BETTER TOGETHER: A JOINED-UP PSYCHOLOGICAL APPROACH TO HEALTH, WELL-BEING, AND REHABILITATION

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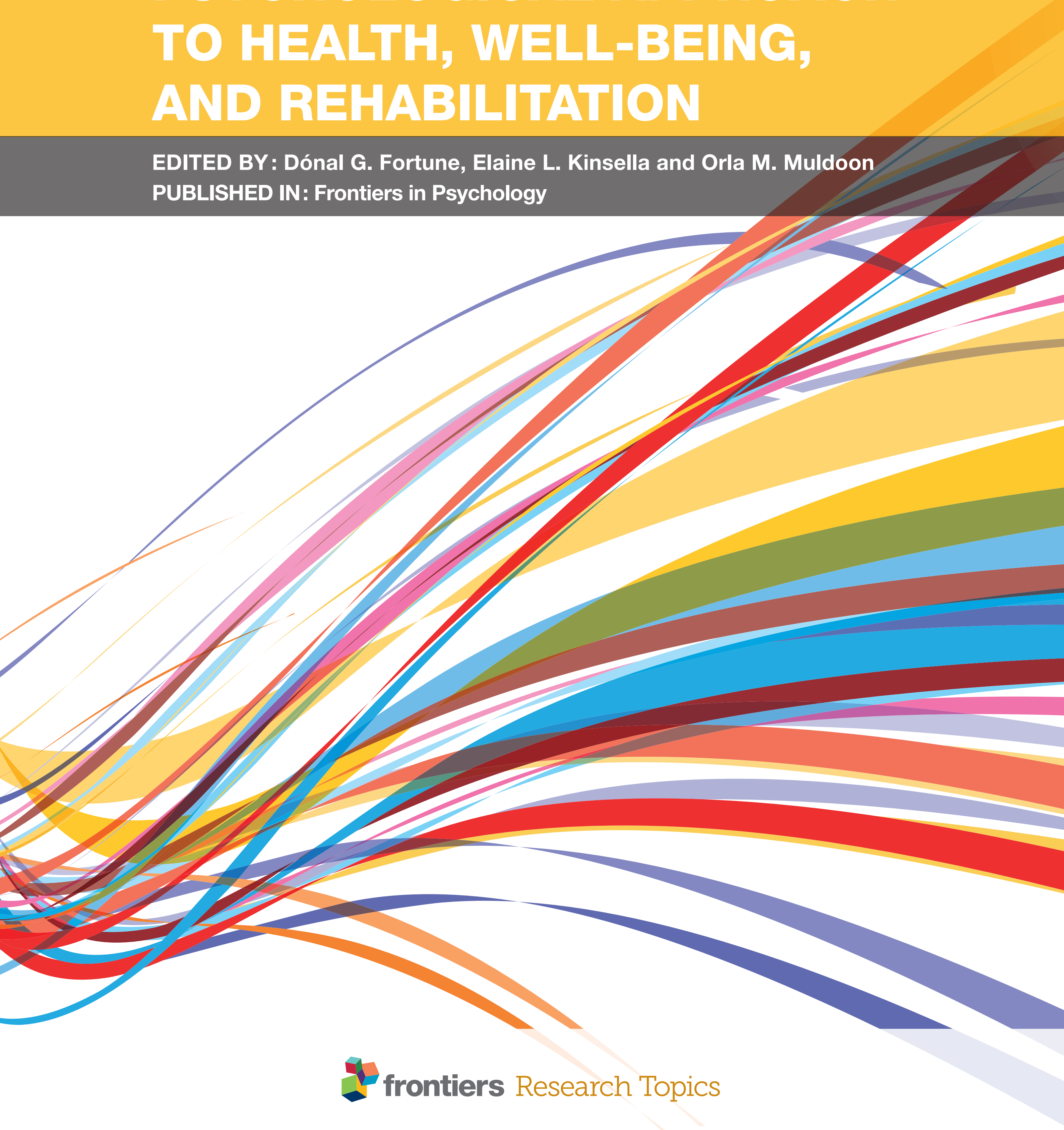

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BETTER TOGETHER: A JOINED-UP PSYCHOLOGICAL APPROACH TO HEALTH, WELL-BEING, AND REHABILITATION

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Health and well-being is best understood in terms of a combination of biological, psychological, and social factors. But how 'social' is the biopsychosocial model when applied to mental health and rehabilitation? Psychology has traditionally viewed health as being determined by individual behavior. An integrative psychological approach is required to draw understanding from sociology, social psychology, and politics to consider how wider systemic, structural, and contextual factors impact on health behavior and outcomes. This e-book is dedicated to examining collective and community approaches to well-being and rehabilitation. In particular, the articles contained within this e-book are seeking to understand how social integration, social groups, social identity, and social capital influence health, well-being, and rehabilitation outcomes.

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EDITORIAL
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Editorial: Better Together: A Joined-Up Psychological Approach to Health, Well-Being, and Rehabilitation

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The Editorial on the Research Topic

Editorial: Better Together: A Joined-Up Psychological Approach to Health, Well-Being, and Rehabilitation

It is exactly 30 years since Arthur Kleinman introduced the term "sociosomatic" in an attempt to refocus attention in the health and psychological sciences on the often apparent, yet all too frequently neglected, social aspects of illness, disorder, and well-being (Kleinman, 1986). Social and cultural causes, social mediators, and moderators, and social outcomes were suggested by Kleinman as representing an additionally helpful, legitimate, and clinically useful formulation of disorder and well-being. This framework contextualized such multifaceted intra- and inter-personal challenges within the social, cultural, and material contexts of peoples' everyday lives. Accordingly, the study of disorder and well-being necessarily requires the interdigitation of the person, their body, and their social and cultural world as essential and inter-dependent components of a comprehensive system of experience.

Since Kleinman's call to arms, one might be forgiven for perceiving psychology to have become increasingly fractionated and divided from its common or shared base. Certainly, it can be observed that professional psychology has developed into increasingly specialized and more numerous "Divisions," further "dividing" or separating relevant and complementary knowledge bases that are likely to have increasing relevance in furthering our understanding of significant social issues. The need for such conceptual and applied integration across specialisms remains compelling, particularly in the case of health and well-being—which is the principal focus of this Frontiers Research Topic. In the initial call for papers for this Research Topic, we stated that health and well-being are best understood in terms of a combination of biological, psychological, and social factors; yet most formulations in this area remain constructed at the individual level. Indeed, it is over 10 years since Suls and Rothman observed that of all the published articles in the American Psychological Association's journal *Health Psychology,* 94% assessed psychological variables only, with minimal attention given to broader socio cultural factors (Suls and Rothman, 2004). Thus, while the biopsychosocial model is the basic explanatory approach for understanding the whole person in health and illness, the social side of the approach remains underspecified and poorly integrated.

Therefore, our principal aim as editors of this Research Topic was to encourage contributions that would permit readers to examine how social integration, social groups, social identity, and social capital influence health and well-being across a variety of outcomes and in a broad number of populations. This over-arching aim was necessarily multidisciplinary and multi-paradigmatic, and assumed equality within the contribution according to the various levels of research focus (i.e., genes, clinical services, families, peer groups, organizational groups, and so forth) across the life span. The aim was, therefore, to attempt to cross the conceptual borders between such arbitrary divisions.

As editors we attempted the challenging task of attracting and developing articles that would "stand-alone" as independent and significant contributions to the research literature, and that would also be consistent with the orientation and aims of this Research Topic, and with their companion articles.

To this end, there was a clear need to bring together interdisciplinary research that utilized a range of approaches across a number of different populations in order to better elucidate common and unique factors relevant to social integration, social groups, social identity, and social capital within an applied framework. We were particularly fortunate to receive such a high standard of contribution in the form of 15 published articles. A number of original research articles in this Research Topic include some of the more novel approaches or areas of investigation that have been informed by significant developments in social, clinical, biological, health, and occupational psychology. Other articles in this Research Topic are concerned with the application of psychological models to vulnerable populations that have been largely underrepresented in research in this area. Given that the various aspects addressed in this Research Topic interrelate in a dynamic and contingent manner, the research presented reflects a necessarily eclectic orientation and supports a breadth of social, cognitive, and physiological viewpoints across the life span.

Among the original research articles, two focussed on the limitations of unitary biomedical explanations. McInnis et al. reported that younger people who carry the oxytocin receptor gene polymorphism were more likely to engage in unhelpful coping styles to deal with negative social interactions, with resultant effects on mood. However, social support from parents and peers were fundamental in determining both coping and well-being regardless of genotype. Huber et al. reported that adolescents with cochlear implants who had additional disabilities did not significantly differ in terms of their relationships with school peers when compared with adolescents with no additional disabilities. Moreover, in an additional study, students in special schools for hearing impaired persons had more conduct problems than mainstream hearing-impaired children. This difference was partially explained by such children having greater difficulties in understanding speech in noisy backgrounds, coming from lower SES backgrounds, and single parent families (Huber et al.). No variable alone could explain comprehensively, why students in special schools have more mental health problems than mainstream pupils, however, the results reiterate the role of the social environment on mental health.

Four articles in this Research Topic assessed the relationships between identification (with an organization) and health behaviors or outcomes. Stronger social identification with an employing organization mediated the relationship between recognizing suffering of clients and burnout in carer's working with homeless adults (Ferris et al.). Moreover, Bjerregaard et al. reported that residential and community carers of older people reported more motivation when their relational identity with clients was perceived by them to be congruent with their organizational identity. Another article reported that although exposure to parental violence in the home reduces family identification generally, stronger identification with their extended family tended to be associated with lower anxiety and better self-esteem in younger people who witnessed parental violence within the home (Naughton et al.). Similarly, in a study examining burnout in sports psychologists across five countries, burnout was frequently experienced despite high levels of work engagement reported (McCormack et al.). The authors cite previous literature suggesting that high levels of work engagement and passion may buffer some of the negative effects of burnout, and in their own study report that social support appeared to facilitate recovery from burnout. Overall, our social situatedness informs our identity and our occupations in ways that directly influence our health and wellbeing (Gallagher et al.).

On the topic of identity pathways, Dingle et al. reported that, contrary to the predominant viewpoint on redemptive narratives in addiction recovery, there are other identity-related pathways leading into and out of addiction in people in recovery, specifically an identity loss and an identity gain pathway which have implications for engagement with recovery models. The authors found that socially-isolated individuals benefitted from the creation of a new valued social identity through affiliation with a therapeutic community. These findings bring attention to the idea that social factors can act as motivations for and barriers to recovery during the course of addiction.

Another theme contained within this Research Topic, concerns the importance of discriminated or discredited social identities and health outcomes. In a longitudinal study, Johnstone et al. reported that homeless people who perceived themselves to be discriminated against on the basis of their social group membership had fewer additional social group memberships at follow-up which consequently impacted their well-being (Johnstone et al.). and Kearns et al. reports that the stigma of accessing help for mental health services can mean those who identify with their organization, in this case a University, feel less able to access the services. In another article, unemployed people reported high levels of anticipated stigma which was associated with higher levels of psychological distress and increased report of physical ill-health (O'Donnell et al.).

Two articles considered social themes associated with another vulnerable population, individuals with acquired brain injury (ABI). In an interventional study with people affected by ABI, Fortune et al. found that changes in more distal social integration outcomes following rehabilitation depend upon prior attainment of positive neurodisability (i.e., physical) outcomes. Further, the authors highlight that the usual time frames used in ABI studies as follow-up may be insufficient to capture important aspects of social integration or community participation. Adopting a salutogenic perspective, Grace et al.'s meta-analysis suggested that people with ABI can experience positive identity growth, and that community and collective factors are likely to enhance posttraumatic growth experiences.

By focusing on cutting-edge research in social, clinical, biological, health, and occupational psychology, this Frontiers Research Topic allows new insights into how social integration, social support, and social identification influence health and well-being across a variety of outcomes and in a variety of populations—demonstrating that we are indeed better together. Beyond the excellent contributions that make up this Research Topic, we believe that this special focus will also give readers ideas for future research in this field, we hope, will continue to turn toward the investigation of social context in understanding wellbeing, illness, and disorder.

AUTHOR CONTRIBUTIONS

DF: Draft outline of Editorial, planned structure and added some content. EK: Fleshed out content and summarized research articles contained within Research Topic. OM: Proofed and made minor typo amendments.

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ORIGINAL RESEARCH
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The moderating role of an oxytocin receptor gene polymorphism in the relation between unsupportive social interactions and coping profiles: implications for depression

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Oxytocin is a hormone that is thought to influence prosocial behaviors and may be important in modulating responses to both positive and negative social interactions. Indeed, a single nucleotide polymorphism, rs53576, of the oxytocin receptor gene (OXTR) has been associated with decreased trust, empathy, optimism, and social support seeking, which are important components of coping with stressors. In the current study, conducted among undergraduate students ($N = 225$), it was shown that parental and peer social support was related to fewer depressive symptoms through elevated problem-focused coping and lower emotion-focused coping, and these effects were independent of the OXTR polymorphism. Unsupportive social interactions from parents were associated with more severe depressive symptoms through the greater use of emotion-focused coping, and this relation was moderated by the OXTR genotype. Specifically, individuals who carried the polymorphism on one or both of their alleles demonstrated increased emotion-focused coping following unsupportive responses compared to those without the polymorphism. Likewise, lower problem-focused coping mediated the relation between parental and peer unsupportive responses to depressive symptoms, but this mediated relation was only evident among carriers of the polymorphism. These findings suggest that carrying this OXTR polymorphism might favor disadvantageous coping styles in the face of negative social interactions, which in turn are linked to poor mood. Regardless of genotype, parental, and peer social support are fundamental in determining stress-related coping and well-being.

Keywords: depression, polymorphism, oxytocin, social support, coping, social interaction

Introduction

Supportive relationships and social connectedness are important predictors of health and well-being that serve as a buffer against several negative consequences of stressors (Cohen and Wills, 1985; Thoits, 2011). In contrast, a lack of social support has been associated with increased risk of chronic health conditions, such as heart disease and diabetes (House et al., 1988; Holt-Lunstad et al., 2010). Thus, enhancing social connectedness and social identity may attenuate depressive symptomatology (Cruwys et al., 2014, 2015). The experience of unsupportive social relationships, comprise negative, or ineffective social interactions, when help or advice is sought during a challenging or stressful time (Ingram et al., 1999, 2001). These unsupportive responses from others include the minimization of problems, blaming the individual, distancing themselves from an individual and their problems, and bumbling attempts to provide support. Importantly, the experience of unsupportive social interactions predicts depressive symptoms above and beyond the contribution of social support (Ingram et al., 1999; Song and Ingram, 2002). Despite the established beneficial effects of social support and the profound impact of unsupportive social interactions on well-being, the biological mechanisms underlying their influence remain largely unknown and under-investigated.

Oxytocin is a hormone that may contribute to a constellation of social behaviors, ranging from trust (Kosfeld et al., 2005) and attachment (Buchheim et al., 2009) to positive communication (Ditzen et al., 2009) and intergroup cooperation (De Dreu et al., 2010). The involvement of oxytocin in these prosocial behaviors in humans has been demonstrated following its administration through a nasal spray (Bakermans-Kranenburg and van IJzendoorn, 2013). As well, support for the involvement of oxytocin in mediating social behavior has come from genetic studies. Specifically, variations in the gene coding for the oxytocin receptor OXTR, in which a single nucleotide polymorphism (SNP) rs53576, which involves a guanine (G) to adenine (A) substitution, has been associated with diminished prosocial behaviors (Kumsta and Heinrichs, 2013). In this regard, compared to individuals who were homozygous for the G allele (i.e., the SNP was not present), A carriers tended to be less empathetic (Rodrigues et al., 2009), displayed lower parental sensitivity (Bakermans-Kranenburg and van IJzendoorn, 2008), and lower trust-related behaviors (Krueger et al., 2012). This SNP has also been associated with lower positive affect (Lucht et al., 2009), and self-esteem as well as greater depressive symptoms (Saphire-Bernstein et al., 2011). In effect, individuals who carry this SNP on one or both alleles (AG or AA genotype) appear to be less socially inclined and potentially at a greater risk for mental health disturbances.

Although coping strategies are not intrinsically negative or positive, depression is frequently associated with the endorsement of lower levels of problem-focused coping and higher levels of emotion-focused coping (Matheson and Anisman, 2003). For instance, depressive disorders have been tied to greater levels of rumination (Aldao et al., 2010) and emotional containment (Ravindran et al., 2002), as well as decreased social support seeking (Matheson and Anisman, 2003) and reduced use of cognitive restructuring (Ravindran et al., 2002). Given that A carriers are less apt to use social support as a means of coping, and benefit less from this coping method, it is possible that the presence of the OXTR SNP might favor the adoption of a relatively narrow range of effective coping strategies (i.e., those that do not rely on social support resources). As a result,the A allele might be associated with greater vulnerabilty to the negative impacts of stressors relative to those with the G allele.

There have been several reports, however, that do not comfortably align with the perspective that the A allele of the OXTR rs53576 gene is associated with vulnerability to disturbed social and emotional functioning. Indeed, the G allele of the OXTR was associated with greater social sensitivity (Bradley et al., 2011; McQuaid et al., 2013; Hostinar et al., 2014), which in the context of negative early life experiences, may be accompanied by greater emotional dysregulation (Bradley et al., 2011) and elevated depressive symptoms among adults (McQuaid et al., 2013). As well, maltreated adolescents who were homozygous for the G allele were more likely to perceive lower social support and reported greater internalizing of symptoms compared to maltreated A allele carriers (Hostinar et al., 2014). The social sensitivity perspective is in line with the suggestion that certain genetic variants may promote behavioral and emotional plasticity, so that environmental and experiential factors, irrespective of whether they are positive or negative, have greater effects on later outcomes (Belsky and Pluess, 2009; Belsky et al., 2009). In essence, the presence of the GG alleles might be accompanied by elevated sensitivity to social cues, irrespective of whether these involved a positive and nurturing early life environment or one that was more negative, and as a result influence social inclinations and mood in adulthood (Bradley et al., 2011; McQuaid et al., 2013; Hostinar et al., 2014).

The elevated sensitivity to environmental factors and the heightened neuroplasticity associated with increased oxytocin functioning (Lin et al., 2012) and with the G allele, could promote the adoption or development of social coping methods (McQuaid et al., 2014a). Indeed, within a stable or warm family environment, G carriers reported greater positive affect and 'resilient' coping, an association that was not observed among those with the AA genotype (Bradley et al., 2013). Conversely, those with the AA genotype sought less emotional social support during distress compared to G carriers (Kim et al., 2010), and also appeared to be less able to benefit from social support (Chen et al., 2011). Among adolescents who carried an A allele, but not among GG homozygotes, experiences of maternal depression predicted lower social functioning, which, in turn, was associated with elevated depressive symptoms (Thompson et al., 2014).

Although unsupportive relationships can have profound effects on mood states, it is uncertain whether the effects of such relationships vary as a function of oxytocin levels or the presence of the OXTR polymorphism. As well, coping methods (e.g., emotion-, avoidant-, and problem-focused coping) which are also important predictors of well-being have not been investigated in association with the genetic variants of the OXTR. In the present investigation we assessed experiences of social support and unsupport from both parents and peers in relation to depressive symptoms and whether these relations were mediated by coping styles. It was of particular interest to determine whether the OXTR rs53576 genotype moderated these mediated relationships. It is possible that the greater social sensitivity of those with the GG genotype would be accompanied by emotion-focused coping in response to unsupportive social interactions, and more effective coping skills in the presence of social support. In contrast, A carriers, who tend to have a more negative affect (and may be less sensitive to social interactions), might be more likely to adopt disadavantageous coping methods that involve emotion- more than problem-focused coping styles, irrespective of perceiving support, or experiencing unsupportive interactions.

Materials and Methods

Participants

Participants included 232 White/Euro-Caucasian female ($n = 189$) and male ($n = 43$) undergraduate students. Participants were recruited through a university online-recruitment system as well as through campus advertisements. Ages ranged between 17 and 35 years of age ($M = 19.75$, SD = 2.78). Current living arrangements varied, with the majority of participants living with either friends/roommates (52.16%), or with parents (31.47%), and the remaining participants reporting living alone (5.60%), with a significant other (4.74%), or other arrangements (6.03%; e.g., living with children).

Procedure

Following the provision of informed consent, participants were provided with a series of questionnaires that assessed demographic information, current symptoms of depression, coping styles, as well as levels of perceived support and unsupportive interactions from parents and peers. Following completion of questionnaires, a single saliva sample was collected from participants for DNA analyses. All participants were provided with a written debriefing explaining the purpose and objectives of the study, as well as researcher contact information. All procedures for the present study were approved by the Carleton University Ethics Committee for Psychological Research.

Genotyping

Saliva samples for DNA analyses were collected using an Oragene OG-500 saliva sample collection kit purchased from DNA Genotek (Ottawa, ON, Canada). Manufacturer's instructions were followed for the extraction of genomic DNA and following extraction samples were diluted to approximately equal concentrations (20 ng/μL). DNA samples were genotyped using quantitative polymerase chain reaction (qPCR). The amplification reactions were performed using approximately 1 μL (20 ng) of genomic template, 0.6 μL of each primer (with a concentration of 10 μM), 1.2 μL of dNTP, 1.5 μL of 10X buffer, 1.5 μL of $MgCl_2$, 0.3 μL of Salmon Sperm DNA, 0.15 μL of Taq polymerase, 0.015 of SYBR green, 8.135 μL of water. The total volume of the resulting solution was 15 μL. Solutions were plated in duplicate and qPCR products were run on 2% agarose gel electrophoresis to visualize and confirm qPCR results. The primer sequences used for qPCR were the following:

OXTR F1 forward: TCCCTGTTTCTGTGGGACTGAGGAC
OXTR F2 forward: TCCCTGTTTCTGTGGGACTGAGGAT
OXTR reverse: TCCCTGTTTCTGTGGGACTGAGGAT

Allele distribution for the OXTR polymorphism comprised 104 individuals with the homozygote GG genotype, (87 female, 17 male), 89 individuals with the heterozygote AG genotype (71 female, 18 male), and 32 individuals with the homozygote AA genotype (25 female, 7 male). Genotype distributions did not differ as a function of gender $\chi^2{}_{(1)} = 0.73$, $p = 0.70$. Additionally, genotype distributions for males, $\chi^2{}_{(1)} = 0.35$, $p = 0.55$, and females, $\chi^2{}_{(1)} = 2.79$, $p = 0.09$, met Hardy–Weinberg Equilibrium expectations. The initial sample size was 232 but there were seven individuals for whom the genotype could not be determined and hence they were excluded from any subsequent analyses making the overall $N = 225$. Further, due to the infrequency of the AA genotype, a dominant model was used wherein all A carriers (AA and AG were pooled) were compared to individuals with the GG genotype.

Measures

Depressive Symptoms

Depressive symptoms were assessed using the Beck Depression Inventory (BDI; Beck et al., 1961). This is a 21-item questionnaire in which participants respond to each item by selecting one of four options that range from low to high depression symptomology. The scores were calculated as the total sum across all items (Cronbach's $\alpha = 0.90$).

Unsupportive Social Interactions

Levels of unsupportive social interactions from parents and peers were assessed using the Unsupportive Social Interactions Inventory (USII; Ingram et al., 2001). This 24-item scale was administered twice (once for parents, and once for peers) and assessed the degree of perceived unsupport individuals received from their parents or peers when turning to them during a recent stressful or challenging time. Participants responded to each item ranging from none (0) to a lot (4). The unsupport scale comprised four subscales that included distancing (behavioral or emotional disengagement; e.g., "Would not seem to want to hear about it"), bumbling (behaviors that are awkward, or uncomfortable; e.g., "Would try to cheer me up when I was not ready to"), minimizing (attempts to minimize the individual's concerns; e.g., "Would feel that I was overreacting"), and blaming (finding fault or criticism; e.g., "Would make "I told you so" or similar comments"). The four subscales were highly correlated with one another [ranging from $r = 0.47$ to 0.65 (Parents) and $r = 0.42$ to 0.58 (Peers)], and so total mean scores of unsupport were used (Peers: Cronbach's $\alpha = 0.92$; Parents: Cronbach's $\alpha = 0.93$).

Social Support

Perceived social support from parents and peers was assessed using the Social Provisions Scale (Cutrona and Russell, 1987). Participants were asked to respond to this shortened 12-item scale twice (once for parents, and once for peers) by rating the degree to which their parents or peers are currently providing them with different forms of support including, guidance, reassurance of worth, reliable alliance, social integration, opportunity to provide nurturance and attachment. This shortened version has been shown to demonstrate good construct validity (Russell et al., 1984). Total mean scores of social support were used and demonstrated good reliability (Peers: Cronbach's $\alpha = 0.87$; Parents: Cronbach's $\alpha = 0.81$).

Coping Styles

The Survey of Coping Profile Endorsement (Matheson and Anisman, 2003) is a 50-item scale that assesses the means individuals use to cope. Participants indicated on a scale of never (1) to almost always (5), the extent to which they would use the behavior as a way of dealing with problems or stressors in recent weeks. A principal component analysis (PCA) with a varimax rotation was conducted to determine the underlying factor structure of this scale. The PCA was performed on 13 subscales based on earlier studies (Matheson and Anisman, 2003) and were included on a factor when loadings were greater than 0.40. Three factors emerged which encompassed emotion-, avoidant-, and problem-focused coping. The factor loadings were similar to that of previous findings (Raspopow et al., 2013; McQuaid et al., 2014b) and Cronbach's alphas for the three factors confirmed that they were well-constructed. Emotion-focused coping comprised ruminations, emotional expression, blaming others, self-blame, and wishful thinking (Cronbach's $\alpha = 0.90$). Avoidant coping comprised, cognitive distraction, passive resignation, and emotional containment (Cronbach's $\alpha = 0.82$). Problem-focused coping comprised problem solving, cognitive restructuring, active distraction, humor, and social support seeking (Cronbach's $\alpha = 0.85$).

Statistical Analyses

The statistical analyses were performed using IBM SPSS Statistics 20 for Windows (Armonk, NY, USA: IBM Corp.). Independent samples *t*-tests were performed to assess differences of OXTR and gender on scores of depression, coping, and experiences of unsupportive social interactions as well as, social support. Pearson correlation scores were calculated to assess the relations between self-reported scores for depression, unsupportive social interactions, social support, and coping. Moderated mediation analyses were conducted using bootstrapping procedures and confidence intervals based on 5000 resamples (Preacher et al., 2007). Unstandardized scores were used for all regression analyses. In the moderated mediation analyses OXTR genotype was treated as the moderator, unsupport or social support were used as independent variables, coping styles as mediator variables and depressive symptoms as the outcome.

Results

There were no differences as a function of individuals' genotype on depression [$t(1,223) = -0.04$, $p = 0.97$], perceived social support from parents [$t(1,223) = 1.14$, $p = 0.26$] or peers [$t(1,223) = -0.38$, $p = 0.70$], or unsupport from parents [$t(1,223) = -0.06$, $p = 0.95$] or peers [$t(1,223) = -0.54$, $p = 0.59$]. Likewise, differences were not observed across genotypes with respect to emotion-focused [$t(1,223) = 0.37$, $p = 0.71$], avoidant-focused [$t(1,223) = 0.77$, $p = 0.44$], or problem-focused coping [$t(1,223) = -0.38$, $p = 0.70$; see **Table 1** for descriptives]. Analyses were also conducted to determine if any of the variables of interest varied as a function of gender. In this regard, reported depressive symptoms were higher among females, $t(1,91) = 4.56$, $p < 0.001$, as were reports of emotion- and avoidant-focused coping, $t(1,85) = 4.24$, $p < 0.001$, and $t(1,230) = 2.23$, $p < 0.05$, respectively (see **Table 2** for all descriptives and *t*-test values).

As expected, depression scores were positively correlated with unsupportive relations from parents ($r = 0.59$, $p < 0.001$) and peers ($r = 0.44$, $p < 0.001$), and negatively related to social support from parents ($r = -0.62$, $p < 0.001$) and peers ($r = -0.47$, $p < 0.001$). As predicted as well, depressive symptoms were positively related to emotion-focused coping ($r = 0.62$, $p < 0.001$) and avoidant-focused coping ($r = 0.41$, $p < 0.001$), whereas problem-focused coping was negatively associated with depression scores ($r = -0.43$, $p < 0.001$; **Table 3**).

Parental Support and Unsupport

It was of interest to examine the influence of OXTR genotype on the mediated relations between parental social support, unsupport, and depressive symptoms through coping styles. Preliminary analyses revealed that avoidant-focused coping

TABLE 1 | Mean, SD, and range for study variables by oxytocin receptor gene (OXTR) rs53576 genotype.

	GG	AG	AA	Overall
Beck depression inventory	$M = 9.18 \pm 7.55$ Range: 0–31.00	$M = 9.08 \pm 8.31$ Range: 0–35.50	$M = 9.61 \pm 9.18$ Range: 0–33.00	$M = 9.15 \pm 8.01$ Range: 0–35.50
Social support (Parents)	$M = 3.22 \pm 0.49$ Range: 1.29–4.00	$M = 3.30 \pm 0.59$ Range: 1.29–4.00	$M = 3.11 \pm 0.75$ Range: 1.42–4.00	$M = 3.24 \pm 0.57$ Range: 1.29–4.00
Social support (Peers)	$M = 3.46 \pm 0.35$ Range: 2.00–4.00	$M = 3.43 \pm 0.47$ Range: 1.85–3.92	$M = 3.30 \pm 0.58$ Range: 1.87–4.00	$M = 3.42 \pm 0.44$ Range: 1.85–4.00
Unsupport (Parents)	$M = 1.40 \pm 0.76$ Range: 0–3.50	$M = 1.40 \pm 0.82$ Range: 0.08–3.50	$M = 1.43 \pm 0.94$ Range: 0.38–3.50	$M = 1.40 \pm 0.80$ Range: 0–3.50
Unsupport (Peers)	$M = 1.20 \pm 0.59$ Range: 0.17–3.25	$M = 1.24 \pm 0.63$ Range: 0.08–2.88	$M = 1.27 \pm 0.74$ Range: 0.17–3.13	$M = 1.23 \pm 0.63$ Range: 0.08–3.25
Emotion-focused coping	$M = 1.92 \pm 0.80$ Range = 0–3.80	$M = 1.86 \pm 0.76$ Range: 0.15–3.47	$M = 1.94 \pm 0.80$ Range: 0.57–3.25	$M = 1.90 \pm 0.77$ Range: 0–3.80
Avoidance-focused coping	$M = 2.09 \pm 0.65$ Range: 0.64–3.50	$M = 2.01 \pm 0.67$ Range: 0.33–3.39	$M = 2.07 \pm 0.64$ Range: 0.67–3.28	$M = 2.06 \pm 0.65$ Range: 0.33–3.50
Problem-focused coping	$M = 2.55 \pm 0.53$ Range: 1.02–3.69	$M = 2.56 \pm 0.58$ Range: 0.80–3.72	$M = 2.51 \pm 0.65$ Range: 1.34–3.61	$M = 2.56 \pm 0.65$ Range: 0.80–3.90

TABLE 2 | Mean, SD, and *t*-test values of study variables by gender.

	Males	Females	*t*-test values
Beck depression inventory	$M = 5.33 \pm 5.47$	$M = 10.02 \pm 8.23$	$t(1,92) = 4.56$, $p < 0.001$
Social support (Parents)	$M = 3.37 \pm 0.43$	$M = 3.21 \pm 0.60$	$t(1,89) = -2.02$, $p < 0.05$
Social support (Peers)	$M = 3.45 \pm 0.42$	$M = 3.42 \pm 0.44$	$t(1,230) = -0.47$, $p = 0.64$
Unsupport (Parents)	$M = 1.07 \pm 0.54$	$M = 1.47 \pm 0.84$	$t(1,94) = 3.98$, $p < 0.001$
Unsupport (Peers)	$M = 1.23 \pm 0.47$	$M = 1.22 \pm 0.66$	$t(1,84) = -0.17$, $p = 0.86$
Emotion-focused coping	$M = 1.54 \pm 0.56$	$M = 1.98 \pm 0.79$	$t(1,85) = 4.24$, $p < 0.001$
Avoidance-focused coping	$M = 1.86 \pm 0.62$	$M = 2.10 \pm 0.65$	$t(1,230) = 2.23$, $p < 0.05$
Problem-focused coping	$M = 2.59 \pm 0.50$	$M = 2.56 \pm 0.59$	$t(1,230) = -0.28$, $p = 0.78$

When Levene's Test of Equality of Variances was violated equal variances not assumed are reported.

was not an important mediator of these relations [95% CI (−0.12,0.64)], and was thus excluded from subsequent analyses examining the moderating role of OXTR genotype. Moderated multiple mediation analyses were performed using bootstrapping techniques and confidence intervals based on 5000 iterations (Preacher et al., 2007), in which we assessed whether the association between parental social support and depressive symptoms mediated by problem- as well as emotion-focused coping was moderated by the OXTR genotype. In particular, it was tested whether the OXTR genotype moderated the path between social support and coping styles.

These analyses revealed that the OXTR genotype did not moderate the mediating role of problem-focused coping ($b = 0.03$, $t = 0.20$, $p = 0.83$) or emotion-focused coping ($b = -0.12$, $t = -0.68$, $p = 0.50$) on the relations between levels of social support from parents and depressive symptoms. In effect, regardless of the genotype, social support was related to depressive affect and this was mediated by greater problem- and lower emotion-focused coping [95% CI (−1.91,−0.58), 95% CI (−2.98,−1.39), respectively]. Alternative models assessing whether OXTR moderated the association between both problem- and emotion-focused coping on depressive symptoms were found not to be significant.

Although OXTR genotype did not influence the mediating role of coping between parental social support and depressive symptoms, it was of interest to examine the moderating role of OXTR genotype in the context of unsupportive social interactions. Analyses were performed to determine the moderating influence of OXTR on the association between unsupport from parents and problem-focused coping to predict depressive symptoms. These analyses revealed that the OXTR genotype moderated the mediating role of problem-focused coping on the relation between levels of unsupport from parents and depressive symptoms $b = -0.18$, $t = -1.96$, $p = 0.05$. Specifically, unsupportive interactions with parents were associated with higher depressive symptoms and this was mediated through lower problem-focused coping. However, this mediated relationship was only present among individuals who carried an A allele [95% CI (0.42,1.70)] and, as expected, was absent among those with the GG genotype [95% CI (−0.25,0.80)] for the OXTR gene (**Figure 1**). Moreover, the OXTR genotype moderated the mediating role of emotion-focused coping in the relation between unsupport from parents and depressive symptoms, $b = 0.23$, $t = 1.94$, $p = 0.05$. Perceptions of unsupportive relations were associated with higher emotion-focused coping, which, in turn was related to higher depressive symptoms. Unlike problem-focused coping, this mediated relationship was observed irrespective of the OXTR genotype, but was stronger among A allele carriers [95% CI (1.73,3.22)] compared to individuals with the GG genotype [95% CI (0.54,2.35)] (**Figure 1**). It should be noted that the moderated effect of the OXTR polymorphism was small, and thus at this juncture the results should be interpreted cautiously. Once again, alternative models assessing whether OXTR moderated the path between both problem- and emotion-focused coping on depressive symptoms were not significant.

Peer Support and Unsupport

In addition to assessing the associations between OXTR and unsupportive responses from parents, we examined the relation

TABLE 3 | Relations between depressive symptoms, social support, unsupport, and coping.

	1	2	3	4	5	6	7
(1) Social support (Parents)							
(2) Social support (Peers)	0.39***						
(3) Unsupport (Parents)	−0.65***	−0.31***					
(4) Unsupport (Peers)	−0.30***	−0.48***	0.61***				
(5) Emotion-focused coping	−0.37***	−0.34***	0.46***	0.45***			
(6) Avoidant-focused coping	−0.25***	−0.25***	0.35***	0.32***	0.51***		
(7) Problem-focused coping	0.40***	0.51***	−0.26***	−0.21**	−0.16*	−0.10	
(8) Depressive symptoms	−0.62***	−0.47***	0.59***	0.44***	0.62***	0.41***	−0.43***

**$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.*

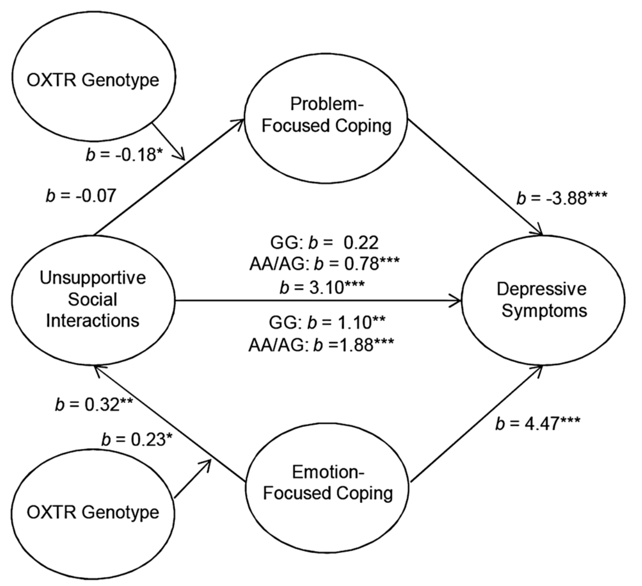

FIGURE 1 | Schematic of the moderated multiple mediation analyses examining parental unsupport. The relation between unsupportive social interactions from parents and depressive symptoms through problem-focused coping was moderated by oxytocin receptor gene (OXTR) rs53576 genotype, such that it was only significant among A carriers. As well, the relation between unsupportive responses from parents and depressive symptoms through emotion-focused coping as moderated by OXTR genotype. This mediated model was significant irrespective of genotype, but was stronger among A carriers. $*p \leq 0.05$, $**p < 0.01$, $***p < 0.001$.

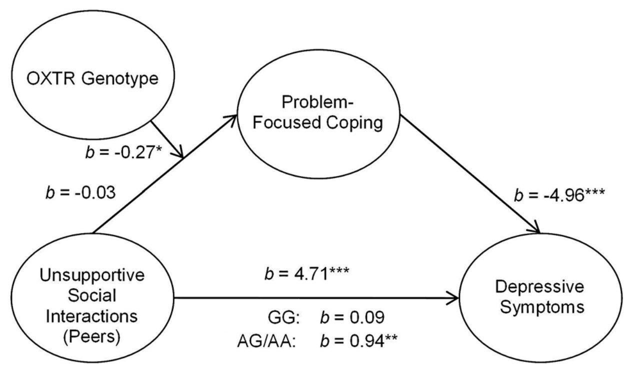

FIGURE 2 | Schematic of the moderated mediation analyses examining peer unsupport. The relation between unsupportive social interactions from peers and depressive symptoms through problem-focused coping was moderated by OXTR rs53576 genotype, only being significant among A carriers. $*p < 0.05$, $**p < 0.01$, and $***p < 0.001$.

between unsupport from peers and coping styles as well as between social support from peers and coping styles. As observed with social support from parents, peer support in relation to depressive symptoms through coping styles was not moderated by the OXTR genotype. Indeed, peer support was important regardless of genotype such that greater levels of perceived peer social support were associated with greater problem- and lower emotion-focused coping and this was related to lower depressive symptoms [problem-focused: 95% CI (−3.93,−1.29); emotion-focused: 95% CI (−4.82,−2.02)]. Furthermore, the OXTR genotype did not moderate the mediated relation between unsupport from peers and depressive symptoms through emotion-focused coping, $b = 0.07$, $t = 0.49$, $p = 0.63$. In contrast, the OXTR genotype moderated this relation when problem-focused coping was considered as a mediator, $b = -0.27$, $t = -2.20$, $p < 0.05$. This mediated relation was observed among A allele carriers (**Figure 2**), but was entirely absent among those with the GG genotype[1].

Due to the potential influence of gender on some of the factors assessed in the moderated mediation analyses (i.e., emotion-focused coping and depressive symptoms) the data were re-analyzed using gender as a covariate. These analyses revealed similar results, in that OXTR remained a non-significant moderator of models in which social support was used as the independent variable. As well, the moderated effect of the OXTR genotype on the relation between peer unsupport and problem-focused coping and depressive symptoms remained unchanged. When examining the moderated effect of OXTR in models where parental unsupport was used as the independent variable, the *p*-value for problem-focused coping was reduced. However, the moderated effect of OXTR on emotion-focused coping changed marginally from $p = 0.05$ to $p = 0.07$. The overall direction of relationships remained unchanged.

Discussion

The current findings revealed that the OXTR polymorphism rs53576 moderated the association between unsupportive social interactions from parents and peers and problem-focused coping responses in their relation to depressive scores. Specifically, this mediated relation was evident in A carriers, but absent among those with the GG genotype. It seems that in the presence of the A allele it was less likely that individuals would adopt problem-focused strategies in the face of unsupportive interactions, which could potentially contribute to depressive disorders. The current findings also indicated that the adoption of emotion-focused coping in association with perceived unsupportive parental responses was tied to greater depressive symptoms, and this was particularly notable among A carriers. It is uncertain why this heightened relation existed. It is possible that diminished reliance on social support seeking among A carriers was accompanied by exaggerated emotion-focused coping efforts under conditions of unsupportive responses. In line with these findings, adolescents who carried the A allele for the OXTR rs53576 reported greater levels of loneliness if they also perceived their social network more negatively (van Roekel et al., 2013). The present findings are consistent with those indicating that depressive mood is accompanied by elevated emotion-focused coping at the expense of problem-focused coping (Matheson and Anisman, 2003).

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[1] As the BDI scores were positively skewed (skewness $z = 6.48$), additional analyses were undertaken of the square root transformed BDI scores. The results of this analysis fully mapped on to that using the non-transformed data.

Whether this reflects actions of coping on depression, altered coping secondary to depression, or variations in the sensitivity to social cues, it is uncertain given the correlational nature of the present data.

It is somewhat puzzling that the relation between peer unsupport and emotion-focused coping was present irrespective of genotype, whereas this relationship was moderated by the OXTR genotype in the context of parental unsupport. However, for individuals in this age group, responses from peers may be especially significant (Wilkinson, 2004) and hence regardless of genotype, peer unsupport may be highly linked to emotion-focused coping. This speaks to the fact that the effects of social interactions on coping and well-being are not all similarly influenced by genetic predispositions.

The current findings indicated that perceptions of both parental and peer *social support* were associated with depressive symptoms through emotion- and problem-focused coping. Moreover, these relations were not influenced by the oxytocin genotype, which contrasts with the pattern observed with respect to unsupportive social interactions. Social support is fundamental to well-being and it is possible that in relation to coping styles, differences related to genotype are less marked. This said, there have been reports of social support interacting with the OXTR genotype, indicating that in comparison to individuals with the AA genotype, G carriers of the OXTR rs53576 exhibited diminished stress responses (i.e., decreased cortisol) when social support was available (Chen et al., 2011). In the present investigation, however, the interaction with the OXTR polymorphism was limited to unsupportive relations and was not apparent with respect to social support. Follow-up statistical analyses indicated that the lack of an association of the OXTR polymorphism with social support and coping was apparent irrespective of whether or not AG carriers were pooled with the AA or GG genotypes. However, the small number of AA individuals in the analyses makes it necessary for further replication to determine the relation (or lack of it) between the OXTR polymorphism, social support and coping styles.

Finally, the current data are consistent with previous studies that linked both unsupport and coping styles with depressive symptoms (Ingram et al., 1999; Raspopow et al., 2013; McQuaid et al., 2014b), and these relations were more apparent among A carriers. Although these data are in line with the view that the A allele is a vulnerability factor in relation to depressive symptoms, they are not consistent with the social sensitivity hypothesis that G allele carriers are more sensitive, rendering them more susceptible to the consequences of a negative environment (Bradley et al., 2011; McQuaid et al., 2013; Hostinar et al., 2014). It is possible, however, that the relationship between particular genotypes and negative events might vary developmentally. In particular, the heightened social sensitivity associated with the G allele of the OXTR rs53576 was more closely aligned with mood symptoms when the negative social interactions were experienced early in life, as in the case of childhood abuse or neglect (Bradley et al., 2011; McQuaid et al., 2013; Hostinar et al., 2014). It should be added that the nature of unsupportive social interactions experienced among adults differs appreciably from that of childhood maltreatment, and thus a comparison of these stressful experiences may be inappropriate. Furthermore, it is possible that the link between oxytocin functioning and social sensitivity may vary with specific contextual conditions. For instance, oxytocin might have prosocial effects in a test involving positive social behaviors, but might have very different actions in situations involving social exclusion or ostracism. We observed that G carriers were more sensitive to the effects of an acute experience of social ostracism, although it is uncertain whether these same individuals would be more likely to adopt social support seeking as a primary coping strategy (McQuaid et al., 2015).

Although the present study indicated an association of the A allele with seemingly less productive coping processes, there are several limitations that should be considered. The modest sample size and the number of variables examined may be problematic in a gene-association study (Ohashi and Tokunaga, 2001), and thus the present findings ought to be considered as being provisional, pending a replication of this study. Also, due to the limited number of participants, we were unable to examine the relative risk for negative mood outcomes across the three OXTR genotypes. Examination of the genotypes separately can be particularly informative and the choice to collapse and use a dominant model may not always be appropriate. For example, following a social stressor that comprised social ostracism, when assessing psychosocial measures we observed that responses of participants with the heterozygote AG genotype for the OXTR rs53576 aligned more closely to those with the AA genotype, whereas on physiological measures (cortisol and blood pressure) the heterozygotes displayed profiles that were more similar to individuals with the GG genotype (McQuaid et al., 2015). In the present investigation, the choice to combine individuals carrying the AA and AG alleles was predicated on earlier studies examining this OXTR SNP (Bakermans-Kranenburg and van IJzendoorn, 2008; Rodrigues et al., 2009; Saphire-Bernstein et al., 2011; Krueger et al., 2012), although a meta-analysis failed to detect a significant combined effect of the OXTR rs53576 polymorphism on social behaviors (Bakermans-Kranenburg and van Ijzendoorn, 2014). However, this does not imply that alternative analytic approaches are inappropriate. Ultimately, evaluating the three genotypes independently, despite the low incidence of the AA genotype (∼15% in Euro-Caucasians), would be ideal.

Males and females differed on several dimensions (e.g., depressive symptoms, emotion-and avoidance-focused coping, parental unsupport and support), but these differences did not vary as a function of the OXTR genotype. As the sample largely comprised females (∼80%) and only a modest number of males were assessed, the contribution of the OXTR genotype to these gender differences warrants further research. This is especially the case as oxytocin may interact with estrogen and with menstrual cycle (Choleris et al., 2003), and it is possible that relations between behavior and the OXTR genotype might also vary with menstrual cycle. However, when gender was treated as a covariate the moderated effect of the OXTR genotype became less significant when examining parental unsupport to depressive symptoms through emotion-focused coping. Further, due to the cross-sectional nature of the study the directionality of the variables of interest is not known. This greatly limits the interpretation of the mediation analyses, and as such, inferences about temporal relations between the variables cannot be inferred. The possibility remains that participants' current depressive symptoms could have biased their perceptions of unsupportive social interactions and social support. Finally, although there have been several studies linking the OXTR rs53576 gene polymorphism to prosocial behaviors, the functionality of this polymorphism is uncertain (i.e., whether this SNP actually disturbs the receptors responsivity; Inoue et al., 1994). Nevertheless, it has been suggested that this polymorphism may contribute to the suppression of the protein making up these receptors (i.e., transcription suppression) and hence the presence of these receptors themselves (Mizumoto et al., 1997).

Despite the limitations, the present findings are consistent with the view that A carriers may be more susceptible to negative mood outcomes through the use of less effective coping methods. Yet, the link to psychological disorders, such as depression, is exceedingly complex, especially as genetic factors that are beneficial in certain environments, particularly those that involve social interactions, may be unfavorable in others.

Author Contributions

OM, RM, and HA contributed to the inception and design of the current experiment. Testing and data collection were performed by OM and RM. The processing of samples was performed by OM and RM. Data analysis and the writing of the manuscript were performed by OM, RM, KM, and HA. All authors approved the final version of the paper for submission.

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Mental health problems in adolescents with cochlear implants: peer problems persist after controlling for additional handicaps

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The aims of the present multi-center study were to investigate the extent of mental health problems in adolescents with a hearing loss and cochlear implants (CIs) in comparison to normal hearing (NH) peers and to investigate possible relations between the extent of mental health problems of young CI users and hearing variables, such as age at implantation, or functional gain of CI. The survey included 140 adolescents with CI (mean age = 14.7, *SD* = 1.5 years) and 140 NH adolescents (mean age = 14.8, *SD* = 1.4 years), their parents and teachers. Participants were matched by age, gender and social background. Within the CI group, 35 adolescents were identified as "risk cases" due to possible and manifest additional handicaps, and 11 adolescents were non-classifiable. Mental health problems were assessed with the Strengths and Difficulties Questionnaire (SDQ) in the versions "Self," "Parent," and "Teacher." The CI group showed significantly more "Peer Problems" than the NH group. When the CI group was split into a "risk-group" (35 "risk cases" and 11 non-classifiable persons) and a "non-risk group" (*n* = 94), increased peer problems were perceived in both CI subgroups by adolescents themselves. However, no further differences between the CI non-risk group and the NH group were observed in any rater. The CI risk-group showed significantly more hyperactivity compared to the NH group and more hyperactivity and conduct problems compared to the CI non-risk group. Cluster analyses confirmed that there were significantly more adolescents with high problems in the CI risk-group compared to the CI non-risk group and the NH group. Adolescents with CI, who were able to understand speech in noise had significantly less difficulties compared to constricted CI users. Parents, teachers, and clinicians should be aware that CI users with additionally special needs may have mental health problems. However, peer problems were also experienced by CI adolescents without additional handicaps.

Keywords: cochlear implants, adolescents, hearing loss, multi handicap, mental health problems, SDQ, peer problems, multi-center study

Introduction

A cochlear implant (CI) is a prosthesis for the hair cells in the inner ear of persons with severe or profound hearing loss. In children with a severe or profound sensorineural hearing loss it usually allows the development of speech understanding and speech production. Long-term studies have however shown that language and speech performance improve slowly over time after cochlear implantation and require years to reach the final level (Beadle et al., 2005; Uziel et al., 2007). Therefore, the age at which children receive their first CI is one of the strongest predictors of hearing and speech skills after cochlear implantation (Nikolopoulos et al., 1999; Sharma et al., 2002; Lesinski-Schiedat et al., 2004; Connor et al., 2006). The language development of children implanted at a very young (<2 years) age is very similar to that of their normal hearing (NH) peers (Spencer et al., 2004; Uziel et al., 2007).

In the last years further areas gained importance in CI research beyond hearing and speech of children and adolescents growing up with CIs. These include academic performance (e.g., Beadle et al., 2005; Uziel et al., 2007; Huber et al., 2014), cognition (e.g., Soleymani et al., 2014) and health related quality of life (e.g., Loy et al., 2010). Most recently, mental health problems[1] of children and adolescents with CIs gained attention (Hintermair, 2007; Dammeyer, 2010; Huber and Kipman, 2011; Theunissen et al., 2011, 2012, 2013; Anmyr et al., 2012).

Studies about young persons with a hearing loss and without a CI indicate that unsatisfactory progress in speech- and language development (Barker et al., 2009; Stevenson et al., 2010) and/or communication problems (Hogan et al., 2011) promote mental health problems, whereas speech intelligibility protects against mental health problems (Polat, 2003). Cochlear implantation enables the development of language and speech (Nikolopoulos et al., 1999; Sharma et al., 2002; Lesinski-Schiedat et al., 2004; Spencer et al., 2004; Beadle et al., 2005; Connor et al., 2006; Uziel et al., 2007). Therefore, we expect that in the long term cochlear implantation has a positive effect on the mental health of children and adolescents with a hearing loss.

Furthermore, hearing variables like the age at first and second CI and functional gain of the CI(s) (aided thresholds) may be associated with the mental health outcomes of young CI users.

However, the number of studies addressing mental health problems of adolescents with CIs is still limited (compare **Table 1**).

Hintermair (2007) investigated the "prevalence of socioemotional problems" in 213 children and adolescents with hearing loss, including 50 children/adolescents with CIs. However, this paper did not explicitly inform about the specific prevalence rates of the CI group. For more information see **Table 1**.

Dammeyer (2010) found no significant differences in psychosocial development between 119 "deaf" participants, 116 "hard of hearing" participants and 92 participants with CIs[2]. However, the authors noted, that the sample of children with CIs was non-representative. Furthermore, NH children were not included as a control group in this study. For more information see **Table 1**.

To the best of our knowledge, only very few studies so far included a NH comparison group when assessing the mental health problems of children or adolescents with CIs.

Huber and Kipman (2011) compared mental health problems between 32 adolescents with CIs and 212 NH peers. Adolescents with CIs have more peer problems compared to their NH peers. But no further differences in other domains, including emotional problems, conduct problems, hyperactivity or prosocial behavior were observed between CI group and normally hearing group. The CI group was however small and there was no matching between CI- and NH group. For more information see **Table 1**.

Theunissen et al. (2011) examined levels of depressive symptoms in 56 children with hearing aids (with a hearing loss reaching from moderate to profound), 27 children with cochlear implants and 117 NH children. However, the CI group was small. The paper did not inform about the specific prevalence rates of the CI group and there was no matching between control and study group. For more information see **Table 1**.

Additionally, Theunissen et al. (2012) investigated levels of anxiety in 51 children with hearing aids (with a hearing loss reaching from moderate to profound), 32 children with cochlear implants and 127 children "without hearing loss." The CI group was however small and there was no matching between CI- and NH group. For more information see **Table 1**.

Furthermore, Theunissen et al. (2013) compared behavioral problems (aggression, delinquency, oppositional behavior, psychopathy, and attention deficit and hyperactivity disorder) between 75 children and adolescents with hearing aids (with a hearing loss, reaching from moderate to profound), 57 children and adolescents with a CI, and 129 NH peers. CI users showed less behavioral problems than children with hearing aids. However, the paper did also not inform about the specific prevalence rates of the CI group and there was no matching between control and study group. For more information see **Table 1**.

Therefore, the question, whether cochlear implantation can protect children and adolescents with a hearing loss against mental health problems requires further attention. Particularly, more closely controlled studies comparing young CI users to NH peers are needed to evaluate whether the prevalence rate of mental health problems is still higher in children with CI compared to NH children.

Despite a matching for age, gender and social background, one should also consider that the risk for additional disabling health conditions is increased in the population of persons, who grow up with a hearing loss.

According to the American Academy of Pediatrics, American Academy of Pediatrics, Joint Committee on Infant Hearing

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[1] Mental health problems are described on the focus of behavior as emotional, behavioral and social problems. Another form of mental health is HRQoL (health related quality of life), with the focus on the (subjective) personal experience. Mental health disorders have to fulfill nosological criteria as described in ICD 10 (World Health Organization 2010). International Statistical Classification of Diseases—ICD 10. http://apps.who.int/classifications/icd10/browse/2010/en (assessed 19.2.2014). or DSM 5 (American Psychiatric Association, 2013).

[2] "Deaf" and "hard-of-hearing" according to Dammeyer (2010).

TABLE 1 | Studies on mental health problems of children older than six years and adolescents with cochlear implants (at least 20% of the study group).

Nr	Mean age	Mental health instrument	Mainstream school	Outcome—mental health problems
[1]	10	SDQ[3] parents	No information	"... as the prevalence of socioemotional problems in the sample of deaf and hard of hearing children was... greater for almost all scores... " No association with the degree of hearing loss of "the threes groups <70 dB, 70–90 dB, >90 dB."
[2]	13	SDQ teacher	100% in schools for persons with hearing loss	3.7 times more "psychosocial difficulties" compared to normally hearing peers. Persons with additional disabilities have 3 times more mental health problems compared to persons without. No association with the degree of hearing loss.
[3]	15	SDQ self SDQ parents SDQ teacher	75%	Significantly more peer problems in the CI-group than in the comparison group of normally hearing peers. Apart from that there was no significant difference between CI- and normal hearing group. Pupils of schools for persons with hearing loss and sign language competent persons showed more problems. The better the speech perception outcomes and reading-speech comprehension, the less are the mental health problems.
[4]	9–15	SDQ self SDQ parents SDQ teacher	29%	Children rated significantly more mental health problems than parents and teachers did.
[5]	11	(a)[4], (b)[5]	CI (59%) HA (64%)	"Hearing impaired children reported more depressive symptoms than normally hearing children."
[6]	12	(c)[6], (d)[7], (e)[8] Intelligence- and language tests	CI (53%) HA (59%)	"Levels of anxiety in children with cochlear implants and normally hearing children were similar." Children with HA showed higher level of social anxiety. "Early implantation was associated with lower levels of .....anxiety."
[7]	12	(f)[9], (g)[10] , (h)[11], parts of (i)[12] Intelligence- and language tests	CI (60%) HA (60%)	"More behavioral problems occurred in HI than in NH children." More problems were shown for pupils of schools of the deaf, higher age, males, disadvantages in social background, lower IQ, and delayed language development. No association with degree of hearing loss or aided threshold was found.

[1] Hintermair (2007), [2] Dammeyer (2010), [3] Huber and Kipman (2011), [4] Anmyr et al. (2012), [5] Theunissen et al. (2011), [6] Theunissen et al. (2012) [7] Theunissen et al. (2013).

(2007), 30–40% of all US children with a hearing loss are suffering from additional disabling health conditions, such as genetic disorders, infections, e.g., meningitis, or conditions as consequences of critical events, e.g., maternal rubella or preterm birth. These conditions are not only associated with hearing loss, but also with brain pathologies, neurological disorders, physical handicaps, borderline or subnormal IQ, and visual impairment. According to the Gallaudet Research Institute (2011), 29% of all US- children and adolescents with a hearing loss are suffering from additional disabilities or handicaps ("legal blindness," developmental delay, learning disability, traumatic brain injury, mental retardation, Autism, Usher syndrome).

It should be noted, that disabling health conditions may also have a negative effect on the mental health of the individuals. Both, children with a hearing loss (Van Eldik, 2005; Van Gent et al., 2007) as well as NH children (Carvill, 2001; Barkauskiene and Bieliauskaite, 2002; Dekker et al., 2002; Leask et al., 2002; Glazebrook et al., 2003; Hemmings et al., 2006; Kaptein et al., 2008; Emerson et al., 2010; Backenson et al., 2013) are concerned. All persons with disabling health conditions, such as visual impairment (Carvill, 2001), intellectual disabilities or subnormal IQ (Carvill, 2001; Dekker et al., 2002; Van Eldik, 2005; Hemmings et al., 2006; Van Gent et al., 2007; Kaptein et al., 2008; Emerson et al., 2010), learning disabilities (Barkauskiene and Bieliauskaite, 2002; Emerson et al., 2010; Backenson et al., 2013), brain disorders (Glazebrook et al., 2003), childhood infections and neurological soft signs (Leask et al., 2002) show an increased risk for mental health problems and disorders. It is of interest, whether potential mental health problems in children with CIs can be related to these additional risk factors rather than the hearing loss *per se*.

In the case of CIs it has to be additionally taken into account that some children, e.g., those with Mondini Dysplasia, have congenital malformations of the inner ear, which complicates the cochlea implantation (Aschendorff et al., 2009). We assume that this group is also at risk for mental health problems, since language- and speech outcomes are variable in young CI users with these complications (Aschendorff et al., 2009).

To address these questions, we initiated a multi-center study assessing mental health problems in a large

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[3] SDQ Strengths and Difficulties Questionnaire (Goodman, 1997).

[4] (a) Child Depression Inventory (self) (Kovacs, 1985) (self report).

[5] (b) Questionnaire (1) out of the study of Rieffe et al. (2004), Questionaire (2) out of the study of Wright et al. (2010) (both self reports).

[6] (c) Fear Survey Schedule for Children -Revised, shortened version (self report) (Ollendick, 1983).

[7] (d) Homemade questionnaire (self report).

[8] (e) Child Symptom Inventory (parents) (Gadow and Sprafkin, 1994).

[9] (f) Self report Instrument for reactive and proactice aggression (Rieffe et al., unpublished paper).

[10] (g) Delinquency Questionnaire (self report) (Baerveldt et al., 2003).

[11] (h) Psychopathy Screening Device (parents) (Frick et al., 1994).

[12] (i) The authors used the scales "attention deficit hyperactivity disorder" and "oppositional defiant behavior" of CSI-4 "The Child Symptom Inventory" (parents) (Gadow and Sprafkin, 1994).

sample of 140 adolescents with CIs, who were closely matched to 140 NH adolescents for age, gender and social background.

The aim of the study was to investigate, whether more mental health problems were prevalent in adolescents with CIs than in their NH peers. We hypothesize that differences in mental health problems between CI users and NH peers are attributable to CI users with additional handicaps (intellectual disabilities or learning disorders, visual impairments or with inner ear malformations) rather than CI users without additional handicaps. A further aim was to provide information about the relation of hearing variables (e.g., age at cochlea implantation, functional gain of the CI of the better ear, i.e., aided thresholds, ability to understand in noise, use of hearing aids before implantation/minimal benefit of hearing aid prior to implant) to the mental health of CI users (see also corresponding information on Hintermair, 2007; Dammeyer, 2010; Theunissen et al., 2012, 2013 in **Table 1**).

Methods

This study was conducted as a multi-center study. The centers Cochlear Implant Center Freiburg, University of Freiburg, Hannover Medical School, Department of Otolaryngology Hannover, University Medical Center, University Mainz, Socialpediatric Center Munich, and Cochlear Implant Center, University Clinic Salzburg participated in the study.

Participants

The study group was comprised of 140 adolescents with CIs (68 boys, 72 girls) and their hearing parents and teachers, 30 from Freiburg, 43 from Hannover, 44 from Mainz and 23 from Munich

TABLE 2 | Demographic data of 140 adolescents with cochlear implants participating in the study including ("non-risk group") 46 CI users with indication for additional handicaps and non-classifiable persons ("risk group") and 94 CI users without additional handicaps ("non-risk group").

	All	Risk	Non-risk
Girls, number (percent)	68 (49)	18 (39)	50 (53)
Boys, number (percent)	72 (51)	28 (61)	44 (47)
Age (years): mean (*SD*)	14.72 (1.51)	14.68 (1.56)	14.74 (1.49)
Causes of deafness, numbers (percent)			
Meningitis	8 (6)	8 (17)	0
Rubella	2 (1)	2 (4)	0
CMV	5 (4)	5 (11)	0
Otitis media	2 (1)	0	2 (2)
Waardenburg syndrome	2 (1)	2 (4)	0
Mondini Dysplasia	3 (2)	3 (7)	0
"Genetic" (non syndromal)	11 (8)	8 (17)	3 (3)
Other diseases and reasons	11(8)	0	11 (12)
Unknown	96 (69)	21 (46)	75 (80)
Age at first fitting of hearing aids (months): mean (*SD*) $n = 60$	20.23 (15.65)	20.93 (14.03)	20.02 (16.26)
Benefit of hearing aids (minimal perception of acoustic stimuli with hearing aids) prior to implant, number (percent)*	72 (53)	25 (57)	47 (51)
Age (years) at 1st implantation: mean (*SD*)	4.53 (3.95)	4.65 (3.91)	4.47 (3.99)
Duration (years) of 1st implants use: mean (*SD*)	9.99 (3.86)	9.87 (3.75)	10.05 (3.93)
Unilateral cochlear implantation, number (percent)	72 (51)	30 (65)	41 (45)
Bilateral cochlear implantation, number (percent)	68 (49)	16 (35)	51 (55)
Age (years) at 2nd implantation: mean (*SD*) $n = 68$	10.05 (3.30)	9.92 (4.05)	10.10 (3.08)
Inter-implant interval, years: mean (*SD*) $n = 68$	4.41 (2.72)	4.65 (3.39)	4.33 (2.50)
Duration (years) of 2nd implant use: mean (*SD*) $n = 68$	7.05 (3.78)	5.67 (4.43)	7.49 (3.48)
Audiogramm (aided treshold): 500 Hz/1000/2000 k/4000 kHz	30.3/30.0/30.5/33.0	30.4/30.5/32.2/33.5	30.3/29.8/29.8/32.9
Is understanding in noise, number (percent)†	88 (73)	25 (66)	63 (77)
Speech perception ‡(%)Monosyllables (60dB): mean (*SD*) n too small	–	–	–
Monosyllables (65dB): mean (*SD*) $n = 106.71/37$	66 (23)	63 (24)	28 (23)
Monosyllables (70dB): mean (*SD*) $n = 31.22/8$	74 (25)	64 (30)	77 (23)
Primary mainstream school, number (*percent*)	43 (32)	9 (20)	34 (37)
Primary school for persons with hearing loss, number (percent)	88 (65)	34 (76)	54 (59)
Other primary schools, number (percent)	4 (3)	2 (4)	2 (2)
Secondary mainstream schools, number *(percent)*	58 (41)	15 (33)	43 (46)
Secondary school for persons with hearing loss, number (percent)	82 (59)	31 (67)	51 (54)

**According to the rating of the parents (4 point rating scale: 1 = some profit, 4 = no profit at all).*

†Evaluated by the audiologists 0 = is understanding 1 = is not understanding.

‡In quiet.

(see demographic data in **Tables 2**, **3**). Our response rate was 79% out of 178 possible cases[13].

All adolescents of the study group were between 12 and 17 years old (mean age = 14.72 years, *SD* = 1.51 years), were diagnosed with severe or profound hearing loss before the age of 24 months and had been using their first CI for at least three years.

In 35 adolescents of the study group we found indications for additional handicaps. These "risk cases" fulfilled at least one of the following criteria: (i) risk for general learning disorder (borderline intellectual functioning) or intellectual disability (31 cases), (ii) visual impairment (1 case), or (iii) inner ear malformations (3 cases). 94 CI users had no additional handicaps, and 11 CI users could not be clearly assigned (see Procedures and **Table 2** for further information).

TABLE 3 | **Educational level and employment skills of *n* = 136 parents of CI users including 46 CI users with indication for additional handicaps and non-classifiable persons ("risk group") and 94 CI users without additional handicaps ("non-risk group") and *n* = 60 parents of normally hearing peers (matched by age, gender, and social background).**

	CI			Hearing
	All CI	Risk	Non-risk	
	N (%)			N (%)
EDUCATIONAL LEVEL FATHER				
Secondary school	39 (31)	10 (26)	29 (33)	17 (28)
Vocational school	36 (29)	11 (28)	25 (29)	19 (32)
Grammar school	19 (15)	8 (21)	11 (13)	11 (18)
College or University	27 (21)	8 (21)	19 (22)	13 (22)
No secondary mainstream qualification	5 (4)	2 (5)	3 (3)	/
EMPLOYMENT SKILLS* FATHER				
0	0	0	0	3 (6)
1	15 (12)	4 (10)	11 (13)	3 (6)
2	92 (72)	32 (78)	60 (69)	34 (63)
3	21 (16)	5 (12)	16 (18)	13 (24)
EDUCATIONAL LEVEL MOTHER				
Secondary school	39 (29)	14 (32)	25 (27)	18 (30)
Vocational school	61 (45)	20 (46)	41 (45)	19 (31)
Grammar school	12 (9)	4 (9)	8 (9)	14 (23)
College or University	14 (10)	3 (7)	11 (12)	10 (16)
No secondary mainstream qualification	10 (7)	3 (7)	7 (8)	/
EMPLOYMENT SKILLS* MOTHER				
0	13 (10)	4 (10)	9 (10)	10 (18)
1	22 (18)	14 (33)	8 (10)	4 (7)
2	80 (64)	22 (52)	58 (70)	35 (61)
3	10 (8)	2 (5)	8 (10)	7 (12)

Key for employment skills: 1 = unskilled work, 2 = jobs demanding vocational/training qualifications up to college level, 3 = jobs demanding college/university degrees, 0 = others.

**Orientation ISCO 88 International Standard Classification of Occupation (International Labor Office)[14] *The higher the number the higher the parents' ISCO-Level.*

In 21 cases the risk could clearly be attributed to the respective etiology for hearing loss of the young CI users. 17 cases out of the 21 fulfilled criterion (i): 5 cases with CMV, two cases with Rubella, one case with Dystonia, one case with Toxoplasmosis, and 8 cases with Meningitis. One case (out of the 21) with Usher syndrome fulfilled criterion (ii) and 3 cases with Mondini dyplasia fulfilled criterion (iii). In 14 of 35 cases the risk could not or not clearly be associated with the etiology of the hearing loss. All 14 cases met criterion (i). In 9 out of these 14 cases clinical files indicated a distinct developmental delay. In 4 cases clinical files informed about additional conditions (e.g., some prenatal infections) with suspicion for intellectual disabilities, in one case the file informed about a neurological condition. Despite these risk factors in the etiology of the hearing loss, risk cases and non-risk cases did not differ in any demographic or hearing variables as summarized in **Tables 2**, **3**.

The comparison group consisted of 140 normally hearing adolescents (68 boys and 72 girls, mean age = 14.8 years, *SD* = 1.4 years) without any intellectual or visual impairments, their hearing parents and teachers. This group was selected from a pool of 212 Salzburgian normal hearing adolescents as described elsewhere [13]. A 1-to-1 matching procedure was employed to match each adolescent with CI to a normally hearing peer of the same sex and comparable age and social background. Social background data are shown in **Table 3**. All adolescents in the control group were enrolled in mainstream education programs.

Instruments

Mental health problems were assessed with the "Strengths and Difficulties Questionnaire" (SDQ[15]) (Goodman, 1997). The SDQ evaluates emotional, behavioral and social problems of children and adolescents aged about 3–17 years. It can also be used as screening measure for mental health disorders, which was not the case in the present study. Its good psychometric properties have been confirmed by many studies worldwide (Goodman and Scott, 1999; Koskelainen et al., 2000; Goodman et al., 2003; Meltzer et al., 2003; Muris et al., 2003; Hawes and Dadds, 2004; Woerner et al., 2004; Becker et al., 2004a,b; Du et al., 2008). The brief 25 item rating scale addresses emotional symptoms (ES), hyperactivity-inattention (HA), conduct problems (CP), peer-problems (PP) and pro-social behavior (PBS), (social strengths, e.g., altruism). The scores of ES, HA, CP and PP can be summarized to the "Total Difficulty Score" (TDS). Due to multivariate analysis procedures (see Statistics), TDS was not analyzed further in the present study. SDQ versions are available for parents, teachers and as self ratings for children from 11 years of age and older. There are three response categories; 0 = not true, 1 = somewhat true and 2 = certainly true. For ES, HA, CP, and PP higher values mean more problems, for PBS higher values mean less problems. The SDQ has been translated and validated for the German language (Becker et al., 2004a,b).

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[13] Thirty eight did not participate, as many girls as boys. 21 families excused themselves because of time reason, 17 did not react to the invitation per mail.

[14] International Labor Office (1990). ISCO-88: International Standard Classification of Occupations. Genf: ILO, International Labor Office. http://www.warwick.ac.uk/ier/ (assessed 19.2.2014).

[15] Youth in mind (2014). SDQ Information for researchers and professionals about the Strengths and Difficulties Questionnaire. http://www.sdqinfo.com (assessed 29.9.2014).

Procedures

The investigation was conducted between January 2012 and January 2013. The participants were recruited on the occasion of the annual appointment in the clinics. Both, adolescents and their parents were asked to participate. In the case of agreement, all adolescents and their parents were surveyed individually. Medical and audiological data were obtained from clinic files. Other demographic data were collected by parental surveys. The patients completed the SDQ questionnaire under surveillance by a clinic member. In 16 cases support was needed, whereby the SDQ questions were given additionally in an adapted format, with standard sentences—following a written guideline-shortened and with paraphrases, presented both orally and written. This support did not replace the original SDQ questionnaire. The use of a sign language interpreter was not required. The parents filled in the questionnaires (SDQ, demographic data) at the same time, however separately. In the case of their agreement, the teachers received the SDQ from the parents and sent it back to the investigators via mail. Teacher ratings were available for 55 adolescents of the study group and 42 adolescents of the control group.

Assignment of "Risk Cases" in the Study Group

Clinical files reported about cases of visual impairment, criterion (ii), or inner ear malformations, criterion (iii). However, not all clinical files provided data about general learning disorders and intellectual disability, criterion (i). To compensate possible missing data, a pediatric assessment was carried out. Thereby for all adolescents in the study group, a pediatrician evaluated whether the available anonymized data about physical diagnoses, IQ, neurological status, indication for brain disorders (from the clinical files and an anamnesis questionnaire) indicated an additional disability. The pediatrician also assessed for every single case, if the physical diagnoses (e.g., of an infection, a genetic syndrome, primarily as cause for deafness) were associated with an increased incidence of brain disorders and/or neurological disorders, which are possible causes for general learning disabilities or intellectual disabilities.

For the Recruitment of the Comparison (NH) Group

We used existing SDQ data and demographic data, collected in two mainstream schools (one secondary school, one secondary grammar school) and one apprenticeship institution in Salzburg (also mainstream education). For economic reasons, all NH adolescents were surveyed in groups, but seated separately, so that neither communication with others nor looking at the questionnaires of other peers was possible. Parents and teachers filled out the questionnaires (SDQ) individually. The parents received the SDQ from the teachers and sent it back to the teacher via mail. The survey of the comparison group was performed anonymously.

Statistics

Statistical analysis was carried out using IBM SPSS Statistics, version 22. Inter-rater agreements between self-, parent-, and teacher-ratings were assessed for each SDQ scale in adolescents with CI and normal hearing group via Pearson correlations. To compare the correlations of the CI group with the comparison group, Fisher's z-transformations were computed.

To test, whether young CI users were comparable to NH peers in their mental health problems, SDQ ratings were compared between CI group and NH group using multivariate ANOVAs over the four problem areas (ES, CP, HA, PP). As the inter-rater agreement in the NH group was only low and only few teacher ratings were available, the analysis was conducted separately for self-, parent- and teacher-ratings. The significance level was thus Bonferroni corrected to 0.017. To evaluate, in which areas the problems manifested, independent-samples *t*-tests were conducted to compare ratings for each problem area separately. PBS was also compared separately. The multivariate ANOVAs were repeated after splitting the study group into a "risk group" and a "non-risk" group, and *post-hoc* Tukey tests were used to evaluate in which problem areas and between which groups the differences occurred. Additionally, cluster analyses were performed on the 5 scores (ES, CS, HA, PP, PBS) of self-, parent-, and teacher-ratings of the total sample (study group and control group) using the new two-step algorithm implemented in SPSS. Then the distribution of adolescents with CIs and normally hearing adolescents in the resulting clusters was reported. Two-step cluster analysis is an advancement of traditional cluster analysis techniques and has the advantage of being able to deal with multiple scalings of variables, a large data-set and in particular automatically determine the number of clusters in the sample. The algorithm applies a two-step procedure by first pre-clustering data using a sequential approach and second grouping data into sub-clusters using the agglomerative hierarchical clustering method. Thereby the distance between two clusters is defined as the corresponding decrease in log-likelihood by combining them in one cluster.

To test, whether mental health problems of adolescents with CIs were related to hearing variables, scores for each SDQ scale were Pearson-correlated to the following audiological variables: (i) benefit of hearing aid prior to implant, (ii) age at fitting of the 1st CI, (iii) speech discrimination (monosyllables, 65 dB), (iv) ability to hear and to understand speech in noise and (v) functional gain of CI aided threshold (mean over functional gain at thresholds 0.5 kHz, 1 kHz, 2 kHz, 4 kHz). Because of missing data the age at first fitting of HA was not taken into account.

Ethical Approval

The study was approved by the ethics committees in Salzburg (Ethikkommission für das Bundesland Salzburg), Munich (Ethikkommission der LMU München), Mainz (Ethikkommission der Landesärztekammer Rheinland-Pfalz), Freiburg (Ethik-Kommission der Albert-Ludwigs-Universität Freiburg) and Hannover (Ethik-Kommission der MHH).

Results

Inter-rater Agreement between SDQ Self-, Parent-, and Teacher Ratings

Pearson correlations representing inter-rater agreement between self- parent-, and teacher ratings on all SDQ subscales in the CI group and normally hearing group are summarized in **Table 4**.

TABLE 4 | Inter-rater agreement between self, parent and teacher ratings in CI group and NH group: Correlation between SDQ scales from different informants.

SDQ scales	CI group			NH group			Comparison		
	S × P (*n* = 128)	**S × T** (*n* = 55)	**P × T** (*n* = 55)	**S × P** (*n* = 68)	**S × T** (*n* = 43)	**P × T** (*n* = 40)	**S × P**	**S × T**	**P × T**
Total difficulties	0.51***	0.37**	0.41**	0.15	0.14	0.06	2.69**	1.18	1.75*
Emotional symptoms	0.45***	0.19	0.21	0.24*	0.40**	0.31^{T}	1.57	−1.10	−0.50
Conduct problems	0.48***	0.30*	0.39**	0.17	0.18	−0.08	2.30**	0.61	2.29**
Hyperactivity-inattention	0.48***	0.44***	0.61***	0.06	0.04	0.31^{T}	3.03***	2.06*	1.81*
Peer problems	0.46***	0.28*	0.39**	0.21^{T}	0.30^{T}	−0.12	2.86**	−0.10	2.48**
Prosocial behavior	0.28***	0.25^{T}	0.35**	0.32**	0.25	−0.12	−0.29	0.00	2.26**

Comparison of correlations between CI group und NH group.

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, $^{T}p < 0.1$; S = self, P = parent, T = teacher.

[1] *Correlations significantly stronger in the CI group than in the normal hearing group according to Fisher's z-transformation (at least $p < 0.05$ one-sided).*

In the CI group, agreement between self and parent ratings was high on all scales. Agreement between teacher ratings and self- and parent ratings respectively was high on all scales except ES. In the NH group, correlations between self-, parent- and teacher ratings were weak and only few reached statistical significance. Most correlations were significantly stronger in the CI group than in the NH group according to Fisher's z-transformation, indicating higher inter-rater agreement in the CI group than in the NH group.

Comparison of SDQ Results between CI Group and NH Group, Matched by Age, Gender and Social Background

Total Group (n = 280, 140 CI Users, 140 NH Peers)

Table 5 shows the SDQ results of the CI group and the NH group. The higher the SDQ score, the more pronounced are the mental health problems rated. To evaluate, whether mental health problems differed significantly between CI group and NH group, multivariate ANOVAs over the four difficulty areas emotional symptoms (ES), conduct problems (CP), hyperactivity-inattention (HA), peer problems (PP) were conducted for each rater (self/parent/teacher). The significance level was thus Bonferroni corrected to $p = 0.017$. Subsequent univariate analyses (t-tests) were performed to evaluate in which area the problems were observed. Multivariate analyses revealed highly significant group differences in SDQ self- [$F_{(4,\,263)} = 4.97$, $p = 0.001$], parent- [$F_{(4,\,203)} = 3.46$, $p < 0.01$] and teacher ratings [$F_{(4,\,92)} = 4.30$, $p < 0.01$]. Mental health problems were rated significantly higher in CI adolescents compared to NH adolescents. Subsequent univariate analyses (compare **Table 5** for t-values) revealed that these differences were attributable to PP, which were rated significantly higher in CI adolescents compared to NH adolescents by self-, parent- and teacher ratings (self: $t = 3.68$, $p < 0.001$, parents $t = 2.85$, $p < 0.004$, teacher: $t = 2.52$, $p = 0.01$.

Self-, parent-, and teacher-ratings did not differ significantly in any other difficulty area (ES, CP and HA). Prosocial behavior (PBS) ratings of any rater did also not differ between CI children and NH children (compare **Table 5**).

Split CI Group: Comparison of CI Risk Group ($n = 46$), CI Non-risk Group ($n = 94$) and NH Group ($n = 140$)

In a next step, the total CI group was split into a risk group, including 35 "risk cases" and 11 cases, who could not be assigned, as well as a non-risk group, including all 94 CI adolescents without additional risks. The risk-group and the non-risk group did not differ with respect to age, gender or social background. To evaluate differences in mental health difficulties between risk-group and non-risk group on the one hand as well as between both groups and the non-impaired NH adolescents on the other hand, the multivariate ANOVAs were repeated with group (CI risk-group, CI non-risk group) as independent variable. The results are displayed in **Figure 1**. As before, highly significant multivariate group differences were observed for self-, parents- and teacher ratings (all $F > 2.94$, all $p < 0.01$).

Post-hoc Tukey tests revealed that among CI adolescents risk group and non-risk group differed significantly in parent- and teacher-rated conduct (CP), and hyperactivity problems (HA) (all $p_{posthoc} < 0.05$), but not in emotional symptoms (ES) and peer problems (PP) (all $p_{posthoc} > 0.06$). Thereby, conduct problems (CP) did not differ between any CI group (risk- group and non-risk group) and NH group, whereas hyperactivity (HA) did only differ between risk- group and NH group, but not between non-risk group and NH group normal. No differences in emotional, conduct or hyperactivity problems were observed between the three groups for self-ratings. For parent- and teacher ratings only the risk-group differed from the NH group in peer problems (PP) (both $p_{posthoc} < 0.05$). For self-ratings both CI risk-group and CI non-risk group differed from the NH group in peer problems (PP; both $p_{posthoc} < 0.05$). Prosocial behavior (PBS) ratings did not differ between groups in any rater (compare **Figure 1**).

Cluster Analyses of SDQ Results and Distribution of Adolescents with CI ($n = 140$) and the Matched Group of NH Adolescents ($n = 140$)

Cluster analyses over the 5 ratings of self, parents and teachers, each, revealed two clusters, discriminating significantly between participants with high and low problem scores (all $|t| > 2.84$, all $p < 0.005$). The distribution of CI adolescents and NH

TABLE 5 | Scale means (SD) and *T*-values for comparison of SDQ mean scores between CI group (*n* = 129 self, *n* = 139 parents and *n* = 55 teachers) and NH group (*n* = 140 self, *n* = 70 parents and *n* = 42 teachers), matched by age, gender and social background.

	Total difficulties	Emotional symptoms	Conduct problems	Hyperactivity inattention	Peer problems	Prosocial behavior
CI						
Self	11.6 (4.9)	2.6 (1.9)	2.2 (1.5)	3.8 (1.8)	3.0 (1.8)	7.7 (1.5)
Parents	10.1 (5.6)	2.4 (2.1)	2.0 (1.7)	3.1 (2.3)	2.6 (2.1)	8.0 (1.8)
Teachers	8.0 (6.6)	2.3 (2.5)	0.9 (1.5)	2.2 (2.6)	2.5 (2.7)	7.4 (2.2)
HEARING						
Self	10.5 (5.0)	2.6 (2.1)	2.2 (1.7)	3.5 (1.9)	2.2 (1.7)	8.0 (1.5)
Parents	8.7 (5.9)	2.0 (2.0)	2.1 (1.8)	2.8 (2.4)	1.8 (1.9)	7.7 (2.2)
Teachers	6.3 (4.9)	1.4 (1.6)	1.5 (1.9)	2.1 (2.0)	1.3 (2.0)	7.6 (2.6)
t-Self	1.85	−0.32	0.35	1.73	3.68***	−1.40
t-Parents	1.59	1.22	−0.70	0.86	2.85**	1.10
t-Teachers	1.38	2.13	−1.79	0.30	2.52*	−0.46

Higher scores indicate more problems except for prosocial behavior (lower scores indicate more problems).
** p < 0.05, **p < 0.01, ***p < 0.001.*

adolescents did not differ between clusters in the analysis of parent- (52% CI, 43% NH in Cluster 1, $X^2 = 1.51, p = 0.22$) and self-ratings (46% CI, 36% NH in Cluster 1, $X^2 = 2.64, p = 0.10$). However, the distribution of CI adolescents and NH adolescents did differ significantly between clusters in the analysis of teacher ratings (34% CI, 12% NH in Cluster 1, $X^2 = 6.56, p = 0.01$). CI adolescents were more frequent in the high problem cluster than in the low problem cluster.

When the CI group was split into risk group and non-riskgroup, a significantly higher proportion of risk cases than non-risk cases or NH adolescents was found in the high problem cluster for self- (61% risk, 38% non-risk, 36% NH in Cluster 1, $X^2 = 8.43, p = 0.02$), parent- (71% risk, 43% non-risk, 43% NH in Cluster 1, $X^2 = 10.71, p = 0.005$), and teacher-ratings (37% risk, 33% non-risk, 12% NH in Cluster 1, $X^2 = 6.64, p = 0.04$).

SDQ Results and the Role of Hearing (Correlations and T-tests) Study Group ($n = 140$)

To investigate the role of hearing for mental health problems we used the following hearing variables: (i) (even) minimal benefit of hearing aid prior to implant, (ii) age at implantation of the first CI, (iii) monaural, binaural implantation, (iv) speech discrimination (monosyllables, 65 dB), (v) ability to hear and to understand speech in noise and (vi) aided thresholds or functional gain of CI (means of 0.5 kHz; 1 kHz, 2 kHz, 4 kHz), see **Table 2**. Because of missing data the age at first fitting of HA was not taken into account.

Age at implantation of the first CI (ii) monaural, binaural implantation (iii) and comprehension of monosyllables (iv) did not significantly relate to any SDQ outcome (all $p > 0.05$).

Peer problems (PP), as assessed by self ratings, showed significant negative correlations with minimal benefit of hearing aids. The higher the benefit of hearing aid prior to implant, the lower were the PP scores ($r = -0.20, p < 0.05$).

On the other hand, the Total Difficulty Score (TDS) and peer problems (PP), as assessed by teacher ratings, revealed a significant positive correlation with minimal benefit of hearing aids. The higher the benefit of hearing aids prior to implantation, the higher were the TDS ($r = 0.27, p < 0.05$) and PP scores ($r = 0.33, p < 0.05$).

Furthermore, the TDS and hyperactivity (HA), as assessed by teacher ratings correlated significantly negative with aided thresholds. The lower the aided thresholds, the higher were the TDS ($r = -0.40, p < 0.05$) and HA scores ($r = -0.37, p < 0.05$).

To investigate possible associations between the ability to hear/to understand speech or speech intelligibility in noise (see **Table 2**) and SDQ outcomes, we established two groups. CI adolescents who were able to hear and to understand in noise ($n = 84$) reached significantly lower TDS scores ($t = -2.23, p < 0.05$) as assessed by parent ratings, than CI adolescents who were constricted regarding understanding in noise ($n = 30$).

Discussion

In a multi-center study we investigated 140 adolescents with hearing loss and CI(s) and 140 normally hearing peers, matched for age, gender and social background.

The agreement between the SDQ informants in the CI group was found to be higher than in earlier studies on mental health of young CI-users (Huber and Kipman, 2011; Anmyr et al., 2012). A high inter-informant agreement demonstrates a high validity of the SDQ results (Becker et al., 2004a,b) and a high predictive value for psychiatric diagnoses (ICD 10[16], or DSM 5 (American Psychiatric Association, 2013). In the hearing group the agreement between the SDQ informant's parents and teachers was only low. Previous studies among healthy participants showed a higher inter-rater correlation, see Stone et al. (2010). Therefore, self-, parent-, and teacher ratings were compared separately between groups.

The CI group as a whole showed significantly more peer problems (PP) compared to the hearing group (all raters). The differences in the SDQ Total Difficulty Score

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[16] World Health Organization 2010. International Statistical Classification of Diseases—ICD 10. http://apps.who.int/classifications/icd10/browse/2010/en (assessed 19.2.2014).

(TDS), emotional symptoms (ES), conduct problems (CP), inattention-hyperactivity (HA), and pro-social behavior (PBS) were not significant.

When the CI group was split into a risk group (CI users with indications for additional handicaps and non-classifiable persons) and a non-risk group (CI users without any additional handicaps), increased peer problems compared to NH adolescents were observed in both subgroups according to self-ratings, but only in the risk group according to parent- and teacher-ratings. Whereas self-ratings did not indicate any differences between risk and non-risk group, parent- and teacher-ratings indicated additional mental health problems in the risk group compared to NH adolescents (hyperactivity) and the non-risk group (conduct problems). Cluster analyses of the SDQ results (emotional symptoms, conduct problems, hyperactivity, peer problems, prosocial behavior) confirmed that the distribution of persons with high problem scores was comparable for the NH and the non-risk group, but elevated among the risk group. Note however, that the teacher ratings (independent of the type of school) led to somewhat contrary results in the cluster analyses. As it was one limitation of the present study that only a minority of teachers participated, our further interpretations will focus mainly on the results of self- and parent-ratings. The phenomen of low teacher participation has also been reported in other studies (Keilmann and Reutter, 2014). We assume that particularly the engaged teachers participated in the study, those, who were motivated to help their pupils and work closely with the parents. They may however, not be entirely representative of all teachers in the study group.

In summary, our results indicate that despite their self-rated peer problems, the prevalence of mental health problems does not differ between NH adolescents and adolescents with CI, if they have no additional handicaps. However, as hypothesized, adolescents with CI, who do have additional handicaps show more problems compared to both NH adolescents and non-risk adolescents with CI.

The higher inter-rater agreement in the CI group compared to the NH group may indicate higher problem awareness in parents and teachers of CI adolescents. Higher awareness may also explain, why peer problems were only perceived by the adolescents themselves in the non-risk group, but by all three raters in the risk group. In the case of additional handicaps, care-givers may be more alert to signs of problems on the one hand and problems more obvious on the other hand. Thus, they become noticed not only by the adolescents themselves, but also by parents and teachers.

The result of additional mental health problems in the risk group correspond to the results of previous studies about mental health problems and disorders of young persons with a hearing loss and without CI (Hindley et al., 1994; Vostanis et al., 1997; Van Eldik, 2005; Van Gent et al., 2007, 2012; Fellinger et al., 2008; Landsberger et al., 2013). However, they also correspond to the results of previous studies about mental health problems and disorders of young NH persons with learning intellectual disabilities or learning disorders (Carvill, 2001; Barkauskiene and Bieliauskaite, 2002; Dekker et al., 2002; Leask et al., 2002; Glazebrook et al., 2003; Hemmings et al., 2006; Kaptein et al., 2008; Emerson et al., 2010; Backenson et al., 2013)

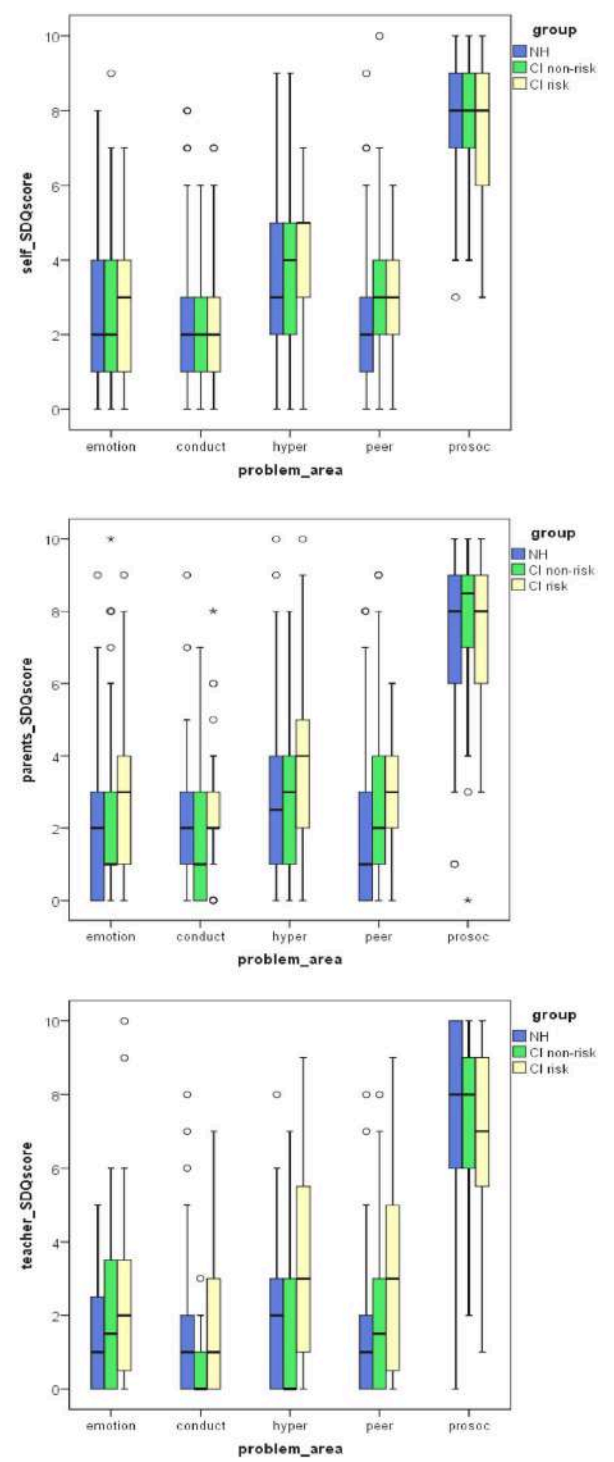

FIGURE 1 | Box-plots of SDQ self- parent- and teacher-ratings for emotional symptoms, conduct problems, hyperactivity and peer problems as well as pro-social behavior in normally hearing (NH) adolescents and CI adolescents with (risk) and without (non-risk) additional handicaps. CI adolescents without additional handicaps differ from NH adolescents only in their self-rated peer problems. CI adolescents with additional risks differ from NH adolescents not only in peer problems, but also in hyperactivity and from CI adolescents without additional risks in conduct problems. Higher scores indicate more problems. Circles (○) and asterisks (*) indicate extreme cases and outliers.

visual impairment (Carvill, 2001) and problems in language and speech (e.g., Helland et al., 2014; Charman et al., 2015). For example, in an Australian study (Emerson et al., 2010), a nationally representative sample of NH children (age 6/7 years) was investigated. SDQ parent-ratings indicated that children with intellectual disabilities and children with borderline intellectual functioning "showed significantly higher rates of possible mental health problems" compared to "typically developed" children.

The diverse outcomes of CI users with and without additional handicaps indicate that it is important to differentiate between these two subgroups. This may explain variability between previous studies not controlling for additional risk factors (Hindley et al., 1994; Vostanis et al., 1997; Van Eldik, 2005; Van Gent et al., 2007, 2012; Fellinger et al., 2008; Landsberger et al., 2013). The presence of a disabling physical health condition may increase the vulnerability for mental health problems in young persons with a hearing loss with and without CI.

Concerning peer problems, earlier studies on children and adolescents with CI (Huber and Kipman, 2011; Martin et al., 2011) and with hearing loss, but without CIs (Wolters et al., 2011) yielded similar results. According to the results of a small study ($n = 10$), peer problems of children with CI begin very early at the age of 5–6 years (Martin et al., 2011). In adolescence the reverse of peer problems is a state of acceptance and popularity in the group, based on a successful interaction with peers. Peer problems can be associated with being bullied and teased, which seem to be more often the case for children and adolescents with hearing loss than for NH adolescents (Fellinger et al., 2008; Van Gent et al., 2012). These problems may in part stem from the CI adolescents being perceived as different by their peers.

However, Wolters et al. (2011) found the following skills and attributes to be essential to prevent peer problems of adolescents with a hearing loss (without CI): strategic and pragmatic communicative skills, social skills (prosocial behavior and the absence of antisocial behavior) and personality (extraversion, agreeableness). Since no differences between the groups were observed in prosocial behavior, it is likely that the higher rates of peer problems in CI adolescents have their roots in distinct communication problems, which impede their interaction with peers. According to earlier studies, young persons with a hearing loss without CI (Fellinger et al., 2008; Barker et al., 2009; Kushalnagar et al., 2011), but also with CI (Ramirez-Inscoe and Moore, 2011) have problems with communicative skills. Communication problems may be based on language problems, partly determined by intellectual disability, borderline intellectual functiononing (Holt and Kirk, 2005) or a malformed cochlea. However, according to self-ratings peer problems are also prevalent in CI adolescents without these additional handicaps.

It seems plausible that despite many years of hearing experience via the CI and hearing aids, communication problems stem from the hearing impairment in adolescents with CI.

Therefore, we assessed possible relations between hearing variables like age at CI and mental health outcomes. While contrary to our expectations, the age at first CI, the duration of CI use as well as the audiological results were not related to mental health problems (but see teacher ratings), the results indicate that particularly the ability to hear and to understand (speech intelligibility) in noise may be important. Difficulties of young CI users to understand people in noisy environments, such as schools, may induce social isolation and mental health problems, particularly peer problems, in the long term. Since the study centers had used different speech discrimination tests, we used the dichotomic assessment of the audiologists (**Table 2**) to inform about the ability to understand in noise. Furthermore, the mental health of adolescent CI users was related to the minimal benefit of hearing aids prior to the cochlear implant in the first years of life. Illg et al. (2013) found significant differences in speech comprehension depending on the duration of hearing aid use before second implantation in adolescents with sequential bilateral CI. Therefore, all patients should be encouraged to continue wearing their contralateral hearing aid in order to maintain afferent neural activity. Minimal benefit of hearing aids in the first years of life may indicate better speech understanding later on.

In the case of NH children, missing acceptance by peers is accompanied by anxiety in the long term (Grover et al., 2007). Being bullied is associated with low self-esteem and emotional problems in the long term (Bond et al., 2001; Woods et al., 2009).

Thus, parents, teachers, and clinicians should be aware that adolescents with CI, especially those with communication problems and those with additional special needs tend to have more problems with their peers. However, the self-perceived peer problems in adolescents with CI, who do not have additional handicaps, should not be dismissed.

Conclusion

In summary, the results of this multi-center study indicate that mental health problems of adolescents with CI concern particularly the interaction with peers. Apart from that, and if there are no additional handicaps, the mental health (emotional, behavioral and social problems) of CI children is comparable to that of normally hearing peers. The benefit of hearing aids prior to implantation because of residual hearing in the first years of life and the ability to understand in noise was found to be protective against mental health problems. This multi-center study belongs to pioneer studies which inform about the mental health of adolescents with hearing loss, who are growing up with cochlear implants. To the best of our knowledge, this is the first study in this area including a large sample, a carefully matched control group and controlling for additional risk factors. The study also belongs to the first assessing the relationship between hearing variables (e.g., age at CI) and mental health problems of young CI users.

Author Contributions

MH was the leading investigator. She developed the proposal for the multi-center study, organized the funding and converted the centers to the cooperation. She was responsible for the data of the control group and played a leading role in the composing of this paper. As first author she is primarily accountable for all aspects of the work. TB—co-work in the conception and designing the study-monitoring parts of the sampling survey and data-acquisition -being co-author in writing parts of he manuscript (most notably "results") -approvement oft the "end-version"- I agree to be accountable for all aspects of the work an I ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. AI Substantial contributions to the acquisition of the patient data, and interpretation of data for the work; and Drafting parts of the paper; and Final approval of the version to be published; and Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. SiK gave substantial contributions to the acquisition, analysis, and interpretation of data for the work, to revising it critically for important intellectual content, to the final approval of the version to be published and her agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. AG "I have contributed to the acquisition of data, to the revision of the work, to ensuring that the questions of the work are appropriately investigated, and to the approval of the version to be published." LB provided substantial contributions to the design of the work; the acquisition and analysis of data for the work; and revised the important content critically and gave the final approval of the version to be published and agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. StK- co-work in conception and designing the study-monitoring parts of the sample-recruiting and acquisition of data-being co-author in writing parts of the manuscript (most notably "discussion")-improvement of the "end-version"- I agree to be accountable for all aspects of the work an I ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. AN gave substantial contributions to the conception of the work, to the acquisition of data for the work, regarding critical revisions of the manuscript, and regarding the final approval of the version to be published. GR contributed substantially to the conception of the work. He revised the draft version of the paper critically and approved the final version. He is accountable for all aspects of the work. AB contributed to the conception of the work, counseled in basic questions about the SDQ, reviewed substantially the draft version and approved the final version of the paper. He is accountable for all aspects of the work. AK provided substantial contributions to the conception and design of the work; the interpretation of data for the work; and drafted the work and gave a final approval of the version to be published and agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Schooling Relates to Mental Health Problems in Adolescents with Cochlear Implants—Mediation by Hearing and Family Variables

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Aim of this multicenter study was to investigate whether schooling relates to mental health problems of adolescents with cochlear implants (CI) and how this relationship is mediated by hearing and family variables. One hundred and forty secondary school students with CI (mean age = 14.7 years, $SD = 1.5$), their hearing parents and teachers completed the Strengths and Difficulties Questionnaire (SDQ). Additional audiological tests (speech comprehension tests in quiet and noise) were performed. Students of special schools for hearing impaired persons (SSHIs) showed significantly more conduct problems ($p < 0.05$) and a significantly higher total difficulty score (TDS) ($p < 0.05$) compared to students of mainstream schools. Mental health problems did not differ between SSHI students with sign language education and SSHI students with oral education. Late implanted students and those with indication for additional handicaps were equally distributed among mainstream schools and SSHIs. However, students in SSHIs were more restricted to understand speech in noise, had a lower social background and were more likely to come from single-parent families. These factors were found to be partial mediators of the differences in mental health problems between the two school types. However, no variable could explain comprehensively, why students of SSHIs have more mental health problems than mainstream pupils.

Keywords: adolescents with cochlear implants, mental health problems, multicenter study, schooling, speech understanding in noise, SDQ, hearing loss

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INTRODUCTION

Cochlear implants (CI) open the door for hearing impaired children to mainstream education (Waltzmann et al., 2002; Huber et al., 2008). If there are no further developmental risks or handicaps, the language development of very young implanted children with CI is very similar to that of their normal hearing peers (Spencer et al., 2004; Beadle et al., 2005; Uziel et al., 2007).

The input from the CI is the requirement for phonological awareness and phonological processing which is needed to decode words (Spencer and Tomblin, 2009) and is therefore a strong requirement for the development of oral language. Early listening and speaking skills predict in the long term reading skills of children with CI (Spencer and Oleson, 2008; DesJardin et al., 2009).

On the basis of cochlear implantation scores on academic tests are achieved that are within 1 SD of their hearing peers (Spencer et al., 2003, 2004).

Nevertheless, in European countries many hearing impaired children and adolescents with CI attend special schools for hearing impaired persons (SSHIs)[1] (Meyer et al., 2013). In Germany still more than 50% of the hearing impaired children and adolescents with CI are in SSHIs. Only a limited number of German SSHIs (Illg et al., 2013) offer the same graduation as an academic high school, yet working with special educational plans.

Several studies indicate that mental health problems[2] of hearing impaired children and adolescents are increased if they attend SSHIs compared to mainstream schools (van Eldik, 2005; Mejstad et al., 2009; Theunissen et al., 2014a). It concerns adolescents with sign language (Sweden: Mejstad et al., 2009; the Netherlands: van Eldik, 2005) as well as children and adolescents with hearing aids, the majority with oral language as mode of communication (Dutch, Theunissen et al., 2014a).

Also in a study including both hearing impaired children with and without CI, self esteem, which predicts mental health problems in normal hearing children (Ranøyen et al., 2015), was found to be significantly lower for pupils of SSHIs compared to mainstream pupils (Keilmann et al., 2007; Theunissen et al., 2014b). Regrettably the authors did not provide any information about the specific outcomes of the CI group. Therefore, little information is available so far on the relationship between schooling and mental health problems in adolescents with CI. As demonstrated in a recent study (Huber et al., 2015) mental health problems of adolescents with CI in general, particularly concern the interaction with peers. Apart from that the extent of emotional, behavioral and social problems of CI children, is comparable to that of normal hearing peers, if there are no additional handicaps.

In a study on the general prevalence of mental health problems among adolescents with CI in Austria, Huber and Kipman (2011) found that more emotional, behavioral and social problems were associated with SSHIs compared to mainstream schools.

Furthermore, no information is available on the reasons, why pupils of SSHIs may have more mental health problems than hearing impaired pupils of mainstream schools.

Therefore, the present study aims on the one hand to investigate the relationship between schooling and mental health problems in a large sample of hearing impaired adolescents with CI acquired in a German multi-center study. On the other hand, the study seeks to explore possible explanatory variables for differences in mental health problems between school types.

The potential reasons for these differences are manifold and may concern the following domains: (i) hearing variables, (ii) school variables, (iii) family variables.

First, problems in understanding and speaking may contribute to mental health problems. Studies about young hearing impaired persons without CI indicate that mental health problems are promoted by an unsatisfactory progress in speech- and language development (Barker et al., 2009; Stevenson et al., 2010) or by communication problems (Hogan et al., 2011). In the above-mentioned studies on self esteem, children and adolescents with poor auditory and oral speech outcomes were overrepresented in SSHIs (Keilmann et al., 2007; Theunissen et al., 2014b).

These differences in auditory and speech skills between school types may in part be due to selection processes. For example in Germany, before entering mainstream schools, the auditory and speech skills of hearing impaired pupils are estimated by teachers from SSHIs. Depending on the results, an educational plan is developed, which may be regular (for children without special needs) or special (for children with special needs). A child with a regular educational plan has the capability to attend a regular class.

Several variables have to be taken into account when assessing the auditory and speech skills of hearing impaired adolescents with CI as a mediator of mental health problems. In a school environment the ability to hear and to understand in noisy environments is surely of particular importance. There is an indication that problems to hear and to understand speech in noisy environments are associated with more mental health problems in young CI users (Huber et al., 2015).

Furthermore, one of the strongest predictors of hearing and speech skills during the first years after cochlear implantation is the age at which children receive their cochlear implant (Nikolopoulos et al., 1999; Sharma et al., 2002; Lesinski-Schiedat et al., 2004; Connor et al., 2006; Svirsky et al., 2007). Additionally it has to be taken into account that some children, e.g., those with Mondini Dysplasia, have congenital malformations of the inner ear, which complicates the cochlear implantation (Aschendorff et al., 2009). Language- and speech outcomes are variable in young CI users with such complications (Aschendorff et al., 2009; Black et al., 2014).

Second, differences in the school environment itself may contribute to more mental health problems. Among the most obvious differences between SSHIs and mainstream school are sign language education and boarding schooling. While in regular mainstream schools students are required to use oral

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[1] German schools fall within the competences of the federal states. This leads to differences in the organization of each federal state's particular school system. Basically, there is a distinction between Primary Education, Secondary Education I, and Secondary Education II. Primary Education mainly comprises elementary schools (Grundschule; grades 1–4). Secondary Education I comprises main schools (Hauptschule), middle schools (Realschule), comprehensive schools (Gesamtschule), and academic high schools (Gymnasium; grades 5–10), leading to the qualification for subject- related university (Fachhochschule). Secondary Education II comprises the stages 11–13 in academic high schools and qualifies for university.

[2] *Mental health* is defined by the WHO "as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" WHO (2014) (http://www.who.int/features/factfiles/mental_health/en/) (assessed 30.11.2015). *Mental health problems* are described on the focus of behavior as emotional, behavioral and social problems. Examples of other mental health approaches: *HRQOoL* (health related quality of life), with the focus on the (subjective) personal experience. *Mental health Disorders* have to fulfill nosological criteria as described in ICD 10 (World Health Organization, 2010). International Statistical Classification of Diseases—ICD 10. http://apps.who.int/classifications/icd10/browse/2010/en (assessed 19.2.2014). or DSM 5 (American Psychiatric Association, 2013).

language, sign language is an integral part of SSHI educational plans in most countries (Langereis and Vermeulen, 2015). German SSHIs offer classes with sign language, oral language, or total communication[3]. In the above-mentioned studies on mental health problems in hearing impaired adolescents at SSHIs, most of these adolescents did not grow up with oral language, but with "total communication" or "two-way" communication (Dutch: van Eldik, 2005; Sweden: Mejstad et al., 2009). Furthermore, SSHIs in Germany are very often residential schools. Normal hearing children who live in residential homes are more vulnerable for mental health problems than children who live at home (Bradley and Vandell, 2007).

Third, we suppose that children with additional needs mostly attend SSHI. This may concern multi- handicapped children. Hearing impaired children have an increased risk by about one third for additional handicaps, compared to normal hearing children (American Academy of Pediatrics, Joint Committee on Infant Hearing, 2007; Gallaudet Research Institute, 2011). Studies on hearing impaired children (van Eldik, 2005; van Gent et al., 2007) as well as normal hearing children (Carvill, 2001; Barkauskiene and Bieliauskaite, 2002; Dekker et al., 2002; Leask et al., 2002; Glazebrook et al., 2003; Hemmings et al., 2006; Kaptein et al., 2008; Backenson et al., 2015) indicate that disabling health conditions increase the risk for more mental health problems and disorders.

Furthermore, additional needs of children and adolescents in SSHIs may also be associated with a disadvantaged social background. In our clinical experience, hearing impaired children from disadvantaged social backgrounds are enrolled more often in special institutions, whereas children with a middle class background tend to grow up in mainstream institutions. Mental health problems are frequently associated with a low socioeconomic status in normal hearing children (Aebi et al., 2014), hearing impaired children (Theunissen et al., 2014a), as well as children with CI (Huber et al., 2015).

The first aim of the present study was to investigate whether schooling relates to mental health problems of adolescents with CI. The second aim was to determine possible differences in the variables listed above between SSHIs and mainstream schools and to investigate, whether these differences affect the relationship between school type and mental health problems.

Our hypotheses are the following:

a) Adolescent CI users who attend secondary SSHIs show more mental health problems than adolescent CI users who attend regular and integrative classes of secondary mainstream schools.
b) Hearing variables: Participants with poor auditory and speech perception in quiet as well as with restricted auditory performance in noise, late implanted participants (age at implantation of the 1st CI equal or higher than 5 years) and participants with indication for additional handicaps are more likely to attend SSHI.
c) School variables: Pupils of SSHIs are more likely to prefer sign language as their mode of communication, are more skilled in sign language and are more often educated primarily in sign language than pupils of mainstream schools. Furthermore, pupils of SSHIs attend more often residential schools than pupils of mainstream schools.
d) Family variables: Pupils of SSHIs have a lower socioeconomic status (educational level and skill level of the parents) compared to pupils of mainstream schools. They live more often in a single-parent family.
e) The variables listed in (b–d) explain at least in part the differences in mental health problems between mainstream schools and SSHIs.

The results of the study may be important for parents of hearing impaired children with CI in order to ensure the most optimal school for their child. Additionally, the results may be important for all teachers of students with CI to guide them and their parents. Furthermore, they may be important for the whole school system to set appropriate proposals for children with CI.

METHODS

This study is part of a more comprehensive Austrian and German project about mental health problems of adolescents with CI and was conducted as a multi-center study. The participating centers of the present study were: the Cochlear Implant Center Freiburg at the University of Freiburg, the Department of Otorhinolaryngology Hannover at the Hannover Medical School, the University Medical Center at the University of Mainz and the kbo-Kinderzentrum München (Socialpediatric Center) in Munich.

Participants

The total group comprised 140 adolescents with CI (68 boys, 72 girls) and their hearing parents and teachers, 30 from Freiburg, 43 from Hannover, 44 from Mainz and 23 from Munich (all Germany). Our response rate was 79% out of 178 possible cases[4]. All adolescents were between 12 and 17 years old (mean age = 14.72 years, *SD* = 1.51 years), were diagnosed with severe or profound hearing loss before the age of 24 months and had been using their first CI for at least 3 years. Demographic data of the total group can be found elsewhere (Huber et al., 2015).

At the time of investigation 83 out of 140 students with CI (59%) visited secondary SSHIs (47 girls, 36 boys, mean age = 14.78 ± 1.54 years). 38 out of 140 (27%) visited regular classes of secondary mainstream schools (18 girls, 20 boys; mean age = 14.63 ± 1.46 years) and 19 (14 %) went to integrative classes of secondary mainstream schools (7 girls, 12 boys, mean age = 14.71 ± 1.48 years). Age and gender did not differ significantly between school types. Among the 83 students at SSHIs mental health ratings were available from 77 students, 82 parents and 30 teachers. Among the 38 students who had visited a regular class at a secondary mainstream school, mental health ratings

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[3] "Total Communication (TC) is a philosophy of educating children with hearing loss that incorporates all means of communication; formal signs, natural gestures, fingerspelling, body language, listening, lipreading, and speech" http://www.handsandvoices.org/comcon/articles/totalcom.htm (assessed 29.11.2015).

[4] Thirty-eight did not participate, as many girls as boys. Twenty-one families excused themselves because of time reason, 17 did not react to the invitation per mail.

TABLE 1 | Medical and hearing variables for students in regular classes of secondary mainstream schools, integrative classes of secondary mainstream schools and students in secondary special schools for hearing impaired (SSHI).

	Mainstream regular ($n = 38$)	**Mainstream integrative ($n = 19$)**	**SSHI ($n = 83$)**
Causes of deafness, numbers (percent)			
Unknown, n (%)	27 (71%)	16 (84%)	52 (63%)
Meningitis/Rubella, n (%)	3 (8%)	1 (5%)	7 (8%)
Connexin 26, n (%)	1 (3%)	0 (0%)	3 (4%)
Mondini Dysplasia, n (%)	1 (3%)	0 (0%)	1 (1%)
Other Infections, n (%)	1 (3%)	0 (0%)	4 (5%)
Other Illnesses, n (%)	5 (13%)	2 (11%)	16 (20%)
Indications for additional handicaps n (%)[5]	8 (21%)	3 (16%)	24 (29%)
Age at first fitting of hearing aids in months, mean ± SD	20.95 ± 19.72	18.67 ± 10.77	20.39 ± 14.60
Benefit of hearing aids (minimal perception of acoustic stimuli with hearing aids) before CI[6], mean ± SD	2.84 ± 1.26	2.79 ± 1.40	2.84 ± 1.27
Age at implantation of 1th CI in months, mean ± SD	50.67 ± 45.64	44.94 ± 40.00	60.19 ± 47.15
Late implantation (>60 months), n (%)	10 (26%)	3 (16%)	25 (30%)
Bilateral implantation, n (%)	19 (50%)	11 (58%)	45 (54%)
Age at implantation of 2nd CI in months, mean ± SD**	99.20 ± 44.31	138.27 ± 40.02	127.28 ± 32.17
Monosyllables 65 dB[7] in %, mean ± SD	71% ± 18%	72% ± 15%	73% ± 26%
Understanding of sentences in noise[8], n (%) ***	29 (76%)	14 (73%)	45 (54%)

$^{**}p < 0.01$, $^{***}p < 0.001$.

were available from 34 students, 38 parents and 15 teachers. For the 19 pupils in integrative classes of secondary mainstream schools 19 self ratings, 19 parent ratings and 10 teacher ratings were available. The demographic data and hearing variables of mainstream pupils and pupils of SSHIs are shown in **Tables 1**, **2**.

Regrettably only few teachers participated in the study.

The majority of students, who went to a secondary SSHI, also had been schooled in an SSHI primary ($n = 67$; 81%). The majority of the students who chose a secondary mainstream school (with- or without integration) had also been schooled in a primary mainstream school ($n = 34$; 60%).

Instruments

Mental health problems were assessed with the "Strengths and Difficulties Questionnaire" (SDQ, Youth in mind, 2014) (Goodman, 1997). The SDQ evaluates emotional, behavioral and social problems of children and adolescents aged about 3–17 years. It can also be used as a screening measure for mental health disorders, which was not the case in the present study. Its good psychometric properties have been confirmed by many studies worldwide (Goodman et al., 2000; Muris et al., 2003; Becker et al., 2004a; Du et al., 2008). The brief 25 item rating scale addresses emotional symptoms (ES), inattention-hyperactivity (HA), conduct problems (CP), peer-problems (PP) and pro-social behavior (PBS), (social strengths, e.g., altruism). The scores of ES, HA, CP and PP are summarized in the "Total Difficulty Score" (TDS). The "impact supplement" in the extended version evaluates the impact of mental health problems on the well-being of young people, their everyday life and their functioning in family, at school, with friends and with peers. SDQ versions are available for parents, teachers and as self ratings for children from 11 years of age and older. There are three response categories: 0 = not true, 1 = somewhat true, and 2 = certainly true. Higher values mean more problems. The SDQ has been translated and validated for the German language (Becker et al., 2004b,a).

Procedures

The participants were recruited on the occasion of the annual appointment in the clinics. Both, adolescents and their parents were asked to participate. All participating adolescents and their parents were surveyed individually. Additional audiological tests like speech perception tests in quiet and noise were performed. Medical data were obtained from clinic files. Other demographic data were collected by parental surveys. The patients completed the SDQ questionnaire under surveillance by a clinic member. In 16 cases support was needed, whereby the SDQ questions were additionally presented in an adapted format, with standard sentences—following a written guideline, shortened and with paraphrases, presented both orally and written. This support did not replace the original SDQ questionnaire. The use of a sign language interpreter was not required. The parents filled in the questionnaires (SDQ, demographic data) at the same time, however separately. In the case of their agreement, the teachers received the SDQ from the parents and sent it back to the investigators via mail. Teacher ratings were available for 55 adolescents with CI. Further information about the procedures can be found in Huber et al. (2015).

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[5] Information about the collection of these data can be found in Huber et al. (2015).

[6] According to the rating of the parents (4 point rating scale: 1, some profit; 4, no profit at all).

[7] Freiburger speech test (in quiet) (Hahlbrock, 1953).

[8] Information of the audiologists 0, is understanding; 1, is not understanding (basing on the actual outcome of the person with CI).

TABLE 2 | School variables, family variables and other demographic data of students in regular classes of secondary mainstream schools, integrative classes of secondary mainstream schools, and students in secondary special schools for hearing impaired (SSHI).

	Mainstream regular ($n = 38$)	Mainstream integrative ($n = 19$)	Special HI ($n = 83$)
SCHOOL VARIABLES			
Sign language			
Education, n (%)*** primarily	4 (11%)	1 (5%)	36 (43%)
Use, n (%)***	15 (39%)	10 (52%)	58 (70%)
Competence[a], mean ± SD***	1.10 ± 1.39	3.52 ± 1.43	2.32 ± 1.33
Preference, n (%)	0 (0%)	1 (5%)	1 (1%)
Additional teacher, n (%)	5 (13%)	4 (21%)	12 (14%)
Residential school, n (%)* **	2 (5%)	5 (26%)	33 (40%)
FAMILY VARIABLES			
Social background			
Mothers Skill level[b], mean ± SD	1.81 ± 0.78	1.71 ± 0.99	1.63 ± 0.70
Fathers Skill level[b], mean ± SD*	2.17 ± 0.45	2.26 ± 0.65	1.93 ± 0.51
Mothers Education[c], mean ± SD	2.22 ± 0.92	2.05 ± 0.97	2.28 ± 1.34
Fathers Education[c], mean ± SD	2.33 ± 1.16	2.63 ± 1.34	2.35 ± 1.25
Only Child, n (%)	7 (18%)	7 (37%)	18 (21%)
Single Parents, n (%)*	2 (5%)	4 (21%)	16 (19%)
REGION IN GERMANY			
Munich, n (%)	8 (21%)	1 (5%)	14 (16%)
Hannover, n (%)	14 (37%)	11 (58%)	18 (21%)
Mainz, n (%)	7 (18%)	2 (11%)	35 (42%)
Freiburg, n (%)	9 (24%)	5 (26%)	16 (19%)

$^{*}p < 0.05$, $^{***}p < 0.001$.

[a] Rated by the parents on a scale from 0 to 4. The higher the number the higher the competence level.

*[b] Rated on a 4-point scale according to the "**I**nternational **S**tandard **C**lassification of **O**ccupation" (ISCO, International Labor Office, 1990). The higher the number the higher the parents' ISCO-Level.*

*[c] Rated by a 5-point scale according to the "**I**nternational **S**tandard **C**lassification of **Ed**ucation ((ISCED)" The higher the number the higher the parents' ISCED-Level. http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx (assessed 4.11.2015).*

Statistics

In order to analyze whether mental health problems of adolescents with CI differed between school types (Hypothesis a, see 3.1. for the results), we used multivariate ANOVAs with independent variable school type (special/regular) and dependent variables EP, CP, HA, and PP. Subsequent univariate analyses were performed to identify in which area the problems manifested. TDS, PBS, and SDQ impact were each compared between school types using One-way ANOVAs. All analyses were performed separately on self-, parent-, and teacher-ratings.

In order to analyze, which hearing variables (see **Table 1**), school variables (sign language, additional teacher, residential school, see **Table 2**) and family variables (social background, only child, single parent, see **Table 2**) differed significantly between school types (Hypotheses b-d, see section "Differences in Possible Explanatory Variables Between School Types" for the results) and were therefore possibly explanatory for the effect of school type. Comparisons between school types were conducted using independent samples *t*-tests, Mann-Whitney U-tests, Chi-Square tests or multivariate ANOVAs depending on the scaling and dimensionality of the variables.

In order to analyze, which of the variables differing between school types were explanatory for the effect of school type (Hypothesis e), mediation analyses were carried out. Therefore, we first identified, which variables had also a significant impact on mental health problems (see section "Relation of Possible Explanatory Variables to Mental Health Problems" for the results). Analyses were performed using multivariate ANOVAs, *t*-tests or Pearson-correlations depending on the scaling of the independent variable. Second, possible explanatory variables with a significant impact on mental health problems were entered as covariates in the comparison of school types, to see whether they were able to explain the effect of school type (see section "Effect of School Type after Controlling for Explanatory Variables" for the results).

Ethical Approval

The present study was approved by the ethics committees in Salzburg (Ethikkommission für das Bundesland Salzburg), Munich (Ethikkommission der LMU München), Mainz (Ethikkommission der Landesärztekammer Rheinland-Pfalz), Freiburg (Ethikkommission der Albert-Ludwigs-Universität Freiburg), and Hannover (Ethikkommission der Medizinischen Hochschule Hannover). According to the Declaration of Helsinki

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[7] Freiburger speech test (in quiet) (Hahlbrock, 1953).

[8] Information of the audiologists 0, is understanding; 1, is not understanding (basing on the actual outcome of the person with CI).

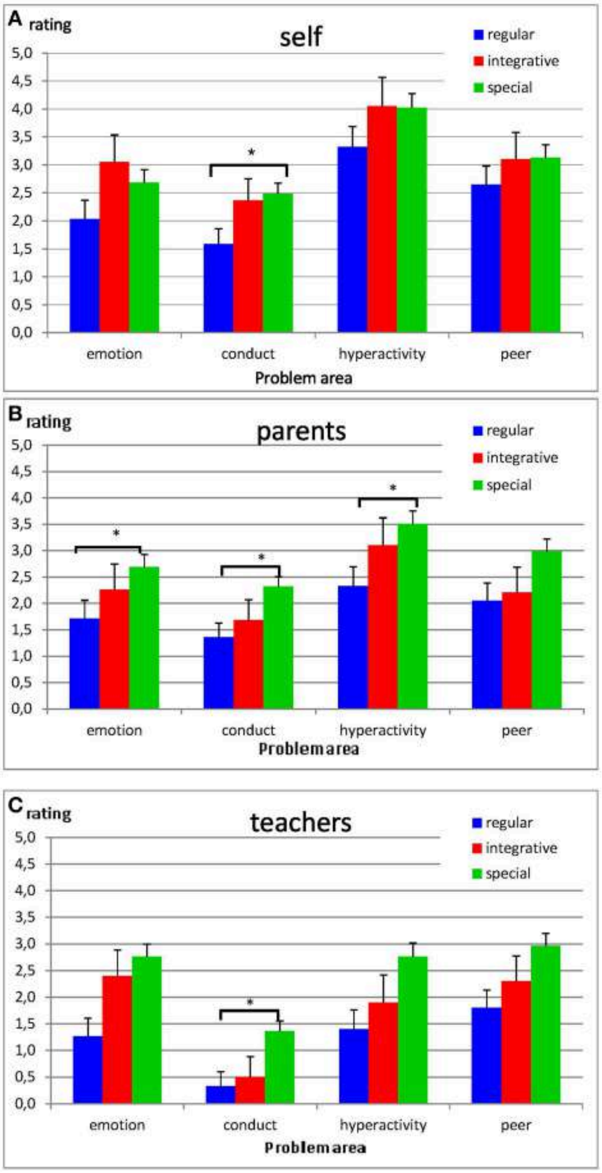

FIGURE 1 | SDQ self- (A), parent- (B), and teacher-ratings (C) for emotional problems, conduct problems, hyperactivity, and peer problems (means ± SE). Higher scores indicate more problems. Significantly different from regular schools: $^{*}p < 0.05$.

the mediating influence of the age at the implantation of the 2nd CI was not considered further.

School Variables

Sign language

Since the majority of students, educated mainly in sign language, visited SSHIs, the impact of sign language was only analyzed among students who visited such schools. No significant differences in TDS, PBS, SDQ impact or any problem area were observed between students who had been educated in sign language and students who had only been educated in oral language (all $t < 1.77$, all $p > 0.08$), with the exception of teacher ratings of conduct problems [$t_{(28)} = 2.48$, $p < 0.05$] with more problems for sign language educated students. Furthermore, no significant correlation between sign language competence and TDS or any problem area was observed.

Residential school experience

Since the majority of students with residential school experience visited SSHIs, the impact of residential school experience was only analyzed among students who visited secondary SSHIs. Self-, parent- or teacher-ratings of mental health problems did not differ significantly between SSHI students in residential schools and SSHI students who lived at home (all $|t| < 1.92$, all $p > 0.06$). Furthermore, the total duration of residential school experience was not correlated to either self-, parents or teacher ratings of mental health problems (all $|r| < 0.22$, all $p > 0.19$).

Family Variables

Social background

Students self-ratings of conduct problems were significantly negatively correlated with the fathers' skill level ($r = -0.24$, $p < 0.05$). Parents ratings of conduct problems were significantly negatively correlated with the mother's skill level ($r = -0.24$, $p < 0.05$). The higher the parents skill level, the less severe conduct problems were reported. No correlation was observed between conduct problems and parents education (all $|r| < 0.12$, all $p > 0.27$). No other area of mental health problems was correlated to social background variables in self-, parent- or teacher ratings (all $|r| < 0.12$, all $p > 0.25$).

Only children

No significant differences were observed in either self-, parents- or teacher-ratings of mental health problems between only children and children with siblings (all $|t| < 1.62$, all $p > 0.10$).

Single parenting

Since the majority of students from single parent families went to SSHIs, the impact of single parenting was only analyzed for students in this type of school. No significant effects of single parenting on TDS were observed in self- and parent-ratings (both $|t| < 1.58$, both $p > 0.11$), but TDS teacher ratings were significantly higher for students from single parent families ($t = -2.07$, $p < 0.05$). A significant main effect of single parenting on mental health problems was observed in the multivariate analyses of parent ratings [$F_{(4.68)} = 2.68$, $p < 0.05$] but not for self and teacher ratings [$F_{(4.71)} = 2.05, p = 0.08; F_{(4.35)} = 1.35, p = 0.28$]. Univariate analyses revealed that the effects on parent ratings were attributable to conduct problems [$F_{(1.79)} = 6.20$, $p < 0.05$], with no effect of single parenting on the other problem areas (all $F < 3.28$, all $p > 0.08$). No effect of single parenting was observed on SDQ impact in either rater (all $t < 1.59$, all $p > 0.11$). No effect of single parenting was observed on parent and teacher ratings of PBS (both $t < 0.73$, both $p > 0.47$). However, self ratings of PBS were significantly lower in students from single parent families [$t_{(74)} = 2.09$, $p < 0.05$].

TABLE 4 | F-values for differences between school types (mainstream school, special school of persons with hearing loss) without covariates (first column) and after controlling for (i) ability to hear and understand in noise (ii) social background (fathers skill level), (iii) single parenting as well as (iv) all three variables simultaneously.

Covariate	None	Hearing	Social background	Single parenting	all
SELF RATINGS					
TDS	11.13***	6.84**	7.61**	10.05**	4.44*
Multivariate analysis	3.27*	2.37	2.01	2.89*	1.25
EP	3.30	3.90	4.34*	2.20	2.65
CP	10.60**	6.72*	4.67*	8.87**	2.90
HA	4.13*	2.56	2.30	5.34*	1.99
PP	2.12	0.36	1.97	1.98	0.64
Impact	0.07	0.02	0.26	0.02	0.02
PBS	7.45**	6.61*	4.68*	5.77*	3.70
PARENT RATINGS					
TDS	16.13***	12.25***	12.04***	13.82***	6.39*
Multivariate analysis	4.02**	3.20*	3.00*	3.45*	1.70
EP	5.78*	3.56	5.01*	4.29*	1.57
CP	9.96**	9.44**	7.63**	7.28**	5.43*
HA	7.09**	4.11*	4.65*	7.10**	2.42
PP	5.23*	4.33*	3.47	5.27*	1.85
Impact	5.78*	3.95*	5.84*	4.36*	1.59
PBS	1.17	3.41	1.95	1.07	2.49
TEACHER RATINGS					
TDS	6.14*	3.45	5.29*	4.94*	1.00
Multivariate analysis	1.59	0.88	1.38	1.29	0.28
EP	3.84	2.35	3.97	2.84	0.79
CP	4.76*	2.18	4.12*	3.83	0.55
HA	2.80	1.16	2.01	2.01	0.23
PP	1.83	1.70	2.02	1.53	0.48
Impact	4.87*	2.71	3.69	3.90	0.84
PBS	0.83	0.54	1.25	0.81	0.32

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Effect of School Type After Controlling for Explanatory Variables

In summary, the following variables were identified as potential explanatory variables for the effect of school type (regular class in secondary mainstream school or secondary SSHI): (a) hearing (ability to hear and understand speech in noise), (b) social background (fathers skill level), (c) single parenting.

These variables were now each entered as covariates into the multivariate analysis of school type, in order to evaluate whether differences in mental health problems between school types were diminished, when the influence of the covariate was taken into account (**Table 4**).

These ANCOVAs revealed that each explanatory variable, entered as a covariate on its own, slightly reduced the differences between school types. However, none of these variables was able to completely explain all differences between school types, since in each ANCOVA some differences between the school types remained. Differences between school types persisted, even after the variables were entered as covariates. However, most differences disappeared when all variables were simultaneously entered as covariates in the comparison of school types. However, even then, some differences still remained, e.g., self- and parent rated TDS; compare **Table 4** last column.

DISCUSSION

In a multicenter study on hearing impaired adolescents with CI we compared the extent of mental problems between pupils of regular classes of secondary mainstream schools, pupils of integrative classes of secondary mainstream schools and pupils of secondary special schools for hearing impaired (SSHIs).

Students of SSHIs showed significantly more conduct problems (CP) and a significantly higher TDS compared to pupils of regular classes of mainstream schools (self-, parent-, and teacher rating, each). Furthermore, they showed significantly more emotional symptoms (ES parents), a higher level of hyperactivity (HA, parents) and more problems with prosocial behavior (PBS, self). Students in integrative classes in mainstream schools showed more problems than pupils of regular classes and fewer problems than pupils of SSHIs. However, these latter differences were not significant.

These outcomes confirm the first hypothesis of the present study. Students with CI in SSHIs show more mental health problems than students with CI in mainstream schools. Additionally they corroborate the results of earlier studies on young hearing impaired persons with (Huber and Kipman, 2011) and without CI (van Eldik, 2005; Mejstad et al., 2009; Remine and Brown, 2010; Theunissen et al., 2014a).

All three informants, i.e., self (adolescents), parents and teachers agreed that pupils of SSHI have significantly more conduct problems and a significantly higher TDS compared to mainstream pupils. Differences in emotional symptoms, hyperactivity (parents) and prosocial behavior (self) were only found in ratings of one informant. Becker et al. (2004b) demonstrated that the predictive quality of the SDQ for mental illness or mental health disorders[9] is only satisfying in the case of an agreement between all three informants. In the case of disagreement the predictive quality of the SDQ was only moderate, especially if only the rating of a single informant was significant (Becker et al., 2004b). Therefore, the outcomes about the increased rates of conduct problems and a higher TDS of students attending SSHIs are more informative and have a higher scientific value than the results regarding emotional symptoms, hyperactivity and prosocial behavior problems (disagreement).

The increased rate of conduct problems in students at SSHIs indicates an increased risk for conduct disorders and further behavioral and/or learning disorders. According to the American Academy of Child and Adolescent Psychiatry (AACAP) *"many children with a conduct disorder may have coexisting conditions such as mood disorders, anxiety, PTSD (Posttraumatic stress disorder) substance abuse, ADHD" and "learning problems. Without treatment, many youngsters with conduct disorder are unable to adapt to the demands of adulthood and continue to have problems with relationships and holding a job."* As shown by studies on hearing impaired children without CI, conduct problems and other behavioral problems start in the first years of life (Barker et al., 2009) and continue during childhood (Stevenson et al., 2010). They are associated with difficulties in oral language (Barker et al., 2009; Stevenson et al., 2010), communication difficulties (Barker et al., 2009), and furthermore with attention problems (Barker et al., 2009).

We also examined the hypotheses, that SSHIs are mainly attended by problematic adolescents and that these problems may explain the relationship between school type and mental health problems of adolescents with CI.

First, it was only partly confirmed, that SSHI are mainly attended by somewhat more difficult cases. CI users with a late 2nd CI, CI users, who are distinctly restricted to understand speech in noise, CI users with a disadvantaged social background (skill level of the father) as well as CI users from single-parent families were overrepresented in SSHIs. However, adolescents with indications for additional handicaps as well as late implanted adolescents (1st CI) were equally distributed in both school types. Also speech perception outcomes in quiet did not differ between school types.

Second, it was also only partly confirmed that mental health problems of CI adolescents in SSHIs were explained by these disadvantages. Understanding of speech in noise, skill level of the father and single parenting were found to possess some amount of impact, but none of these variables explained comprehensively the differences in mental health problems between SSHIs and mainstream schools. Most likely a combination of all three variables may play a role for the differences between the two school types. Regarding the speech in noise outcomes, mean scores would have been more informative. However, due to the different audiological sentence tests the participating centers used to evaluate speech perception in noise, we were restricted to the dichotomic assessment of the audiologists (basing on the actual outcomes of the adolescents).

Third, already existing mental health problems could have caused parents to choose an SSHI environment for their child. In the present study more than 80% of students, who went to a secondary SSHI, also had been schooled in an SSHI primary. This could indicate, that the majority of adolescents had already shown mental health problems at a very young age. Because of the retrospective study design, it is however not possible to clearly answer this question. The few studies addressing mental health problems of children with CI before school age (Martin et al., 2011; Wiefferink et al., 2012) indicate that very young CI children are less socially competent than normal hearing children (Wiefferink et al., 2012) and that they show some peer problems (Martin et al., 2011). However, there is no indication for more problems in externalizing behaviors like hyperactivity or conduct problems (Wiefferink et al., 2012).

However, additional variables that have not been addressed in the present study, may also account at least in part for the increased rate of mental health problems of students of SSHI including lexical and syntactical knowledge as well as communication skills (compare e.g., Theunissen et al., 2014b).

Furthermore, the feeling to be strange or not "normal" and loneliness may play a role in pupils of SSHIs. In Germany and Austria pupils of SSHIs come from a large geographical area. Because these schools are usually not located in the neighborhood of the children/adolescents, it is difficult for commuters between school and home to meet classmates after school or at the weekend. In normal hearing children loneliness in childhood predicts problems with social adjustment, depression, aggression, and suicidal thoughts in adolescence (Schinka et al., 2013).

CONCLUSION

Young CI users who attend special schools for hearing impaired have more mental health problems than adolescents with CI who attend regular classes in mainstream schools. Students at special schools for hearing impaired have additional problems. They are more restricted to understand speech in noise, the age at implantation of the 2nd CI is higher, the socioeconomic

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[9] **Mental health disorders** are fulfilling nosological criteria as described in ICD 10 (**I**nternational **S**tatistical **C**lassification of **D**iseases) or DSM 5 (**D**iagnostic and **S**tatistical **M**anual of Mental Disorders) American Psychiatric Association (2013) International Statistical Classification of Diseases—ICD 10.http://apps.who.int/classifications/icd10/browse/2010/en (Assessed September 19, 2014).

status is lower, and the adolescents are more likely to come from single-parent families. The variables speech understanding in noise, fathers skill level and single parenting were found to be partial mediators of the differences in mental health problems between the two school types. However, none of these variables could explain comprehensively, why students of special schools for hearing impaired have more mental health problems than mainstream pupils.

AUTHOR CONTRIBUTIONS

MH was the leading investigator. She developed the proposal for the multi-center study, organized the funding and converted the centers to the cooperation. She played a leading role in the composing of this paper. As first author she is primarily accountable for all aspects of the work. BP was responsible for the statistical analysis and the results section. She also gave input on the structure of the introduction and discussion section and edited the paper for grammar and style. AG contributed to the acquisition of data, to the revision of the work, to ensuring that the questions of the work are appropriately investigated and to the approval of the version to be published. SK gave substantial contributions to the acquisition, analysis and interpretation of data for the work, to revising it critically for important intellectual content, to the final approval of the version to be published and her agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. AN gave substantial contributions to the conception of the work, to the acquisition of data for the work, regarding critical revisions of the manuscript and the final approval of the version to be published. AI contributed to the acquisition of the patient data, the interpretation of data and she drafted parts of the paper. Finally she approved the versions to be published. She is accountable for all aspects of the work in ensuring, that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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The Florence Nightingale Effect: Organizational Identification Explains the Peculiar Link Between Others' Suffering and Workplace Functioning in the Homelessness Sector

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Frontline employees in the helping professions often perform their duties against a difficult backdrop, including a complex client base and ongoing themes of crisis, suffering, and distress. These factors combine to create an environment in which workers are vulnerable to workplace stress and burnout. The present study tested two models to understand how frontline workers in the homelessness sector deal with the suffering of their clients. First, we examined whether relationships between suffering and workplace functioning (job satisfaction and burnout) would be mediated by organizational identification. Second, we examined whether emotional distance from clients (i.e., infrahumanization, measured as reduced attribution of secondary emotions) would predict improved workplace functioning (less burnout and greater job satisfaction), particularly when client contact is high. The study involved a mixed-methods design comprising interview ($N = 26$) and cross-sectional survey data ($N = 60$) with a sample of frontline staff working in the homelessness sector. Participants were asked to rate the level of client suffering and attribute emotions in a hypothetical client task, and to complete questionnaire measures of burnout, job satisfaction, and organizational identification. We found no relationships between secondary emotion attribution and burnout or satisfaction. Instead, we found that perceiving higher client suffering was linked with higher job satisfaction and lower burnout. Mediation analyses revealed a mediating role for identification, such that recognizing suffering predicted greater identification with the organization, which fully mediated the relationship between suffering and job satisfaction, and also between suffering and burnout. Qualitative analysis of interview data also resonated with this conceptualization. We introduce this novel finding as the 'Florence Nightingale effect'. With this sample drawn from the homelessness sector, we provide preliminary evidence for the proposition that recognizing others' suffering may serve to increase job satisfaction and reduce burnout – by galvanizing organizational identification.

Keywords: social identity, social pain, vicarious trauma, burnout, job satisfaction, infrahumanization

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INTRODUCTION

In human services such as the homelessness sector, frontline workers are often faced with confronting circumstances in their daily work with clients. Operating within this environment can be demanding for workers, both professionally and personally (Baker et al., 2007). Their client base consists of individuals, couples, and families from diverse backgrounds who are at imminent risk or in the midst of housing crisis. People experiencing homelessness are stigmatized and often present with complex needs, and the transition into homelessness is marked by very high levels of psychological distress (Harris and Fiske, 2006, 2007; Fitzpatrick et al., 2013).

Meeting Competing Demands: Care, Burnout, and Emotional Distance

A range of traumatic antecedents can catalyze entry into homelessness (Chigavazira et al., 2013), such as escape from domestic and family violence, or sexual and other forms of abuse; financial difficulties, unemployment, and poverty; family breakdown or bereavement; addiction or substance misuse; eviction or blacklisting from the private rental market; contact with the criminal justice system; mental illness; cultural conflict and intergenerational trauma; and many other triggers (Department of Families, Housing, Community Services and Indigenous Affairs, 2008; Australian Institute of Health Welfare, 2014).

Over and above the skills necessary to support people to cope with or exit homelessness, workers need the ability to remain resilient in the face of these challenges. Seeing clients' pain and suffering can expose workers to vicarious emotional distress, with workers in the human services being particularly at risk (Maslach and Pines, 1977; Miller et al., 1995; Maslach et al., 2001; Baker et al., 2007; Bride, 2007; Gleichgerrcht and Decety, 2013).

Exposure to distressing human circumstances means workers may be vulnerable to workplace stress, and over time, these stresses can lead to *burnout*. Burnout is described as a 'prolonged response to chronic emotional and interpersonal stressors on the job', and is linked with a raft of negative consequences for the individual, their clients, and the broader workplace (Maslach et al., 2001; Maslach, 2003, p. 189). Burnout generally comprises three principle symptoms: exhaustion, perceived lack of accomplishment, and callousness (Maslach et al., 2001; Haslam and Reicher, 2006; Reicher and Haslam, 2006; Reicher et al., 2008). These symptoms are considered to emerge in response to specific workplace factors: accomplishment is undermined when people feel they do not have the resources to complete their tasks (such as time, training, or tools, and infrastructure), while exhaustion and callousness are associated with ongoing work overload and social stressors (Maslach et al., 2001). There is considerable evidence that burnout is linked with low job satisfaction (Lee and Ashforth, 1996).

Given these risks, it is important to understand how workers can avoid burnout and protect themselves emotionally from the difficulties and suffering of their clients, while at the same time providing those very clients support and care. We tested two models to better understand the implications of exposure to others' suffering for frontline workers in this field. We examined whether workers in this field might protect themselves from the consequences of exposure to suffering and maintain positive workplace functioning via identification with the organization (i.e., a mediational hypothesis). We also examined whether emotional distance from clients would predict improved workplace functioning, particularly when client contact is high. (i.e., a moderation hypothesis).

The Suffering of Others and Organizational Identification

The social identity approach proposes that a person's group memberships and social categories dynamically inform one's self-concept and position relative to other individuals and groups (Tajfel and Turner, 1979; Brewer, 1991; see also Hornsey, 2008, for review). In the workplace, an individual's interrelatedness with the organization or organizational unit can be readily conceptualized in social identity terms (Ashforth and Mael, 1989; Haslam et al., 2003b; van Dick and Haslam, 2012). But how might acknowledging clients' suffering promote identification with the organization, and how does this protect workers?

One possible explanation arises when considering how workers forge a positive identity in the workplace despite adverse aspects of the role. Exposure to clients who are suffering and working with people experiencing homelessness may be considered 'dirty work', because it involves contact with stigmatized members of society (Hughes, 1958; see also Ashforth and Kreiner, 1999; Ashforth et al., 2007; Baran et al., 2012). Such work can be considered noble or heroic – such as work done by firefighters, veterinarians in attending to animal euthanasia, surgeons, and carers for the elderly (Ashforth and Kreiner, 1999; Stacey, 2005; Baran et al., 2012). However, while those outside the profession may be grateful for the important work being done, they may also be pleased and relieved they do not have to carry it out themselves (Ashforth and Kreiner, 1999).

Importantly, Ashforth and Kreiner (1999) highlight the capacity for dirty tasks themselves to generate meaning, where negative aspects of the job create and maintain organizational identity, for instance by allowing workers to display resilience and fortitude or to demonstrate sacrifice in a way that carries collective significance. In particular, for workers in the homelessness sector, acknowledging clients' suffering could fuel meaningfulness by creating an immediate and salient link between the work and its purpose – to *relieve* suffering. In this way we can conceptualize others' suffering as a potential catalyst for organizational identification: theoretically, acknowledging suffering could enliven a sense of shared purpose and meaning in the workplace and enhance identification with the organization (Haslam et al., 2003a,b; van Dick and Haslam, 2012).

Identification with the Organization and Workplace Functioning

There is a large literature on the benefits of group memberships, and identifying with the organization has been consistently linked with positive workplace outcomes. Shared social identity promotes communication (Greenaway et al., 2015), provides a basis for shared social capital (Cornelissen et al., 2007), predicts positive organizational citizen behaviour (Christ et al., 2003), and relationally binds groups to their leaders (Steffens et al., 2014). A raft of evidence shows the benefits of social identity and group memberships in terms of general wellbeing (Haslam et al., 2005, 2009; Haslam and Reicher, 2006; Iyer et al., 2009).

Relevantly, van Dick and Haslam (2012) point to empirical and meta-analytical work linking high organizational identification with higher job satisfaction, and lower levels of stress (see for example, Haslam et al., 2005; Riketta and Dick, 2005). They argue that the capacity for a workplace stressor to enliven stress is moderated by how relevant it is to salient organizational identities. This suggests that for high organizational identifiers, stressors which go to the heart of one's organizational identity have the potential to be more damaging. However, van Dick and Haslam (2012) further point out that these identity salient stressors also create the conditions for collectively derived responses to shared problems (Haslam et al., 2005) and access to social support (Haslam et al., 2004). This suggests that organizational identification furnishes individuals with additional resources to deal with the challenges they face together, leading to more positive workplace outcomes. In sum, the social identity approach provides a strong and plausible explanation for how workers might marshal psychological resources to deal with their clients' suffering, particularly in stigmatized or lower-status industries.

Building a Protective Barrier Through Emotional Distancing

A growing literature on humanness and dehumanization indicates a possible alternative for how workers protect themselves from the emotional challenges of caring for others who are suffering. Empathy is associated with positive outcomes for care recipients in therapeutic contexts (see for example, Halpern, 2003; Haslam, 2007; Haque and Waytz, 2012). However, distancing oneself emotionally from challenging material might help to preserve those emotional resources that are tapped when extending empathic concern and perspective-taking in relation to clients. Schulman-Green (2003) reported qualitative evidence that health employees engage in emotional distancing as a coping mechanism, such as referring to patients in terms of their condition rather than by their names. In interviews with intensive care nurses, Cadge and Hammonds (2012) found that staff expressed concern for patients but also detailed efforts to maintain emotional barriers.

Recent quantitative evidence suggests that emotional distancing among health care workers is associated with improved coping with patients' physical pain and mortality (Vaes and Muratore, 2013; Trifiletti et al., 2014). In a cross-sectional study with 78 Italian hospital and oncology unit workers, Vaes and Muratore (2013) found that workers who emotionally distanced themselves by reporting lower presence of uniquely human emotions (also termed 'secondary emotions') in a hypothetical patient tended to show more perceived professional efficacy, and more work engagement. Notably, the relationship between this form of emotional distancing and burnout was moderated by patient contact: for those health workers with high levels of patient contact, reporting higher presence of uniquely human emotions was associated with higher disillusionment, psycho-physical exhaustion and professional inefficacy. Trifiletti et al. (2014) reported similar findings in a study involving 109 nursing staff. They found that nurses' self-reported stress was positively correlated with the attribution of uniquely human traits to patients; but only for those nurses with high overall affective commitment to patients and their organization. Reconciling these findings with Vaes and Muratore's (2013) study, it appears that emotional distancing is linked with reduced burnout for health workers, especially those with high-contact roles, or those who are particularly emotionally committed to and involved in the organization.

This makes it important to tease apart the concept of emotional distancing in order to understand what protection it might afford. From the outset, it is important to note that in the context of patient and client care, the present work seeks to explore targeted and subtle ways of engendering emotional distance from a dehumanization and infrahumanization framework (see Haslam, 2014, for review). We do not seek to impute that extreme denial of humanness is occurring in this context, nor anticipate extreme forms of dehumanization that represent a failure to extend the moral concern normally afforded to other human beings (Goff et al., 2008; Harris and Fiske, 2011). Instead, we are seeking to examine protective emotional distance in a challenging work context by using the theoretical framework of infrahumanization.

Infrahumanization can be considered a subtle form of humanness denial that operates at intergroup (Leyens et al., 2001; Demoulin et al., 2004b) and interpersonal levels (Bastian et al., 2014a; Haslam, 2014). This framework proposes that there are secondary or *uniquely human emotions*, and that these are different to the primary or basic emotions experienced by both humans and animals alike (*non-uniquely human emotions*). For example, primary emotions such as joy, pain, or fear do not distinguish an entity as being human, as animals too undergo these emotions. In contrast, secondary emotions are unique to humans, such as optimism, shame, or indignation, as these are emotions that animals are not considered to experience (Demoulin et al., 2004a). Ascribing secondary (uniquely human) emotions to an entity is therefore an index of infrahumanization, where lower attribution shows greater infrahumanization. Secondary emotion attribution represents a way to capture the concept of emotional distancing, in the sense that denial or suppression of secondary emotion characteristics might provide more direct information about how *emotional* distancing operates.

Moreover, the current evidence base on protective infrahumanization has only examined exposure to others' physical pain and suffering. It remains an empirical question whether similar effects are observed when considering social pain. Modern approaches to homelessness conceptualize the experience and existence of homelessness as a symptom and expression of social exclusion (Minnery and Greenhalgh, 2007).

Social exclusion may be considered as a form of *social pain*, which MacDonald and Leary (2005, p. 202) describe as '…a specific emotional reaction to the perception that one is being excluded from desired relationships or being devalued by desired relationship partners or groups'. Whether protective infrahumanization is observed on exposure to others' social pain awaits empirical substantiation.

The Present Research

Working in the homelessness sector is a challenging undertaking, and leaves workers exposed to the risk of burnout. We examined two models concerning the implications of exposure to clients' suffering. First, building on the literature on social identity and dirty work, we proposed that acknowledging suffering can lead to the development of a positive organizational identity and this can protect workers in stigmatized roles by fostering meaningfulness. Second, an alternative literature points to emotional distancing as providing protection for workers exposed to the suffering of others. This proposes that 'dialing down' empathy and increasing emotional distance through infrahumanization is protective when empathetic interpersonal skills come under heavy demand – even though empathy is a key skill generally associated with positive client outcomes. While the existing evidence base has largely focused upon exposure to others' physical pain (Vaes and Muratore, 2013; Trifiletti et al., 2014), we probed whether there is evidence for protective organizational identity or infrahumanization associated with exposure to others' social pain. Accordingly, we aimed to examine whether infrahumanization is protective for staff working in homelessness service delivery, especially those with high client contact – with a view to examining links between infrahumanization and reduced burnout, and higher job satisfaction.

Thus the present study extends on previous literature by examining these two possibilities in a novel caregiving context: provision of support services to people experiencing homelessness. To that end, we combined qualitative and quantitative approaches. We interviewed and surveyed a sample of frontline homelessness service providers to discover their experiences and to investigate what factors contribute to job satisfaction and burnout.

MATERIALS AND METHODS

Participants, Design, and Procedure

Ethical clearance was received from the University of Queensland Behavioral and Social Sciences Ethical Review Committee and the School of Psychology Ethics Review Committee, and gatekeeper approval for the study was secured from the employing organization. The sample consisted of 60 frontline service providers (18 male) between 23 and 65 years ($M_{\text{age}} = 40.53$ years) employed in homelessness service delivery roles. Staff members were considered in-scope if their employment duties included case management of homeless clients, outreach services, and/or general support duties involving direct contact with clients (collectively termed 'frontline' duties).

We employed a mixed-methods design comprising qualitative (interview) and quantitative (survey) components. The qualitative component explored workers' experiences in direct service provision with clients, while the quantitative component was cross-sectional in design and measured client contact, infrahumanization, and client suffering (case history task), burnout, job satisfaction (workplace functioning), and organizational identification. We also took demographic and basic workplace information such as length of tenure.

Participants were first recruited for one-on-one semi-structured interviews and questionnaires delivered at the workplace ('on-site phase', see further below; $N = 26$). Recruitment was then extended to an online phase ($N = 43$) to ensure adequate sample capture, from which nine online participants who did not complete measures beyond initial demographic information were excluded. Overall, we aimed for a total sample of 60 participants for survey data across both recruitment phases, and closed data collection when the threshold of 60 completed responses was achieved (see **Figure 1**).

On-Site Phase

Interviews were carried out on-site to minimize disruption to service delivery, and ranged between approximately 15–60 min in duration ($M = 31{:}41$ min). On arrival participants were given study information, invited to provide informed written consent, and allocated a unique anonymous identifier to link interview and survey responses. Participants took part in the interview then completed the survey comprising demographics, client contact, case history task, workplace functioning, and organizational identification items. Finally, participants were verbally debriefed and thanked for their time.

Online Phase

Online participants were invited to visit the survey website at their convenience any time before the survey deadline. Once on the survey website, participants were given study information and invited to give informed consent by clicking a link to proceed. The online survey was presented in the same order as the on-site phase with the addition of four abridged interview questions at the end on empathy and self-care, adapted for an online open-text response format.

Materials and Measures

Interview

The complete semi-structured interview comprised 22 questions on a series of topics relating to work role, motivation, belief systems, client outcomes, and factors contributing to or detracting from clients' ability to exit homelessness. Specific to the present work were five questions tapping empathy (*To what extent do you empathize with clients and their circumstances?, How useful is empathizing with clients in helping them achieve positive outcomes?*), emotional connection with clients (*To what extent do you connect emotionally with clients?*), and questions on dealing with challenging experiences in the workplace and self-care (*How do you deal with challenging or confronting experiences in your role?, What sorts of self-care do you undertake, if any, to deal with difficult experiences in your role?*). The semi-structured

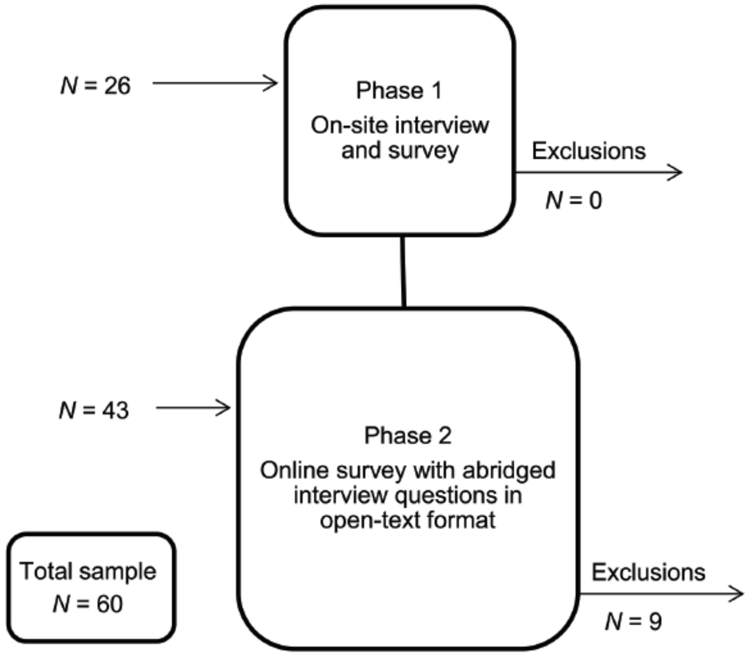

FIGURE 1 | Study recruitment flowchart for on-site and online phases, including sample size, and exclusions.

interview format enabled participants to discuss their thoughts, feelings and experiences related to the interview topics. The interview was digitally recorded and transcribed for analysis. A shortened version of the interview questions was used during the online phase with four key questions relating to empathy, dealing with challenging experiences in the workplace, and self-care.

Survey

For both on-site and online phases, the survey consisted of the case history task, workplace functioning questionnaire, and demographic and basic workplace information items.

Case history task

We developed two case history vignettes describing 'Warren', a 39 years-old man experiencing homelessness following a period of incarceration; and 'Denise', a 21 year-old woman escaping domestic violence. These vignettes were based on Vaes and Muratore's (2013, p. 183) oncology patient "BM", adapted to a homelessness context on the basis of national homelessness intake protocols and common client presentations drawn from pre-existing client interview data. Vignettes allowed us to measure participants' responses to an individual client, rather than to 'clients generally', without breaching confidentiality obligations. Each vignette described the person's circumstances using profession-relevant language without specifically referring to their emotional state (see **Figure 2**). In line with Vaes and Muratore's (2013) analyses, we totalled the number of negative primary and secondary emotions attributed within each vignette. Measures between vignettes were moderately to highly correlated (ρs 0.44 to 0.86, ps < 0.01) with the exception of how often such a client was encountered[1]. Accordingly, we collapsed values over the vignettes to create a total value for negative secondary emotions and mean value for suffering in subsequent analyses[2].

Perceived client suffering and infrahumanization. To measure perceptions of suffering, we asked participants to read the two hypothetical client case histories and rate client suffering (*How much is this client suffering?*) on a 7-point scale (from *Not at all* to *Extremely*). To measure infrahumanization, we asked participants to attribute emotions to the client described in each vignette. Participants were asked to indicate which (if any) emotions best described the client's emotional state. Emotion options were largely negative in valence and included equal numbers of primary and secondary emotions (Vaes and Muratore, 2013). All 28 emotions were randomized and presented after each vignette. We gaged the extent to which participants attributed primary (non-uniquely human) and

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[1] As anticipated, we surmise that the latter reflects the somewhat gender-segregated nature of service delivery, where participants who frequently work with clients of one gender are less likely to work often with clients of the other.

[2] We detected significant differences between vignettes in negative secondary and primary emotions, with participants attributing 'Denise' a greater median number of negative secondary ($Mdn = 4.00$) and negative primary ($Mdn = 5.00$) emotions compared to 'Warren' (secondary: $Mdn = 3.00$, $T = 813.00$, $p = 0.007$, $r = 0.25$; primary: $Mdn = 4.00$, $T = 893.50$, $p < 0.001$, $r = 0.32$). All other comparisons between vignettes were non-significant. Differences in emotion attribution between vignettes were tentatively anticipated, given prior research indicating differential infrahumanization of men and women, and criminals (see Hetey and Eberhardt, 2014, for review). However, we were satisfied that key variables were highly correlated between vignettes, and that having more than one vignette reduced the risk that any observed effects would be attributable to an artifact of the materials.

Warren, a 39 year old man, presented at specialist homelessness services following an extended period of homelessness. Warren was released from a long custodial sentence eight months ago. After his release, he stayed with an acquaintance in a large share house, but they asked him to pay rent or move out after a week, and he could not afford to stay on. Warren slept rough for a few nights, then applied for emergency funds from Centrelink. He then started receiving Newstart and found a room at a boarding house, but after several weeks, Warren did not find paid employment and began abusing alcohol and solvents. He eventually got behind in his rent and was evicted. After eviction from the boarding house, Warren slept rough for several months until he was arrested for public nuisance following a fight with another man and was hospitalised. The hospital referred Warren for crisis housing support on his release.

Denise, a 21 year old woman, presented at specialist homelessness services after experiencing domestic violence. She had been sharing rental accommodation with her partner, and remained through physical and emotional abuse for six months before leaving the relationship. She had been staying with relatives for the past three months until these options dried up. Denise struggled with drug addiction during her late teens, and when her relatives learned she had recently returned to active drug use, they asked her to leave. Denise was about to enter her second trimester of pregnancy, but had not told anyone else about the pregnancy.

FIGURE 2 | Case history vignettes describing two hypothetical clients experiencing homelessness, 'Warren' and 'Denise'. 'Centrelink' and 'Newstart' are terms specific to the Australian national welfare system.

secondary (uniquely human) emotions when considering a client's emotional state, and arrived at a total value for negative secondary emotions averaged across vignettes with lower scores indicating infrahumanization.

Ancillary measures. Participants were asked rate to what extent working with such a client would be *challenging*, *confronting*, or *distressing* on a 7-point scale (from *Not at all* to *Extremely*). We also asked participants to indicate on a 7-point scale (from *Never* to *Almost always*) how often they encounter such a client in their work situation. These measures aimed to respond to service delivery in the homelessness sector which is often divided by gender (Australian Institute of Health Welfare, 2014), such that a participant may deal exclusively with men or women depending on the center in which they work.

Workplace functioning and organizational identification

Burnout. We used the extended version of Haslam and Reicher's (2006) burnout scale to quantify levels of workplace burnout in our sample (Jetten et al., 2012; see also Reicher and Haslam, 2006). This measure comprises three subscales: exhaustion, lack of accomplishment, and callousness. Each subscale is carried by three items, which participants rated on a 7-point scale (from *Do not agree at all* to *Agree completely*): exhaustion (*I feel I am working too hard at work*, *I feel energetic at work* (reversed), *I feel exhausted at work*; $\alpha = 0.60$), lack of accomplishment (*At work I feel I am failing to achieve my goals*, *At work I feel frustrated, At work I feel I am accomplishing many worthwhile things* (reversed), $\alpha = 0.63$), and callousness (*At work I am concerned about the welfare of others* (reversed), *At work I don't really care what happens to people any more*, *At work I feel I am becoming callous toward other people*, $\alpha = 0.37$). We noted the poor reliability of the callousness subscale, and further investigation revealed that this was attributable to one item (*At work I am concerned about the welfare of others*). The reliability[3] of this subscale improves once this item is omitted ($r = 0.68$). This burnout scale also serves as a cohesive single measure of burnout by collapsing across the subscales (Jetten et al., 2012). Omitting the aforementioned problematic item from the callousness subscale improved the reliability of the overall burnout measure ($\alpha = 0.70$), and this was used in subsequent analyses.

Job satisfaction and organizational identification. These variables were each measured with items on a 7-point scale (from *Do not agree at all* to *Agree completely*). We measured job satisfaction with three items (*All in all I am satisfied with my job*, *In general I don't like my job* (reversed), *In general I like working here,*

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[3] Reliability for two-item scales is a Spearman-Brown-corrected correlation (Eisinga et al., 2013).

$\alpha = 0.74$), which constitute the satisfaction subscale of the Michigan Organizational Assessment Questionnaire (Cammann et al., 1979; Jetten et al., 2012; van Dick and Haslam, 2012). We gaged organizational identification with two items (*I identify with this center*, *I identify with [the organization]*, $r = 0.63$) designed for the specific requirements of this study (Postmes et al., 2013). We also measured demographics, including tenure in the homelessness sector (sector), tenure at the center location (center), and tenure in the present role or position (role).

RESULTS

Quantitative Analyses

Suffering, Workplace Functioning, and Identification

Zero-order correlations[4] between suffering, job satisfaction, and burnout (see **Table 1**) revealed that suffering was negatively correlated with burnout ($r = -0.28$, $p = 0.029$), and positively correlated with job satisfaction ($r = 0.27$, $p = 0.038$). **Table 2** shows correlations between length of tenure and key variables of interest.

We undertook mediation analyses[5] to examine identification as a potential mediator, as a way to examine whether this might underlie the observed relationships between suffering and job satisfaction, and suffering and burnout (Baron and Kenny, 1986). First, we tested a bootstrapped mediation model with the PROCESS macro (Preacher and Hayes, 2008; Hayes, 2013) using 5,000 resamples in which suffering served as predictor, job satisfaction as outcome, and organizational identification as mediator. This provided evidence of full mediation, such that once the indirect effect of suffering via identification was accounted for [Indirect effect (*IE*) = 0.28, *SE* = 0.13, 95% Confidence interval (CI) = (0.08, 0.62)], the direct effect of suffering on satisfaction was no longer significant; see **Figure 3** for mediation model and coefficients).

TABLE 2 | Descriptive statistics and zero-order correlations between length of tenure and workplace functioning variables.

	Length of tenure (years)		
	Sector	**Center**	**Role**
Mean (SD)	5.95 (6.44)	4.29 (4.99)	2.76 (2.84)
Median	3.42	3.00	2.00
Minimum (months)	1	1	1
Maximum	28	28	15
Suffering	−0.09	−0.06	−0.13
Job satisfaction	−0.15	−0.13	−0.13
Identification	−0.04	−0.09	−0.19
Burnout	0.24	0.23	0.24
Secondary emotions (negative)	**0.28**	0.18	0.04
Primary emotions (negative)	0.15	0.15	−0.05

N = 60. Text in bold indicates Pearson's r is significant at p < 0.05 (two-tailed). Tenure variables were positively skewed; correlations (but not descriptives) have been calculated following log transformation.

Second, we tested a bootstrapped mediation model (Preacher and Hayes, 2008) using 5,000 resamples in which suffering served as predictor, overall burnout as outcome, and organizational identification as mediator. We again found evidence of full mediation, such that once the indirect effect of suffering via identification was factored in, the direct effect of suffering on burnout was no longer significant ($IE = -0.16$, $SE = 0.07$, 95% CI = $[-0.34, -0.04]$; see **Figure 4** for mediation model and coefficients). For completeness we also tested this at the subscale level, using three separate mediation models to test each burnout subscale as outcome variable. The indirect effect of suffering via identification was consistently evident for each of the burnout subscales (see **Table 3**).

We also sought to test whether reverse mediation models could be supported by the data given the cross-sectional design we deployed. Specifically, this involved testing two models in which identification was retained as mediator, but where suffering

TABLE 1 | Descriptive statistics and zero-order correlations between perceived client suffering and workplace functioning variables.

Variable	*M (SD)*	1	2	3	4	5	6	7	8
(1) Suffering	6.32 (0.73)								
(2) Job satisfaction	5.96 (1.11)	**0.27**							
(3) Identification	5.12 (1.47)	**0.26**	**0.68****						
(4) Burnout	2.60 (0.81)	−**0.28**	−**0.58****	−**0.58****					
(5) Burnout (exhaustion)	3.10 (1.14)	−0.11	−**0.29**	−**0.30**	**0.79****				
(6) Burnout (lack of accomplishment)	2.79 (1.12)	−0.21	−**0.56****	−**0.51****	**0.82****	**0.38***			
(7) Burnout (callousness)	1.58 (0.81)	−**0.41***	−**0.57****	−**0.57****	**0.56****	0.20	**0.34****		
(8) Secondary emotions (negative)	8.15 (5.17)	0.07	−0.09	0.19	−0.01	−0.05	0.12	−0.11	
(9) Primary emotions (negative)	9.02 (5.26)	0.23	−0.02	0.21	0.00	0.01	0.08	−0.15	**0.79****

*N = 60. Text in bold indicates Pearson's r is significant at p < 0.05; *p < 0.01; **p < 0.001 (two-tailed).*

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[4] Variables were screened for violations of normality assumptions. Client suffering and job satisfaction were negatively skewed (suffering: −1.34, *SE* = 0.306; job satisfaction: −1.64, *SE* = 0.309), which was resolved by square root and log10 transformation, respectively, (suffering = −0.77, *SE* = 0.306; job satisfaction = −0.58, *SE* = 0.309). Untransformed data were used for bootstrapped mediation analyses (Hayes, 2013; see further at Footnote 5 below).

[5] We conducted mediation analyses with untransformed data, then repeated mediation analyses with transformed data; the indirect effect of suffering via workplace identification on each of the workplace functioning variables prevailed regardless of whether transformed or untransformed data were used. Therefore the untransformed data are presented, consistent with convention (Hayes, 2013).

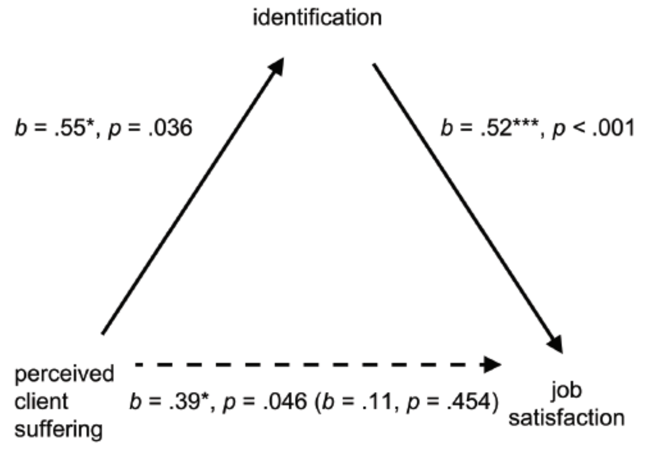

FIGURE 3 | Mediation model showing the effect of organizational identification on the relationship between perceived client suffering and job satisfaction. Unstandardized coefficient in brackets relates to the direct effect once the indirect effect is accounted for.

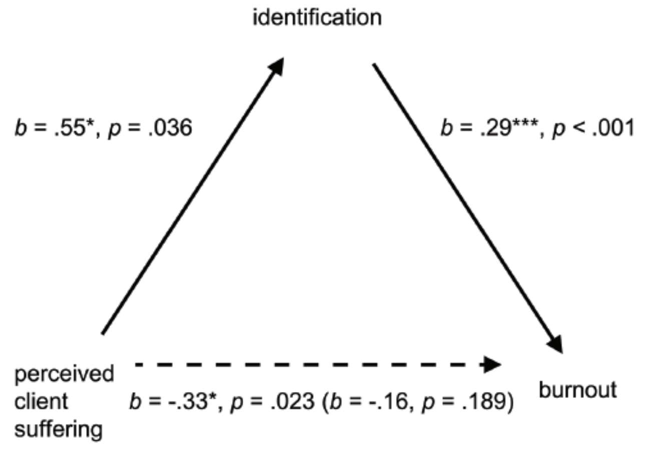

FIGURE 4 | Mediation model showing the effect of organizational identification on the relationship between perceived client suffering and burnout. Unstandardized coefficient in brackets relates to the direct effect after accounting for the indirect effect.

TABLE 3 | Additional mediation analyses examining the indirect effect of suffering on each burnout subscale via organizational identification.

Burnout subscale	*IE*	*SE*	*LLCI*	*ULCI*
Exhaustion	−0.12	0.21	−0.3411	−0.0049
Lack of accomplishment	−0.20	0.10	−0.4649	−0.0535
Callousness	−0.16	0.09	−0.4259	−0.0418

served as the outcome variable, and satisfaction and burnout each as a predictor. First, with job satisfaction as predictor, we did not find support for mediation, with the indirect effect of job satisfaction via identification failing to account for a significant amount of the variance in suffering ($IE = 0.08$, $SE = 0.08$, 95% CI = [−0.08, 0.23]). Second, with burnout as predictor, we again failed to find support for mediation, with the indirect effect of burnout via identification unable to account for a significant amount of the variance in suffering [$IE = -0.08$, $SE = 0.08$, 95% CI = (−0.24, 0.06)].

Infrahumanization, Contact, and Workplace Functioning

We tested a moderation model using multiple regression with the PROCESS macro (Hayes, 2013), in which negative secondary emotion attribution (lower scores indicating infrahumanization) served as predictor, burnout as outcome, and client contact as moderator, measured by the rating scale item from Vaes and Muratore (2013). Variables were mean-centered for moderation via syntax for the PROCESS macro. We found no significant main effect of secondary emotion attribution on burnout ($b = 0.00$, $SE = 0.02$, $t = 0.00$, 95% CI = [−0.04, 0.04]), nor of contact on burnout [$b = -0.16$, $SE = 0.14$, $t = -1.20$, 95% CI = (−0.44, 0.11)], and no significant interaction [$b = 0.02$, $SE = 0.03$, $t = 0.68$, 95% CI = (−0.04, 0.07)]. Indeed, further moderated multiple regression analyses revealed no significant relationships between secondary emotion attribution and any of the three burnout subscales (exhaustion, lack of accomplishment, and callousness), nor any significant main effects or interactions arising from the introduction of any of the three indices of client contact as moderator, and we also failed to find evidence for these relationships using job satisfaction as the outcome variable (all *ns*, see **Table 4**). Noting that primary emotion attribution was also a poor predictor of workplace functioning variables (see **Table 1**), the pattern of results did not shift with the addition of primary emotion attribution or total emotion attribution as a covariate into the model.

Qualitative Analyses

We also analyzed the qualitative data arising from interviews and the online open-text responses from frontline staff (Ritchie et al., 2014; Patton, 2015). We identified two cases with missing data for the qualitative component arising from the online phase, leaving $N = 58$ for qualitative analysis. While valuing the contribution of unique voices in the study (Kitto et al., 2008), owing to the small number missing the potential impact on qualitative analyses was considered to be tolerable.

These data were analyzed thematically with a top–down theoretical approach (Braun and Clarke, 2006), where themes were identified and analyzed which represented some level of patterned response or meaning from the interviews. We explored links between themes of suffering, organizational identification, and workplace functioning, in order to determine whether the relationships in our mediation models resonated with the lived experiences of our participants. We also examined the theme of empathy in workers' practice with their clients, in order to better understand why links between infrahumanization and workplace functioning were not found in the quantitative data. Evidence of thematic references linking suffering, identification and/or workplace functioning are discussed below first, followed by themes of bounded empathy.

TABLE 4 | Multiple regression analyses of infrahumanization and workplace functioning measures, with client contact as moderator.

Outcome	Predictor	Coefficient	*SE*	*t*	*p*	*LLCI*	*ULCI*
Burnout	Secondary emotion attribution (infra)	0.00	0.02	0.00	0.996	−0.043	0.042
	Client contact %	−0.16	0.14	−1.20	0.235	−0.437	0.109
	Infra x contact	0.02	0.03	0.68	0.500	−0.036	0.073
Exhaustion subscale	Secondary emotion attribution (infra)	−0.02	0.03	−0.58	0.567	−0.079	0.044
	Client contact %	−0.12	0.19	−0.62	0.536	−0.509	0.268
	Infra x contact	−0.02	0.04	−0.55	0.583	−0.099	0.057
Callousness subscale	Secondary emotion attribution (infra)	−0.02	0.02	−0.97	0.336	−0.705	0.024
	Client contact %	−0.22	0.15	−1.47	0.148	−0.523	0.081
	Infra × contact	0.01	0.03	0.30	0.763	−0.052	0.069
Lack accomplishment subscale	Secondary emotion attribution (infra)	0.03	0.03	1.12	0.267	−0.025	0.139
	Client contact %	−0.17	0.19	−0.91	0.368	−0.539	0.203
	Infra × contact	0.06	0.04	1.75	0.086	−0.009	0.139
Satisfaction	Secondary emotion attribution (infra)	−0.01	0.03	−0.20	0.839	−0.064	0.052
	Client contact %	0.31	0.19	1.67	0.101	−0.062	0.679
	Infra × contact %	−0.03	0.04	−0.80	0.427	−0.104	0.045

The 'Florence Nightingale' Effect

We implemented a theory-driven top–down analysis (Braun and Clarke, 2006) to unpack themes around acknowledging clients' suffering, and whether this might be creating meaning, galvanizing organizational identification and thereby promoting improvements in workplace functioning. In support of findings of the mediation models from the quantitative data, we found links between themes of suffering, organizational identification, satisfaction, and burnout.

Suffering is why we are here

Workers recounted the difficulties they experienced in coming to terms with the pain and suffering their clients were feeling. However, acknowledging suffering was seen as an important step toward alleviating suffering.

> *[E]very person who you come across will have experienced trauma and we might not be able to relate to that trauma but being able to have a framework, to know how that can affect a person, is really important.*
>
> *– Josie*[6]

Workers also indicated that alleviating suffering motivated them to keep going in their role, and that this desire to lessen clients' pain united them with the organization more broadly. Specifically taking action aimed at reducing clients' pain was also a way to cope with the emotional after-effects of exposure to suffering and horror.

> *[Y]ou see some really broken women come through [the service] and their pain is bigger than them.*
>
> *. . .*
>
> *The clients [motivate me], definitely each and every one of them is unique in their own wonderful way. Just wanting to see them move forward, find stability.*
>
> *– Sarah*

Hard work is meaningful work

Workers reported deriving a fundamental sense of meaning and purpose from their role, despite – or even because of – its challenging nature. Some workers recounted actively seeking out more challenging work, and a preference for their current role over other types of work seen as easier but less meaningful.

> *I'll be truthful with you – I really love the work. Now I know that sounds like one of those martyr statements, and I always cringe when I hear people say it, but I really love the work.*
>
> *– Lucy*

> *It was a change of life. I was in retail. . .and that wasn't really giving me much fulfillment, I enjoyed it but I wasn't really meaningful, so that's when I went for this type of work. . .I mean it's a lot. . .a lot harder as far as mentally and everything else . . .but this certainly is more fulfilling, more rewarding, helping people.*
>
> *– Cath*

> *[W]e're not working on a puzzle or a jigsaw or a video game or something. . . you are connected and emotions are so raw and pure as well. A lot of conversations come around those emotions, a lot of great work comes around with someone telling you about exactly how they're feeling.*
>
> *– Dale*

We are in this together

Some workers expressed a shared sense of solidarity in terms of their motivations and in facing workplace difficulties together, and that this helped them to function in their role.

> *[The job]. . .is not always easy because some things will click with you more than others and trigger you a little bit more but I guess that's why you've got to have those steps in place, of supervision, and know your limits. I guess it's the open communication with the team and letting them know. There's [sic] been situations where I [felt]. . ., "I cannot deal with this situation." – if it's too close to home, and someone else steps up, and that's just how you've got to work.*
>
> *– Donna*

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[6] Names have been substituted to protect participants' confidentiality.

For some, individual struggles and sacrifices in the workplace were reframed and contextualized within the collective; critically, these hardships offered deeper meaning and greater purpose when understood in the collective context.

> *It's done with love, it's the perfect fit. . .one team, one fight.*
>
> – Harry

> *I've seen a lot of burnout and I've had it myself, I've just had to learn how to work with that, because I love this industry.*
>
> – Dale

> *I think a big part for me is. . . the mission of the organization, I am aligned with that mission and that's why I'm working for the organization, so I think it's very broad in that sense the mission is to serve suffering humanity and I think a lot of suffering comes when people are homeless. . . and that's where I feel like I'm aligned. . . and all the nitty gritty happens later but I think that's where I'm aligned – that if this is the mission of the organization, this is what my mission is – to be an instrument in that big process of what it is to serve suffering humanity. . .*
>
> – Nadine

Bounded Empathy

We also examined the theme of empathy in workers' practice with their clients. We again implemented a top–down theoretical approach to explore workers' perspectives and experiences regarding empathy, and with an eye to better understanding why links between infrahumanization and workplace functioning did not emerge from the quantitative data. Responses were coded for presence or absence of reference to bounded empathy, conceptualized as any reference to the need for empathy, understanding, or authentic connection with clients, with the qualification that boundaries or limits were required. Of the 58 participants retained for qualitative data, 64% responses made specific reference to bounded empathy concepts.

Being strong and staying intact

An emerging theme was the desire to maintain a level of resiliency despite the challenges of the work. This touched on finding an optimal balance in dealing with clients experiencing homelessness – connecting with individuals in a way that fosters trust, rapport, and an authentic alliance, but that also allows the worker to stay in control, to regulate their emotions, and remain resilient despite the challenging and sometimes upsetting material being shared.

> *[D]oing this job, just after a year and a half, you can see the hardness that comes over you – which is good in a way, because it gives you an ability not to be controlled at home by those thoughts and memories and what you've seen and what you've dealt with.*
>
> – Shelli

> *I'm pretty good at not taking it home and not letting it really affect me personally. Sometimes that's scary because I think, "I hope I'm still sensitive," because you hear these horrible situations and you remember how you used to feel initially and you think, "I don't have that feeling anymore." So you worry that you're changing in terms of becoming harder, but I think it's a good thing because if I let those stories affect me personally I probably wouldn't be here [in this role].*
>
> – Norma

This desire to stay strong was also linked to the obligation to do one's best for the client, with the view that emotionally mirroring clients would not only be damaging to oneself, but importantly would not be effective in working with clients and supporting them to reach sustainable solutions to their issues and concerns.

> *You have to be really careful about taking on other people's emotions because you have your own life to deal with outside of the service. So you just have to remind yourself that although this is your work, and you can be compassionate and empathize, you have to really look after yourself and have that self-care put in place. It has to be there because you will burn yourself out. . . And that's not just for yourself, that's for the client too because you've got to provide them the best service you can.*
>
> – Donna

> *. . .[T]hey need someone there that's strong and that's not going to sit there and crumble with them. I don't think it would be good if you sat there and joined them in the sadness and pass tissues around and all that sort of stuff because, I don't know, for me I just don't think it's a good look. You can have empathy and relate to them emotionally and feel it, but rise above it because they're the ones reaching out to you to grab your hand. . .*
>
> – James

Separating work concerns and personal life

Workers also emphasized the need for clear lines between work and home life.

> *I go home to my family and start a new day when the key goes in the front door.*
>
> – Ed

> *Leave it at work. I don't take this home with me. I've got a new role when I go home.*
>
> – Andy

Accepting the limits of what can be done

Reconciling a strong motivation to help clients versus the realities of what could be achieved was another component of the theme bounded empathy. Workers expressed a longing to provide a panacea to help all their clients to overcome their hardships – however, this was tempered with the clear pragmatic recognition that many clients experience complex problems and setbacks, and that often small incremental change was all that might be achieved.

> *In the early days I wanted to save everyone. . . I've realized I can't save everyone.*
>
> – Audrey

> *It's their journey, their stuff. I'm only there in a very small role, but a very big role, to facilitate what it is they need to do on their journey to reach their desired outcome.*
>
> . . .
>
> *I can't want their success more than they want it, and I can't set their goals because they're probably unrealistic and unattainable. . . My role is to walk with their permission, their journey, but alongside, and encourage them and help them to stay on track to their case plans, to their life's goals.*
>
> – Maddie

Accepting the boundaries of one's own personal sphere of influence, for instance by deferring to a higher power or religion, was another way workers reported dealing with and working through challenges in the face of seeming futility or personal ineffectiveness.

> *...[P]raying is big. So at the end of the day I say Lord here, they're yours, you love them as much as you love me, and I don't know what I can do...[I] leave it at the foot of the cross and go okay fine, I've done my job, and I'm hurt, but I don't want to carry it on, so help me.*
>
> *– Nadine*

DISCUSSION

The present work examined how frontline workers in the homelessness sector deal with the suffering of their clients. These workers perform their duties against a difficult backdrop: a complex client base, ongoing themes of crisis, and distress, plus the stigma of their profession and minimal recompense for 'dirty work' (Hughes, 1958; Baker et al., 2007; Chigavazira et al., 2013). These factors combine to create an environment in which workers are vulnerable to workplace stress and burnout (Maslach, 2003). We examined two ways workers could deal with these demands and still function in their role: through organizational identification, and by creating emotional distance from clients through infrahumanization. We considered whether organizational identification might provide workers with the social capital they need to thrive in their roles. We also tested whether workers who infrahumanized clients might be less vulnerable to the negative effects of being exposed to their suffering (Vaes and Muratore, 2013; Trifiletti et al., 2014).

Clients' Suffering and the Florence Nightingale Effect

When looking at perceived client suffering, we found evidence of a mediating role for organizational identification in two key relationships. Perceived suffering positively predicted job satisfaction, and the direct effect of suffering on satisfaction was no longer significant once the indirect path via identification was accounted for. Similarly, perceived client suffering predicted less burnout, and this again was fully mediated by organizational identification. These mediation models provide preliminary evidence to indicate that acknowledging client suffering may increase job satisfaction and reduce burnout by galvanizing organizational identification. We introduce this novel finding as the 'Florence Nightingale effect'.

These results provide a counterpoint to the literature on vicarious exposure to the suffering of others in medical settings (Vaes and Muratore, 2013; Trifiletti et al., 2014). Indeed this literature predicts that the practice of recognizing clients' suffering would take a toll on workers and lead to higher burnout and less satisfaction. There is a large literature pointing to the deleterious effects of vicarious trauma for workers in the human services (Miller et al., 1995; Maslach et al., 2001; Baker et al., 2007; Gleichgerrcht and Decety, 2013). However, this was not the case in the present study. Instead, we see in the present research that recognizing suffering is predictive of positive workplace outcomes – *through* identification with the organization.

The Florence Nightingale effect therefore represents a novel contribution to the literature as a new approach to understanding the role of recognizing suffering for positive occupational identities. It contributes to the literature on organizational identification and 'dirty work', which highlights the value of identity solidarity in stigmatized occupations (Ashforth and Kreiner, 1999). The homelessness sector is ostensibly neither high-status nor well-remunerated – but here, suffering may be the ingredient that adds status or moral value to this occupational identity. If relieving human suffering is the *raison d'être* for the organization and its efforts, then recognizing that suffering in others conceivably provides an avenue for reinforcement of a meaningful organizational identity, and in turn for the concomitant benefits of higher job satisfaction and less burnout. Concepts of futility, inefficacy, or fatalism in the face of insurmountable human need might be better thwarted together than alone – as 'groups often can sustain beliefs that individuals cannot' (Ashforth and Kreiner, 1999, p. 421). Perhaps in this way, others' suffering can be seen as a call to arms and a motivating force, rather than a dispiriting realization of the human condition. We thereby draw on the social identity literature (Haslam et al., 2004, 2009; Riketta and Dick, 2005; van Dick and Haslam, 2012) and introduce a different theoretical perspective on how workers might deal with the suffering of their clients.

Protective Infrahumanization

Drawn from a homelessness services context, our data did not reveal a negative association between infrahumanization and burnout, even for workers with high client contact. We were unable to explain patterns of burnout or job satisfaction in this cohort by reference to infrahumanization. This is in contrast to the findings reported by Vaes and Muratore (2013), in which medical workers who infrahumanized patients reported less burnout, particularly for those working in high contact roles. These findings also diverge from those indicated by Trifiletti et al. (2014), who found a link between patient infrahumanization and lower stress symptoms for nursing staff with high affective commitment to the organization and patients.

There is the possibility that workers might be engaging in infrahumanization as a normative practice. Interestingly, qualitative evidence showed that nearly two–thirds of workers overtly discussed their connection with clients in terms of bounded empathy – where authentic connection to and understanding of clients' circumstances is paramount, but the empathetic connection has strict boundaries, and suffering is "left at the door" when workers go home. This offers an interesting insight into how workers are conceptualizing their clients' suffering and creating functional distance. More specifically, the qualitative findings shed light on the way suffering can be conceptualized by workers, and how workers articulate the role of empathy in their practice (for instance, being motivated by social justice ideals, and balancing client need with the need for workers to set boundaries; Gerdes and Segal, 2009).

Another explanation for why we did not find protective infrahumanization relates to the differences between social pain and physical pain. Our mediation models indicate that perceiving others' social pain and suffering may actually serve to *bolster* workplace functioning via organizational identification. This is markedly different to the extant literature on exposure to others' physical pain, where emotional distance away from such exposure buffered against burnout. We thereby add to an emerging literature on critical differences in the psychology of social versus physical pain (Iannetti et al., 2013; Woo et al., 2014). Indeed, while there are commonalities between the hurtful experiences of social pain (such as social exclusion or ostracism) and physical pain (MacDonald and Leary, 2005), there are key points of difference between these two pains. For instance, enduring and prevailing through physical pain can be seen by others as a sign of strength or moral virtue (Bastian et al., 2014b), whereas social pain may be seen as detractive, perhaps signaling reduced social standing, or as reliably giving rise to negative affect and lowered self-esteem (Smart Richman and Leary, 2009). This suggests that the psychological corollaries of exposure to others undergoing such pains might be quite different, because the meaning, social functions, and value of those pains are different. Accordingly, we could expect to see differing patterns in how people respond to that exposure, consistent with the findings of this study.

Limitations and Future Research

This study has certain limitations. Despite the advantages of a field sample over a convenience sample in terms of ecological validity, we note the need for further research to rule out whether distinctive features characterizing this sample's organization are borne out in other organizations within and beyond a homelessness context. For instance, it would be of interest to examine whether the Florence Nightingale effect prevails in other 'helping' professions, and organizational settings where there are ostensibly different relationships between the worker and care-recipient, as well as different organizational goals and norms. Such contexts might include clinical psychology practice, or delivery of non-medical humanitarian aid (e.g., civil capacity-building) by military and non-government organizations. Similarly, while we focused on organizational identification, future research might want to focus on examining whether similar effects are obtained when professional identification is measured. Strong professional identity could also feasibly serve a protective function. It would also be valuable to quantitatively examine the role of perceived efficacy to ameliorate suffering. For homelessness workers, recognizing social pain in their clients may be associated with positive functioning because it is considered within their collective ability to alleviate that suffering. Specifically probing these and other themes (such as interpersonal authenticity and perceived efficacy to ameliorate different kinds of suffering) could deliver further insights into how workers might be framing these challenges.

Further, sampling those presently employed may have inadvertently excluded workers who are struggling or already burnt out, with attrition of these workers from the sector making their views and experiences harder to access. While the sample size of the present study was adequate, it was also smaller than the other studies in the literature. We took steps to mitigate this by utilizing bootstrapping in our analyses, with the aim of increasing power and coverage probability (Fritz and MacKinnon, 2007), and gathered valuable qualitative information for analysis. However, future research will valuably add to the literature by enlisting larger sample sizes, diversifying how relevant constructs are measured in an effort to avoid common method variance (Antonakis et al., 2010, 2014); and should canvass the experiences of former workers in addition to current employees. It would also be important to consider the pathways for workers who *do* experience burnout as a subset – what factors might predispose workers, and are there boundary conditions to the ostensibly protective value of recognizing suffering collectively.

Assessing how workers attribute emotions with vignettes of course only approximates the process of considering a real client's emotional state. However, it allowed us to respect client confidentiality constraints, and to target emotion attribution for individuals, not clients generally. We have also argued that the use of emotion attributions rather than traits to measure infrahumanization is a more direct way to target emotional distancing practices. This differs from the approach taken by Trifiletti et al. (2014), who examined patient infrahumanization in terms of the attribution of traits rather than emotions. Their infrahumanization measure involved ratings on a smaller set of four uniquely human and four non-uniquely human traits validated for an Italian cohort. This differs slightly from other trait attribution studies in the literature (e.g., Andrighetto et al., 2014) in that eight rather than 14 traits were tested – but more relevantly, our study focused on emotions, and only along the uniquely human dimension (based on the methodology of Vaes and Muratore, 2013). This difference alone should not explain why protective infrahumanization was not supported in the present dataset, given that Vaes and Muratore (2013) also deployed these same measures. Nevertheless, future studies could confirm whether and when these subtle differences in the measurement of humanness are important.

In terms of mediation, we have found evidence of a mediating role for organizational identification in explaining the respective relationships between perceived suffering and reduced burnout and increased job satisfaction. We tested reverse models with suffering as the outcome variable, and the data do not support these reverse models. Furthermore, as discussed, qualitative data yielded nominal support for our posited mediation models. Nevertheless, due to the cross-sectional design we used in this study, we cannot rule out the possibility that an externality or unmeasured variable or variables might provide an alternative explanation for these findings (Hayes, 2013). Experimental studies would valuably contribute to this evidence base by providing data that could facilitate the drawing of causal inferences (Antonakis et al., 2010, 2014). There is also a broader need to augment existing literature on protective infrahumanization with experimental studies, with recent research emerging in response to this need (see for example, Cameron et al., 2015). In sum, while our findings deviate from prior literature, and this can be approached and understood in several ways, we suggest there are sound theoretical reasons for why our results differ, as canvassed above.

CONCLUSION

It is a special undertaking to respond to the suffering of others and support those in need, and doing so carries both reward and challenges. Frontline workers in the homelessness sector routinely deal with clients who are suffering, and this challenging environment means they are vulnerable to compassion fatigue and burnout. Previous research suggested that infrahumanization of patients and clients could be protective for workers in a medical context. However, we failed to find evidence that infrahumanization explained workplace functioning in the form of burnout and satisfaction. Rather, with two mediation models we report that perceived client suffering predicts reduced burnout and increased satisfaction, with a mediating role for organizational identification in each of these relationships. We present this as the Florence Nightingale effect – whereby perceived client suffering is linked to increased identification with the organization, which in turn predicts less burnout, and more job satisfaction. Ultimately, seeing another human being suffering is part of the everyday experience for workers in the homelessness sector, and social psychological perspectives have much to offer in extending our understanding of the difficulties facing workers in the sector. In the meantime, people experiencing homelessness rely on the support and generosity of these workers: their important work continues.

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Social and relational identification as determinants of care workers' motivation and well-being

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A growing body of research in the field of health and social care indicates that the quality of the relationship between the person giving care and the person receiving it contributes significantly to the motivation and well-being of both. This paper examines how care workers' motivation is shaped by their social and relational identification at work. Survey findings at two time points (T1, $N = 643$; T2, $N = 1274$) show that care workers' motivation increases to the extent that incentives, the working context (of residential vs. domiciliary care), and the professionalization process (of acquiring vs. not acquiring a qualification) serve to build and maintain meaningful identities within the organization. In this context care workers attach greatest importance to their relational identity with clients and the more they perceive this as congruent with their organizational identity the more motivated they are. Implications are discussed with regard to the need to develop and sustain a professional and compassionate workforce that is able to meet the needs of an aging society.

Keywords: care work, motivation, social identity, organizational identity, relational identity

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Introduction

In the UK as elsewhere across the industrialized world, the rapidly aging population has led to a dramatic increase in the size of the adult social care workforce and this is increasingly recognized as an important social and economic resource (Centre for Workforce Intelligence, 2011; Care Quality Commission, 2012; Department of Health, 2012; Skills for Care, 2012, 2013c). In the UK, for example, the direct economic value of the adult social care sector is estimated to be worth more than £20 billion per year. The sector employees over 1.5 million people — which is more than either the construction industry or the public administration and defense sectors (Skills for Care, 2013b). Moreover, this sector is predicted to grow to employ between 2.1 and 3.1 billion people by 2025 (Centre for Workforce Intelligence, 2011). Nevertheless, with some notable exceptions, very little research has looked in any depth at the substrates of care workers' motivation or at what sustains their capacity to deliver professional and compassionate care (Help the Aged, 2007; Lucas et al., 2008; Hussein et al., 2010; Adamson et al., 2012).

The conundrum of care worker motivation is exemplified by the fact that in spite of their low status and poor financial reward, domiciliary, and care home workers report high levels of job satisfaction, pride and well-being (Cameron and Moss, 2007; Skills for Care, 2007; Lucas et al., 2009; Hussein et al., 2010). This is largely attributed to care workers' intrinsic satisfaction with their work. Indeed, in this context financial and altruistic incentives are frequently cited as polarized aspects of carers' motivation — such that the "virtuous reward" of caring (Heyes, 2005, p. 1) is often viewed as compensating for, and even justifying, the lack of financial reward (Heyes, 2005; Equality and Human Rights Commission, 2012).

More recently, though, there have been calls for theories to challenge the dominant social discourse that quality of caring is shaped by whether it is done ‘for love’ or ‘for money,’ and to instead consider how virtuous and financial reward might be integrated aspects of care workers motivation (Nelson and Folbre, 2006; Lepore, 2008; Hussein et al., 2010; Weicht, unpublished). However, as noted in a review of the role of reward and incentives in adult social care in England (conducted on behalf of Skills for Care, 2007), although at a common-sense level one might conclude that there are links between pay, other incentives, and the recruitment and retention of care workers, to date very little work has explored these linkages (Lucas et al., 2008).

In what work there has been on this topic, care workers’ motivation has consistently been found to be associated with their relationships with clients (Skills for Care, 2007; Lucas et al., 2009; Maben et al., 2012; Adams and Sharp, 2013; Bjerregaard et al., in press a). Moreover, the quality of this relationship is also perceived (by clients and their families) to be indicative of the quality of care (Bowers et al., 2001; Wilson et al., 2009). The centrality of this relationship to the motivation and well-being of care workers and clients alike has also underpinned the drive for a relationship-centered approach to health and social care (Beach and Inui, 2006; Nolan et al., 2006) and the creation of compassionate care-work cultures (Adamson et al., 2012; Department of Health, 2012; Onyett, 2012; Dewar and Nolan, 2013). As yet, though, there has been little consideration of the psychological processes through which these work relationships contribute to care workers’ motivation.

The context in which the carers work is also likely to shape their motivation. Long-term adult care usually takes place either in residential and nursing homes or in the form of domiciliary care in people’s homes. In the former, carers work together to look after a number of residents, whereas in the latter carers typically visit people in their own homes and work independently. The two domains thus require different working styles and often attract people seeking different things from their work (Care Quality Commission, 2012; Bjerregaard et al., in press a). Accordingly, the implications of working in these different domains for motivation also needs to be taken into account when considering how best to create and sustain compassionate care organizational cultures.

In both spheres of activity, the ongoing professionalization of the sector over the last decade, in the UK and elsewhere, has resulted in the establishment of standards for workforce training and qualifications, the regulation of care practices, and the accountability of the sector to a professional body. Many discussions around this issue emphasize the importance of employee training and qualifications (e.g., Department of Health, 2006, 2012; Wild et al., 2010) and studies have found that care workers themselves identify training and development as important determinants of their work motivation (Wild et al., 2010; Skills for Care, 2013a,c). Again, though, very little, if any, research has examined whether and how training relates to the other motivational factors that sustain workers in the care sector. It is therefore pertinent to examine whether care workers’ pursuit and acquisition of qualifications enhances their motivation at work, and how this relates to other psychological outcomes such as well-being.

Understanding Care Workers’ Motivation

As noted above, mainstream accounts of employee motivation foreground individualistic considerations and argue that work motivation is driven primarily by personal self-interest or the trade-off between money and altruistic reward. Accounts that go beyond a simple focus on economic (vs. other) reward nonetheless also theorize motivation as largely the outcome of personal factors. For example, *self-determination theory* (SDT; Ryan and Deci, 2000; Gagné and Deci, 2005) distinguishes between different types of motivation on a continuum between extrinsic controlled, “amotivation (which is wholly lacking in self-determination), to intrinsic [autonomous] motivation, which is invariantly, self-determined” (Gagné and Deci, 2005, p. 335). Pertinent to this distinction, a key finding is that incentives that activate extrinsic controlled motivation (e.g., those which set financial or processing targets) can actually erode intrinsic motivations and individual satisfaction (e.g., Deci, 1972). Indeed, on the basis of this argument, Heyes (2005) proposes an economic model in which “a badly paid nurse is a good nurse” (p. 1). At the same time, individuals are understood to differ in the degree to which behavior is externally regulated vs. integrated into the personal self, and this is also seen to vary as a function of context. Nevertheless, theorizing has yet to fully account for the psychological process through which this takes place (Greguras and Diefendorff, 2009; Kovjanic et al., 2012).

In contrast to these individually oriented accounts of motivation, the social identity approach offers an alternative framework which suggests that different levels of identity enactment might contribute to creating a (compassionate) working culture. This approach combines *social identity theory* (SIT; Tajfel and Turner, 1979) and *self-categorization theory* (SCT; Turner, 1985; Turner et al., 1987), and, alongside *organizational identity theory* (Ashforth and Mael, 1989; Ashforth et al., 2008), focuses on the ways in which a person’s work motivation is shaped both (a) by their sense of identification with different groups within an organization (Haslam et al., 2000; Van Knippenberg, 2000; Ellemers et al., 2004), and (b) by their identification with different role relationships (Sluss and Ashforth, 2008). Rather than defining the self in purely personal terms (as ‘I’ and ‘me’) this perspective argues that the self can also be defined in collective terms (as ‘we’ and ‘us’). So in addition to their idiosyncratic personal identity, a person’s self-concept is also understood to incorporate a range of social identities and role relational identities that become more or less salient depending on the fit and accessibility of the identity within a particular context (Oakes et al., 1994).

The definition of the self at collective and relational levels has distinct implications for individual motivation and behavior because it serves to redefine the nature of the self that is implicated in processes of self-actualization and self-enhancement (Turner, 1985; Haslam et al., 2000; Ellemers et al., 2004; Haslam, 2004; Sluss and Ashforth, 2008). Thus when group or role-based identities are salient, as is often the case in work contexts (Haslam, 2004), a person can be driven as much by a desire to enhance a collective sense of self (e.g., as a woman, a care worker, or an employee of a given organization) as they are by a desire to enhance their relational sense of self (e.g., in their role as supervisor or carer) or their personal sense of self (as a unique individual; e.g., Tim, Mary). In a range of circumstances this also means that acting in the interests of group membership can override concerns about personal self-interest (Onorato and Turner, 2001). As Ellemers et al. (2004, p. 461) assert "self-conception in collective terms would energize people to exert themselves on behalf of the group, facilitate the direction or effort toward collective (instead of individual) outcomes and help workers sustain their loyalty to the team or organization through times when this is not individually rewarding."

Speaking to the value of this approach, a broad body of research has shown that organizational identification is positively related to a range of work-related attitudes and behaviors such as motivation, performance, job satisfaction, turnover intentions, and absenteeism (for reviews, see Tyler and Blader, 2000; Van Knippenberg, 2000; Haslam, 2004; Riketta and Van Dick, 2005). More recent organizational research on the strength of identification with different foci of attachment has also found that people typically indicate greater levels of identification with localized identities such as teams (Riketta and Van Dick, 2005; Riketta and Nienaber, 2007) and role relationships (Sluss et al., 2012; Smith et al., 2012) than with the organization as a whole. At the same time, organizational identification is often the strongest predictor of work-related outcomes including motivation and well-being (Sluss et al., 2012; Smith et al., 2012; for a general discussion of the relationship between social identification and well-being, see Haslam et al., 2009; Jetten et al., 2012). Accordingly, to the extent that their identification with different work relationships and work groups is congruent with, or nested within, organizational identification, then one would expect workers to be more motivated and more satisfied at work (Van Knippenberg, 2000; Haslam et al., 2003; Ellemers et al., 2004; Wegge et al., 2006; Riketta and Nienaber, 2007; Ashforth et al., 2008; Akerlof and Kranton, 2010). This is because, in instances of such perceived alignment, by advancing the organization the individual will see themselves to be enhancing aspects of the (collectively defined) self. On the other hand, when they experience incongruence between their role relationships and their team or organization, people are likely to be less motivated and experience compromised well-being in the form of greater frustration and stress (Haslam and Reicher, 2006).

According to Sluss and Ashforth (2008), congruence between relational and collective identities is likely to be strengthened by (1) the degree of task interdependence (a particularly high level of which is evident between frontline care workers and clients; Karlsson and Rydwik, 2013); and (2) the degree to which the relational partner is prototypical of the organization or the working context. In line with this reasoning, it seems likely that whether care workers indicate strong relational identification with their clients and whether their client and organizational identities converge will depend on the extent to which the care worker perceives their caring role with the client to be supported by the organization.

The Present Research

To take into account the social and relational context in which care work takes place, the present research seeks to examine the motivation of care workers through the lens of social identity theorizing. In particular, it seeks to investigate the link between what incentivizes people to work in adult social care and their motivation and well-being. More specifically, it seeks to explore the role of financial incentives and social relationships in motivating care workers and driving positive work-related experiences (e.g., greater job satisfaction, reduced stress). Here, rather than dichotomising the 'love' and 'money' aspects of working in care we argue that they will form integrated elements of care workers' motivation to the extent they serve to build meaningful work-based identification.

In addition, this study also examines how care workers' motivations and well-being might be influenced by the two different working domains in which care workers predominately operate and by the process of professionalization, (i.e., undertaking qualifications). In line with recommendations about how to apply social identity analysis in the field (Haslam et al., 2003; Haslam, 2014) the study also focuses on those work identities that were identified as self-relevant by care workers in previous qualitative work in the present program (Bjerregaard et al., in press b) — namely client, care staff, care professional, and organization identities.

Hypotheses

Based on the above reasoning, this study sought to test five main hypotheses:

- H1. Care workers' social identification with different groups at work will be positively related to their work motivation and well-being (Ellemers et al., 2004). Specifically, we expect that carers' work motivation and well-being — that is, their pride, job satisfaction, and stress, as well as their job attachment (turnover intentions and pro-professionalization) — will be predicted by their identification with (a) the people they care for (*client identification*; H1a) and (b) the care organization they work for (*organizational identification*; H1b). Moreover, although care workers are (c) likely to indicate higher levels of client identification than organizational identification (H1c); their (d) organizational identification is likely to be the more proximal predictor of motivation and well-being (H1d).
- H2. Care workers will primarily be incentivized to work in care because of their caring relationship with clients (H2a). However, the extent to which valuing relationships with clients leads to higher levels of motivation and well-being at work, will be mediated by identification with the organization (H2b). Moreover, this organizational identification is expected to be predicted by client identification (H2c).

- H3. Care workers will be less incentivized by pay than by other social considerations (H3a). Nevertheless, the extent to which pay does lead to increased motivation and well-being will also be mediated by organizational identification (H3b). Here the effects of organizational identity are unlikely to be predicted by client identification (H3c).
- H4. Carers' sense of social identity will vary as a function of their place of work (i.e., residential/nursing home or domiciliary care). The nature of independent working involved in domiciliary care will lead workers to have higher levels of client identification (H4a) and lower levels of organizational identification (H4b) than those working in residential care. This lack of congruence between identities makes it more likely that domiciliary care workers will report lower levels of work motivation and well-being than those who work in residential care (H4c).
- H5. Undertaking a qualification is likely to lead to increased motivation and well-being (H5a). Again this is expected to be mediated by organizational identity (H5b). More specifically, the effects of undertaking a qualification on motivation and well-being should be explained by the extent to which undertaking a qualification increases and maintains identification with the organization and other groups at work (H5c).

Study Context

To test these hypotheses, we administered an organizational survey to carers at two time points, 1 year apart. The surveys were distributed across multiple sites (in different locations across the south of England) in a large care organization that had recently amalgamated a number of smaller organizations. The survey measured carers' motivation, their sense of identity at work, and their feelings about work outcomes, including professionalization. As well as allowing us to examine the relationship between these variables cross-sectionally, the study's longitudinal design also enabled us to examine variation in responses over time as a function of whether or not people had undertaken professional qualifications in the intervening period—so that, in effect, undertaking a professional qualification in the past year constituted an experimental treatment (for similar logic, see Lim and Putnam, 2010). In this way, the study had a quasi-experimental longitudinal design, which enabled us to examine the impact of exposure to professional training on organizational identification and motivation.

Materials and Methods

Surveys were administered to care staff who worked for a large not-for-profit organization that operates across the South of England and the Isle of Wight. The care organization, which recently incorporated four different care organizations, runs 28 residential care and nursing homes and delivers domiciliary care services from six domiciliary care bases. Its clients are primarily elderly people, yet services are also provided for younger people who need support to live independently on their own and in groups. The studies were conducted at two time points, 1 year apart, in January 2010 (T1) and January 2011 (T2).

Participants

Table 1 provides a detailed breakdown of sample characteristics. At Time 1, 3280 questionnaires were distributed and 643 were returned completed — a response rate of 20%. The majority of participants ($n = 458$; 72%) worked in residential and nursing care (residential care), 28% ($n = 172$) worked in domiciliary care. At Time 2, 4,200 questionnaires were distributed. Of these, 1274 completed questionnaires were returned — a 33% response rate. The majority of respondents (58%, $n = 740$) worked in residential care while 42% ($n = 534$) worked in domiciliary care. The substantially higher response rate at Time 2 was primarily the result of efforts to raise awareness of the survey among care staff through an article in the organization's newsletter and presentations to managers. This had an especially notable effect in increasing the response rate of domiciliary care staff. A total of 204 carers participated on both occasions, 70% in residential care and 30% in domiciliary care. Of these, 51% ($n = 103$) had undertaken a professional qualification over the course of the year (i.e., were exposed to a professionalization treatment) and 49% ($n = 100$) had not.

Measures

Participants completed a four-page, 51-item questionnaire, in which they indicated agreement with statements on scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Work motivation was measured by means of five scales that examined (a) *job satisfaction* (three items, T1 $\alpha = 0.79$, T2 $\alpha = 0.76$, typical items: "I enjoy my work at [the care organization]"; after Haslam and Reicher, 2006); and (b) *pride* (three items, T1 $\alpha = 0.71$, T2 $\alpha = 0.75$, typical item: *"I am proud to work in the care sector,"* adapted from Tyler and Blader, 2000); (c) *stress* (four items, reversed scored, T1 $\alpha = 0.70$, T2 $\alpha = 0.69$; typical item:

TABLE 1 | Sample demographics.

	Time 1	Time 2	Longitudinal
No. q'res distributed	3,280	4,200	
No. q'res returned	643	1,274	204
Response rate	20%	33%	
% Residential care	72%	58%	70%
% Domiciliary care	28%	42%	30%
Gender	$F = 571$ (92%) $M = 51$	$F = 1077$ (90%) $M = 124$	$F = 188$ (92%) $M = 15$
Age range	16–76 $M = 44.8$, $SD = 12.12$	16–78 $M = 42.57$, $SD = 14.90$	18–78 $M = 46.62$, $SD = 14.27$
Job role			
Domestic workers	52 (8.5%)	124 (10%)	20 (10%)
Care workers	364 (57%)	885 (69%)	124 (61%)
Snr care workers	115 (18%)	114 (9%)	27 (13%)
Managers	43 (6%)	51 (4%)	21 (10%)
Admin and planners	21 (3%)	36 (3%)	10 (5%)
Undisclosed role	48 (7.5%)	64 (5%)	2 (1%)

"I am able to cope with the demands of my job" adapted from Haslam and Reicher, 2006); (d) *turnover intentions* (two items, reversed scored, T1 $r = 75$, T2 $r = 0.72$, typical item: "I would like to stay working at [the care organization] for as long as possible"; after Ellemers et al., 1999); (e) *pro-professionalization* (five items, T1 $\alpha = 0.76$, T2 $\alpha = 0.75$, typical item: "I feel positive about the process of professionalization at [the care organization]").

Key factors which *incentivize carers* to work for the care organization were measured by the extent to which (a) *pay* and (b) *relationship with clients* were valued. In each case, responses were given to a single item indicating whether "I work at [the care organization] primarily because I value the [incentive]." At Time 2 this measure was supplemented by an item in which respondents indicated their *satisfaction with incentives* by responding to statements of the form: "Overall I am satisfied with the [incentive] at [the care organization]": pay, $r = 0.47$, relationship with clients, $r = 0.60$.

Work identification was measured by four three-item scales that asked participants about different loci of identification in the workplace: (a) with clients (*client identification)*; (b) with staff at the care home or domiciliary base (*staff identification*); (c) with *care professionals (professional identification)*; and (d) with the organization *(organizational identification)*. For each measure respondents indicated whether "I feel strong ties with [group]," "I feel good about [group]," "I am willing to do as much as possible to make life easy for [group]" (adapted from Doosje et al., 1995; T1 αs = 0.78, 0.65, 0.65, 0.73, respectively; T2 αs = 0.70, 0.76, 0.72, 0.71, respectively).

At the end of the questionnaire participants were asked to provide demographic information (age, gender, length of service working, and ethnicity), as well as information about the nature of their work, their occupational role (domestic staff, care worker, senior care worker, manager, administrator or planner), and their work domain (residential and nursing vs. domiciliary care). At Time 2 participants were asked additional questions about the amount of training days they had undertaken in the past year, whether they had undertaken professional qualification in this time, and, if so, at what level.

Ethical Approval

The research was approved by the School of Psychology Ethics Committee at the University of Exeter. This required participant anonymity and data confidentiality.

Procedure

A questionnaire containing the above scales was distributed to care staff in sealed envelopes via the care homes and domiciliary bases. Prior to administration, the questionnaire was piloted on a small sample of 15 care workers in order to check and refine its terminology and structure. Questionnaires were accompanied by a cover letter from the organization and the researchers' university that outlined the purpose of the survey and informed participants that completion of the questionnaire was taken as an indication of their consent to take part in the study, but that this was voluntary. Confidentiality and anonymity were assured. Respondents then returned the questionnaire in an enclosed stamped addressed envelope to the University. To enable questionnaires from the same person to be linked, respondents were requested to provide a unique identifying code. The recruitment of participants was intended to cast a wide net such that the sample was representative of all care workers working in domiciliary, residential and nursing care rather than any particular sub-sample.

Results

Analytic Strategy

Given the large number of respondents at T2 and the good representation of responses from domiciliary workers as well as residential care workers (that was missing from the T1 and longitudinal data), we decided to conduct our analysis on the cross-sectional T2 data and focused our analysis of longitudinal data on the changes that occurred over time, primarily around the impact of professionalization. Cross-sectional analysis proceeded in two steps. First, preliminary tests of hypotheses were conducted by examining bivariate correlation between the various measures administered in the study at each time — in particular, the relationships among (a) work group identification and motivation/well-being (H1), (b) perceived incentives and motivation/ well-being (H2, H3), (c) type of care work and identification (H4), and (d) professionalization activity (undertaking a qualification) and motivation/well-being (H5).

Second, we used structural equation modeling (SEM) to test two integrated theoretical models. Model 1 examined whether different incentives to work in care, namely relationships with clients and pay, are associated with greater motivation and well-being to the extent that they build relational identification with clients (H2a) and through this contribute to broader organizational identity (H3a, H3b). Model 2 then considered how the care work context — in this case, care workers' work domain and their experience of having undertaken a qualification — was associated with motivation and well-being at work, and whether any effects could be accounted for by strengthened organizational identification (H4c and H5b).

A second phase of analysis was conducted on the longitudinal data ($n = 204$) and examined variation in responses over time as a function of whether or not respondents had undertaken a qualification in the intervening period. In this analysis, having undertaken qualifications during the intervening period (1 year) was treated as a quasi-experimental intervention. This enabled us to assess whether undertaking a qualification had any impact on identification and, through this, motivation and well-being (H5c).

Cross-sectional Analysis

Bivariate Associations

Mean, standard deviation, and bivariate correlation for cross-sectional data at T2 are reported in **Table 2**. As can be seen from this table, participants generally reported positive work experiences and outcomes: they indicated very high levels of satisfaction, high levels of pride, and low levels of stress. They also

TABLE 2 | Bivariate correlation, Time 2.

	M	*SD*	1a	1b	2a	2b	3a	3b	3c	3d	4a	4b	4c	4d
1a Qualification taken	1.51	0.50												
1b Working domain	1.43	0.50	−0.08*											
Work incentive														
2a Pay	3.10	1.46	0.02	0.03										
2b Relationship with clients	6.02	0.81	0.07*	0.07*	0.02									
Work identification														
3a Client	5.92	0.77	0.04	0.05	0.06*	0.64**								
3b Staff	5.37	0.95	0.10**	0.09**	0.15**	0.31**	0.46**							
3c Organization	5.21	0.99	0.10**	0.12**	0.31**	0.34**	0.45**	0.63**						
3d Care professional	5.29	0.92	0.11**	0.14**	0.17**	0.34**	0.52**	0.73**	0.62**					
Work motivation and well-being														
4a Satisfaction	6.02	0.87	0.05	0.04	0.23**	0.37**	0.43**	0.43**	0.53**	0.425**				
4b Pride	5.68	0.97	0.08*	0.01	0.16**	0.40**	0.44**	0.38**	0.46**	0.42**	0.50**			
4c Stress	2.40	0.85	−0.05	−0.01	0.18**	0.20**	0.31**	0.41**	0.43**	−0.36**	0.57**	0.34**		
4d Professionalization	5.46	0.87	0.10**	0.10**	0.15**	0.26**	0.34**	0.41**	0.51**	0.39**	0.47**	0.42**	0.49**	
4e Turnover	2.51	1.40	−0.05	0.10**	0.23**	0.26**	0.30**	0.43**	0.57**	−0.39**	0.56**	0.40**	0.43**	0.42**

***$p < 0.01$ (two-tailed), *$p < 0.05$ (two-tailed).*

reported being attached to their job, as reflected in low turnover intentions and favorable attitudes toward professionalization. As in other studies of the social care workforce (e.g., Heyes, 2005), carers attached the least value to pay and highest value to their relationships with clients as incentives for work.

In line with H1, participants indicated strongest identification with clients. They also identified strongly with the other staff where they worked, with care professionals in general, and with the organization itself (all mean > 5 on a seven-point scale). As predicted by H1, and as demonstrated in the bivariate correlation, higher identification with different groups at work (clients, organization, staff and care professionals) was associated with higher levels of well-being, a positive orientation to professionalization, and lower turnover intentions. Inspection of the bivariate correlation also revealed a clear pattern whereby the strength of association between identification and well-being and job attachment increased as the locus of identification became inclusive (i.e., higher-level and broader) rather than exclusive (lower level and narrower). Thus, at the exclusive end of the spectrum, relational identification with clients was positively associated with satisfaction, pride and more positive attitudes toward professionalization ($rs = 0.43, 0.44, 0.34$, respectively; all $ps < 0.01$) and was negatively associated with stress and turnover intentions ($rs = -0.32, -0.34$, respectively; all $ps < 0.01$). However, at inclusive end of the spectrum these relationships were all stronger — such that collective identification with the organization was strongly positively correlated with satisfaction, pride, and positive attitudes toward professionalization ($rs = 0.53, 0.46, 0.51$, respectively; all $ps < 0.01$) and was strongly negatively correlated with stress and turnover intentions ($rs = -0.41, -0.61$, respectively; all $ps < 0.01$).

Bivariate correlation also pointed to a variable degree of association between different incentives and workers' motivation. In line with H2 and H3, these ranged from weak correlation between motivation, well-being and being incentivised by pay, to very strong correlation between motivation, well-being and being incentivised by relationships with client. More specifically, being incentivised by pay was weakly associated with increased satisfaction, pride, pro-professionalization attitudes as well as reduced stress and lower turnover intentions ($rs = 0.23, 0.16, 0.15, -0.18, -0.23$, respectively; all $ps < 0.01$). However, there were stronger associations between being incentivised by relationships with clients and motivation and well-being in terms satisfaction, pride, pro-professionalization attitudes, reduced stress, and reduced turnover intentions ($rs = 0.37, 0.40, 0.26, -0.20, -0.26$, respectively; all $ps < 0.01$).

Consistent with H4a, undertaking domiciliary (vs. residential) care work was generally associated with stronger client identification and weaker colleague, professional, and organizational identification. Consistent with H4c there were also negative associations between domiciliary care work and motivation, reflected in attitudes that were less pro-professionalization and stronger turnover intentions. However, there were no significant correlation between type of care work and measures of satisfaction, pride, and stress.

Finally, and consistent with H5, undertaking a qualification was positively associated with increased staff team identity, care professional identity, and organizational identity. In addition, undertaking a qualification was positively associated with key measures of motivation and well-being— notably increased pride and pro-professionalization. In sum, these patterns of association reveal relationships that are broadly consistent with our hypotheses. However, to explore these patterns of support in more detail, we conducted SEM.

Structural Equation Modeling

Two theoretical models were tested by SEM using AMOS 19 software. Model 1, presented in **Figure 1**, examined the relationship between what care workers reported incentivizes

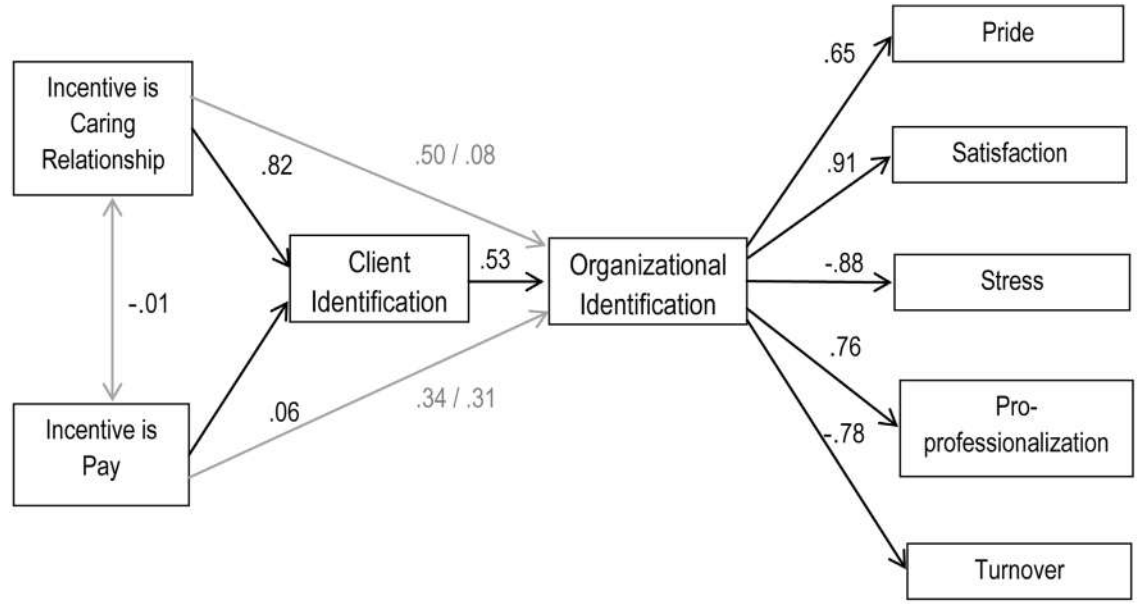

FIGURE 1 | The effects of incentive source on motivation and well-being (Model 1, Time 2).

them to work in care and their motivation and well-being at work, and the way in which this is influenced by identification with clients and the organization. Model 2, presented in **Figure 2**, examined whether work domain and having undertaken a qualification were related to work motivation and well-being and whether any effects that were observed were mediated by the degree to which these things strengthened (or undermined) organizational identification.

Model 1

Two sets of SEM results are reported to test Model 1: (a) the results of confirmatory factor analysis which establishes whether indicators measure the corresponding latent variables within the model and (b) the fit of the relationships outlined in the model between latent variables (following McDonald and Ho, 2002; Garson, 2009; Hayes, 2012). To determine the fit of the proposed models we report three Goodness-of Fit indices (as

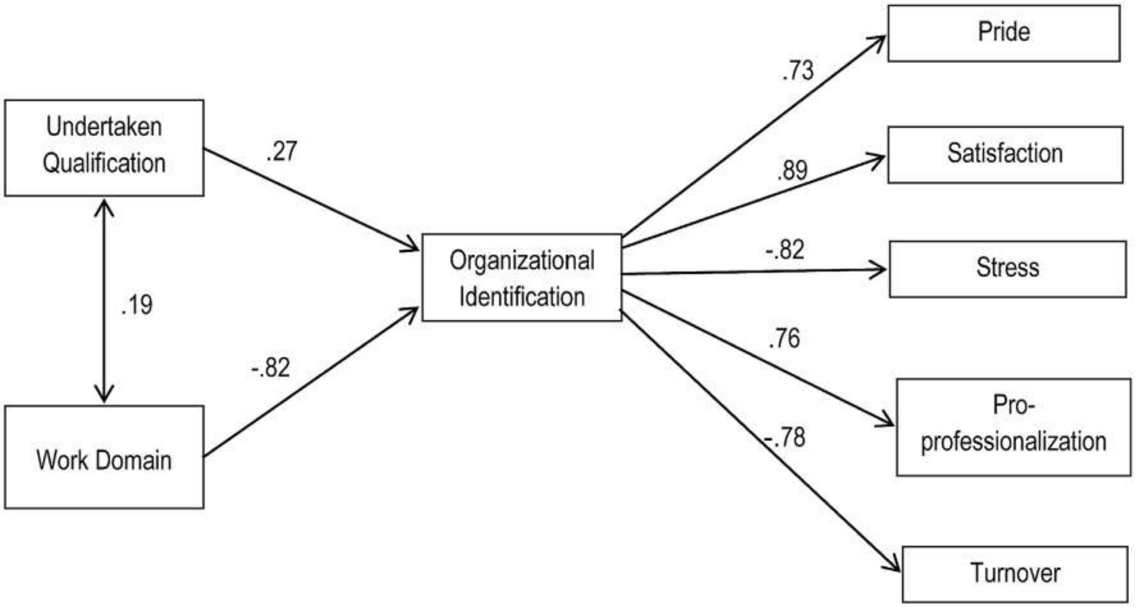

FIGURE 2 | The effects of undertaking a qualification and work domain (residential vs. domiciliary) on motivation and well-being (Model 2, Time 2).

suggested by Garson, 2009): the chi-square χ^2 (where values below 5 indicate an acceptable fit, values below 2 indicate a good fit); one incremental fit index, the Comparative Fit Index (CFI; where indices range from 0 to 1, with values exceeding 0.90 indicating a good fit); and one residual fit index, the root mean squared error of approximation (RMSEA), which is based on the proportion of variance not explained in the model (where values above 0.08 indicate poor fit, above 0.05 indicate good fit, and below 0.05 indicate excellent fit; see Hu and Bentler, 1999, for further discussion of the appropriate application of Goodness-of-Fit indices to test Model fit; see also Garson, 2009; Kenny, 2012).

In order to provide additional support for our models, we test a null model and compare our models to plausible alternative models, which are outlined in greater detail below. The null model (where all the parameters are set to zero) tests the assumption that there is no co-variation among the variables that make up the model and provides a baseline against which to compare the theoretical model (Crabtree et al., 2010). In addition to testing this model on the largest, most representational sample (the cross-sectional data at Time 2) we further corroborated our proposed theoretical model by conducting the analysis on the longitudinal data ($n = 204$).

Confirmatory Factor Analysis validated the measurement of the model, establishing that the indicators (i.e., the items) in the model measured the corresponding latent variables (i.e., the measures), $\chi^2(360) = 4.78$, CFI $= 0.92$, RMSEA $= 0.055$. As expected, the null model did not fit the data well, with a highly significant chi-square indicating a significant difference between the observed and estimated covariance matrices, $\chi^2(392) = 38.94$, CFI $= 0.001$, RMSEA $= 0.18$.

The hypothesized model then tested our integrated theory (a) that the effects of incentives on organizational identity are mediated by identification with clients (H1) and (b) that what incentivises people to work in care (relationships with clients or pay) leads to enhanced motivation and well-being outcomes because it builds identification with the organization (H2 and H3). The unadjusted theoretical model fitted the data well, $c^2(392) = 5.90$, CFI $= 0.89$, RMSEA $= 0.060$. In line with common practice we also examined how the fit of the model might be improved by inspecting the standardized residual matrix for highly correlated error terms and then allowing these to correlate in the model (Ullman, 1996; Crabtree et al., 2010). Highly correlated error terms were observed among indicators within a number of latent variables (organizational identification, client identification, satisfaction, stress, and pro-professionalization) and so these were allowed to correlate. This adjusted theoretical model also had a good fit to the data, $\eta_p^2(405) = 4.55$, CFI $= 0.92$, RMSEA $= 0.054$. In short, the application of this model to the data confirms its robust fit.

The fit of the adjusted theoretical model was also compared to plausible alternative models. Alternative Model A turned the hypothesized model around and examined the possibility that participants' motivation and well-being explains what it is that incentivizes them to work in care and that this is mediated by their level of client and then organizational identification. This had very poor fit to the data, $c^2(392) = 14.89$, CFI $= 0.69$, RMSEA $= 0.11$. Alternative Model B examines a traditional economic model of motivation which suggests that people are incentivised to work in care as a function of their levels of motivation without any mediating role for processes of identification. This also had poor fit, $c^2(392) = 13.40$, CFI $= 0.73$, RMSEA $= 0.10$. Alternative Model C examined the possibility that organizational identification leads to client identification, and that the latter mediates the relationship between factors that incentivize participants to work in care and levels of motivation and well-being. Although it had better fit, this did not fit the data as well as the theoretical model, $c^2(392) = 6.05$, CFI $= 0.87$, RMSEA $= 0.064$. In summary, our theoretical model appears to provide a better representation of our data than other models that propose plausible alternative casual sequences.

Model 2

Structural equation modeling was also used to test theoretical Model 2 — that different working domains and the process of undertaking qualifications would affect motivation and well-being to the extent that they serve to build organizational identification. This followed the same analytical logic as Model 1 above. Here, confirmatory factor analysis validated the measurement of the model and, as expected, the null model did not fit the data well, as evidenced by a highly significant chi-square, $c^2(392) = 43.64$, CFI < 0.001, RMSEA $= 0.186$.

The theoretical model examined the relationship between having undertaken qualifications in the last year, and subsequent motivation, and the extent to which these relationships were mediated through identification with the organization. This fitted the data substantially better than the null model and, after adjusting the model to allow a number of highly correlated items to correlate (organizational identification, satisfaction, and pro-professionalization), the amended theoretical model had good fit to the data, $c^2(156) = 4.92$, CFI $= 0.92$, RMSEA $= 0.056$. In line with recommended best practice, to test the robustness of the model we repeated it on a subsample of data comprised of those participants who took part at both times ($n = 203$). This also provided evidence of good fit.

We also tested two other plausible alternative theoretical models. Alternative Model A tested the possibility that client identification predicted organizational identification, and that both of these sequentially mediated the relationships between undertaking a qualification and working domain on the one hand and increasing well-being and motivation on the other. This model had a good fit with the data, $c^2(156) = 5.15$, CFI $= 0.90$, RMSEA $= 0.058$, but not as good as the theoretical model. A second plausible alternative, Model B, assessed whether undertaking a qualification and working domain led directly to increased motivation and well-being. This model had poor fit, $c^2(156) = 10.90$, CFI $= 0.82$, RMSEA $= 0.090$.

Longitudinal Analysis: Variation in Responses as a Function of Undertaking a Professional Qualification

To look at the effect of time on participants' motivation we conducted an examination of the longitudinal data across T1 and

T2 ($N = 204$)[3]. We started by conducting a paired samples t-test on measures of motivation and identification at the two times. In general, participants' responses were highly consistent across the year. Nonetheless, (a) participants' level of commitment rose over the course of the year, $t(197) = 2.72$, $p < 0.005$, (b) their attitude toward professionalization became more positive $t(186) = 3.20$, $p < 0.005$, (c) their identification with care professionals decreased, $t(191) = 1.96$, $p < 0.05$, (d) the value they attached to working conditions rose, $t(199) = 2.02$, $p < 0.05$, as did (e) the value they attached to opportunities for training and development, $t(198) = -2.53$, $p < 0.05$.

Against this backdrop of evidence that there was little change in motivation and identification over the course of the year, and taking into account the pathway analysis tested in the SEM models (which demonstrated that motivational and well-being outcomes were proceeded by identification with work groups), we then tested the effects of undertaking professional qualification on identification (i.e., H5c). To this end, panel data analysis enabled us to refine our investigation and control for reverse causality and selection bias (following the strategy employed by Lim and Putnam, 2010). Here, participants' identification with care professionals was examined by mean of a 2 (Professionalization: gained vs. did not gain qualification) × 2 (Phase: Time 1 vs. Time 2) ANOVA, with repeated measures on the second factor. This analysis revealed a significant effect for phase, Wilks Lambda = 0.96, $F(1{,}201) = 7.37$, $p = 0.007$, $\eta_p^2 = 0.04$, indicating that, as noted above, participants were less identified with care professionals at T2 ($M = 5.39$, $SD = 1.0$) than at T1, ($M = 5.51$, $SD = 0.81$). However, this effect was conditioned by a significant interaction between professionalization and phase, Wilks Lambda = 0.97, $F(1{,}201) = 6.51$, $p = 0.01$, $\eta_p^2 = 0.03$. This interaction is plotted in **Figure 3**. Tests for simple effects revealed that there was no difference over time in the care professional identification of participants who had taken part in training between T1 ($M = 5.52$, $SD = 0.81$) and T2 ($M = 5.51$, $SD = 0.97$) Wilks Lambda 1.00, $F(1{,}201) = 0.02$, $p = 0.91$, $\eta_p^2 = 0.00$. However, there was a significant reduction in care professional identification among those who had not undertaken qualifications across these two time points (T1 $M = 5.64$, $SD = 0.08$; T2 $M = 5.26$, $SD = 0.09$), Wilks Lambda = 0.94, $F(1{,}201) = 14.08$, $p < 0.001$, $\eta_p^2 = 0.06$.

The same analysis was performed for the measure of participants' identification with the organization. This revealed no main effect for phase [Wilks Lambda = 0.99, $F(1{,}201) = 0.10$, $p = 0.75$] but a significant interaction between professionalization and phase, Wilks Lambda = 0.97, $F(1{,}201) = 3.83$, $p = 0.03$, $\eta_p^2 = 0.02$. This interaction is plotted in **Figure 4**. Tests for simple effects revealed that the organizational identification of participants who had undertaken a qualification rose, albeit not significantly, from Time 1 ($M = 5.26$, $SD = 0.09$) to Time 2 ($M = 5.48$, $SD = 0.10$), Wilks Lambda = 0.98, $F(1{,}201) = 3.1$, $p = 0.08$, $\eta_p^2 = 0.02$, but that the organizational identification of those who had not undertaken qualifications decreased, again not significantly, from at Time 1 ($M = 5.47$, $SD = 0.11$) to Time 2 ($M = 3.1$, $SD = 0.10$), Wilk Lambda = 0.99, $F(1{,}201) = 1.78$. $p = 0.18$, $\eta_p^2 = 0.009$.

The same analysis was also performed on participants' identification with clients. This revealed a similar pattern to that observed with care profession identification, however, there was no significant main effect for phase [Wilks Lambda = 0.99, $F(1{,}201) = 1.18$, $p = 0.28$] and no significant interaction effect between group and phase [Wilks Lambda = 0.99, $F(1{,}201) = 2.21$, $p = 0.14$].

In summary, our findings show that engaging in the professionalization process by acquiring a qualification served to increase carers' identification with the organization, and to maintain their identification with care professionals, but that not engaging in this process was associated with a reduction in both forms of identification. This accords with evidence from our pathway analysis where Model 2 suggests that undertaking a qualification leads to increased motivation and well-being outcomes because it serves to build organizational identification.

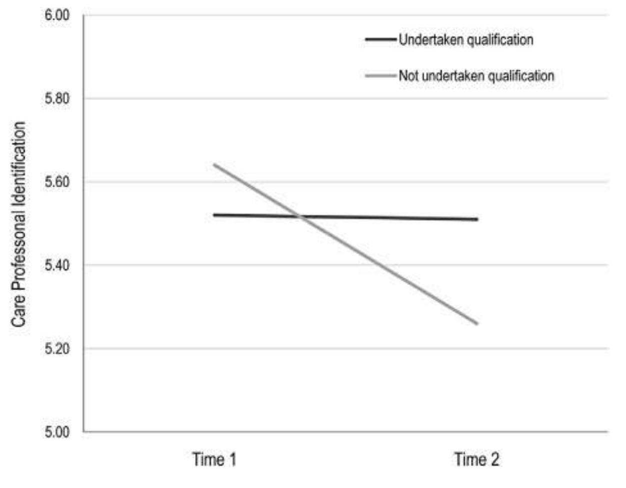

FIGURE 3 | The effects of undertaking a qualification on care professional identification, Longitudinal panel data.

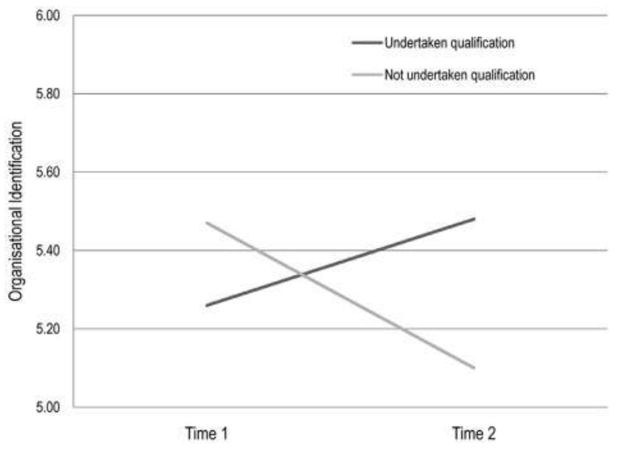

FIGURE 4 | The effects of undertaking a qualification on organizational identification, Longitudinal panel data.

Discussion

The purpose of this study was to examine how care-workers' motivation and well-being is shaped by their social and relational identification at work. More specifically, the study sought to gain a better understanding of the ways in which care workers' motivation and well-being are structured (a) by material (pay) or virtuous (relationships with clients) reward, (b) by the working context (of residential vs. domiciliary care), and (c) by exposure to professionalization (through undertaking vs. not undertaking a qualification). It also sought to investigate the role of identity processes in accounting for the effects of these factors on the process of creating and sustaining compassionate work cultures in care organizations.

Based on a social identity theorizing, we argued that organizational identification provides a critical underpinning for sustainable motivation and well-being in the workplace (Ellemers et al., 2004; Jetten et al., 2012). Consequently, factors that serve to build or reinforce organizational identification (e.g., incentives or specific forms of training) should have a positive impact on individual motivations and well-being at work. At the same time, this analysis was supplemented by the proposal (gleaned from qualitative research; Bjerregaard et al., in press b) that for this particular workforce (and arguably many other 'helping' occupations) relational identification with clients, patients, or service users is central to the way in which workers define themselves within the broader organizational context. This suggestion also accords with previous research in the social identity tradition (Sluss and Ashforth, 2008; Sluss et al., 2012), which suggests that motivation and well-being should be particularly enhanced when these different bases of identification — relational and organizational — align. Accordingly, we also examined the relationships between relational and organizational identifications and their combined role in supporting carer motivation and well-being.

Summary of Findings

Consistent with other studies undertaken with care workers (Skills for Care, 2007; Hussein et al., 2010; Atkinson and Lucas, 2012) participants in our study reported high levels of satisfaction and pride, and low levels of stress. Participants were motivated to work in care because of their relationships with clients, and they attached high value to training and personnel development, and to working conditions, but relatively low value to pay. In line with previous work (Van Dick, 2001; Haslam et al., 2003; Van Knippenberg et al., 2004; Riketta and Van Dick, 2005) and with H1, findings also showed that care workers' identification with different groups at work is positively related to their motivation and well-being. In particular, motivation and well-being were predicted both by identification with clients (H1a) and by organizational identification (H1b). As anticipated, care workers indicated higher levels of identification with clients than with the organization (H1c), but levels of motivation and well-being were best predicted by the latter (H1d).

Effects of Incentives

Findings from SEM confirmed that although care workers were primarily incentivised by 'love' (i.e., relationships with clients) rather than 'money' (i.e., pay), attaching value to either of these incentives was associated with increased motivation and well-being (H2a, H3a). Importantly, and consistent with our hypotheses, these relationships were also mediated by patterns of identification (H2b, H3b). Specifically, being incentivised by relationships with clients fed into motivation and well-being by increasing relational identification and, through this, organizational identification (H2c). A similar pattern was evident for incentivization by pay; however, here the mediating role of organizational identification was stronger (H3c).

Contrary to mainstream economic thinking about care work, these findings suggest that neither altruism nor money in themselves lead to more positive organizational outcomes. Rather, they contribute to enhanced motivation and well-being due largely to their ability to foster and reinforce care workers' organizational identification. Thus, rather than being particularly valued in its own right, pay can be seen to play an important role in motivating staff and making them feel good about themselves and their work because it helps build organizational identification — for example, by indicating to the individual that they are valued by the organization (Tyler and Blader, 2000). Likewise, enacting relationships with clients promotes motivation and well-being because this behavior reflects the way in which individuals see themselves within the organization. Indeed, the very weak fit of a model that represented the mainstream economic and individualistic perspectives — wherein incentives directly affect motivation and well-being — suggests that this oft-cited dichotomised explanation for work in this domain fails properly to explain key outcomes in this domain.

Effects of Work Domain

In line with H4, care workers' attachment to their job (i.e., a positive orientation to professionalization and low turnover intentions) was found to vary as a function of their working domain such that residential care workers displayed generally higher organizational motivation than domiciliary workers. Again, though, SEM indicated that these domain-based differences in motivation could again be accounted for by patterns of identification (H4b and 4c) in so far as the best fitting model was one in which differences in organizational identification mediated the relationship between work domain and motivation and well-being.

Effects of Professionalization

In line with other research into the effects of identification on training outcomes (Pidd, 2004; Bjerregaard et al., in press a), our findings indicate that undertaking a qualification increases well-being and attachment to one's job. However, consistent with our overall theoretical framework, these effects of training — which we were able to examine longitudinally — could also be understood in terms of their consequences for organizational identification. Specifically, it appears that undertaking a qualification increased well-being and attachment because this reinforced individuals' sense of identification with their organization (H5a). Interestingly, although we predicted that organizational identification would be most important for explaining the effects of gaining a qualification, an alternative model that incorporated client identification as a precursor to organizational identification accounted for the data nearly as well. This pattern mirrors the pattern observed for incentivization and further underscores the important linkages between client-based and organizational identification in this domain.

Theoretical Implications: Identity Convergence and the Creation of a Compassionate Workforce

These findings corroborate and extend findings from previous organizational studies that have pointed to the positive mediating effects of organizational identification on motivational and well-being outcomes (see Van Knippenberg, 2000; Haslam et al., 2003; Ellemers et al., 2004; Ashforth et al., 2008; Jetten et al., 2012; van Dick and Haslam, 2012). In addition, this research considered the dynamic relationships between organizational identity and other work-based identities that operate at different levels of abstraction (Riketta and Nienaber, 2007; Sluss et al., 2012; Smith et al., 2012). In particular, we explored the relationship between relational identification with clients (or service users/patients) and organizational identification and found that client identification can become a basis for organizational identification, and accordingly that the forces that strengthen the former can also strengthen the latter — with positive consequences for different aspects of organizational motivation and well-being.

Tests of alternative models that considered reversed sequences of mediators demonstrated poorer fit to the data, suggesting that although there is convergence between different forms of identification (i.e., relational and organizational), it is likely to be the former that builds the latter rather than the other way around. This may reflect the fact that because client identification operates at a relational level of identity it is "a linchpin in overall self-concept at work" (Sluss and Ashforth, 2008, p. 11). Drawing on findings from our previous qualitative work with care workers (Bjerregaard et al., in press b), this convergence between the specific relational identification and broader organizational identification is likely to occur through two processes. First, it may occur by means of 'affect transfer,' whereby "affects generated from identifying with a role relationship directly and unconsciously transfer to the organization and vice versa" (Sluss and Ashforth, 2008, p. 5). That is, the positive affect generated from identifying with the carer role is transferred to the assessment of the organization in terms of its capability to care (both for clients and carers themselves; Bjerregaard et al., in press b). Second, it may also occur through the process of "behavioral sense-making" whereby "what one does, informs and confirms who one is" (Sluss and Ashforth, 2008, p. 6). That is, enacting a carer role that one identifies with informs how one thinks both about oneself as a representative of the organization and about the organization as a whole.

In these ways, this study supports the notion that the different levels of care-worker identification (relational identification with clients and social identification with the organization) converge around care workers' perceptions that the organization values (a) their relationship with their clients, (b) the interests of the clients, and (c) the care workers themselves. At the same time it explains care workers' disengagement and frustration at the organization should they perceive it not to be acting in accordance with caring values. Accordingly, at least in the context of care work, it could be argued that the creation of a compassionate working culture depends upon the organization's capacity to both (a) to harness and support meaningful identities through which individuals understand their work and (b) to promote alignment between work-based identities at all levels (personal, relational, and organizational).

Practical Implications

At a practical level, this study helps us to see how the social identity approach can provide a multi-dimensional, dynamic framework through which to better understand care workers' motivation and well-being. First, by integrating the virtuous and financial aspects of caring — that is, by seeing both of these as reward that underpin workplace identities — this model challenges the simplistic view that care workers' motives are dichotomised between either 'love' or 'money.' Instead, it appears that care workers are motivated and buoyed by both 'love' of the caring relationships they have with their clients and 'money' as reflective of the caring relationship that exists between them and the organization for which they work. Second, this framework suggests that in order to be successful in building a compassionate culture in health and social care, attention needs to be paid to people's prevalent work-based relational and social identities (e.g., as argued by Haslam et al., 2003; Peters et al., 2013).

Amongst other things, these identities are created in conversations that draw on social, cultural, organizational and individual narratives, and which let people know who they are and why they matter (Harquail and King, 2010; Ibarra and Barbulescu, 2010; Bjerregaard, 2015). Accordingly, the values and behaviors that are attributed to these different identities can make them congruent and mutually supportive (e.g., seeing oneself to be both a caring professional and member of a caring organization) or can make them ambiguous, irrelevant and conflicting (e.g., seeing oneself as part of a family while at the same time being made to feel like a number and a commodity; Bjerregaard et al., in press b). The degree of alignment between multiple meaningful social identities in and out of work should also have consequences for sustained employee motivation. Hence, third, undertaking activities which support professionalization and embed compassionate practice are likely to motivate care workers and to make them feel good about both themselves and their work to the extent that these activities harness and develop meaningful organizational and relational identities that enable those workers to experience a congruence between the values and behaviors represented by different foci of social identification at work.

Conclusion

This study provides detailed cross-sectional and longitudinal evidence of the way in which care workers' motivation is shaped by the dynamics of collective and relational identities at work. In this context, the application of the social identity approach has two key affordances. First, it allows us to understand the nuanced ways in which care workers are motivated and satisfied by both 'love' and 'money.' Second, it shows how these two things feed into increased motivation and well-being by building and maintaining meaningful work-based identities, in particular organizational identity. It thus appears that to the extent that particular incentives validate social identities at work, they will serve to make individuals more motivated to engage with their work and to feel better (both about themselves and their work) when they do. Conversely, when incentives negate valued identities, this is likely to result in detrimental outcomes for both the individual and the organization.

In arriving at this conclusion, we believe the present research goes some way to addressing calls to "examine the team and organizational influences that contribute to compassionate care and determine how they can be strengthened" (Adamson et al., 2012, p. 32). It does so by confirming that compassionate behavior and values are enacted and sustained by care workers to the extent they make sense in terms of their salient social and relational identities. Accordingly, it appears that it is by recognizing, harnessing, and developing these identities that care organizations can encourage those they employ to play their part in enacting a culture of compassionate care.

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Family identification: a beneficial process for young adults who grow up in homes affected by parental intimate partner violence

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Exposure to parental intimate partner violence (parental IPV) is a complex trauma. Research within social psychology establishes that identification with social groups impacts positively on how we appraise, respond to and recover from traumatic events. IPV is also a highly stigmatized social phenomenon and social isolation is a major factor for families affected by IPV, yet strong identification with the family group may act as a beneficial psychological resource to young people who grew up in homes affected by IPV. The current study, an online survey of 355 students ($M_{\text{age}} = 20$, 70% female), investigated if a psychosocial process, specifically identification with the family, may influence the relationship between the predictor, exposure to parental IPV, and outcomes, global self-esteem and state anxiety. Mediation analysis suggests that identification with the family has a positive influence on the relationship between exposure to parental IPV and psychological outcomes; exposure to parental IPV results in reduced family identification, but when family identification is strong it results in both reduced anxiety and increased self-esteem for young people. The findings highlight the importance of having a strong sense of belonging to the extended family for young people who were exposed to parental IPV, thus has implications for prevention, intervention, and social policy.

Keywords: parental intimate partner violence, psychological outcomes, family identification, social identity, psychosocial processes, mediation analysis, self-esteem, anxiety

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Introduction

Recent work within the field of social identity, health, and wellbeing has established the benefits that subjective identification with a social group has on individuals' wellbeing (Haslam et al., 2009). Group identification is a measure of one's subjective internalization of a social group at both cognitive and affective psychological levels, where members obtain a sense of belonging and gain meaning from group membership. Moreover, strong identification with social groups not only affects the way we feel, think and behave, it also impacts on how we appraise and respond to stress (Gallagher et al., 2014).

Research by Sani et al. (2012) has established the protective role that identification with the family group has on wellbeing. Family identity may be described as an affiliative identity: an "invisible or background" identity which we are born into, and which we can be mobilized when required, for example in times of stress (Walsh et al., 2014). Affiliative identities provide a strong sense of belonging, which can function as a beneficial psychological resource in times of need.

Despite the fact that families affected by parental IPV may be considered problematic (Bancroft et al., 2011), we propose that identification with that same family group may have an impact on the wellbeing of young adults who grew up in homes affected by parental IPV.

Intimate partner violence (IPV) is defined as a repeated pattern of coercive behaviors (physical and psychological) perpetrated by one partner over the other in an intimate relationship. IPV is a phenomenon which for the most part takes place within the home (Miller et al., 2015). Safe, stable and predictable family relationships are essential to child development (Unicef, 2006). However, Lieberman et al. (2011) suggest that children who grow up in homes affected by parental IPV are parented by "a parent who frightens and one who is frightened." Concurring with this, a growing body of research over the last two decades has established that exposure to parental IPV has a negative impact on children's cognitive, emotional, behavioral and social functioning (Holt, 2011) which can continue into adulthood (Artz et al., 2014). Based on the premise that it is mainly young children who are at greatest risk of being exposed to parental IPV (Fusco and Fantuzzo, 2009; Trocmé et al., 2013) much of the literature concentrates on young children (Hungerford et al., 2012). Where research does focus on young adults (aged 17–25) who have been exposed to parental IPV, there is a tendency for it to center on their own victimization/perpetration within intimate relationships (e.g., Rivera and Fincham, 2015).

Emergent literature has established an association between child exposure to parental IPV and young adults' impaired wellbeing (Cater et al., 2015), but there is a dearth of research which explores the psychosocial factors which may influence this association. Exposure to parental IPV has been defined as a complex trauma as it may involve repeated exposure to aversive events from a very young age, with the perpetrator and victim (the child's parents/caregivers) being known, loved and trusted by the child (Margolin and Vickerman, 2011). A large body of literature on recovery from trauma establishes the importance of various social factors in the link between experiencing aversive events and the development of resilience (Pynoos et al., 1999).

However, there may be inherent barriers to the availability of protective social factors for this population. Within the literature there is a strong link between IPV and social isolation (Levendosky, 2013). For children of families affected by parental IPV, social isolation may be derived from two interdependent factors. First, an established controlling tactic used by the perpetrator is to isolate their victims, including the children (Bancroft et al., 2011). Second, due to the stigma and shame associated with IPV, children/adolescents may self-exclude from social life (Buckley et al., 2007). Recent research suggests that young adults' inability to disclose parental IPV throughout their childhood, despite an awareness of its existence, portrays an intrinsic level of isolation and secrecy among such young adults (Howell et al., 2014). This suggests that there may also be reduced opportunities for young adults who grew up in homes affected by parental IPV to become integrated within social groups outside the family, thus rendering their ties to their family all the more important.

Research more generally links family to positive psychological outcomes (see Elliott and Umberson, 2004). Initial findings also suggest that family may act as a beneficial psychological resource in the context of exposure to parental IPV across various age spans (children, adolescences, and young adults). For example, Owen et al. (2009) identified that child reports of family cohesion and relatedness to their primary attachment figure mediates the relationship between child reports of IPV and child adjustments (8–12 years). Similarly, Chanmugam (2014) found a strong sense of identity and belonging within mother–child–sibling relationships in a qualitative study of 12–14 year-old adolescents and their mothers from a refuge population. More recently, Miller et al. (2015) suggested that parental warmth may buffer the relationship between exposure to parental IPV and wellbeing in young adults. Therefore, despite the fact that parental IPV results in unpredictability and trauma within the home, it seems that children, adolescents, and young adults' identification with their family or family members may influence their psychological outcomes. However, there is not yet conclusive evidence explicating the established variations in psychological outcomes (Kitzmann et al., 2003), nor the underlying processes which may influence the link between exposure to parental IPV and psychological outcomes. We therefore propose identification with family as a possible explanatory variable.

The current study used Edleson et al.'s (2008) measure of child exposure to domestic violence, hereafter referred to as *exposure to parental IPV*, which is in line with recent theoretical arguments to operationalize exposure to parental IPV broadly (Haselschwerdt, 2014). The exposure to parental IPV measure captures both physical and psychological violence, and as well as being validated with children (Edleson et al., 2008) it has also been validated as a measure of historical child exposure to parental IPV in young adults (Cater et al., 2015; Miller et al., 2015). To broaden our understanding of the impact of exposure to parental IPV on young adults, the current study focuses on young adults' self-reports of both ongoing and historical exposure to parental IPV.

Further, to provide a more complete understanding of the impact of growing up in a home affected by parental IPV, outcomes within the present study were operationalized in terms of both short-term functioning (state anxiety) and long-term functioning (global self-esteem). Reviews and meta-analysis have clearly established associations between exposure to parental IPV and decreased self-esteem and increased anxiety in children (Evans et al., 2008; Holt et al., 2008; Haselschwerdt, 2014). Despite limited research with a young adult population, research has established associations between exposure to parental IPV and increased anxiety (Schiff et al., 2014; Miller et al., 2015) and reduced self-esteem (Davies et al., 2004) in young adults who grew up in homes affected by parental IPV. Global self-esteem, a measure of self-worth, develops over time, and aversive environments are deemed to have a negative impact on its formation (Rutter, 1993). State anxiety is a measure of in-the-moment or reactive anxiety. In the current study, participants completed the measure of exposure to parental IPV first, which acted to prime the participants and thus facilitated the capture of reactive anxiety.

Research within social psychology has established that identification with a social group can buffer the effects of trauma/stress, particularly for vulnerable groups (Haslam et al., 2009). As such, Branscombe et al. (1999) established that identification with one's ethnic group was associated with increased self-esteem for minority group members, while Wakefield et al. (2013) demonstrated that support-group identification was linked to reduced anxiety in multiple sclerosis sufferers. However, the potential buffering effect of family identification has not been explored for young adults who grew up in homes affected by parental IPV.

Contextual factors such as gender and socioeconomic status (SES) may also impact on the relationship between exposure to parental IPV and young adults' wellbeing. Cater et al. (2015) found gender by outcome interactions, with young women reporting significantly higher levels of anxiety than young men. However, as the young women also reported significantly higher levels of historical exposure to parental IPV than the young men, the authors cautioned about the presence of a gender reporting bias of both exposure to parental IPV and anxiety. There is also reason to believe SES may influence the impact of parental IPV on outcomes. The developmental literature suggests that it is the combination of childhood traumatic events together with an aversive environment that contributes to maladjustment (Herrenkohl and Herrenkohl, 2007; Gonzalez et al., 2014), and indeed in line with this, low SES is generally linked to poorer wellbeing (Lorant et al., 2003). In light of the previous findings on gender and SES, the current study also investigated the presence of differential effects for both gender and SES for exposure to parental IPV, family identification, anxiety, and self-esteem.

It is hypothesized that higher levels of reported exposure to parental IPV will predict higher levels of anxiety and lower levels of both family identification and self-esteem. Furthermore, based on social identity theory, family identification will mediate the association between exposure to parental IPV and both outcomes, anxiety and self-esteem.

Materials and Methods

Design

The current study was part of a larger cross-sectional online survey. Ethical approval was obtained from the Faculty's Research Ethics Committee. Participants, from a predominately white university population, were invited to complete an online questionnaire. Participants gave their informed consent to partake in the study by 'clicking' a button. In acknowledgment of their time, participants were given the option to enter a prize draw for a €50 voucher. In line with the proposed mediational model, family identification (Doosje et al., 1995) was considered as a potential mediator in the association between exposure to parental IPV (Edleson et al., 2008) and both self-esteem (Rosenberg, 1965) and state anxiety (Marteau and Bekker, 1992).

Participants

Since exposure to parental IPV is established as a pervasive problem (EU FRA, 2014), a convenience sample of university students was thought to provide sufficient variability within the regression model. While a total of 465 students completed the first measure, exposure to parental IPV, 23.66% failed to complete all measures, resulting in a final sample size of 355. There was no significant group difference [$t(463) = -1.60$, $p = 0.11$] in the level of reported parental IPV between participants who completed the entire survey ($n = 355$) and those who dropped out ($n = 110$). Of those who completed demographics, participants had a $M_{\text{age}} = 20.07$ years, $\text{SD}_{\text{age}} = 2.08$, 70.6% were female, and 46.5% were in receipt of income assessed government funding (suggesting that they are from low income backgrounds). 63% reported exposure to parental IPV (defined as a total score of exposure to IPV of 3 or greater), of those 36.1% stated that it was ongoing and 63.9% stated it was historical.

Instruments

Demographics

As an indicator of SES, participants were asked to indicate if they were in receipt of income-assessed government funding to attend university. 'Yes' was coded as 'lower SES' and 'No' was coded as 'higher SES,' because funding is only provided to those with a sufficiently low income. Participants were also asked to provide their age and gender.

Predictor

Exposure to parental intimate partner violence

Edleson et al.'s (2008) validated scale for exposure to IPV was adapted to capture young adults' self-reported exposure to parental IPV, both ongoing and historical, which was perpetrated by either or both of the participant's parents/caregivers. To make the scale gender-neutral, the wording within each of the original items was altered so that references to 'mother' or 'father' were replaced by 'parent/caregiver.' For example, "How often did one *parent/caregiver* swear, yell or scream at, threaten the other *parent/caregiver* or call them names, fat, stupid or idiot etc.?" Participants rated the occurrence of both psychological and physical parental IPV on a 5-point Likert scale from 0 (never), 1 (rarely), 2 (sometimes), 3 (often), to 4 (a lot) (see supplementary material for individual items). To obtain maximum validity, 7 items (contact author for additional details) were totaled to give final scores between 0 and 28 for the exposure to parental IPV, with high scores indicating high exposure to parental IPV. Reliability was very good, with a Cronbach's alpha of 0.88 for the current study.

Recency of exposure to parental IPV

Participants were asked to indicate the time frame of the most recent incident of exposure to parental IPV (ongoing, within 6 months, within 3 years, or over 3 years ago). This measure was collapsed to form a dichotomous variable, in that 'ongoing' refers to within 6 months, and 'historical' refers to more than 6 months ago.

Mediator

Family identification

Doosje et al.'s (1995) 4-item identification scale was used to assess family identification. Participants responded to items relating to their subjective, affective and shared identity within their family group by providing a rating from 1 (totally disagree) to 7 (totally agree). Means were calculated to give scores between 1 and 7, with higher scores indicating higher identification. Reliability was excellent, with a Cronbach's alpha of 0.94 for the current study.

Outcomes

Anxiety

Marteau and Bekker's (1992) 6-item scale was used to assess state anxiety. Participants responded to items relating to state anxiety from 0 (not at all) to 3 (very much so). Reliability was very good, with a Cronbach's alpha of 0.85 for the current study. Items were totaled to give scores in the range of 0 to 18, with higher scores indicating higher anxiety.

Self-esteem

Rosenberg's (1965) 10-item scale was used to assess self-esteem. Participants responded to items relating to global self-esteem from 1 (strongly agree) to 4 (strongly disagree). Reliability was very good, with a Cronbach's alpha of 0.85 for the current study. The rated items' mean was calculated to give a range of 1–4, with higher scores indicating higher self-esteem.

Data Analysis Overview

The central aim of the current study was to investigate the impact of family identification on the link between exposure to parental IPV and both anxiety and self-esteem. Initial multivariate and follow-up univariate analyses of variance were performed to determine the need to control for any systematic group differences caused by SES and gender of the participant within the mediation model. Correlation analyses (Pearson's r) were undertaken to identify associations between the variables of interest. Finally, to test the buffering effect of family identification, mediation analyses were performed.

Simple mediation models were analyzed using PROCESS model 4, which uses ordinary least squared regressions to yield unstandardized path coefficients for all pathways, as well as total, direct, and indirect effects (Hayes, 2013). Effects are deemed significant when the lower to upper limits of the accelerated 95% confidence intervals (CIs) do not pass through zero. The current analysis was undertaken both with and without bootstrapping. Bootstrapping involves drawing 1000 random samples from the data pool to estimate each pathway's effects, with computed bias corrected and accelerated 95% CIs determining the significance of each pathway. Bootstrapping makes no assumptions about the normality in the sampling distribution and has superior control over type 1 errors when compared to non-bootstrapping (Preacher and Hayes, 2004).

Results

Group Differences

Results of the MANOVA identified a significant within subjects effect on exposure to parental IPV, family identification, anxiety, and self-esteem for both SES and gender of the participant. Follow-up univariate analysis of variance (ANOVA) testing the effect of gender of the participant on reported exposure to parental IPV, family identification, self-esteem, and anxiety proved non-significant. However, ANOVA testing the effects of SES revealed group differences of SES on exposure to parental IPV [$F(1) = 6.46$, $p = 0.01$] and family identification [$F(1) = 6.81, p < 0.01$]. As the exposure to parental IPV measure was composed of both ongoing and historical exposure to parental IPV, subsequent separate ANOVAs were also undertaken for ongoing exposure to parental IPV ($n = 149$), and also historical exposure to parental IPV ($n = 264$) to identify if differences between SES groups were present for exposure to both ongoing and historic parental IPV. For participants who reported ongoing exposure to parental IPV, ANOVA revealed group differences of SES for exposure to parental IPV [$F(1) = 6.8$, $p = 0.01$, $\eta_p^2 = 0.05$] and family identification [$F(1) = 7.6$, $p < 0.01$, $\eta_p^2 = 0.06$]. Specifically, within participants who reported ongoing exposure to parental IPV, those with lower SES reported significantly higher levels of exposure to parental IPV ($M = 6.53$, SD $= 6.48$) than those with higher SES ($M = 4.05$, SD $= 4.04$). In addition in this same group, those with higher SES reported significantly higher levels of family identification ($M = 6.18$, SD $= 1.2$) than those with lower SES ($M = 5.44$, SD $= 1.69$). These significant effects were maintained when we controlled for whether participants lived at home or had moved away. For participants who reported historical exposure to parental IPV, there were no significant SES group differences for either exposure to parental IPV or family identification. There were no significant differences between male and female participants for exposure to parental IPV, family identification, anxiety or self-esteem. Means and standard deviations of predictor, mediator, and outcome variables by gender and SES groups are presented in **Table 1** for exposure to ongoing parental IPV and in **Table 2** for exposure to historic parental IPV.

Inter-Correlations

Partial correlations (Pearson's r) between variables are presented in **Table 3** (with SES as covariate), together with means, SD, and range. As predicted there was a moderate to large positive correlation between the predictor, exposure to parental IPV and the outcome, anxiety ($r = 0.44$) and a moderate to large negative correlation between the predictor, exposure to parental IPV, and the outcome, self-esteem ($r = -0.39$), and mediator,

TABLE 1 | Means (standard deviations) for exposure to parental intimate partner violence (IPV), family identification, self-esteem, and anxiety by socioeconomic status (SES) and gender of participant, for participants who reported IPV as ongoing.

	Male	Female	Higher SES	Lower SES
Exposure to parental IPV	5.57 (6.50)	4.74 (4.63)	4.05 (4.04)	6.53 (6.48)
Family identification	5.53 (1.52)	6.07 (1.37)	6.18 (1.20)	5.44 (1.69)
Self-esteem	2.83 (0.54)	2.70 (0.43)	2.75 (0.39)	2.71 (0.57)
Anxiety	5.70 (3.79)	6.65 (4.33)	5.71 (3.75)	7.53 (4.68)

TABLE 2 | Means (standard deviations) for exposure to parental IPV, family identification, self-esteem, and anxiety by SES and gender of participant, for participants who reported IPV as historical.

	Male	Female	Higher SES	Lower SES
Exposure to parental IPV	5.41 (4.47)	5.24 (4.47)	5.19 (4.38)	5.44 (5.38)
Family identification	5.55 (1.76)	5.69 (1.56)	5.72 (1.56)	5.57 (1.69)
Self-esteem	2.79 (0.50)	2.71 (0.45)	2.73 (0.47)	2.74 (0.47)
Anxiety	7.06 (4.49)	7.79 (4.13)	7.79 (4.41)	7.33 (4.15)

family identification ($r = -0.50$). There was a moderate to large positive association between family identification and self-esteem ($r = 0.50$) and a moderate to large negative association between family identification and anxiety ($r = -0.54$).

Mediation Analysis

Two simple mediation analyses including SES as a covariate were performed to analyze separately whether family identification influenced the association between exposure to parental IPV and both outcomes: anxiety (**Figure 1**) and self-esteem (**Figure 2**). Exposure to parental IPV predicted weaker family identification ($B = -0.16$, $p < 0.001$), which in turn predicted increased self-esteem ($B = 0.13$, $p < 0.001$) and reduced anxiety ($B = -1.19$, $p < 0.001$). There were significant indirect effects for both models (see **Table 4**); exposure to parental IPV affected both anxiety and self-esteem through family identification. Indirect effects, Model 1: exposure to parental IPV, family identification, anxiety [$B = 0.19$, 95%CL (0.14, 0.28)] and Model 2: exposure to parental IPV, family identification, self-esteem [$B = -0.02$, 95%CL (−0.03, −0.01)]. However, while significantly reduced, both direct effects remained significant; exposure to parental IPV was significantly associated with both anxiety ($B = 0.22$, $p < 0.001$) and self-esteem ($B = -0.02$, $p < 0.001$), while accounting for family identification. Furthermore in model 1, exposure to parental IPV and family identification collectively explained 33% of the variance in anxiety, while in model 2, exposure to parental IPV and family identification collectively explained 28% of the variance in self-esteem. Results were maintained when bootstrapping was employed. Non bootstrapping results are presented.

Note: In the initial ANOVA analysis we identified significant SES group differences for both exposure to parental IPV and family identification, for participants who reported exposure to parental IPV as ongoing. Therefore both mediation models were also undertaken with samples consisting of participants who reported only ongoing exposure to parental IPV ($n = 118$), then only historical exposure to parental IPV ($n = 197$). Significant indirect effects were maintained for both conditions; moreover these significant effects were also maintained when we controlled for whether participants live at home or had moved away.

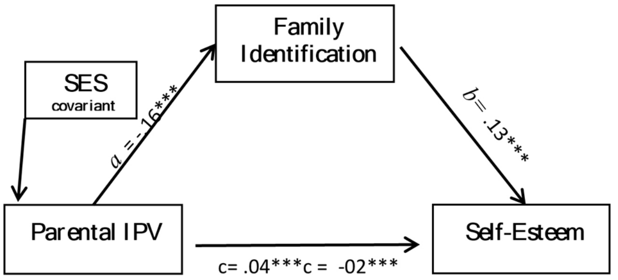

FIGURE 1 | Mediation of the effect of exposure to parental intimate partner violence (IPV) on anxiety by family identification. ***$P < 0.001$.

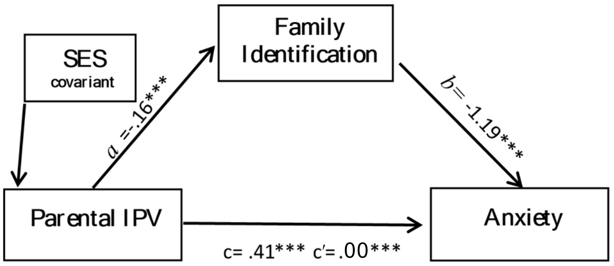

FIGURE 2 | Mediation of the effect of exposure to parental IPV on self-esteem by family identification. ***$P < 0.001$.

Discussion

The central aim of the current study was to investigate the role of family identification in the association between exposure to parental IPV and both anxiety and self-esteem. Mediation analysis identified that family identification buffered the association between exposure to parental IPV and both

TABLE 3 | Pearson correlation coefficients of exposure to parental IPV, family identification, self-esteem, and anxiety with SES as a covariate.

Variable	2	3	4	Mean (SD)	Range		*N*
					Min	Max	
(1) Exp. parental IPV	−0.50***	−0.39***	0.44***	4.54 (4.67)	0	25	465
(2) Family identification		0.50***	−0.54***	5.77 (1.55)	1	7	355
(3) Self-esteem	.		−0.61***	2.74 (0.47)	1.33	3.80	434
(4) Anxiety				7.08 (4.33)	0	18	431

Means, SD, and ranges are also included.
****p < 0.001, SD; Min, minimum; Max, maximum; N, sample size; Exp., exposure to.*

TABLE 4 | Parameter estimates of the model examining the mediating role of family identification in the relationship between exposure to parental IPV and outcomes; anxiety and self-esteem.

			Path coefficients			
Outcome		**Path**	**B**	**SE**	**95% CL**	R^2
Family identification	Parental IPV	*a*	−0.16***	0.02	(−0.19, −0.13)	
	Model 1					
Anxiety	Family ident	*b*	−1.19***	0.15	(−1.47, −0.90)	0.33
	Direct effect	c'	0.22***	0.05	(0.12, 0.31)	
	Indirect effect	ab	0.19	0.11	(0.14, 0.28)	
	Model 2					
Self-esteem	Family ident	*b*	0.13***	02	(0.09, 0.16)	0.28
	Direct effect	c'	−0.02***	0.01	(−0.03, −0.01)	
	Indirect effect	ab	−0.02	0.004	(−0.03, −0.01)	

Regression weights a,b,c, and c' are illustrated in ***Figures 1*** *and* ***2****. The 95% CI for* $a \times b$ *is obtained by the bias-corrected bootstrap with 1000 resamples. Exposure to parental IPV is the independent variables (x), Family identification is the mediator (m), and anxiety and self-esteem are outcome (y).* R^2 *is the proportion of variance in y explained by x and m. CI (lower bound, upper bound) of 95% confidence interval (CIs).* $^{***}p < 0.001$.

anxiety and self-esteem. There was a direct effect between exposure to parental IPV and both outcomes; high levels of exposure to parental IPV were associated with decreased levels of self-esteem and increased levels of anxiety. However there was also an indirect effect, in that family identification buffered the associations between exposure to parental IPV and psychological outcomes. Thus, despite the fact that higher levels of exposure to parental IPV were associated with weaker levels of family identification, participants who reported stronger levels of family identification also reported increased levels of self-esteem and decreased levels of anxiety. Family identification can therefore be said to play a positive role in the association between exposure to parental IPV and psychological outcomes for young adults. However, as higher levels of exposure to parental IPV were associated with weaker levels of family identification, those most affected are least likely to be able to draw on this beneficial resource.

This is the first study to consider family identification and belonging to the family group as an underlying psychosocial factor that may explain the association between exposure to parental IPV and psychological outcomes. As predicted, in line with previous research, stronger family identification was associated with more positive psychological outcomes (Sani et al., 2012). Moreover, strong family identification buffered the association between exposure to parental IPV and both anxiety and self-esteem. Current findings therefore build on previous research within the social identity tradition which document the explanatory role of family identification in the link between various traumas and psychological outcomes, for example: acquired brain injury (Walsh et al., 2014); multiple sclerosis (Wakefield et al., 2013); stroke (Haslam et al., 2008); and in the context of political violence in the Northern Ireland conflict (Muldoon et al., 2009) and Kosovo conflict (Kellezi et al., 2009). The current findings thus provide further evidence for the argument that social identities function as a 'Social Cure' (Jetten et al., 2012). The current findings also extends previous research which highlights the significance of affiliative identities – pre-existing groups which we are born into – in the context of trauma (Walsh et al., 2014). Additionally, they advance recent research within the literature on exposure to parental IPV, which investigates factors relating to family as potential mediators between child exposure to parental IPV and psychological outcomes across age spans. Both parental warmth (Miller et al., 2015) and family cohesion (Owen et al., 2009) are suggested as important mediators in that literature. The current study complements this research by including young adults' perceptions of both ongoing and historical exposure to parental IPV.

Similar to the current study, the previous studies used a cross-sectional design with young Swedish adults (Miller et al., 2015) and African American children (Owen et al., 2009). In combination with these, our study provides compelling support for the importance of family to the psychological outcomes of young adults who grow up in homes affected by exposure to parental IPV. This may seem somewhat paradoxical, given that exposure to parental IPV may contribute directly to problematic family relationships and an aversive family environment. However, it should be noted that a strong integration within the family may be particularly important for this group. As discussed previously, due to the shame, stigma, and isolation associated with IPV, there are nuanced barriers to building strong links with social groups outside of the family for this at-risk population.

Contra to previous findings identified by Cater et al. (2015), who identified that Swedish young women reported significantly higher levels of historical child exposure to parental IPV than young men, the current study found no significant gender differences. In fact the trend was in the opposite direction, with young men reporting slightly (but not significantly) higher levels of exposure to parental IPV than young women. In the current study, young adults who reported ongoing exposure to parental IPV and who were from lower SES backgrounds reported significantly higher levels of exposure to parental IPV and significantly lower levels of family identification than their counterparts from higher SES backgrounds. However, there were no differences in the levels of either exposure to parental IPV and family identification based on SES for the participants who reported exposure to parental IPV as historical. One possible explanation for this is that those from lower SES backgrounds may live in smaller family homes therefore may be exposed to higher levels of ongoing parental IPV. Furthermore, as the current findings show, higher levels of exposure to parental IPV predict weaker levels of family identification, thus explaining the lower levels of family identification for participants from lower SES backgrounds who report ongoing exposure to parental IPV.

A strength of the current study was that two psychological measures of wellbeing were used; a global measure of self-esteem (long term functioning) and a reactive measure of state anxiety (short term functioning). This gives a more complete picture of the consequences of exposure to parental IPV for young adults. Global self-esteem develops over time, while state anxiety is a measure of "in the moment" anxiety levels. Completing the measure of exposure to parental IPV may be said to have primed the participants, and since the measure of state anxiety is reflective of current affective status, it therefore captures a more implicit and immediate response. As such, using both long term and reactive psychological outcomes, which have both been associated with resilience, allows for a more complete picture of the ongoing consequences of growing up in a home affected by parental IPV.

However, there are of course some limitations. For example, the current findings are not generalizable as participants in the current study could all be considered "high academic achievers" in that they attained sufficient grades to qualify for a university place, and this distinguishes them from the general population. A more pronounced effect may therefore have been identified in a high risk population, or indeed a general population sample.

Additionally, participants self-reported both ongoing and historical exposure to parental IPV; therefore the measure captures their awareness of the occurrence of parental IPV, but did not explicitly ask if they had directly witnessed the parental IPV. Furthermore, there are questions surrounding the validity of self-report measures of aversive childhood events within cross-sectional data (Widom et al., 2004). The accuracy of reporting exposure to parental IPV may in fact be a function of current psychological functioning. Individuals with low self-esteem, for example, may be motivated to attach meaning to their sub-optimal psychological functioning, therefore may be more likely to reflect on their childhood experiences in a more negative light (Horwitz et al., 2001). Furthermore, there may also be reciprocity between family identification and the reporting of exposure to parental IPV, as those with stronger identification may be less likely to report non-favorable family dynamics. However, it should be noted that participants' family identification would not necessarily have been salient when completing the exposure to parental IPV measure, as this measure was completed prior to that of family identification.

Importantly, as longitudinal data is seen as a requirement to determine causality, the design of the current study (a cross-sectional study) is said to impede a conclusive causal interpretation. Although Hayes (2013) states that the limitations of data collection should not limit the statistical tools we use to help us understand the underlying processes which may be at play within our data, the findings must be said to be exploratory and not causal. The findings point to the need for longitudinal studies with at-risk children and young adults, which capture current measures of exposure to parental IPV, family identification and psychological outcomes at various time points. Future qualitative studies may also give an in-depth and nuanced understanding of the processes of family identification in the context of exposure to parental IPV. Furthermore previous research has established a co-occurrence of child exposure to parental IPV and direct child maltreatment (Herrenkohl et al., 2008). Future research is warranted which explores the buffering effect of family identification on cumulative trauma for young people who grew up in homes affected by parental IPV.

The current findings demonstrate the important insights which can be gleaned by a paradigm shift from individually focused research to research which explores the impact of psychosocial factors. As such, this study highlights the positive influence that strong identification with family can have on young people who grew up in homes affected by parental IPV. This beneficial effect was identified in both short and long term adaptation, and also for young adults who reported both ongoing and historical exposure to parental IPV. Participants, who reported high levels of exposure to parental IPV but also stronger family identification, may have mobilized this affiliative identity, which then may have functioned as a beneficial psychological resource to buffer their affective status in the face of stress. Furthermore, although the occurrence of parental IPV may contribute to a suboptimal family environment, the current findings suggest that identification with that same family may promote the development of positive self-esteem over time.

The first and paramount consideration when dealing with victims of IPV (including children) should be their physical and psychological safety. That said, given the secrecy that surrounds IPV, it is important that parents, the extended family and service providers are educated on the potential protective effects that a strong identification with family can have so that an inherent sense of belonging within the extended family can be promoted for young adults who grow up in homes affected by parental IPV.

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Supplementary Material

The Supplementary Material for this article can be found online at: http://journal.frontiersin.org/article/10.3389/fpsyg.2015.01249

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Practicing What We Preach: Investigating the Role of Social Support in Sport Psychologists' Well-Being

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Well-being and mental health of psychologists and their clients can be strongly linked to the psychologists' experience of work. We know from general theories of occupational health psychology that certain work factors will have a greater impact on well-being than others. Work engagement is positively related with occupational health, while burnout and workaholic tendencies relate negatively. An individual's resources can buffer against these negative effects. Specifically, the environmental resource of social support can impede the impact and instance of workaholism and has a positive influence on burnout. Social support is often encouraged by sport psychologists in protecting an athlete's well-being. Drawing on theory and research from work and organizational, health and social psychology we explore the lived experiences of burnout and work engagement among applied sport psychologists, investigating their perceptions of how these experiences impact their well-being. Thirty participants from five countries were asked, using semi-structured interviews, to recall specific incidents when feelings of work engagement and burnout occurred. We examined the influence of social support and its impact on these incidents. Thematic analysis revealed that burnout is frequently experienced despite high levels of work engagement. Sources of social support differ between groups of high burnout versus low burnout, as does reference to the dimensions of work engagement. Avenues for future research including investigating the role of mindfulness and therapeutic lifestyle changes for practitioners are outlined.

Keywords: self care, work engagement, burnout, sport psychology, ethics, social support, mental health, qualitative

INTRODUCTION

Increasingly, scrutiny is being exerted on the application of psychology across a range of settings. Applied psychology, comprising the fields of clinical, health, forensic, sport and exercise, occupational and educational psychology all have a common challenge of solving personal and social problems associated with human behavior (Davey, 2011). Our study investigated a specific aspect of applied psychology, namely sport psychology, in order to elucidate practitioner well-being and the challenges therein. Firstly, it is worthwhile to explore the broader context in which our practitioners must operate; the nuances of the evolving field of applied sport psychology will be discussed later.

Among the reasons for accountability in our profession are the financial pressures on healthcare systems and the necessity to demonstrate positive client outcomes (APA, 2006), the emergence of clear educational pathways for practitioner psychologists (e.g., sport psychology; Fletcher and Maher, 2013) and the development of competency benchmarks across applied disciplines (Fouad et al., 2009). One step toward meeting the demands for the professionalization of the discipline has been the development of statutory regulation, which, for example, has been in situ in the UK since 2009 (Health Care Professionals Council; HCPC). The role of this agency is to protect the public by ensuring that applied psychologists meet specified standards of training, behavior and professional skills and as a consequence are "fit to practice." Under this system practitioners have "a personal responsibility to maintain and manage [one's] own fitness to practice and are required to engage in self-referral if changes to health and character may impede the ability to practice" (HPC, 2007). Critically, this approach focuses on an individual's competencies without considering their social context (e.g., working as part of a multidisciplinary team). Furthermore, practitioner self-care is largely overlooked in the standards and the question remains: who will protect the practitioner? This is not a moot point given the potential for compassion fatigue, secondary traumatic stress (Figley, 2002), burnout and mental health challenges among practitioners (Malinowski, 2014). In addition to practitioner well-being issues, the client may be at risk and so, self-care is an ethical imperative (Barnett et al., 2007).

The Social Context of Sport Psychology

Applied sport psychology is a rapidly growing profession (Arnold and Sarkar, 2014; Campbell and Moran, 2014) that addresses issues central to sport and physical performance, deals with sportsmen, sportswomen and associated professionals, and requires knowledge of factors that can facilitate and enhance sporting performance (Andersen et al., 2001). More recently, Andersen and Speed (2010) argued that the primary role of a sport psychologist was the welfare of the client rather than simply focusing on enhancing performance. Thus, the psychologist may share the collaborative goal of seeking performance enhancement, while recognizing the influence of goal achievement on the well-being of the client.

This juxtaposition of meeting the goals of performance enhancement and well-being are not new to the field of sport psychology. Historically, sport psychology grew up in physical education departments, subsequently termed "sport-science" or "kinesiology" faculties (Andersen et al., 2001). Consequently, client mental health and well-being was not typically at the forefront of the interventions, which instead focused upon performance enhancement using psychological skills training programs. This psycho-educational approach did not dilute the application of a more comprehensive psychological approach entirely as the field was still influenced by the 1965 Boulder scientist-practitioner model. In fact, one of the most common interventions in the early years of modern sport psychology was developed by a clinical psychologist for use in sport settings (e.g., visuo-motor behavioral rehearsal, Suinn, 1997). In recent years, the commonality between clinicians and sport psychologists has gained precedence. Emerging evidence has suggested that the prevalence of mental health challenges among sporting populations are at least as common as among the non-sporting samples (Schaal et al., 2011). This challenges the assumption of the prototypical model in the field, the mental health model for sport (Raglin, 2001), which simply linked training load to mental health challenges rather than the myriad of issues that may occur with the social context of a sporting sub-culture (e.g., risk of eating disorders in esthetic sports; Brewer and Petrie, 2014). Consequently, the requirement for more comprehensive training in mental health for neophyte practitioners is now clearer than ever.

Practitioner self-regulation is of particular interest to sports psychology because of the potential challenges with regard to managing multiple relationships (including boundaries and dual agency), the potential for isolation, overcoming clients protective nature (Brown et al., 2005) and disparate training routes that consultants have pursued that may not have provided training in specific competencies for self-care and peer support (Aoyagi and Portenga, 2010). One common example is how practitioners operate at the Olympic Games (Birrer et al., 2012). Over 3 weeks of the competition, they typically interact with athletes in non-traditional time segments and locations, which may involve multiple roles, exhaustive time commitments, isolation from family and friends, and potential client goal conflict (Andersen et al., 2001). In this environment the burden of ethical behavior often rests solely with the practitioner and it is essential that they remain self-aware and self-regulating in order to remain a benefit to their clients and ultimately themselves (Haberl and Peterson, 2006).

Some of the aforementioned challenges may resonate with clinical psychologists and a number of these issues have been highlighted by researchers in mental health and ethics (Koocher and Keith-Spiegel, 2007). Service delivery in the sporting context can occur during both formal (e.g., at training) and informal settings (e.g., on the bus to the event) therefore practitioners can themselves feel under pressure to consistently perform (McCann, 2008). The expectation to consistently provide a service is arguably a case of applied psychology *in extremis* and provides a rationale for our current study, which focuses upon the practitioner as a performer as well as a service provider (Fletcher et al., 2011). This continual pressure to perform, managing not only the performance goals of the athlete, may result in burnout in the long term.

Burnout as a Risk

Prevailing research in the domain of work and organizational psychology explains the psychological and social factors in determining mental health in the workplace. Building on Karasek's (1979) job-demand's control model, Bakker and Demerouti (2007) introduced the job demands-resources model, which incorporated psychological resources, job resources and job demands as considerations in understanding burnout and work engagement (Demerouti et al., 2001). This model posits two fairly independent processes, a health impairment process—associated with an end state of burnout—and a motivational process—associated with work engagement (Bakker et al., 2014). In this context, *burnout* refers a state of exhaustion and cynicism toward work (Bakker et al., 2014), which is conceptualized as a psychological syndrome in response to chronic interpersonal stressors on the job (Maslach et al., 2001). It has three key dimensions: *exhaustion* refers to feelings of being overextended and depleted in one's psychological resources, *cynicism* or *depersonalization* represents the interpersonal context of burnout, and refers to negative and detached responses to aspects of the job, and *reduced efficacy* or accomplishment is a self-evaluation referring to feelings of incompetence and reduced productivity (Maslach et al., 2001).

A longitudinal study conducted by Sonnentag et al. (2010) found that high demands matched with low psychological detachment, where the individual is unable to stop thinking about work during non-work times, was associated with increased reports of emotional exhaustion in the long term. A lack of detachment can increase strain, which negatively affects resource attainment and management, and on a daily basis can negatively influence and individual's approach to work the following day (Sonnentag, 2012). It has also been suggested that increased strain on individuals, fortified through low levels of psychological detachment, resulted in increased reports of psychosomatic complaints (Sonnentag, 2012).

We adopt the perspective that clinical settings are a specific type of work context, with specific demands and resources, and thus, it is appropriate to adopt work-based theories, rather than general clinical models, in seeking to explain burnout for those who work in clinical settings. From such a perspective, the type of work engaged in by sports psychologists working with athletes is very similar to the person-focused work of medical professions such as doctors and nurses. The job demands-resources model has been applied to such professions, demonstrating high levels of burnout due to the intensive demands imposed by caring for others in need, and particularly due to the high levels of emotional labor that are required (Demerouti et al., 2000, 2009; Brotheridge and Grandey, 2002). For example, Dunford et al. (2012) examined burnout across career transitions. Their research demonstrated that the three burnout dimensions differ in their pattern of change over time as a result of career transition type: organizational newcomers, internal job changers (e.g., promotions or lateral moves), and organizational insiders (i.e., job incumbents). Using a large sample of health care employees, over 2 years, they found that burnout was relatively stable for organizational insiders but slightly dynamic for organizational newcomers and internal job changers. In addition, they found that the dimensions of emotional exhaustion and depersonalization were more sensitive to career transition type than reduced personal accomplishment.

Such research is of particular relevance to sport psychologists, where they frequently operate across multiple organizational boundaries, and may hold multiple role identities (Andersen et al., 2001). Similarly, while they may form part of the support function with high performance teams or athletes, their role as a psychologist may mean that they remain somewhat of an "outsider" operating in a professional vacuum. Aoyagi and Portenga (2010) describe this as a role "in which the practitioner is the only person in the environment with knowledge of professional roles, responsibilities, and ethics" (p. 258). Ambiguity resulting from managing multiple role identities is a well-established cause of stress and burnout. For example, research has demonstrated that workers distinguish between organizational, workgroup and career foci of identification (Millward and Haslam, 2013), that there are circumstances when work identity is negatively associated with well-being (Avanzi et al., 2012), and that managing multiple roles is associated with stress and burnout (Rothbard et al., 2005). Critical outcomes of burnout are decreased job performance and increased absenteeism (see Bakker et al., 2014, for a review). Furthermore, burnout has been found to be contagious and thus, there is evidence that experiences of burnout can be transferred to others in contact with the burned out individual (Bakker et al., 2005). For psychologists in clinical settings, such outcomes will undoubtedly impact on their client interaction and capacity to support them.

Contemporary research has introduced interpersonal strain as an additional dimension of burnout (Consiglio, 2014). Interpersonal strain represents "the feeling of discomfort and disengagement in the relationships with people at work resulting from exceeding social requests and pressures" (Borgogni et al., 2011, p. 875). Research has established its distinctiveness from established burnout dimensions (Borgogni et al., 2011) and it has been shown to be related to emotional dissonance and health symptoms in hospital staff (Consiglio, 2014). As healthcare professionals, psychologists are also subject to the effects of high levels of interpersonal and emotional demands, which may result in high levels of experienced interpersonal strain. Thus, like any other healthcare professional, psychologists may be particularly susceptible to burnout. However, in contrast to other healthcare professionals, psychologists are trained in self-care techniques for managing psychological health and well-being. Interestingly, there may be expectations that practitioners are expected to be able to manage their mental health appropriately in themselves. Thus, there may be a degree of stigma associated with burnout for a psychologist and this could reduce their engagement with processes such as self-referral. Clients, employees, colleagues, and even family and friends may be perceived as questioning the abilities of a psychologist who is struggling with their own psychological distress (Barnett et al., 2007). However, Bearse et al. (2013) reported that although stigma is not rated highly as a barrier toward seeking personal psychotherapy, almost two thirds of respondents admitted to not seeking psychotherapy at a given time even though they recognized that it could have benefited them. Bearse et al. (2013) suggest that this could be related to the perceived privacy issues associated with visiting another psychologist, such as being seen as a client of someone else which could deter an applied practitioner from seeking the desirable help.

Work Engagement as a Resource

The job demands-resources model posits that the experience of work engagement is an antidote to burnout (e.g., Gonzalez-Roma et al., 2006; Schaufeli et al., 2008). In this case, work engagement represents a state of mind characterized by feelings of vigor, dedication and absorption (Schaufeli et al., 2002). Vigor is characterized by high levels of energy and resilience while working, the willingness to invest effort in one's work and persistence in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge (Schaufeli et al., 2002). Finally, absorption is characterized by being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties in detaching oneself from work (Schaufeli et al., 2002). Vigor and dedication are considered direct opposites of the exhaustion and cynicism components of burnout (Bakker et al., 2014). Work engagement has been shown to be related to decreases in ill-health, and an increase in job performance and life-satisfaction (Shimazu et al., 2015).

Accumulating evidence demonstrates strong support for the proposition that highly engaged employees are much less likely to experience burnout, and even experience fatigue in a different way (Schaufeli et al., 2006). "Engaged employees have a sense of energetic and effective connection with their work activities, and they see themselves as able to deal well with the demands of their jobs" (Schaufeli et al., 2006, p. 702). Moreover, work engagement is fostered when job and personal resources meet the demands faced in the job (Bakker and Demerouti, 2008). Although high workload and multiple roles are associated with burnout as discussed above, there are situations when the negative effects of such job demands may be mitigated and engagement can still be experienced. For example, Hakanen et al. (2008) demonstrated that dentists engagement was not affected by high workload when they experienced high skill variety. However, when they experienced low skill variety, engagement decreased as a function of increasing qualitative workload. Thus, engagement may contribute the upward spirals of resource gain (Salanova et al., 2010), which can buffer against the negative health impairment spiral of resource loss that can lead to burnout.

The Role of Social Support as a Resource

Prevailing research suggests that social support is one of the most important job resources in combating burnout and facilitating engagement, and has been the most extensively studied job resource in buffering against burnout (Maslach et al., 2001; Halbesleben and Buckley, 2006; Blanch and Aluja, 2012). "Social support" refers to an individual's belief that help is available from other people in different situations (Cobb, 1976; Mayo et al., 2012). Recent research on interpersonal strain has utilized the conservation of resources theory (Hobfoll, 1989) to account for the relationship between the social environment and burnout. The basis of this theory is that people have a drive to create, foster, conserve, and protect the quality and quantity of their resources (Gorgievski and Hobfoll, 2008). Burnout, from this perspective, is a stress outcome resulting from a process of the slow bleed out of resources without any counterbalancing resource gain or replenishment (Gorgievski and Hobfoll, 2008). Utilizing this perspective, social support has been found to be a job resource that buffers the effect of stress (Cohen and Wills, 1985; Bakker et al., 2004; Mayo et al., 2012) and thus should ameliorate the onset of burnout. Social support has also been shown to be inversely related to burnout in a sporting context (DeFreese and Smith, 2013). Experimental research suggests that replenishment occurs given the occurrence of favorable conditions (Tyler and Burns, 2008). From this perspective, social support may be a mechanism through which burned out individuals try to create such favorable conditions.

The picture may be somewhat more complex than this, however. One key area of investigation lies in examining the source of social support, which may be work-related (e.g., supervisor, co-workers) or non-work-related (e.g., family; Halbesleben, 2006), and vary in terms of whether it is formal (e.g., counseling service) or informal. A meta-analysis of sources of social support and burnout (Halbesleben, 2006) found that the existence of social support as a resource, did not demonstrate relationships across any of the three burnout dimensions. However, when considering the sources of social support, a different view emerged. Work-related sources of social support were more closely associated with exhaustion than depersonalization or personal accomplishment, while the opposite pattern was found with non-work sources of support (Halbesleben, 2006).

The Present Study

Social support is encouraged by sport psychologists in the maintenance of an athlete's well-being (DeFreese and Smith, 2014). Despite the extensive literature establishing that social support is an important job resource in combatting burnout, little research has examined the lived experience of burnout for those who are meant to be experts in its management. In this study, we aimed to explore the experience of burnout for sport psychologists using a qualitative approach. Specifically, we were interested in the lived experience of managing burnout in professionals who "should know better" and the cognitive dissonance associated with both managing athletes' psychological health and well-being, while simultaneously experiencing burnout themselves.

Secondly, we aimed to encapsulate work engagement and its sources among sport psychologists, specifically examining the different aspects of work engagement and how these differed between those who were deemed to have experienced either low or high levels of burnout.

Finally we captured critical incidents of burnout experienced by sport psychologists, and qualitatively examined whether those with experienced high or low levels of burnout cited different sources of social support, including formal versus informal, and work-related versus non work-related sources of social support.

MATERIALS AND METHODS

Participants

A total of 51 participants provided informed consent to participate in an online survey, from a target sample of 80, from which 30 agreed to participate in follow-up interviews. Purposive sampling was employed to obtain a comprehensive exploration of the topics among an international sample of sport psychology practitioners (limited to Anglophone countries, i.e., the USA, the UK, Ireland, Australia, and New Zealand). Inclusion criteria were as follows: (a) practitioners had to be currently accredited or certified as a sport psychologist by a relevant organization [i.e., Association of Applied Sport Psychology (AASP), HCPC, Australian Psychological Society, or Irish Institute of Sport] and

TABLE 1 | Summary of the International Sample of Practitioner Sport Psychologists.

Location	Accrediting/Licensing Body	Total Accredited	Percentage of Available Sample (*n*)	Percentage of Sample
North America	Association of Applied Sport Psychology (Certified Consultant)	334	3.89% (13)	43.33%
UK	Health Care Professionals Council (Practitioner Psychologist, Sport Psychology)	215	3.72% (8)	26.66%
Australia	Australian Psychological Society (College of Sport and Exercise Psychology)	221	2.26% (5)	16.66%
Ireland	Irish Institute of Sport (Registered Member)	25	16% (4)	13.33%

(b) they must also work within the high performance environment (have attended an international competition such as the Olympics or Paralympics, World Cup, European Cup, Pan-American or the Commonwealth Games in the role of sport psychologist or have worked with athletes who have competed at this level). Institutional ethical approval was granted by the Education and Health Sciences Faculty Research Committee for all aspects of this study. Attrition occurred for both the survey where 12 of the sample were excluded due to incomplete information (or because they did not fit criteria) and the interviews as four participants did not respond to the invitation to be interviewed and another four were unable to be scheduled appropriately. In sum, thirty practitioners (males $n = 18$, females $n = 12$) completed the qualitative study (see **Table 1**) which resulted in a 58% response rate for interview as this was based on the numbers that completed the initial survey.

Materials

A semi-structured interview guide was developed for the purpose of this study. The question items were designed to elicit responses to a broad range of both positive and negative work-related experiences among a sample of applied sport psychologists. For instance, they were probed on their experiences of work engagement (e.g., Can you think of a specific time when you could describe yourself as engaged in your work?), burnout (e.g., Can you think of a time when you just weren't able to recover from work?), and their use of social support as a personal resource (e.g., Can you think of a specific time when you turned to someone you trust in a time of stress?).

Combined with these prompts the interview employed a "critical incident technique" (CIT; Flanagan, 1954; Gremler, 2004) in order to encourage the participants to recall in rich detail, an experience that related to the area of investigation. CIT obtains a record of specific behaviors from those in the best position to make the required observations (Gremler, 2004). If the participant felt they had not experienced the behavior themselves, they were prompted to recall if they had witnessed a certain characteristic in others, however they were encouraged to use their own experienced above those of another.

Procedure

Institutional ethical approval was granted for this study and subsequently, 80 practitioners who met the inclusion criteria for the study were identified, emailed, and invited to participate in the online survey. The recruitment email detailed the process of participation, with individuals invited to complete an online questionnaire to glean basic demographic information and confirmation that they were accredited as practitioners. After they completed the questionnaire, participants received a personal email thanking them for completing it and then they were sent an email outlining the next phase of the study.

Semi-structured interviews were organized, taking into account international time zones and the availability of both the participant and researcher, and conducted via Skype^{TM}. The duration of the interviews ranged from 40 to 100 min and all were audio-recorded with consent from the participant. The interviews were then transcribed verbatim, and the transcripts were sent to each participant for approval.

Analyses

Data analysis was conducted through NVivo V.10 software. The qualitative data analysis utilized a thematic analysis framework (Braun and Clarke, 2006), and proceeded in a number of steps. The researcher became familiar with the data through transcription and spent some time re-reading the script and re-listening to the audio recordings. Open coding determined the separation of the data initially; as the interviews were semi-structured, answers from different sections were able to be coded under the same heading at this point. Following the guidelines from Braun and Clarke (2006) initial codes were generated and line-by-line analysis was conducted in order to gather relevant data for each potential theme. The coded themes were isolated and more specific themes within each section were identified. By subjecting the data to an inductive analysis, the classification of the information and further reduction of the information into manageable units served to reflect both the reality of the participants and to shed light on their interpretation of their reality from their interviews (Braun and Clarke, 2006).

Each interview script was scrutinized for examples of burnout as defined by Maslach (2003, 2011) and subjectively assigned the attribute of either moderate to high levels of experienced burnout (high burnout), moderate to low levels of experienced burnout (low burnout) or experiencing no burnout (not-applicable).

Work engagement experiences were examined in all participants comparing level of experienced burnout. Finally, a frequency analysis was conducted to examine the extent to which those with high burnout versus low burnout recalled the use of social support and specifically where that support was sourced. The process of qualitative analysis employed was not rigid but was instead fluid and flexible in nature, so these steps followed in an interactive fashion. This was based on the approach of Braun and Clarke (2006) who stated that "analysis involves a constant moving back and forward between the entire data set, the coded extracts of data that you are analyzing, and the analysis of the data that you are producing" (p. 86).

RESULTS AND DISCUSSION

The findings are discussed under the primary themes of burnout, work engagement, and social support, followed by discussions, conclusions and suggestions for future research.

Burnout

Each participant was subjectively categorized as either "high burnout" or "low burnout" or "non-applicable." However, examples of burnout were readily reported by almost all participants. Similar to the findings of Dunford et al. (2012) emotional exhaustion was the most frequently cited dimension of burnout reported, as exemplified by P02/P12:

> *. . .And when we talk about depression and things, I actually think looking back on it now, and having had a year's distance from it; it was not a positive experience in my life, I contemplated giving up, I was so unhappy in my position.*
>
> *And it can cause emotional exhaustion because sometimes there aren't things that you can do about it. If I'm frustrated with a coach or two . . .and then you get frustrated and then you question why do I even do this?. . .I don't take it personally, but you know it's frustrating because they don't allow you to do your job the way it needs to be done and it creates emotional exhaustion and frustration and gets you to question whether or not you want to even be here anymore.*

Feelings of emotional exhaustion were not limited to those who had experienced high levels of burnout. Even those in the low burnout group had episodic experiences of exhaustion, with one participant (P04) stating:

> *But at that time I do remember vividly having that feeling of. . .it was more the exhaustion mentally and physical and I just thought "I've nothing there, I can't give you anything."*

In contrast to those who had experienced high levels of burnout, these latter reports related to less sustained experiences and a single case load. Once the competitive season finished, these feelings of exhaustion dissipated. For some participants, especially those who held a dual role in academia, the balancing of existing workload and their willingness to take on extra work to satisfy their own desires took a toll on their resources; P14 highlights this issue by saying:

> *I still loved doing the applied work [but] it was at that point just another thing that I had to get done versus something I really enjoyed and looked forward to because I was just trying to cram it in along with anything else. And so I've been really trying to work towards trying to chunk off time periods which are specifically devoted to my applied work, that way it sort of stays in that box and then my academic stuff stays within a different box . . .*

TABLE 2 | Explanation of Coding Categories for Work Engagement.

Code	Child Node	Meaning
Work Engagement		Any quotes that encapsulate the idea of Work Engagement
	Absorption	Individuals are fully concentrated and engrossed in their activities, time passes quickly and they find it hard to detach themselves from work (Hakanen and Schaufeli, 2012).
	Dedication	Strong involvement in one's work accompanied by feelings of enthusiasm and significance and by a sense of pride and inspiration (Hakanen and Schaufeli, 2012).
	Vigour	High levels of energy and mental resilience while working. The willingness to invest effort in one's work and the ability to avoid being easily fatigued. Persistence in the face of difficulties (Hakanen and Schaufeli, 2012).
	Flow	A sense that one's skills are adequate to cope with the challenges at hand, in a goal-directed, rule bound action system that provides clear clues as to how well one is performing. Concentration is so intense that there is no attention left over to think about anything irrelevant, or to worry about problems. Self-consciousness disappears and the sense of time becomes distorted. People are willing to do an activity for its own sake, with little concern for what they will get out of it (Csikszentmihalyi, 1990).

Although instances of the following were less readily reported, participants from both high and low burnout out groups had also purportedly suffered from decreased feelings of efficacy, the dimension highlighted by Maslach et al. (2001) as being self-evaluative. It is highly plausible that the work being conducted was to a required standard, however feelings of incompetence and reduced productivity can negatively affect an individual's sense of well-being. P21 highlights this issue in the following excerpt:

> *. . .well let's see my, my performance was not good, I stopped doing things to the best that I could I started doing things just to get them done. So that was pretty difficult until another option was available. So I stopped being really proud of the work I was doing, which is never a good thing I always would be proud of what I'm doing rather than not.*

As with work engagement, experiences of burnout were common and varied amongst the sport psychologists. What appears to differ between participants is the resources employed to combat the negative impact of burnout on their well-being. Two appear prevalent, the experience of work engagement as a buffer against burnout, and the utilization of social support as a social resource.

Work Engagement

The practitioners were all able to recall instances of work engagement and verbalize what work engagement meant to them. Using a matrix coding query, we found that those who had not experienced high levels of burnout recalled instances of all three dimensions of work engagement at a different intensity than those who had experienced high levels of burnout. Statements regarding work engagement were coded as whether they represented vigor, absorption or dedication (see **Table 2**, for an explanation for each code). Dedication was identified most readily irrespective of their reported levels of burnout. As stated by P04:

> *Without question it's when you see that light bulb moment in somebody's eyes. When they have come to you wanting to be somewhere in their life in terms of their sports performance, or other areas in their life, because it wouldn't be only sport that I deal with an athlete, there would be other issues that would come up. You'll see somebody and you'll know in their mind they want to be able to achieve something when they come to you but they usually are away from that, they're not getting it for whatever reason, and then when I can identify what are the obstacles, and the barriers and the gaps that are in the way, and help them realise that they actually already have the tools to deal with it, and all I'm going to do is facilitate them in bringing them out. That Ping! Moment when they go "Ooooh I can do this!" . . . It's just – I love that, I love that! It's such a kick.*

Both vigor and absorption were commonly reported, but more frequently by those who had not experienced high levels of burnout, compared to those who had experienced high levels of burnout. An example of absorption is as follows (P07):

> *I can relate to that especially when you're working with people it's difficult to have a concept of time because you're so engaged. You have to be so in the moment to actually be present with the individual. You almost forget how much time has passed definitely when I'm working one-on-one with people and also when researching and reading I would feel the same thing for a lot of time has passed and not really conscious of that because I am very engaged in what I'm doing.*

Similarly, P17 shares their experience of vigor during an episode of high engagement as having:

> *. . .High energy levels, kind of really excited about the challenge of doing what I was doing. I felt really motivated, which made me be really organised and plan out what I was doing and think about things thoroughly.*

Although these quotes are only a small extract from the sample of recorded quotes, they clearly convey the different areas within which sport psychologists experience work engagement. Furthermore, they also reflect the degree to which practitioners are passionate about their work, how they garner meaning from working with athletes; seeing them grow as both performers and individuals.

Social Support

A matrix coding query was conducted, looking at the frequency of each social support source for those who had experienced high and low levels of burnout. Our findings indicated that there appeared to be some differences in the magnitude with which individuals with low versus high experienced burnout utilized different sources of social support (see **Table 3**).

The analysis revealed that participants identified several sources of social support, and for the purposes of our analysis, these were categorized and themed into work based versus non-work based. Firstly, work based sources of social support were divided into formal and informal sources of support. Examples of formal work support included support received from work-provided counseling, supervisors and superordinates, and formalized peer groups. Informal work support sources included informal mentors and informal peer groups. Non-work based sources of support included, for example, family and friends, personal counseling (e.g., if sought by the individual independently to their place of work) and peer support, which included colleagues who were explicitly identified as part of their organization but who did not bear the role of sport psychologist (e.g., other sport science and medical personnel).

In the findings, work based sources of social support were cited most frequently. Work based social support can contribute to an individual's identification with an organization, especially for those who work virtually (i.e., working from home or on the road and outside the traditional centralized office; Wiesenfeld et al., 2001). The most notable source of formalized social support was support from a supervisor when one participant (P15) stated that:

> *It's nice to be able to run things by somebody. I also have a supervisor who lives in a city interstate, and I can always just pick up the phone and ring him there and say: hey, I've got this problem what do you think?*

Meta-analytic reviews have concluded that social support from a supervisor has been shown to decrease the perceived workload of an individual (Bowling et al., 2015). Their meta-analysis also showed a similar relationship between support from one's co-workers and work stress. Participants reported using this source of social support in both formal and informal ways as P02 commented:

> *If you're talking about peer support within an academic situation I've got people I turn to, [in the] research situation again, I've got people to turn to. . ..I've had a number of, kind of formalised peer supervision groups for my applied work and I find them invaluable.*

This quote is supported by another participant, P07, who states:

> *"[another practitioner] was in London during the games and like I didn't meet up with him but we were in pretty regular contact we were - and it was informal but it was helpful because I knew, he knew what I was feeling you know and I remember that he sent me a couple of messages that were really kind of spot on and that was a very informal thing but it was, it was an outlet, and I knew, I think I did ring him once and we had a pretty long conversation yeah."*

TABLE 3 | Explanation of Coding Categories for Social Support.

Code	Node	Child Node (i)	Child Node (ii)	Meaning
Social Support				Any quotes that encapsulate the idea/ benefits of social support.
	Non- Work			Social support from outside the field of sport psychology.
		Family and Friends		Family and friends unrelated to sport psychology.
		Formal		This is where a participant has sought professional counseling or guidance outside of their organization.
		Peer		Alternatively people who work in their organization but are not within the same field i.e. other service providers.
	Work			Social support from within the field of sport psychology or formally from within the academic organization.
		Formal		
			Organizational	Where a participant cites using services provided by their organization
				i.e., an Employee Assistance Program (EAP).
			Peer	A formalised peer group within the organization.
			Supervisor	A person or person(s) who has been formally assigned to the participant to provide guidance in a managerial capacity. Their direct line manager, HOD, director of performance etc.
		Informal		
			Mentor	Someone within the organization who acts as an informal mentor to the participant.
				Or a previous mentor who the participant continues to seek for advice and guidance i.e., previous PhD supervisor.
			Peer	Friends or colleagues within the organization who the participant turns to in order to vent, etc., Or other Sport Psychologists who they collaborate with but who do not work in their organization.

Both types of peer related social support were cited as being instrumental to managing work stress, however informal peer support was more commonly cited. Those who had not experienced high levels of burnout reported both sources more readily than those who had experienced high levels of burnout.

Another form of social support commonly reported by the practitioners was that obtained from friends and/or family. Lapierre and Allen (2006) believe that both emotional support and instrumental sustenance (relieving family members of home based tasks or responsibilities) can alleviate work-family strain and contribute to employee well-being. One participant, P21 stated:

> *"I always say that my wife is fantastic and very supportive, and she knows when I get busy I'm going to do a little bit less of the work around the house, she's going to help out with that. . .I would also say that socially on top of my wife, I have a group of friends, a very, very fond group of friends that are just a fantastic social support network. To the extent that if I ever say I need something, I will tell them I need something and they will do everything that they can to help."*

The above quote shows the influence of both friends and family on relieving work-family strain, which ultimately reduces an individual's perceived work load thus reducing his or her work-related stress enhancing their well-being.

However, the most common sources of social support accessed by our sample seem to be informal in nature. Participants did not indicate that the support was organized or formalized, and was frequently sought on an *ad hoc* basis. Informal peer support was the second most highly cited form of support after family support. Those who had not experienced high burnout cited informal peer support more often than those who had experienced high levels of burnout. An example of informal support is provided by another participant, P24 who states:

> *I have been pretty fortunate for the eight years that I have been at the (organisation) because I have had a great group of sports psychologists and clinical psychologists that have been part of, that I have shared my work with. And that group has change quite significantly over the 8 years, but it has always been a big source of professional support for me.*

Interestingly, those who were deemed to have experienced high levels of burnout cite family and friends more frequently than those who had experienced lower levels of burnout, with a 3:2 citation ratio for those who have experienced high levels versus those who had not. Family support often comes in the form of the ability to vent, or detach from work. As one participant P05 states:

> *So I think that of course there is my family, my brother, my father, my mother – I know I can always talk to them if there's something annoying me or pissing me off about something, or that I'm stressed out about something.*

And another practitioner, P21, comments:

> *But my wife and my friends, we escape work I mean when we're together we very rarely talk about the work that we're*

> *doing. But we're doing fun activities you know whether it's related to a youth sporting contest or you know I have a group of friends that one of us holds a get-together maybe once every second week, so we're always together. So like we vacation together so you know it allows us to escape really.*

Those who cited "friends" in the field of sport psychology were coded under "Work/informal/peer." In sum, participants used social support as a resource, indicating the important role at hat this resource plays in these lives. However, support seemed rather unorganized, heavily based on family and friend support systems, with greater focus on short-term relief rather than long-term coping.

DISCUSSION

Burnout

Participants in this study who combined their work in academic institutions as well as practicing applied sport psychology, often cited bringing work home, working from home, staying in the office late, or attending sporting events out of office hours, indicating that there might be little true psychological detachment from work. From a purely applied perspective, there were instances cited where the participants reported they were unable to detach from their work, especially when on site at camp or competition, which echoes the sentiment by Schein that a consultant is always consulting (as cited in Aoyagi and Portenga, 2010, p. 256). Despite the fulfillment of their job, all participants reported experiencing incidents of exhaustion at some point in their career, but only some reported full-blown experiences of burnout.

Work Engagement

Engagement was frequently cited by our participants. When people are engaged in what they do, their well-being (both physical and psychological) will increase (Deci and Ryan, 2000). Hakanen and Schaufeli (2012) found that even though burnout can predict a person's level of depression in the long term, the positive effect of work engagement on life satisfaction outweighs the negative effects of burnout. Those who had experienced high levels of burnout cited less frequently all dimensions of work engagement but were still able to recall times of work engagement and passion regarding their work. Therefore, it is invaluable to an individual's work-related wellbeing to reduce instances of burnout and to support long-term work engagement

Social Support

Burnout was experienced by the participants in this study. However, a resource that can both buffer the individual from burnout and foster work engagement is social support. According to Hobfoll's (1989) conservation of resources theory, social support is a key resource that can preserve valued resources. In our study, we concluded that social support often facilitates recovery or can be the source of recovery, i.e., when an individual's loved ones will encourage them to take time off and detach from work.

Support from supervisors has also been found not only to protect work engagement during times of high stress, but to be a key resources in encouraging work engagement in employees (Bakker et al., 2007). Furthermore, Schaufeli and Bakker (2004) also found evidence for a positive relationship between social support (both support from colleagues and supervisory coaching) and work engagement. On the other hand, job resources had a negative effect on burnout, meaning that the greater the resources, the less likely an individual is to burn out.

Notably, our sample highlighted the frequent use of informal forms of social support and rarely reported using formal forms of social support. Prior research has suggested that noted that a main reason for not seeking professional help in terms of personal psychotherapy is the perceived difficulty in finding an acceptable therapist (Bearse et al., 2013). While this may be a contributing factor to the more commonly reported reliance on informal social support, it is also possible that due to individualized nature of the work of many practitioners, having formalized social support is less available. Rhodius and Sugarman (2014) recommends establishing peer support groups to combat this potential isolation but notes that it is not required by an accrediting body other than during supervised training, with the exception of the Australian accreditation process for practicing psychologists. Interestingly, Cogan et al. (2012) highlighted the benefits of working in teams during the provision of psychological support to athletes at the Olympic games. This formal peer-support structure was unique and it may be a useful way to manage risk among practitioners during periods of intensive workload.

Future research could investigate the challenges of practitioners staving off burnout by targeting the formal peer support networks and exploring the role of social support, boundary issues and specific self-care behaviors, which may include what Walsh (2011) has termed "therapeutic lifestyle changes." These lifestyle changes proposed by Walsh (2011) are each linked to mental health benefits and include (effective nutrition, exercise, and physical activity). Other possibilities for future research include mindfulness interventions for practitioners. They could be implemented into practitioners daily life for self-care in addition to their use to enhance the consultation preparation process. A recent study reported that sport psychology practitioners tend to use mindfulness activities within consultation sessions, but not for their own self-care as practitioners (McAlarnen, 2015). The challenges for practitioners in dealing with diverse athlete groups may present a challenge which requires further scrutiny. Another interesting and fruitful avenue for future research would be to specifically longitudinally investigate well-being in a select cohort of applied sport psychologists over a concerted block of time. This block of time optimally would coincide with a major sporting event (e.g., Olympic Games, world championships) which would see this group of practitioners work prior to, during, and after this major event with teams and individuals. The benefits of investigating sport psychologists well-being in the lead-up to, during and after a major sporting event will shed light on the unique demands placed on applied sport psychologists. Ultimately this type of research may lead to practitioner specific guidelines and recommendations regarding the promotion of appropriate self-care.

CONCLUSION

This study has provided tentative evidence for the role of social support in ameliorating burnout and other challenges to mental health in a sample of applied psychology practitioners. Instead, positive work engagement was integral to the practitioners experiences and the role of formal support networks may be a key feature to consider (Cogan et al., 2012). It is arguable that the social context rather than individual competencies were a key consideration in the development of psychological resources. Applied sport psychologists act as support to many athletes and sports professionals, often instructing them to live balanced lifestyles and encouraging them to build a strong and supportive network around them, yet according to our study this is not always the case with the practitioners themselves. Burnout appears to creep into this profession regardless of the high rate of work engagement. Hakanen and Schaufeli (2012) found that even though burnout can predict a person's level of depression in the long term, the positive effect of work engagement on life satisfaction outweighs the negative effects of burnout. Therefore, it is valuable to not only reduce instances of burnout but to support and encourage long-term work engagement.

Our research adds to the accumulating evidence and notion that mental health and indeed the viability of applied psychology rests not just on the achievement of successful outcomes for clients but—also—on the ongoing mental health of practitioners. Furthermore, future research can build on our findings in exploring the optimal use of psychological and social resources in reducing chances of burnout of applied psychologists.

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REVIEW
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An integrative review of social and occupational factors influencing health and wellbeing

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Therapeutic approaches to health and wellbeing have traditionally assumed that meaningful activity or occupation contributes to health and quality of life. Within social psychology, everyday activities and practices that fill our lives are believed to be shaped by structural and systemic factors and in turn these practices can form the basis of social identities. In occupational therapy these everyday activities are called occupations. Occupations can be understood as a contextually bound synthesis of meaningful doing, being, belonging and becoming that influence health and wellbeing. We contend that an integrative review of occupational therapy and social psychology literature will enhance our ability to understand the relationship between social structures, identity and dimensions of occupation by elucidating how they inform one another, and how taken together they augment our understanding of health and wellbeing This review incorporates theoretical and empirical works purposively sampled from databases within EBSCO including CINAHL, psychINFO, psychArticles, and Web of Science. Search terms included: occupation, therapy, social psychology, occupational science, health, wellbeing, identity, structures and combinations of these terms. In presenting this review, we argue that doing, being and belonging may act as an important link to widely acknowledged relationships between social factors and health and wellbeing, and that interventions targeting individual change may be problematic.

Keywords: occupational science, occupational therapy, social structure, social identity, social class, wellbeing, activities of daily living

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Introduction

Occupational therapy, like psychology has tended to view one's health and wellbeing as situated within the individual and largely determined by the internal motivation, abilities and constitution of that individual. Despite these disciplines espousing a biopsychosocial model and recognizing the influence of a range of factors on health, the individual often remains the focus of intervention and attention. Problematizing the individual obscures the potential for occupational therapy to address health and wellbeing concerns resulting from occupational inequities within communities and populations (Rudman and Dennhardt, 2008; Ikiugu and Pollard, 2015). Ergo, Occupational therapy scholarship and practice is deepening its understanding and consideration of the sociocultural context.

Social psychology has had a longstanding appreciation of the sociocultural context and particularly how social groups to which an individual belongs inform the individual's identity, their behavior (Tajfel, 1981), and as such, their participation in occupation. Notwithstanding recognition of a range of contextual factors, individual behavior remains central to much scholarship and intervention within psychology and occupational therapy. A deeper analysis of how occupational therapy and social psychology study individuals, collectives, actions and structures within social contexts and how this influences health and wellbeing, will highlight the complementary nature of the two disciplines. It will also direct warranted, and much needed, attention to the social in the biopsychosocial perspective through collaboration.

The Disciplines: Defined and Integrated

Here we present integrated disciplinary understandings of human action within a social world, arguing that interventions to improve health and wellbeing must consider that an individual's identity and what an individual chooses to "do," can neither be separated from each other, nor from the social structures that inform each of these entities. Doing is synonymous with occupation (Wilcock, 1999) the medium central to occupational science and to the discipline of occupational therapy. Occupational science is the study of humans as occupational beings (Yerxa, 1990). Introduced in 1989, it is the academic discipline that underpins occupational therapy. The profession of Occupational therapy was founded early in the 20th century, though its philosophical base emanates from a range of 18th and 19th century movements, including the mental hygiene and the moral treatment movements. These philosophies supported the idea that those living in asylums, who had been subjected to poor and inhumane treatment, were worthy of receiving care. Specifically, use of planned activities within a daily life regimen was introduced to imbue compassion through "normalcy" into the lives of those experiencing mental illness (Wilcock, 2006). Later in the 19th century, the arts and crafts movement, as a counter to industrialization, saw engaging patients in occupations, such as craftwork as moral and curative (Reed, 2015). Subsequent then to WW1, occupational therapists also became providers of rehabilitation services to injured or disabled veterans who faced a range of difficulties upon their return home. Combining these historical perspectives, occupational therapy today is about enabling engagement in occupations that promote health, wellbeing and participation in life for all people. To understand the significance of occupation in the lives of humans and the relationship of occupation to health and wellbeing, it is useful to describe occupation as a meaningful synthesis of doing, being and belonging (Wilcock, 1999; Rebeiro, 2001; Hammell, 2004). This will be discussed in detail later in the paper. Here it is important to know that it is through our occupations that we connect with the world and create meaning, enabling us to live well, healthily and ultimately to survive (Wilcock, 1999). Additionally, that this "doing" and its associated therapy, occupational therapy, is often concentrated on individualized interventions.

The focus of social psychology is on understanding how individuals think, act and feel when in social situations. Early social psychology was influenced by philosophical beliefs about human behavior as governed by rationality versus irrationality and social behavior based on utilitarian needs or innate social tendencies (Goethals, 2003). If human behavior was guided by abilities beyond one's own mind, then the objective of social psychology was to apply a scientific method of inquiry to questions of social interaction and social influence. The objective of which was to establish principles of social behavior and by doing so, enable the creation of optimal societal conditions with maximum benefits to members (Gergen, 1973). Accordingly, contemporary social psychology and social identity theory in particular, points to the relevance of social structures to what we are enabled or dis-abled to "do." Within the social identity approach concepts, social relations, shared identifications and belonging are linked to social groups which in turn are related to, how we live and how well we are (Haslam, 2004). Psychology and the social identity tradition have tended to orient to cognition as an important substrate for health and wellbeing. Thus an orientation to occupation offered by occupational therapy, allows a reorientation to the importance of activity and practice to health.

To support this shift in perspective we will first discuss health and how it can be viewed through social and systemic factors. We then explore how social factors shape our identity and our occupations. Next we consider how contextualized occupations influence health and wellbeing. We then conclude, arguing that interventions that attend to how identities and groups anchor and motivate people are those most likely to gain traction and embed in everyday activities and practices leading to improved health and wellbeing.

Health: A Role for Occupational, Structural, and Group Influences?

Health is defined as a state of complete physical, mental and social wellbeing and a resource for everyday life. An individual or group must be able to identify and realize aspirations, satisfy needs, and change or cope with the environment (World Health Organization, 1986). Health and wellbeing are understood to be promoted through the ability to make purposeful and meaningful every day choices about what to do (Townsend and Wilcock, 2004). Occupation in which people engage has long been known to influence health and wellbeing (Creek and Hughes, 2008). Engagement in meaningful occupation, a concept central to occupational science, has been identified, not only as essential to maintain health, but as essential for survival (Wilcock, 1999). The occupations, for example, of food shopping, cooking, and house building are integral to our ability to maintain our health and wellbeing. Additionally, occupation provides structure and routine to our days, contributes to our dynamic sense of identity, and keeps us connected to others and to the world around us (Hasselkus, 2006). These additional aspects have also been shown to be essential for our health (Koome et al., 2012; Gupta and Sullivan, 2013).

Perhaps because of the predominant culture of individualism in the West both occupational scientists (those who study occupation as a human endeavor), and psychologists often neglect the role of macro-social or group influences in our analysis and our interventions (Dickie et al., 2006; Pollard et al., 2008; Kinsella, 2012). Occupational science, occupational therapy and psychology in clinical settings are disposed to concentrating attention at the individual level. In recent years, the emphasis within psychology and social sciences more generally, has been on genetic and neurobiological explanations of human behavior. This has led scholars to try to identify individual characteristics of those who tend toward criminality (Sampson and Wilson, 1995) or are disease prone for example (Friedman and Booth-Kewley, 1987). The contemporary Western zeitgeist influencing much scholarly thought has, and for the most part continues to emphasize and problematize individuals as the source of social ills (Sampson and Wilson, 1995). However, there is increasing criticism of this perspective. Those questioning this orientation (Dickie et al., 2006; Laliberte Rudman, 2013) suggest that it neglects the value of occupation (or doing) with communities and society and limits the potential to address the broader contexts that enable or constrain participation in occupation. There is much evidence to suggest that attending to collective experience, as in co-occupations (occupations done by two or more people) and community occupations, also contribute to meaningful engagement. These observations further our realization of occupation as socially situated (Fieldhouse, 2012; Mason and Conneeley, 2012; Ramugondo and Kronenberg, 2013). Here we propose an alternate understanding of the psychology of health and human behavior which at a minimum requires multiple levels of analysis.

Occupation happens in a cultural, temporal and ecological context (Hocking, 2000). This situatedness of occupation is important for understanding the meaning of occupation and subsequently, its impact on health and wellbeing. Recent critical perspectives, by occupational scientists, of the individualization of occupation have proposed broader social theories as a means of supporting the science of occupation. Specifically, Cutchin et al. (2008) building on the work of early 20th century educationalist, John Dewey, define occupation as a relational action through which context, along with habit and creativity are coordinated toward a particular outcome. In other words, you cannot separate the individual from their environment (Kuo, 2011). Literature in occupational science using this relational or transactional perspective highlights the capacity of social structures to inform engagement in occupation and consequently, health. In Canada, Rudman (2005) analyzed newspaper articles examining how structural and discursive transformations of retirement shaped what retirees viewed as ideal and possible occupations. She found that political discourses were instrumental in shaping what occupations retirees believed to be possible. Further, she argued that the neoliberal message heard by retirees is that they are individually responsible for their own aging and, by implication, their own health outcomes. Galvaan (2015) and Gallagher et al. (2015) explored everyday occupational choices of adolescents living in very disadvantaged neighborhoods in two different parts of the world (South Africa and Ireland, respectively). Both found that daily occupational choices that at risk young people perceive as accessible to them are pervasively informed by the socio political, sociocultural and socioeconomic contexts in which they live. This perception by the young people predicates particular patterns of occupational engagement that may reinforce negative health behaviors.

Thus it can be said that we are highly sensitive to our social context and in particular to disadvantage or inequality and there is a growing evidence that this impacts health (Marmot, 2004). Measures of income inequality allow comparisons of the effects of inequality across nations. These measures include the GINI index, a commonly used measure of income distribution inequality, as well as indicators of the proportion of wealth owned by the richest proportion of the population, a key measure being the 20/20 ratio. The GINI index is based on income distribution of a nation's residents and varies between 0 and 1 (with 0 indicating perfect equality of income distribution and 1 complete inequality). The GINI coefficient has been linked convincingly in a large number of diverse countries, to self-rated health (Mansyur et al., 2008) and morbidity (Kondo et al., 2009) for example. Consistently, research confirms that irrespective of how affluent or poor a nation is it is the level of inequality in a society that determines the steepness of the social class gradient in health (Marmot, 2004). As a consequence, wealthier nations are not necessarily healthier. Health depends on the level of inequality (Wilkinson and Pickett, 2009). Alternatively stated, in societies where the distribution of wealth is more equal, all social classes are healthier.

Marmot's findings on the impact of inequality have important implications. While material disadvantage has consequence for our health, it is relative inequality that has the greatest impact on health. Our relative economic position vis-a-vis other people is interpreted and imbued with social meaning. Feeling valued, autonomous and appreciated in society and having access to social support are integral to relative social positions and these are all important factors in health and wellbeing outcomes. Furthermore these differences are not only apparent across nations; they are also evident across the social class gradient within nations. The very poor suffer most from inequality: life expectancy gets shorter and most diseases become more prevalent with each descending rung of the social ladder (Wilkinson and Marmot, 2003). In a longitudinal study of civil servants in 20 London government departments, the risk of anxiety and depression was evident in the social class gradient amongst both women and men. Both genders in the lowest employment grades had a significantly higher risk of poorer psychological outcomes than those in higher grades and the risk significantly decreased as employment grade increased (Wilkinson and Marmot, 2003). Thus it can be said that health is linked to not only structural conditions and material disadvantage but also one's interpretation of this disadvantage and the subjective meaning with which it is imbued. This portends to a social psychology of health, where context and its associated meaning impacts on health and wellbeing.

A Social Identity Framework: Collective Context, Identity, and Occupation

Social identity theory has been a hugely influential theory in the development of European social psychology. Identity can be understood as the active and dynamic understanding of self that people derive from interactions between themselves and their environments (Simon, 2004). Tajfel's (1981) original formulation argued that social categorization or the tendency to label ourselves and others according to group characteristics is a pervasive social process. Often these labels are short hand methods of saying more about the group members than mere membership implies. Effectively the categorization allows a degree of stereotyping. Importantly this process of categorization is linked to extant social relations, categorization being most likely to occur spontaneously when social and political structures serve to embed group differences. Social identity theory is thus concerned both with the psychological and sociological aspects of group behavior.

Subsequent to categorization, of the self and others as group members, identification with the group develops. This process of identification means that individuals develop a degree of buy in into the groups to which they belong. This willingness to belong has emotional, behavioral and cognitive elements. Tajfel argued that those who identified more strongly with their group, felt better about the groups to which they belonged and as a consequence about themselves. More recently, researchers in this area have argued that the concerns that identity motives may be far more wide ranging and may include strategic and political concerns as well as processes that serve to bolster and support mental and physical health.

In this way identities can also be powerful psychological resources to deal with adverse social, educational and economic challenges (Muldoon and Lowe, 2012; Muldoon, 2013; Cruwys et al., 2014; Jetten et al., 2014). In a landmark paper, Haslam et al. (2009) identified the investigation of relationships between social identities, health and wellbeing as an important applied field of inquiry for contemporary social psychology. The idea of "social cure" was further developed by Jetten et al. (2012) who advocated the social identity approach as a perspective particularly well suited to application in the study of associations between social relationships, group memberships, health and wellbeing.

Not all social identities are the same, however. So although much of the early work relating to the nature of groups and their consequences employed a minimal group paradigm, increasingly psychologists have paid attention to real world social groups. The application of the social identity model to such real world groups is of course the truest test of the model. Over the past decade, research has particularly attempted to recover the "lost nation of psychology" for example by examining the specificities of national identity (Reicher et al., 1997). These attempts have been informed by the work of Billig (1995) on the "banality" of nationalism. Billig (1995) identified banal aspects of social identities. Identities are often unexpressed and unrecognized but nevertheless present and available for mobilization if and when required. These banal or background identities hinge on feelings of belongingness. They are the groups to which we affiliate; the groups to which we feel we belong that are understood as making us who we are. Family and nation are perhaps two obvious examples. These identities have been referred to as affiliative identities (Stevenson and Muldoon, 2010).

Another distinction in types of social identities, drawn by Deaux et al. (1995) is between identities founded upon relationships and identities associated with occupation. This observation has also been made in the literature in other disciplines where the self is understood as a conduit through which "who we are" is constructed via "the social groups we are immersed in" (Lieberman, 2013, p. 191). This second type of social identity considered here has been described by Houser-Marko and Sheldon (2006) as "the self-as-doer" construct. These identities are actively constructed in everyday ways and are actively claimed (Stevenson and Muldoon, 2010). Ashmore et al. (2004) distinguish between ascribed identities, such as gender, and achieved identities, such as occupation. Ascribed identities are similar to the types of affiliative identities detailed previously whereas achieved identities include those "self-as-doer" type identities identified by Houser-Marko and Sheldon (2006). Occupation can be seen as a fundamental component of achieved identities as what we do informs our identity and likewise identity influences occupation, not just what we do, but how we do over time (Christiansen, 2000). These constructive components of identity are more likely to be strategically deployed in the manner suggested by self-categorization theory (Reicher and Hopkins, 2000). These identities are projects ongoing in the sphere of conscious awareness and day-to-day discourse. This strategic deployment of actions in the face of occupational challenge is referred to as occupational adaptation (Schultz and Schkade, 1997). The process of occupational adaptation in which one's identity and wellbeing are central, has been posited not only as a reaction to a disruption or a transition, but as a conscious everyday strategy to advance one's occupational choices, thus reinforcing self-concept and supporting wellbeing (Nayar and Stanley, 2015). Occupation is the nexus of these self-as-doer identities enabling positive occupational identity construction and enhancing occupational competence (Kielhofner, 2002, p. 121). So from several theoretical points of view, ranging from the social constructionist (e.g., Butler, 2003) to the neuropsychological (Wilson et al., 2009), to the social identity approach (Klein et al., 2007), to occupational therapy (Wilcock, 1998; Hammell, 2004), identity is presented as intimately intertwined with "doing." Some identities require performance, in order to be sustainable. Identities must be capable of expression and generally require recognition by others in order to be viable (Klein et al., 2007).

Taken together, a contemporary social identity approach highlights the important relationship between extant social structures and groups and the social identities we subsequently develop. It is increasingly becoming apparent in a growing literature that these identities are linked to health and wellbeing. However, identities are not homogenous. The available literature would appear to suggest that identities that support "belonging" and those that support "doing" may both impact on health although this impact may differ. Interestingly this distinction between doing and belonging is one that has resonance in the discipline of occupational science and it is to this research we now turn.

Occupational Science: Meaningful Being Doing, and Belonging in Context

Central dimensions informing therapies are the sense of "doing," "being," and "belonging" and the inherent meaning of each for the individual. The founding of occupational science has contributed much to our empirical understanding of occupation and how it is experienced by people. The academic notion of occupation as dimensions of meaning rather than a therapeutic taxonomy of self-care, productivity and leisure creates opportunity for nuanced distinctions between doing, being and belonging (Hammell, 2004) that has further enhanced our understanding of the complexity of occupation.

Being

Before we consider doing and belonging, we will briefly address "being" as understood in occupational science. As a meaningful dimension of occupation, being can be considered a focus of attention from active to passive doing; a dimension of occupation that creates a space for being true to ourselves, our identity, and appreciating what is unique about us within our interactions with others (Wilcock, 2006). For example, the moment during the morning school run when you stop focusing on the clock, the traffic and getting to work on time and appreciate the journey as time spent with your children, being a parent. It is seen as introspective and reflective and is often over looked in our "doing" filled lives (Hammell, 2004). The current popularity of mindfulness practices to maintain mental health and improve depression support the idea of being in the moment and suggests that we spend too much time thinking about what we did in the past or what we have to do in the future (Kabat-Zinn, 1994). Mindfulness then can be a mechanism for connecting what we do with who we are; our "doing" with our "being." In today's busy and technologically imbued context, the balance between doing and being can easily be lost. In this situation, people can be enabled to find occupations that create time and space for reflection and meaning making. Mindfulness and flow (Kabat-Zinn, 1994; Csikszentmihalyi, 2014) are concepts that advocate a presence in and awareness of occupation in the moment, and have been suggested to influence wellbeing (Reid, 2011). These opportunities for being can restore occupational balance and the natural equilibrium of our biological, psychological and occupational selves (Wilcock, 2006). Conversely, there are those deprived of "doing" for whom "being" is too consuming and central as individual's lives may lack opportunity or resources for meaningful engagement in occupation, such as refugees and asylum seekers (Whiteford, 2000) those in secure forensic settings (Farnworth et al., 2004) or those living in poverty. There is a dimension of "being" that goes beyond introspection and relates to how we are situated in the world. In considering this aspect of being, the social identity framework just discussed offers insight into how our individual selves are situated within structures and often informed by the labels promoted by these social structures. For example "being" a mechanic, and "being" a doctor each portray different identities that when interpreted within the social world may impact how others view our worth and inform our own sense of self.

Doing

Doing is so central to human existence that life cannot possibly be imagined without it (Wilcock, 1999). Meaningful "doing" is therapeutically used to engage with people when disruption in their lives impacts on their ability to do every day things. For example, when circumstances of forced migration and consequent resettlement adversely disrupt familiar and safe roles and routines, occupations, such as, finding the grocery store, cooking culturally cherished dishes and transferring existing capabilities into a new context can facilitate the re-development of life skills that enable this transition; particularly when the reconstruction of everyday meaning and the enculturation of newly emerging identities are necessitated by the broader resettlement context (Suleman and Whiteford, 2013). Likewise broader considerations of meaningful "doing" are apparent when participating in occupations at the community level. Community gardening has been shown to minimize social exclusion through the gardening group's ability to establish and maintain links with the wider community and by individuals developing knowledge and skills (e.g., horticulture) that are relevant to a wider social circle (York and Wiseman, 2012). As well as challenging negative stereotypes by developing roles that lend to positive identity formation (Mason and Conneeley, 2012). Further, social farming, in which mental health service users supported socially and practically by the farmer, participate in animal assisted interventions on a small farm has been shown to improve a range of symptoms associated with poor mental health (Berget et al., 2011). This social inclusion initiative has been shown to lessen anxiety and depression and increase self-esteem, self-efficacy and coping (Berget and Braastad, 2011).

Fundamentally, what we do influences our health. From the broader social levels just described to the very basic level when we do things like eat well, sleep well, attend to hygiene and avoid high risk activities, like driving without a seatbelt, cycling without a helmet or smoking we can contribute to maintaining our health and prevent ourselves from accidents or ill health. Indeed, the world's top causes of death, such as heart disease, lung disease and stroke are largely modifiable and preventable through engagement in health promoting occupations, such as healthy eating routines and participation in moderate physical activity (World Health Organization, 2014). However, as previously stated occupations are complex and embedded in context. For example, it is not necessarily easy for people on low incomes to eat well. Eating well can be expensive, as healthful diet routines are often more costly (Rao et al., 2013). Likewise, it is not easy for someone who is homeless to sleep well considering the challenge of finding a safe, warm, and dry place to sleep (Chang et al., 2015). People must have the resources and the capabilities to "do" and "belong" in ways that enable them to look after their own health.

Belonging

Ultimately, humans are social beings and as such are embedded in collectives to which belonging is central for health and wellbeing. "Belonging" is about feeling safe, and worthy of acceptance and love (Rebeiro, 2001). Belonging as a dimension of occupation arose from Rebeiro's (2001) study of the meaning of occupational engagement for a group of women with mental ill-health. Rebeiro found that belonging needs were critical to life satisfaction, as it was only when the women in her study felt supported and safe in their environment that they were able to experience meaningful engagement and participation. Wilcock (2007) acknowledged belonging as a dimension of occupation because of the connectedness people experience to one another when engaged in occupations together and the subsequent impact of these relationships on health. The need to belong takes precedence in informing daily occupational choices made by adolescents living in socioeconomically disadvantaged urban areas (Gallagher et al., 2015). Indeed, the sense of belonging experienced through social occupations is so powerful that Glass et al. (1999) longitudinal study of older people found it increased life expectancy. Conversely, belonging needs have also been identified as potentially stigmatizing. Hvalsøe and Josephsson (2003) found that disabled individuals who needed to be with others for assistance due to the challenges of doing things on their own, experienced feelings of differentness and therefore potentially not belonging. Given the importance of belonging to health and wellbeing, foregrounding the individualization of occupation and backgrounding the collective, social, economic and political structures may act to advance health inequities (Laliberte Rudman, 2013). Occupational science is at its genesis in understanding an individual's occupational self as inextricably and relationally embedded within their context (Dickie et al., 2006). This makes social identity decidedly relevant to occupational science.

Meaning

If we add to these dimensions the meaning that individuals derive from their group memberships, as well as from occupations, we gather another perspective of the relationship between belonging and health and wellbeing. Van Nes et al. (2012) studied meaningful co-occupations for older couples as told through photo-stories and found that both being and belonging were central to enjoyment of the co-occupation. When viewing an image of themselves with arms linked on one of their walks—one half of the couple interpreted this as the closeness they experience and the sameness of their steps, while the other partner interpreted this as a way of keeping his balance. These interpretations of the walk represented both the shared and personalized meanings of the occupation. For both it was about doing something meaningful together, contributing to their identity as a couple, despite the different explications. The meaning of occupation is significant as many disciplines have identified meaning as essential to quality of life (Eklund et al., 2012). Even when people do not view their occupations positively or indeed when they are subjected to horrible occupational experiences, the search to make meaning of it can lead to survival (Frankl, 1985). The meaning of the occupation to the individual is critical to the occupation's potential as an agent of change (Wilcock, 2006). Using meaningful occupation therapeutically enables the skills and abilities necessary for participation in life. For example, Merryman et al. (2012) study of an occupation centered summer camp for at-risk youth demonstrated that occupation based programming, within an enriched environment that enabled campers' ability to make choices, led to improvements in skill competence (social skills, thinking skills, personal values and positive self-identity), the capability to make positive occupational choices, and increased resilience. These improvements were effectively sustained upon return to the high-risk environments from which the young people came. Improvements in perception of choice and self-identity may be instrumental in envisioning alternate ways of being that lead to better social, economic and health and wellbeing outcomes.

Occupational science has also led to greater attention to the broader contexts that inform and shape occupational engagement. As a result we are learning that individualized interventions targeting impairments enabling people to "do" may be misdirected. For example, research with wheelchair users consistently highlights societal barriers as equally, if not more disabling, to participation than physical barriers (Ripat and Woodgate, 2012). Political barriers to occupation have also been highlighted. For example, policy decisions regarding support for single mothers whereby participation in any paid employment means mothers risk losing benefits that enable them to provide for their children. These decisions keep single mothers from engaging in occupations that could potentially increase their self-esteem and develop their identity as a contributor to society, thus increasing their sense of belonging. As we develop our understanding of the ways in which the socio economic, socio cultural and political contexts both constrain and facilitate people's ability to participate in occupations of meaning, the more interventions can address the actual barriers to participation that negatively impact on health and wellbeing.

A Particular Case: Social Class, Occupation, and Identity

While the degree to which economic or social mobility can be achieved is debatable, socio-economic identities are more likely to be seen as malleable and therefore must be actively claimed (Stevenson and Muldoon, 2010). Social identification is believed to be underpinned by social comparison and distinctiveness processes. Given the more malleable nature of social class position and the potential for misunderstanding of relative positions, achieving comparison and distinctiveness via doing, being and belonging is essential to maintaining social class positions. In this way, occupation can be seen as central to definitions and understandings of social class and social class can be seen as instrumental in informing occupation. Occupational identity has both individualistic and conformist components (Rudman and Dennhardt, 2008). Conformist occupational identity aligns strongly with affiliative social identity and is evident when occupational choices reflect the expectations of the sociocultural environment. For example, when gang members meet group expectations by choosing to embody similar characteristics, such as dressing in similar clothing or sporting the same tattoo. In essence, claiming the gang member identity. Individual occupational identity is exhibited when occupational choices are not in keeping with the sociocultural context (Rudman and Dennhardt, 2008), thus exhibiting distinctiveness. The presentation of social class as achieved, earned or even chosen, is often linked to the development of negative social identities, or stigmatized identities particularly for low status groups (Fiske et al., 2002). Despite widely held categorization, identification and stereotyping of income groups (Brattbakk and Hansen, 2004; Warr, 2005; McCulloch et al., 2006; Nayak, 2006), the dominant presentation of social class identities as individually achieved inhibits our understanding of this stereotyping as a group based phenomena. Much like understanding occupational identities as ascribed to individuals inhibits our understanding of structures informing an individual's occupations. These phenomena are socially situated and therefore can be shaped by context in the way that contemporary discourses in social media can promote particular subjectivities and alienate others, and thus set standards for ways of "being" or identities (Rudman, 2005).

So while identities can be important resources for health and wellbeing, stigmatized identities are often associated with economically disadvantaged groups. Labeled with negative identity attributes such as helplessness or anti-sociality which are then used to justify and perpetuate social exclusion (McNamara et al., 2011). Coping with stigma generally involves trade-offs (Major and O'Brien, 2005). Typically the perception of discrimination is seen to consolidate a shared identity that groups can then use as a collective resource- a form of psychological empowerment (Haslam and Reicher, 2006). Indeed being a member of a range of social groups is a key aspect of the development of "social capital": The network of alliances and relationships within a community or organization that contribute to its reputation, membership involvement, loyalty and commitment (Haslam et al., 2003). Feeling positive bonds of identity with others within a group is the basis for extending and taking help from group members and underpins community involvement and social responsibility (Levine et al., 2005; Reicher et al., 2007). However, members of disadvantaged communities are members of fewer social groups, have weaker bonds to these groups and a smaller range of opportunities to engage with and contribute to community life and have less influential connections. Such diminished social capital and marginalization from meaningful occupation, negatively impacts health and wellbeing (Townsend, 2012). Individuals lack opportunities to develop their potential, to foster their social inclusion and as such, become susceptible to low mood, low self esteem, isolation, and limited perception of possible futures.

In situations like this, when emotional and psychological resources for coping are depleted; occupation can be a conduit to meaning via our relationship with ourselves and others (Eakman, 2015). Occupation centered interventions can lessen psychological distress (Kohn et al., 2012), improve mood (Graff et al., 2007) and enable individuals to facilitate the orchestration of daily occupations that promote wellbeing (Doble and Santha, 2008). Attributes such as self-concept, self-esteem, and motivation as precursors to coping are developed and mediated through participating in meaningful daily occupations (Brown and Stoffel, 2015). Through "doing," individuals find meaning in their lives, interact effectively with others, develop skills for making decisions, clarify values and beliefs, cope with stress and adapt to changes in life circumstances and demands (Wilcock, 2006). By developing a range of skills through occupation, self-esteem and mastery can be developed, potentially lessening the need for trade-offs in coping with stigma. Human engagement in occupations is a complex phenomenon based on individual and cultural meanings and therefore has the potential to counter stigmatized identities and their potential to negatively impact health outcomes. For example, male carers of a preschool child, along with their child, participated in a gardening project in a disadvantaged community. The findings revealed that fathers created stronger bonds with their child, promoting their father identity. Additionally, they developed social bonds with other fathers, enhancing their social identity as involved fathers, thus, minimizing the stigma and stereotypes associated with those from a disadvantaged background (Mason and Conneeley, 2012). In this way, occupation can be seen to have important consequences for health and wellbeing via "doing," "being," and "belonging" as shaped by its situatedness in people's lives.

"Becoming" as Means to Health and Wellbeing

Complementary to aspects of "doing" "being" and "belonging," "becoming" implies a sense of movement toward a future way of being. In this dimension of occupation, the capacity to create new identity narratives and to move toward becoming all who one needs and wants to be is enabled (Hammell, 2004). In this paper we have reviewed and aligned literature from social psychology, occupational therapy and occupational science to support the argument that what we do is inextricably linked to who we are. Further that, who we are is inseparable from the sociocultural context in which we exist and that this combination is linked to health and wellbeing. In other words, we "wear our environment like a glove," (Rowles, 2000, p. 52S) and our doing, being, belonging and becoming are spread across the social networks we inhabit. These ideas are not new, however, we believe that our synthesis of these interrelating perspectives can inform thinking and interventions, in both the clinic and the community as we come to more fully recognize the predominance of social identity and structures in knowing individuals authentically and engaging them in occupations to improve their health and wellbeing.

Two classic examples of interventions from the respective disciplines are presented here to illustrate an integrative acumen proposed in the preceding sections. The first example relates to a typical occupational therapy intervention in the home of an older person, whom we will call Maureen, who has experienced a fall. The second example is a classic psychology intervention for Diane, a young mother of three children, who is experiencing significant stress and anxiety.

Occupational Therapy After a Fall

The standard offering from the occupational therapist in this situation is to advise Maureen to remove the small throw or scatter rugs from throughout her home to make it safer and lessen her likelihood of a fall. While the rationale for this practical act makes sense to the worldview of the therapist, it does not genuinely consider the reality of life for, and the situatedness of, this particular older person. Maureen happens to be poor and so cannot afford to keep her heating on to ensure her home remains consistently warm and comfortable. The rugs provide both an actual warm covering of the cold floor on which Maureen must walk and also provide a warm "coziness" to the atmosphere that Maureen finds comforting. Additionally because Maureen is poor, she cannot afford to carpet the whole floor, and these small rugs have done the required job for years. Finally, these throw rugs are the manner of demonstration for Maureen's pride in her home and her identity as a homemaker, as she has carefully chosen each rug for a specific and personally meaningful reason. Given her low socioeconomic position, this threat to her homemaker status is significant and given that the therapist is most likely middle class, there becomes an even greater need for cultural sensitivity and awareness. In reconsidering the intervention based on a situated or contextualized understanding of who Maureen is, the therapist may wonder whether this intervention is likely to be successful at all. Certainly in making this suggestion, there should be an appreciation of the threat of the intervention to Maureen's occupational and social identity, and warrants a broader discussion of how to make Maureen safer in her home.

Psychology Intervention for Significant Stress and Anxiety

There is a belief when working with a person experiencing significant stress, that the person has a need to "be in the moment" and often this is the advice prescribed. Again, a very sound and well evidenced piece of mindfulness advice. However, for Diane, a young woman with three small children and an unreliable partner who does not contribute to living costs, this intervention may do little to alleviate the intensity and severity of Diane's stress. Diane's primary occupational identity is as a mother and a provider to her children. Diane works incredibly hard to ensure that her children's need for good nutrition is met and this process consumes much of her time and a lot of her income. When one of her children is crying that his shoes are too small and his foot is painful, Diane needs to manage how to finance this unexpected cost on top of all her other usual expenses. When in this acutely stressed state, she is told to "be in the moment"; this may become another perceived responsibility. All of her thoughts and energy relate to getting those new shoes, making sure her child is not in pain and being a "good" mother. The notion of putting those plans on hold to be in the moment may be more than Diane can cope with. Again, there is a likelihood that class differences mean the therapist has no experience of the stress that comes with having no money and never having to consider the material realities of life in the same way as Diane. This intervention requires reconsideration based on the understanding of what Diane needs to "do" to maintain her most important identities of mother and provider. Even having a greater understanding of and compassion for exactly what is being asked of Diane to "be in the moment" is likely to make this intervention more effective and potentially more sustainable.

These simplistic examples are used to highlight the importance of informed decision making for interventions that incorporate understanding of "being in place" and knowing someone authentically. Such interventions will be more effective as they acknowledge the transactional, relational, dynamic messiness that is the human experience. Interventions and approaches must move beyond linear and reductionist tactics that situate the problem within the individual. They should address the person as they exist in a sociocultural world, the "real world." In this way, they will be more person centered, more in keeping to the lived experience and as such, much more likely to be sustained as a means of promoting health and wellbeing.

Considering the importance of social factors, and in particular social identity, on our occupations and health and wellbeing, our interventions require mobilization beyond individualized conceptions of health, appreciating that a person is never separate from their context. Interventions are not about the individual, they are about the individual's transactional relationship with the group, and the group's place in the context. You cannot enable one's "becoming" without recognition of the social factors both inside and outside the group. A good example of this is the Brazilian practice of "social occupational therapy" (Galheigo, 2005), which emphasizes collective action, and integration between individuals, groups, communities and society. This way of working in Brazil developed in response to both growing social inequality and an acceptance of social responsibility and social transformation as part of occupational therapy practice in Brazil in the 1970's. In developing this practice, therapists recognized that concepts such as individual normality and functionality from rehabilitation would not work in the social context. They needed to acquire "tools to interpret the connections between personal and social realities" to enable a more innovative practice. In this way the therapists learned to enable participation in "counter hegemonic activities" through which individuals might be facilitated to take alternative paths from "appalling life conditions" (Dias Barros et al., 2011, p. 209). These conditions implore interdisciplinary perspectives to address social constructs such as marginalization, disadvantage and disaffiliation. Constructs in which social identity and occupation are central and where the potential for both oppression and liberation exist.

Conclusion

In summary, we have proposed a multi -level and integrative model of understanding that who we are and what we "do" are situated in a social world. Further, we have demonstrated that this social situatedness informs our identity and our occupations in ways that directly influence our health and wellbeing. It is our assertion that occupation drives identity processes in and of itself, but also because of the relationship between doing or practice and our sense of ourselves and our relationships to others. Meaningful occupation provides the basis for social participation (Wilson et al., 2009). Occupation then carries with it the potential for considerable therapeutic utility providing as it does a basis for identity (re)construction (Clark, 1993; Walsh et al., 2015). Attention to the ways in which occupation is situated and embedded within structures and context is critical to any perspective on health (Wilcock, 2006). It is through understanding this relationship that we can create contexts for enabling individuals, communities and society to engage in meaningful occupations that promote participation, health and wellbeing. The complexity of occupation, its transactional nature, and its situatedness opens a door to enhancing our understanding of being well and staying well in social world.

Everyday social lives are complicated. While we are all individuals and sometimes act as individuals, we are also group members and sometimes our behaviors or occupations are enabled or disabled by these (racial, ethnic, religious, gendered, or socio-economic group) memberships. Central to the understanding of human behavior is the consideration of whether individuals are acting as individuals, or as a consequence of their group memberships. A failure to attend to group level influences in determining occupations misses a key level of analysis. This level of analysis though obvious to many social scientists is frequently bypassed in clinical practice. This can result in a failure to focus on wider structural level influences that drive behavior through valued social identities. This additional level of analysis is an important potential avenue through which health promoting interventions and everyday practices can gain traction. This analysis therefore links macro-social or structural level factors with health and wellbeing outcomes drawing from occupational perspectives and social psychology. In short, our memberships of social groups, be they national, racial, ethnic or socio-economic, are central to understanding everyday behavior, or occupation, and that these groups and these behaviors have consequences for both physical and psychological wellbeing.

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Social Identities as Pathways into and out of Addiction

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There exists a predominant identity loss and "redemption" narrative in the addiction literature describing how individuals move from a "substance user" identity to a "recovery" identity. However, other identity related pathways influencing onset, treatment seeking and recovery may exist, and the process through which social identities unrelated to substance use change over time is not well understood. This study was designed to provide a richer understanding of such social identities processes. Semi-structured interviews were conducted with 21 adults residing in a drug and alcohol therapeutic community (TC) and thematic analysis revealed two distinct identity-related pathways leading into and out of addiction. Some individuals experienced a loss of valued identities during addiction onset that were later renewed during recovery (consistent with the existing redemption narrative). However, a distinct identity gain pathway emerged for socially isolated individuals, who described the onset of their addiction in terms of a new valued social identity. Almost all participants described their TC experience in terms of belonging to a recovery community. Participants on the identity loss pathway aimed to renew their pre-addiction identities after treatment while those on the identity gain pathway aimed to build aspirational new identities involving study, work, or family roles. These findings help to explain how social factors are implicated in the course of addiction, and may act as either motivations for or barriers to recovery. The qualitative analysis yielded a testable model for future research in other samples and settings.

Keywords: social identity, social support, substance misuse, treatment, thematic analysis

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'I don't ever wanna drink again. . .I just need a friend.'
—Amy Winehouse, lyrics from "Rehab"

INTRODUCTION

Although theories of addiction have historically focused on individual factors (such as biological, cognitive behavioral, and individual differences models), a growing body of research shows that social factors also play an important role. Social factors are involved at every stage of the development of and recovery from a substance use disorder (SUD). For example, the onset of problematic substance use may be associated with social isolation (Chou et al., 2011) or with peer pressure and normative influences on behavior (Bauman and Ennett, 1996; Ary et al., 1999). For individuals in addiction treatment, social network support for abstinence influences treatment outcomes (Zywiak et al., 2009; Kelly et al., 2011; Litt et al., 2015). Furthermore, two of the three most common reasons for relapse into substance misuse after treatment are social: namely, interpersonal conflict and social pressure to use (Hodgins et al., 1995; Zywiak et al., 2006). In this paper, we begin by summarizing existing research about the influence of social factors on the trajectory of substance use. We then extend this work with a qualitative analysis of interviews conducted with adults in a drug and alcohol therapeutic community (TC) to begin to determine if, and how, their social relationships and social identities play a role in the pathways into and out of addiction.

Social Factors Involved in the Onset and Development of Addiction

Peer Normative Influence

A variety of factors have been implicated in the onset of substance use in adolescents. Although family factors play a role, peer influence (both indirectly through modeling substance use, and directly through provision of substances and encouragement to use) is widely considered to be the most consistent and influential factor (Newcomb and Bentler, 1989). For instance, Ary et al. (1999) conducted a 24-month longitudinal study of 204 adolescents and parents. They found that a composite measure of problem behavior that included substance use at a 2-year follow up was directly predicted by associations with deviant peers, and indirectly influenced by poor parental monitoring in a pathway mediated by associations with deviant peers.

Amongst university students, several norm-based prevention programs have been based on the provision of information about descriptive norms (e.g., telling students about the quantity and frequency of drinking of other university students), and injunctive norms (e.g., telling students that they ought to stay under the safe drinking guidelines). The results of such programs have been mixed, and recent research indicates that the effectiveness of such information depends on whether the individuals consider themselves to be prototypical of the group or unique (Goode et al., 2014).

Social Isolation and the Need to Belong

Social isolation (that is, a lack of peer connections) has also been related to risk of substance misuse. In the case of smoking for example, Ennett and Baumann (1993) conducted a social network analysis of 1,092 adolescents in five junior high schools and placed them into three categories: cliques (several members of a group named other members as their best friends); liaisons (who had at least two links with either clique members or other liaisons), or isolates (who had few or no connections to other adolescents in their school). They found that across all schools, isolates were far more likely to be current smokers than either clique members or liaisons. The percentage of clique members who were smokers ranged from 3.9 to 15.5%, compared with 6.7% up to 38.5% of isolated adolescents across schools.

Despite the potential negative consequences of "peer pressure," social relationships bring a wide range of tangible and psychological relationships. It has been argued that social connectedness provides a sense of belonging, purpose, and meaning that are key psychological needs (Baumeister and Leary, 1995) and critical to mental health (Cruwys et al., 2014a). In light of this, it is interesting to note that population studies have suggested that SUD is associated with very high levels of social isolation (Chou et al., 2011). A recent investigation of people in TC treatment for SUDs found that 63% were single; 69% not in fulltime employment; 24% had "0 or 1" close friend; and 42% spent most of their time "alone" (Dingle, 2012). Less research has explored the causal direction of this effect. Some evidence points to social isolation as an outcome of substance use (e.g., Link et al., 1997; Vangeest and Johnson, 2002), whereas other studies suggest social isolation has a causal role in the development of SUD (e.g., Bellis et al., 2012; Wakefield et al., 2015). It is possible that both pathways may be at work, but apply to different sub-populations of individuals with SUDs. Equally, such effects could be reciprocal.

In summary, one extant body of research shows that family, peer, and social groups can influence (protect against or promote) the onset and development of problematic substance use. A second body of research suggests that socially isolated and marginalized people may be at increased risk of substance use. Theoretically, substance use may be a pathway to a valued social group and identity as part of a "using" social group may engender a sense of belonging. However, to date there is insufficient evidence of this second pathway and its addiction prevention and treatment implications in the available research. In the next section we consider the social factors implicated in addiction and spontaneous or assisted recovery from addiction.

Social Factors Involved in Recovery From Addiction

In research about spontaneous (unassisted) recovery, Waldorf and Biernacki (1981) interviewed former opiate addicts and found that their decision to stop taking drugs came about when the user's addict identity conflicted with, and caused problems for, their other social identities (such as those of partner, parent, or employee) in ways that had become intolerable. These researchers referred to recovery as a process by which individuals learn to manage a "spoiled identity"; through restoring a more positive prior identity and/or the establishment of a new one. This notion was further supported in a Scottish interview study with 70 people recovering from opiate addiction (McIntosh and McKeganey, 2000). One common theme arising from these interviews was participants' description of a discrepancy between the person they had become while addicted and their "real" self, and a belief that recovery would mean giving expression to their true self through a rejection of their drug using past and the establishment of a new abstinent way of life. The term "spoiled identity" was also used by Hughes (2007) to describe the deviant activities (e.g., carrying a gun, theft, etc.) that opiate users engaged in order to obtain heroin.

Other research on recovery has focused on social factors involved in mutual support groups such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA). Moos (2007) identified the following ingredients of mutual support groups that were associated with long-term abstinence from alcohol and other drugs: bonding and support; obtaining an abstinence-focused role model; and doing service work within the group (Moos, 2007). These findings were echoed in a review of 24 studies focusing on how AA membership benefits people with alcohol dependence (Groh et al., 2008). Additional evidence about the mechanisms of action of AA membership comes from an analysis of data from 1,726 adults in the Project Match study (Project

MATCH Research Group, 1997), which showed that adaptive social network changes and increases in social abstinence self-efficacy were the mechanisms that exerted the most influence in recovery (Kelly et al., 2011; Stout et al., 2012). A narrative analysis of life stories with 51 respondents in recovery from a range of addictive behaviors revealed five different story types which were labeled: the AA story, the growth story, the co-dependence story, the love story and the mastery story (Hanninen and Koski-Jannes, 1999). Of these, the "AA story" was consistent with the notion of social identity loss following by finding ones place within the (AA or recovery) community (i.e., a recovery and redemption narrative). In contrast, the "love story" narrative matched most closely themes of unmet identity needs and social isolation being compensated for by the addiction. For these individuals, receiving real loving care was the key to their recovery from the addiction. Other work supports the notion that building sober social networks is particularly important in light of the findings that social bonds to recovery networks are stronger, and the quality of friendships better, in non-using than in substance using networks (Humphreys et al., 2004). Furthermore, sober networks that include occupational roles and peers have been found to support and destigmatize the recovery process of individual members (Best, 2015). By contrast, maintaining ties with using networks is associated with relapse and poorer outcomes following treatment (Havassy et al., 1991; Dingle et al., 2015).

In summary, the prevailing view suggests that people with SUDs lose important social identities with the onset of addiction and they are motivated to restore these lost identities during recovery. What is not known is whether alternative identity related pathways exist during the course of addiction. Also lacking in this growing body of social addiction research is a unifying theory of social relationships. In the next section we review emerging evidence for one such theory—the social identity approach (Tajfel and Turner, 1979; Turner et al., 1987)—applied in the domain of substance misuse.

A Social Identity Approach to Addiction

A central tenet of the social identity approach is that our social group memberships inform our self-concept—that is, "who *I* am" is defined, at times and in part, by "who *we* are" (Tajfel and Turner, 1979; Turner et al., 1987). This process of *identification* with social groups is a foundation of social behavior, such that when we identify with a social group, this influences how we perceive the world and what we choose to do, including in the domain of health (Platow et al., 2007; Haslam et al., 2009; Cruwys et al., 2012). Furthermore, social identity makes social support possible, as people are more able to give and receive support from members of groups that they identify with (Haslam et al., 2005). It follows therefore, that defining oneself as a "drinker," "stoner," or "junkie" has enormous implications for substance use behavior (Schofield et al., 2001). This is of particular importance for people who are socially isolated, as their main (or only) source of social support and self-definition is likely to be their substance-using social groups, and their behaviors may thus be guided to a significant extent by "addict" related identities. Conversely, thinking of oneself as belonging to a *recovery* group or network may influence a person to persist with abstinence or distance themselves from substance-using networks (Best et al., 2014).

Using this theoretical perspective, Frings and Albery's, (2015) Social Identity Model of Cessation Maintenance argues that social identities built around cessation can support successful outcomes through a combination of increased self-efficacy, self-esteem and an adjustment of which behavioral norms are acted upon, bolstered by both social support and social control enacted by other group members. In support of this approach, Buckingham et al. (2013) examined the role identity played in maintaining abstinence amongst members of mutual support groups (AA and NA). They found that participants who evaluated their recovery identity more favorably than their addiction identity (termed "evaluative differentiation") had significantly lower relapse rates and reduced appetitive behaviors. A stronger endorsement of the recovery identity relative to the addiction identity ("identity preference") was related to higher levels of abstinence self-efficacy, which predicted number of months drug-free and reduced levels of appetitive behaviors. Identity preference was also related to higher self-efficacy, which in turn was related to lower relapse.

Beckwith et al. (2015) investigated factors related to client identification with a TC in the first 2 weeks. Those who experienced an increased identification with the TC and reduced social identification with their substance using groups over the first 2 weeks, stayed in treatment significantly longer than the others (Beckwith et al., 2015). A prospective longitudinal study of 132 adults from this same TC (Dingle et al., 2015) reported that for most participants, identification as a substance user continued to decrease among those who stayed in treatment, with 76% of the sample reporting a decrease in user identity strength over the first month in the TC. At the same time, recovery identification increased significantly over time, with 64% of the sample staying the same or increasing their recovery identity ratings over the first month. The increase in recovery versus user identification over time accounted for 33–50% of the variance in drinking and wellbeing at follow up (Dingle et al., 2015).

The Current Study

A growing body of research suggests that the change from an addiction/user identity to a recovery identity is a critical ingredient in successful treatment. This existing research emphasizes an identity loss and renewal or "redemption" narrative associated with the onset and recovery from addiction. However, it is unclear at this stage whether this narrative fits all people's experience or whether other identity related pathways exist in the addiction context. Nor does such a narrative account explore adequately how identity concerns facilitate addiction onset. A final area of research that is currently underdeveloped is a description of the range of other (non-substance related) social identities (such as family, occupational, recreational, religious) that exist among people with an addiction and how these broader social identities might play a role in addictive and recovery. We explored these issues through the use of qualitative methods allowing for a rich and detailed analysis of individuals' experience. Qualitative methods have not been widely used in research on the social identity approach to health so this study is also novel in its application of this methodology to these phenomena. The study was designed to address the following specific questions:

1. What social identities and relationships do participants hold prior to their addiction?
2. What social factors are related to the onset and development of an addiction problem, and the initiation of treatment?
3. How do participants' social identities and relationships change during treatment in a therapeutic community?
4. What social identity and relationships do participants aspire to hold after leaving treatment?

MATERIALS AND METHODS

Participants

Twenty-one people volunteered to be interviewed for the study which was conducted as part of a larger quantitative study. Efforts were made to ensure that the sample for this study were representative of the TC as a whole. The sample comprised 69% males, aged 26–58 years (mean age = 35.9, SD = 8.9 years). A majority of participants was single (58%), a third (33%) were separated from their partner, and 8% were in a relationship. Most did not have children residing with them (85%), and the remainder had between one and four dependent children. The average number of close friends was 4.08 (SD = 2.68). The average years of education completed was 10.77 (SD = 2.09 years). Most were not in full time work at the time they entered the TC, and the average days of paid work in the month prior to treatment was 6.62 (SD = 11.21 days). Most clients at the TC had been using more than one substance, although they nominated their primary substance of concern as alcohol (31%), heroin (15%), other opiates (8%), amphetamines (15%), and cannabis (15%). The remainder (15%) reported poly-substance use as their primary concern. The average number of years using the primary substance was 12.99 (SD = 5.98 years). Clients had completed three previous drug or alcohol treatments on average (SD = 2.18).

Measures and Interview

Addiction Severity Index (McLellan et al., 2006)

The 5th edition of this semi-structured clinician-administered interview was used to assess client status in seven functional domains: alcohol and drug use, medical and psychiatric health, employment/financial support, family relations, and illegal activity. The ASI-5 is the most widely used structured interview for substance abuse and related problems, and it has adequate-to-good psychometric properties in English and a range of other languages (Snow and Tipton, 2009). Lifetime and past 30 days incidence and severity data are collected for each aspect of these domains. For the current study, participants' demographics and substance use variables were taken from this measure.

Semi-Structured Qualitative Interview

The interview was designed to obtain detailed client experiences without leading them onto any particular topic. In particular, the questions contained no cues to social relationships or social identity as a topic, in an effort to only capture spontaneously generated identity related themes. Three open questions were used in each interview:

1. What was your life like before you came into [*name of the therapeutic community*]?
2. What has been your experience here at [*name of the therapeutic community*]?
3. What have you learned at [*name of the therapeutic community*] that you think will help you when you leave?

Procedure

This study was carried out in accordance with the recommendations of The University of Queensland research ethics committee (approval #2011000953) and the London South Bank University Research Ethics Committee (approval #UREC1444) with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The first author and two clinically trained research assistants addressed the whole community to tell them about the broader project and to invite residents to participate in the interviews. Residents were assured that their participation was voluntary and would not affect their treatment in any way. Consenting participants were interviewed at a time that was suitable for them, in a quiet place within the TC. The interviews were audio recorded and transcribed verbatim. A thematic analysis was conducted by the three authors (two of whom were independent of the data collection process) to establish inter-rater reliability. We followed the thematic analysis procedure described by Braun and Clarke (2006) in which transcripts are read and coded independently by the coders to draw out primary themes and subthemes. The three coders then met to discuss and refine the themes on two occasions until there was a consensus.

RESULTS

Two main identity-related "pathways" into addiction emerged in participants' descriptions their life experiences before they became addicted. In the first pathway, participants held positive social identities prior to addiction and felt that these were lost as a result of, or alongside of, their increasing engagement in substance use and the activities related to obtaining substances. This resulted in the development of an identity which was stigmatized due to drug use, or one "spoiled" by criminal activity. In contrast, in the second pathway, participants described negative early life experiences and profound social isolation due to a lack of positive social connections and identities. For this group, the development of an addiction brought with it a new valued identity as a substance user, along with a sense of belonging and acceptance within a substance using social network. The major themes are represented in the thematic map in **Figure 1**. We describe the major themes along with quotations from the interviews below.

First Pathway: Loss of Positive Identities

Many participants described a range of positive social relationships and identities before the onset of their addiction, and also spoke of a loss of identities and connections associated

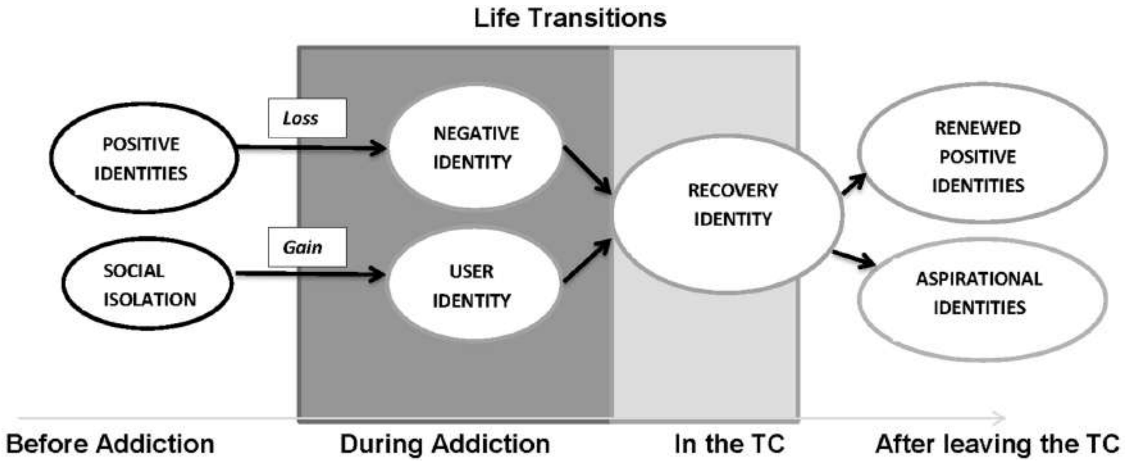

FIGURE 1 | Thematic analysis of interviews with clients in therapeutic drug and alcohol treatment showing changes in social identities over time.

with addiction. For example, some described themselves as happy children, while others emphasized their achievements at school or sports:

> *In my good bits, I excel, really excel. I was playing basketball too, got drafted for the Northern Tigers in the under 16s, I was like 15 and competing for the Olympics, I had a really beautiful girlfriend when I was 16. And then everything just went *poof**—Male, 1 week in treatment for amphetamines.

Several participants valued their identity as a "good parent":

> *When I had my daughter I was a really good Mum for two years...no problem. I had had drug problems before but when I had her I just stopped, I was happy being a Mummy*—Female, 1 week in treatment for amphetamines.

These participants clearly saw their substance use and the deviant activities related to substance use (such as crime and deceiving family members) as problematic, and associated their using with a stigmatized label such as "junkie" and "dealer," or seeing themselves as part of a "wrong crowd":

> *Yeah, so then I started using needles about 3 years into the relationship. Got caught up in the wrong crowd and started doing a lot of crime, a lot of bad stuff. Doing people over. I cheated on [my girlfriend] a heck of a lot*—Male, 2 weeks in treatment for heroin.

Second Pathway: Social Isolation and Gain of Identity with Addiction

The second identity related pathway into addiction tended to involve a lack of social relationships and supports. Sometimes the experience of isolation occurred despite the fact that the individual was living in a family or couple relationship:

> *I consider myself very different to other people growing up... going to school and getting picked on for being different and for being really small, like I was tiny, I don't even believe how small I was. I guess, it sort of painted an image for what I thought people were like...That feeling of emptiness and that real, pure loneliness feeling of 'it's just me in the world'. And even though I was in the city and there was all these people, just thinking I was so alone*—Male, 1 week in treatment for amphetamines.

> *I started to feel more and more depressed and more excluded from the outside world. I didn't enjoy it very much...I suppose my worst point was about 6–8 months ago. I lost my dog, and that was pretty much the only thing connecting me to the rest of the world at that time*—Male, 4 weeks in treatment for alcohol.

For many of these participants, substance use was associated, at least initially, with membership of a new social group and an associated gain in social identity. Some people described how substance using networks offered a sense of belonging and acceptance that had been absent previously:

> *All I cared about was fitting in with some people and I found that through bad kids and gangs, and sort of the crime, and all that kind of lifted. Obviously drinking, my older sister introduced me to drinking when I was 12, by the age of 13 I was pretty much binge drinking every day at school.*—Male, 1 week in treatment for amphetamines.

> *I hung around the wrong people. I learnt by being naughty I could have friends that actually liked me, that wanted to be with me. Well not be with me, be around me*—Male, 1 week in treatment for amphetamine misuse.

Relationships as Triggers for Entering Treatment

Even for those participants whose substance use initially offered a sense of belonging and a positive identity, this shifted as their substance use became more extreme and maladaptive over time, to the point where some experienced rejection from their using groups. This was reflected in conversations or confrontations with others when the participant was using the "wrong" substances, at the "wrong" times, or in the "wrong" quantities. This prompted entry into treatment for some participants, despite some ambivalence about giving up their substance use.

> *They have alcohol problems, but they don't think that they do. They say 'why don't you just sit down and have a beer', 'be a normal person'. . .'Why do you have to take this valium crap?'*—Female, 9 weeks in treatment for opiate and benzodiazepine misuse.

> *My mate who I lived with used to smoke pot and drink but he never used to drink as much. He told me that I was getting worse and worse, and eventually he said "in my consensus I think you are an alcoholic now"*—Male, 4 weeks in treatment for alcohol misuse.

There were some expressions of fear or uncertainty about entering treatment and what it would be like:

> *I was scared when I heard there were people here from jail but I can tell you I have met some of nicest gentlemen in my life that have come from jail. I am truly fond of them! So this place has taught me to like men. I thought all men were bad, but now I'm living with them, I love them all dearly*—Female, 6 weeks in treatment for polysubstance use.

It was common for participants to cite an important person or social group as a trigger for entering treatment and turning their lives around. For some, this motivation came from conversations with a member of their family:

> *I sought out my Aunty, she detoxed me for a month. She showed me the quality of life I could be living. The importance of family, and I really got that back.*—Male, 2 weeks in treatment for heroin.

In some cases, this pivotal help came from a professional:

> *He was . . . giving me the time of day and no one else would, he was the first person in 6 months who stopped and said hello. Everyone else would just look at me and keep walking. I said to him, so what do you do? He goes, I'm the local paramedic in town. . ..*—Male, 3 weeks in treatment for cannabis misuse.

For others this turning point involved a realization that they'd lost their whole social network:

> *It was um my birthday and . . ..there was nobody there. I was just on my own and I'm a very spiritual believer and I felt that I had a sign and my angels tell me "have a look at yourself – there's nobody even here and it's your birthday". The phone wasn't ringing, Nothing. I just grabbed the local directory and it opened on the page with [therapeutic community] on it*—Female, 5 weeks in treatment for opiates.

Development of a Recovery Identity

Most participants described positive ties with other residents and staff of the TC and a sense of belonging and acceptance within the community. Being a member of the TC allowed the development of positive social connections and, for some clients, a positive identity:

> *. . .the support was just instant straight away from everybody. Everybody. Nobody looked at you sideways they were just continually there. And within a few days I was just stoked that I was here and I had no inclination to leave at all. I still don't. . .. To have these people around is just amazing. When people leave it's just like "Nooo!" when they haven't finished – especially when they're young and they've got so much to gain out of it and don't realise it yet*—Female, 5 weeks in treatment for opiate misuse.

> *It's like building the foundation of a house, and all the community and staff have had input into building that foundation for me. The foundation isn't ready yet and has to be rooted in firm strong ground otherwise I'll just sink in the sand. I want to be strong and I don't want to quit*—Female, 6 weeks in treatment for poly-substance misuse.

Participants reported that they were able to receive emotional support and understanding from fellow members of the community who had experienced similar life circumstances and there is evidence from some of these comments that clients formed a single coherent entity within the community:

> *Although, everyone was just so supportive; sometimes it felt like they are psychic because I would just be sitting somewhere having a cigarette and someone would ask "How you travelling in your head?" and I would think, "How did you know I was in that bad head space right now? I have just been talking and smiling with you a few minutes before. I was just having a cigarette and didn't think I had an odd look on my face"*—Female, 3 weeks in treatment for alcohol misuse.

> *Yeah, and being in a community; I'm just not really used to that you know? Your drug circle is pretty limited, [but here] you get to know a lot of people who all have similar sorts of issues*—Male, 4 weeks in treatment for poly-substances.

Some of the participants made a special mention of their relationship with a counselor as important in their recovery:

> *You couldn't have anything more healing than being able to talk to someone who knows exactly what you're talking about. From beginning to end. . . your losses, your gains. . . everything.*—Female, 5 weeks in treatment for opiate misuse.

Participants also described the TC as a place where they had a sense of purpose, and a meaningful and important role within the community:

> *You have to work your way into these positions. You become a mentor – leading a new person into life at [the therapeutic*

> *community]. Took a while for me to get to be a mentor. I was stubborn – everything was black and white – so it took a while for me to be settled in [the therapeutic community] in a way that I could mentor a new person. The next step is residential house manager. You are in control of 10–12 people in the house*—Male, 27 weeks in treatment for alcohol misuse.

Despite the widespread experience of social cohesion and support within the TC, a minority of participants found it difficult to integrate with the community and there was some ambivalence expressed about this process:

> *[I've been]. . .noticing a fair bit of passive aggressive stuff. For example, people saying things to other residents like "I have been noticing you have been getting quite a lot of consequences lately. Is there anything we can do to support you, anything I can do to help?" I look at the person and think, "you're not actually wanting to support them. You are pointing out to them their consequences and relishing in their failures". So I'm really just getting to know the deeper levels of the personalities. . .. But it is not as solid of a community as I thought it was. You know, everyone is from different walks of life and different addictions they are trying to recover from, you can't expect. . .you know. . .[a perfect community].*—Female, 3 weeks in treatment for alcohol misuse.

Some participants articulated a view that the social connections formed within the TC were temporary and that they were unlikely to continue these relationships after their treatment.

> *Um. . .not particularly [I don't have close relationships within the TC]. No. I guess working in the field with aged people you have got to have a sense of detachment, because knowing they are gonna pass on. I guess I brought a little bit of that into me. They are going to go their own way, know what I mean? This is my theatre production. And you know, I choose who I want to reveal stuff to. . .there would be very few people at this point who I would stay connected with after I leave.*—Male, 4 weeks in treatment for alcohol.

For some participants, it was too early in treatment for them to comment on their future plans. However, many were making clear plans of who they wanted to be and how they wanted to live after leaving treatment. Here we see the re-emergence of the two pathways, with the participants who previously held positive social identities hoping to renew these, and those who lacked social connections and identities aspiring to develop new positive identities and social roles.

First Pathway After Treatment—Renewed Identities

Some participants hoped to renew and repair positive social identities that they had held prior to the addiction such as occupational and educational identities:

> *To be able to achieve my dreams, and that is to be a professional fighter. That is one of the things that I want to be able to do. I trained for 9 years doing it, and I really want to be able to do that*—Male, 4 weeks in treatment for alcohol misuse.
>
> *I really value education. I need to [finish] my education, I need to get somewhere good. Coz I don't want to be a bum the rest of my life, I'm better than that.*—Female, 26 weeks in treatment for poly-substance use.

Second Pathway After Treatment—Aspirational Identities

For many, their goals were closely aligned with new aspirational identities such as "university student" or "writer":

> *For me, I have, the good side of me, I want to go to Uni, I want to do occupational therapy and I want to be able to have a normal life. That's my real ambition. And to give back to society, coz I know I've taken a lot from the society and I really want to give back. I really want to educate troubled children or youth and inspire them*—Male, 1 week in treatment for amphetamine use.
>
> *I think all of my self-esteem was just crushed that I had none left, but slowly bit by bit it is coming back. But I want a lot more. Now I am aspiring to write a book.*—Female, 6 weeks in treatment for poly-substance use.

For others, their aspirational identity was associated with family roles such as "spouse," "parent," or "grandparent":

> *I want kids, I want a family, I want to get married and I want to see my Mum's face when she sees my first kid. My sister just had her first kid, the day before I went into detox, which makes me an uncle. Which is the first time in my life that I have had a responsibility like that, and I am so happy that I am an uncle because there is nothing better than children I believe, because innocence is one of the best things in this world*—Male, 4 weeks in treatment for alcohol.

In contrast to the participants who indicated that their social connections with others in the TC would be transient, others intended to maintain their recovery identity through continued contact with the TC:

> *Yeah so it's mainly the tools and I won't ever leave here in that way that I'll be – that's why [previous treatment center] didn't work, because I left too early and I didn't have any backup like we can keep coming here for rap groups, after care, you can come here for lunch, you can come here for the morning meeting.*—Female, 5 weeks in treatment for opiates.

DISCUSSION

The thematic analysis of interviews with 21 adults undertaking treatment in a drug and alcohol TC revealed that people who have experienced addiction understand their own substance misuse and recovery through their relationships and their social identities. Participants clearly articulated how they saw themselves and their circumstances before the development of an addiction in relation to their social roles and relationships. Participants communicated how their identities shaped—and were shaped by—the development of an addiction. They described both losses and gains of social networks as they entered treatment in the TC. Finally, participants imagined their future in terms of new or renewed social roles and relationships.

An Identity Loss Pathway

In terms of the addiction literature, this investigation is the first to suggest two alternative pathways into addiction—one in which addiction represents an *identity loss* and one in which addiction brings with it an *identity gain*. In the current study, people spoke about a number of sources of positive pre-addiction social identities: abilities, family roles, work roles and relationships. The development of addiction impacted negatively on participants' ability to maintain these identities—for example, the young man whose budding sporting career was cut short by the misuse of drugs. Addiction also impacted on participants' behavior in ways that caused damage to their relationships—for example, the man who deceived his family and colleagues by continuing to get dressed for work each day but then returned home to drink instead. The negative impact of identity loss has been found in other research on people going through life transitions—such as, loss of identities when one suffers a stroke (Haslam et al., 2008); loss of home and family ties when students go away to university (Iyer et al., 2009).

For participants following the identity loss pathway, their substance user identity was described as a negative, devalued identity: being a "junkie" or "dealer." Several participants felt that substance use had led them to feel stigmatized and the criminal or devious behavior associated with obtaining and using the substance had "spoiled," or tainted, their identity. This resonates with previous research by Waldorf (1983), Waldorf and Biernacki (1981), Hughes (2007), McIntosh and McKeganey (2000), and the "AA story" that came out of Hanninen and Koski-Jannes's, (1999) narrative analysis. As these earlier researchers noted, participants' desire to repair their spoiled identity appeared to create the motivation for ceasing substance use and its associated way of life. Similarly, Hill and Leeming's, (2014) interview-based study of six adults recovering from alcohol dependence found that the participants were very much aware of stigmatized identity that was assigned to them as "alcoholics." However, to some extent these participants were able to avoid stigma by viewing themselves in terms of an "aware alcoholic self" which was different from their previously unaware self and formed the basis for a new and valued identity.

Socially meaningful others often motivated people's decision to enter treatment, either directly through discussion—such as the young man who turned to his Aunt for detoxification and support—or indirectly as an attempt to salvage a lost or damaged relationship—such as several participants who spoke about wanting to repair their relationship with their children, or be present for their grandchildren.

An Identity Gain Pathway

A lesser known second pathway was apparent among those who were socially isolated or who lacked supportive social ties or who had unmet identity needs. These participants appeared to be drawn to the user identity due to its promise of belonging and esteem, making them vulnerable to normative peer influence (Newcomb and Bentler, 1989)—such as those who started taking drugs with older relatives or fell in with the "wrong crowd." These participants described a sense of belonging in the substance using (and sometimes drug dealing) social networks that brought with it new esteem and social support and even, in one participants' case, a sense of power over others.

Although details of their upbringing were beyond the scope of the study, some participants alluded to family dysfunction or abuse and the onset of addiction as a means of rebellion or escape from their family. This theme was consistent with Ary et al. (1999) findings that substance use and other problematic behaviors among young adults were predicted by social factors such as poor parental monitoring and associations with deviant peers. For participants on the identity gain pathway, substance using groups were often their first experience of acceptance and community. However, as their substance use became more extreme and maladaptive over time, they often experienced rejection from their using groups—in some cases, for using the "wrong" substances, or for losing control over their substance use. This was an alternative way in which socially valued networks prompted entry into treatment for some participants, albeit with a somewhat ambivalent desire for recovery.

Joining the Therapeutic Community

Although many participants expressed a fear or uncertainty about entering treatment, once in the TC, it was common for participants to report a sense of group belonging and cohesion (Dingle et al., 2015). There was evidence of mediators mentioned in previous research on mutual support groups and other group treatments for addiction such as collective esteem, normative structure around abstinence, and social support and control (Moos, 2007; Groh et al., 2008; Frings and Albery, 2015). It has also been found in psychotherapy groups that outcomes are related to the extent to which these groups foster a perception of normative change (Cruwys et al., 2015). During treatment in the TC, participants clearly gave and were able to accept support from other members of the community and from counselors (Crabtree et al., 2010). That members of the TC were supportive of one another is consistent with earlier findings that social identity is the basis for giving and receiving social support (Haslam et al., 2005). However, on occasion, the motives behind such support and the subsequent responses they invoked were not perceived as entirely positive.

It is important to note that these participants were not simply passive recipients of treatment—rather they took an active role in their own therapeutic process as well as work roles within the TC, in the gardening, catering or housekeeping teams, and some taking on peer mentor status and then becoming a house manager or community leader. In this way, the social roles within the TC may have informed and strengthened the participants' recovery identity, such as the young man who spoke about working his way into a mentor role in which he inducted new people into life at the TC. In line with the concept of an identity gain pathway, the taking on of active roles within the TC could be seen as a form of identity performance; that is, the public enacting of identity relevant norms that serve to consolidate the group identity, an expression of the message: "look at me living a sober, healthy life and serving my TC" (Klein et al., 2007). These active roles contrast with other services in which clients are passive recipients of help (e.g., hospital and primary care services and some homeless accommodation services). The opportunity to take an active role appears to be an important factor in treatment outcome according to research showing that autonomous individuals achieve positive outcomes from therapeutic and behavior change programs (Dwyer et al., 2011; Ryan et al., 2011). This is also consistent with the helper therapy principle (Moos, 2007; Pagano et al., 2011) that demonstrates how becoming a buddy or helper within AA group is associated with positive long term abstinence from alcohol.

After Treatment—Recovery Identity Continuity and Renewed or Aspirational Identities

Although not all participants envisaged an ongoing connection with others in the TC, many did, through living at the halfway house and coming back to the TC for support group sessions and graduations of their peers. Regardless of whether they were planning to engage in ongoing contact with the TC, many participants indicated that their social identity as a member of a "recovery" social network would continue after their treatment. In addition to this, the participants who described positive pre-addiction identities spoke about renewing these former identities—for example, the man who wanted to go back to training to be a professional fighter, and the woman who wanted to finish her education. In contrast, the participants who started with a relatively impoverished social network tended to aspire toward new social identities—for example, the young man who dreamed of becoming a husband and father.

Clinical Implications

These emerging themes raise questions about how a person's social identity history might influence treatment outcomes and whether different approaches to treatment might be indicated. For instance, should interventions be aimed at renewing or repairing "spoiled identities," or in fostering new identities for socially isolated individuals—such as is implied in the lyrics of the song "Rehab" at the start of this paper? One possibility is that such treatment decisions should be based in part on whether an identity "loss" or "gain" pathway is most reflective of an individual's experience of addiction up to that point. Under what circumstances do a person's social networks and ties facilitate recovery or relapse? It is likely that a single approach will not fit all, and this suggests a need for routine assessment of social roles, networks and identities early in treatment to understand the "push" or "pull" of the addiction identity as part of the treatment process. This could be achieved via a social mapping activity (Best et al., 2014; Haslam et al., 2016), conducted early in the person's treatment, combined with motivational interviewing procedures using the person's positive identities and social roles as motivating factors for change (Miller and Rollnick, 2002).

The sometimes transient nature of identities related to TCs and recovery raises an interesting question of how long these identities persist beyond the controlled environment of a TC, how they are maintained (or not) over time and if they remain beneficial. Such transitional identities could be functional in helping the individual transition from the TC back into society but then become unnecessary; acting as "disposable" identities whose use is constricted to periods where they have utility. This echoes the notion of "disposable ties" found in the urban poor who rely on strangers rather than family or established social network to meet their immediate needs (Desmond, 2012). Existing literature (e.g., Kelly et al., 2011; Litt et al., 2015) highlights the significantly lower relapse risk for those who have a strong recovery support network in place. The maintenance of recovery-oriented identities forged in TCs may foster engagements in such networks beyond treatment. This is an area for future research but, if it is the case, adds further emphasis to the need for clinicians to explore identity-based interventions as part of the treatment process. Halfway houses and follow-up groups would be one way in which TC identities could, where appropriate, be reinforced. In addition to treatment-specific groups, clinicians could assist clients to join interest-based community groups toward the end of their treatment that they can continue to belong to after treatment as a way of "bridging" their social networks and supporting their ongoing recovery. These groups need not revolve around addiction recovery—research with choirs, art groups and sports/exercise groups provide evidence that this approach shows benefit for both substance use and mental health more generally (Dingle et al., 2013, 2014; Cruwys et al., 2014b).

Theoretical Contributions

From a social identity perspective, this is one of the first attempts to track the experience of identity change over time and using a detailed qualitative analysis of participants' experiences. Although social identity has been linked with a huge number of health behaviors in cross-sectional and experimental contexts, few studies have examined identity transitions and their health implications longitudinally (with some few exceptions, e.g., Iyer et al., 2009; Cruwys et al., 2014b; Dingle et al., 2015). The results of the current study suggest that the dynamics of identity change across months and years shape a person's life in fundamental ways—addiction is not only something that people experience as an individual biological reality (as it has often been studied), but rather as a psychosocial phenomenon which in part reflects individuals' attempts to navigate their social world. The thematic analysis has yielded a theoretical model that lends itself to further quantitative testing in a range of other samples and treatment settings.

Limitations/Questions Raised for Future Work

Social identities are likely to be culturally bound—the stigmatization of addiction, the development of "disease" models, and differing understandings and definitions of addiction may mean that the form and content of identities vary across cultures and over time. The relationship between identities may also differ as a function of their content (see, e.g., Buckingham et al., 2013). Despite this limitation, the current research speaks to basic identity processes that are likely to be generalizable to the extent social identity principles seem to be robust across cultures (Suh, 2002). One further limitation of the current study is in the retrospective nature of the measures taken. It could be argued that part of the process of recovery from SUDs is reflecting on (and imposing meaning upon) past life events. Thus, it is possible that the meaning of events and *post hoc* construction of identities (i.e., being a "junkie") reflect a *post hoc* justification for (or understanding of) past events. Such a construction could be a product of the treatment process, rather than an in-the-moment reflection of identity. Whilst this is possible, we also note that many of our interviewees reflected on their present and future identities (including many currently affiliating with addiction related identities), as well as those from the past. Further, other more quantitative work has supported the predictive nature of identity prospectively (e.g., Dingle et al., 2015).

Finally, the current study did not explore directly how repeated treatment episodes affect identity. One possibility is that a cycle of relapse-treatment-relapse may make addiction identities seem more intractable whilst simultaneously making identities associated with recovery less resilient and, perhaps, achievable. In contrast, this same pattern may well alter the content of the "addict" identity (as involving relapse and being constantly present) and also that of recovery (e.g., to include ideas of persistence in the face of adversity) in way which foster recovery. Although such analysis is beyond the scope of the present paper, it does raise interesting questions as to how clinicians discuss identity and relapse to best effect.

CONCLUSION

In summary, the current study found two social identity-related pathways into and out of drug and alcohol addiction. For some, the development of the addiction was associated with a loss of positive social identities and these people were motivated to enter treatment in part to restore their former social identities and roles. Others were socially isolated and the addiction represented an identity gain. For this latter group, treatment required a giving up of the addiction social networks and an aspiration to new positive social identities and roles. Membership of the TC itself was experienced by most participants as a valued identity but the expectation that this recovery identity would continue beyond treatment varied among participants. In summary, both substance use related and other social identities could be assessed and addressed during treatment as an important motivational force for change and a guide for the kind of social changes that might be most helpful to the individual in supporting his or her ongoing recovery from addiction.

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Discrimination and well-being amongst the homeless: the role of multiple group membership

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The homeless are a vulnerable population in many respects. Those experiencing homelessness not only experience personal and economic hardship they also frequently face discrimination and exclusion because of their housing status. Although past research has shown that identifying with multiple groups can buffer against the negative consequences of discrimination on well-being, it remains to be seen whether such strategies protect well-being of people who are homeless. We investigate this issue in a longitudinal study of 119 individuals who were homeless. The results showed that perceived group-based discrimination at T1 was associated with fewer group memberships, and lower subsequent well-being at T2. There was no relationship between personal discrimination at T1 on multiple group memberships at T2. The findings suggest that the experience of group-based discrimination may hinder connecting with groups in the broader social world — groups that could potentially protect the individual against the negative impact of homelessness and discrimination.

Keywords: homeless, discrimination, multiple group membership, well-being

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Introduction

A large body of work demonstrates that people who are homeless also experience disproportionate rates of health problems and associated social disadvantages (Rosenthal et al., 2006; Echenberg and Jensen, 2009; Scutella et al., 2012). Pervasive discrimination experienced by people who are homeless, particularly discrimination based on access to accommodation and goods and services, contributes to the high rates of poor health (Phelan et al., 1997; Lynch and Stagoll, 2002). Moreover, the discrimination that homeless individuals face is perceived as legitimate (Fiske et al., 2002), not only by the general public, but also by individuals who experience homelessness themselves.

Even though previous research has shown that turning to others may alleviate the negative effects of discrimination on well-being (Branscombe et al., 1999), and that identifying with multiple groups in particular has beneficial well-being effects (Iyer et al., 2009; Ysseldyk et al., 2013; Haslam et al., 2014), it remains to be seen whether these effects will be observed among individuals who are homeless. There are reasons to believe that, given the highly stigmatized nature of homelessness, individuals who are homeless may have limited opportunities to join groups that may protect their well-being when facing discrimination. We examine this prediction in a longitudinal study among individuals who reside at homeless shelters. Before outlining our study, we first elaborate the rationale underlying our prediction.

Stigma and Discrimination Amongst People Who are Homeless

A large body of work examining a broad range of disadvantaged groups demonstrates that discrimination negatively affects well-being (Kidd, 2007; for a meta-analytic review see Williams et al., 2003; Schmitt et al., 2014). This work identified a number of factors that influence the relationship between perceived discrimination and well-being. Three of these factors are particularly likely to amplify the negative effects of discrimination on well-being for the current sample. We outline these as background to understanding the reasons as to why people experiencing homelessness might face discrimination, and how perceptions of discrimination and the reasons underlying discrimination may affect outcomes.

First, there is evidence that when the stigmatized identity is viewed as to some extent controllable (such as unemployment, drug addiction, or obesity), group-based discrimination has a more harmful effect on well-being than discrimination directed against those with an uncontrollable stigma (such as race or gender). Indeed, negative group-based treatment is more likely to be perceived as legitimate by both the individuals and the perpetrators if directed at people with controllable stigmas compared to uncontrollable stigmas (Weiner et al., 1988; Rodin et al., 1989). Because housing status is perceived as somewhat under an individual's control, whereby the homeless are often considered to be responsible for their lack of adequate housing (Parsell and Parsell, 2012), homeless individuals are likely to face highly legitimized forms of discrimination, amplifying negative well-being consequences.

Second, despite the fact that individuals who are homeless are perceived as struggling and in need of care and compassion (Kidd, 2004; Benbow et al., 2011; Shier et al., 2011), there is also evidence that homeless individuals are not perceived as fully human (Harris and Fiske, 2006). Research has shown that homeless people as a group are seen as neither competent nor warm, and thus form "the lowest of the low" (Fiske et al., 2002). This elicits the worst kind of prejudice – disgust and contempt – and can make people functionally equivalent to objects (Harris and Fiske, 2006). This further enhances the perceived legitimacy of negative treatment against the homeless and, in turn, further compromises an individual's ability to cope with discrimination.

Third, people who are homeless are often not only discriminated against because of their housing status, but also face discrimination for other reasons. In particular, these individuals also commonly experience mental illness and/or drug addiction, conditions which are subject to high levels of stigma in society (Barry et al., 2014).

In sum, because homeless individuals face discrimination that is perceived as legitimate, and targeting them for many different reasons, we predict that these individuals' well-being will be negatively affected. Consistent with this, both qualitative and quantitative work describes the negative impact of discrimination for the homeless on their well-being (Phelan et al., 1997; Lynch and Stagoll, 2002; Kidd, 2007) and homeless individuals describe the experience of discrimination as making the transition out of homelessness and into employment and stable housing significantly more complex and challenging (Milburn et al., 2006; Piat et al., 2014).

Coping with Discrimination by Turning to Groups

Given the negative relationship between discrimination and well-being, the question presents itself whether there are factors that attenuate the strength of this relationship. Researchers working from the social identity approach (consisting of social identity theory, Tajfel and Turner, 1979, and self-categorization theory, Turner et al., 1987) have shown that individuals often react to discrimination with increased group identification and cohesion, and this can alleviate some of the negative effects on well-being (Branscombe et al., 1999). Known as the rejection-identification model, these effects have been demonstrated amongst historically disadvantaged groups, such as African Americans, women and more recently, international students, and people seeking out body-piercings (Branscombe et al., 1999; Jetten et al., 2001; Schmitt et al., 2002, 2003). According to this model, identification follows rejection (i.e., group-based discrimination) because group membership becomes highly salient when individuals face group-based discrimination. This enhances the distinction between 'us' (the stigmatized group) and 'them' (the majority group), and strengthens identification with the stigmatized group. In turn, enhanced identification with the stigmatized group counteracts some of the negative consequences of facing discrimination and rejection and protects well-being. From this reasoning, it becomes clear that identification can be a psychological resource that group members can fall back on when facing stressors such as discrimination or rejection (Branscombe et al., 1999).

However, in many ways, the homeless are different to other groups experiencing discrimination for at least two reasons (e.g., women, Asians, African–Americans). First, prior research with people who are homeless suggests that individuals do not necessarily identify with other homeless people or think of themselves as similar to others who are homeless (Parsell, 2010; Walter et al., under review). Indeed, Gowan (2009) demonstrates how people living on the streets actively construct a self-identity and convey a public image as entrepreneurs through routine recycling work that they present as socially valuable. The recyclers deliberately identified themselves as workers as a point to contrast themselves with other homeless people. Second, the 'group' homeless people is quite diverse consisting of people of different ages, reasons for being homeless, and opportunities for exiting homelessness. As a result of this diversity, the category homelessness becomes less relevant and meaningful as a framework to organize the experiences of individuals facing homelessness. Both the meaningfulness of the homelessness label to describe the self and the diversity of experience among those categorized as homeless suggests that it may not be meaningful to examine the extent to which identification with others that are homeless affects well-being.

Even though experiencing discrimination might not enhance identification with others who are homeless, it may nevertheless lead homeless individuals to turn to groups for identity–based social support. In a development of the rejection-identification model, recent work has shown more generally that identification with groups (other than those that are targets of discrimination) and joining new groups is associated with better well-being for those facing life stressors. For instance, among those with acquired brain injury, gaining the identity of being "a survivor of brain injury" and having a greater number of social relationships since injury was associated with heightened life satisfaction (Jones et al., 2011). In a similar vein, Haslam et al. (2008) found that, after a stroke, those individuals who were able to maintain membership in multiple groups reported greater well-being. More generally, the benefits of multiple group memberships on well-being is supported by a mounting body of evidence linking multiple group identification and enhanced well-being (Iyer et al., 2009; Ysseldyk et al., 2013; Haslam et al., 2014, see also Thoits, 1983; Biswas-Diener and Diener, 2006).

There are a number of reasons why multiple group memberships offer a 'social cure' (Jetten et al., 2012). First group memberships can be seen as psychological resources and if individuals identify with groups, mere membership in such groups protects well-being. If groups are resources, it follows that the more resources an individual has, the better protected they are (Jetten et al., 2014). Second, the more groups that individuals belong to, the more "eggs they have in their basket" to deal with life stressors (Putnam, 2000; Roccas, 2003; Jetten et al., 2009). This provides greater flexibility to deal with stressors in the sense that it enhances the likelihood that one can turn to a suitable group when facing a particular stressor.

Barriers Toward Maintaining Membership and Joining Groups

Even though the extent to which people who are homeless turn to other groups when they face discrimination might be a good predictor of their well-being, discrimination is likely to be an important barrier to joining new groups. Facing legitimate discrimination, being blamed for their homelessness status (Phelan et al., 1997; Milburn et al., 2006), and internalization of this blame will exacerbate the negative effects of stigma among the homeless. Consistent with this, research has found that self-blame and guilt due to homelessness were the most strongly related to low self-esteem, loneliness, feeling trapped, and suicidal ideation, even beyond the effects of stigma (Kidd, 2007).

Facing discrimination may not only stand in the way of seeking out others to cope with discrimination, those who attempt to draw social support may not be successful and they may encounter further rejection. Specifically, others may not be accepting of those who have been or still are homeless and — because discrimination against the homeless is highly legitimized — might exclude those who want to join their groups or social networks. Consistent with this, it has been found that when members of the disadvantaged group perceive the discrimination they face as legitimate (compared to illegitimate), it will lower identification with others suffering from similar negative treatment and reduce intentions to engage in collective action to address the discriminatory treatment (Jetten et al., 2011, 2013). In sum, we predict that given the pervasiveness and legitimacy of discrimination that people who are homeless face, it might be hard for them to join new groups or to maintain membership in their current groups and this may have negative well-being outcomes.

The Current Research

To recap, it is not surprising that there are negative consequences associated with discrimination. Building on previous work showing that belonging to groups can act as a coping resource averting some of the negative psychological effects of homelessness, we predict that joining new social groups and/or belonging to multiple groups enhances well-being. However, individuals facing homelessness are different from other minority groups facing discrimination. For instance, they are subject to discrimination from their own friends and family, as well as the mainstream, and are often blamed for being in their predicament.

The aim of this research is to investigate how the experience of discrimination amongst the homeless affects social connections, and subsequent well-being. We explored two forms of discrimination: discrimination that one faces as an individual and discrimination that is due to belonging to a stigmatized group. In line with Jetten et al. (2013), we predicted that in particular perceived *group-based* discrimination would be a powerful predictor of an individual's ability and motivation to turn to groups. This is because group-based discrimination enhances the salience of the intergroup context and enhances 'us' versus 'them' perceptions in a way that perceived personal discrimination does not. It is therefore mostly in the former, and not the latter form of discrimination that we would expect that individuals would, ordinarily, be motivated to turn to others with whom they share identity — other groups that are part of a large and inclusive 'we.' However, because people who are homeless do not generally identify with others who are homeless and because the discrimination experienced by the homeless is pervasive and seen as legitimate, we predict that group-based discrimination would make it more difficult to join new groups, and even more so than perceived personal discrimination.

We analyzed data from two time points from individuals who were living in homeless shelters at Time 1, controlling for initial levels of well-being. It was expected that the experience of greater degrees of discrimination while in the shelter (Time 1) would stand in the way of developing multiple group memberships (either by joining new groups or by nurturing and expanding existing social relationships) at Time 2. This would be associated with lower levels of well-being at Time 2.

Materials and Methods

Participants

Participants were individuals who were residing in one of six homelessness accommodation services run by a charitable organization (The Salvation Army in South–East Queensland, Australia). The Salvation Army is a well-known charity that offers a wide range of services, including accommodation and related support for individuals who are homeless. Nationally, the Salvation Army provides crisis accommodation for over 1000 people per night, with a further 6000 persons housed in non-crisis accommodation.

A total of 119 participants completed an interview and questionnaire at Time 1 (T1 for short), including 56 men and 63 women, with an average age of 35.39 years (range: 19–59; SD = 9.34). At T1, the average time participants had been in the homeless accommodation was 7.5 weeks. Although there is a maximum stay in temporary accommodation with the Salvation Army of 3 months, 'duration of need' clauses may be placed on the time limit (i.e., if people need to stay longer, they often can). The Time 2 data (T2, $n = 76$) were collected from participants 2–4 weeks after leaving the service, or 3 months after T1 if they had not yet exited the service.

Participants completed a second interview and questionnaire at T2. Attrition analyses revealed that participants who completed T2 were not significantly different from those who dropped out of the study in terms of gender, age, employment status (at T1), initial levels of alcohol consumption or well-being[1]. Of participants providing data at the second time point, 50% were in stable or supported accommodation at T2. At T1, 18.5% of participants were in some form of paid employment, and 87% received some sort of government benefits, compared with 26% and 80.5% at T2.

Measures

Perceived Personal Discrimination

Broadly consistent with other discrimination measures (Latrofa et al., 2009; Giamo et al., 2012) and building upon previous work (Jetten et al., 2001, 2013), we developed two items asking participants at both time points the extent they agreed with the items: "*I feel people look down on me because of my situation*" and "*People have discriminated against me because of my situation.*" Responses to the two items were measured on a 7-point Likert scale from *"Strongly disagree"* to *"Strongly agree,"* and the items were correlated at T1 ($r = 0.75$) and at T2 ($r = 0.79$).

Perceived Group-Based Discrimination

On the same 7-point Likert scale, perceived discrimination of homeless people as a group was also assessed. Two items were used, "*Homeless people as a group face discrimination*" and "*There is prejudice against homeless people.*" The two items were highly correlated at T1 ($r = 0.81$) and at T2 ($r = 0.94$).

Multiple Group Membership

Two items at T1 and two items at T2 measured multiple group membership since living at the Salvation Army to assess the extent to which people belong to multiple social groups. The items were adapted from a 2-item scale by Jetten et al. (2010) and a 4-item scale by Haslam et al. (2008) to be suitable for the specific population. At T1, participants were asked, *"Since coming to (name of Salvation Army Homeless Shelter), I am a member of lots of different social groups"* and *"Since coming to (name of Salvation Army Homeless Shelter), I have friends who are in lots of different groups."* The two items were measured on a 7-point Likert scale with responses ranging from *"Do not agree at all"* to *"Agree,"* and highly inter-correlated ($r = 0.66$). On a similar 7-point scale, at T2 participants were asked, "*After living at (name of Salvation Army Homeless Shelter), I am a member of lots of different social groups,*" and "*After living at (name of Salvation Army Homeless Shelter), I have friends who are in lots of different groups.*" The two items were correlated ($r = 0.78$).

Personal Well-Being

Well-being was measured at T1 and T2. The personal well-being Index (PWI) developed by the International Well-being Group (2006) is an eight-item scale measuring satisfaction with life, covering eight quality of life domains (e.g., standard of living, achievement in life; personal relationships). An example item asks *"How satisfied are you with what you are currently achieving in life?"* (measured on a 10-point scale from "*completely dissatisfied*" to "*completely satisfied*"). The eight scores were averaged to give a score representing 'subjective well-being,' and for the purpose of comparing scores to Australian norms, the scores were standardized, so that each individual had a score between 0 and 100. The scale demonstrated good reliability (alpha at T1 = 0.84 and T2 = 0.94), and good validity (International Well-being Group, 2006).

Results

Path Analysis

The mean, SD and inter-correlations between measures of discrimination, multiple group membership and well-being are presented in **Table 1**. Consistent with the personal-group discrepancy (Postmes et al., 1999), it appeared that group-based discrimination was perceived to be higher than personal discrimination. In addition, at both time points, the number of groups that individuals belonged to was rated around the midpoint of the scale. The normative range on personal well-being in Australia is 73.4–76.4 points. The personal well-being in our sample was worse: our respondents were 10 points below this normative range. The average well-being score improved about 1 SD from T1 to T2.

To assess the hypothesized relationships, we tested a structured model with measured variables using AMOS software (Version 22.0). Controlling for personal well-being at T1, we specified perceived personal discrimination (T1) and perceived group-discrimination (T1) as exogenous predictor variables. We specified multiple group membership (T2) as a mediator variable, with personal well-being (T2) as the outcome variable. To determine the fit of the model, we included several absolute and relative fit indices (see Hu and Bentler, 1999; Iacobucci, 2010), including the χ^2 goodness-of-fit test, the comparative fit index (CFI), the root mean squared error of approximation (RMSEA), and Akaike's Information Criterion (AIC).

Our model fit the data well: $\chi^2(1) = 5.11$, $p = 0.02$, CFI = 0.96, RMSEA = 0.19, AIC = 43.11. **Figure 1** shows the standardized parameter estimates for the model. Group-based

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[1] Gender [completers vs. non-completers female: 59 vs. 42%, $\chi^2(1, N = 119) = 3.32$, $p = 0.069$], age [completers $M = 34.3$, SD = 9.05; non-completers $M = 37.4$, SD = 9.62, $F(1,117) = 0.3.10$, $p = 0.081$], employment status [completers vs. non-completers employed: 20% vs. 16%, $\chi^2(1, N = 119) = 0.22$, $p = 0.64$], alcohol consumption [completers $M = 11.57$, SD = 10.09; non-completers $M = 15.08$, SD = 10.09, $F(1,92) = 2.64$, $p = 0.108$],well-being [completers $M = 5.68$, SD = 1.79; non-completers $M = 5.67$, SD = 1.95, $F(1,117) = 0.001$, $p = 0.981$].

TABLE 1 | Mean and SD of discrimination measures, multiple group membership, and well-being.

		Personal discrimination		Group discrimination		Multiple group membership		Personal well-being	
	Mean (SD)	**(T1)**	**(T2)**	**(T1)**	**(T2)**	**(T1)**	**(T2)**	**(T1)**	**(T2)**
Perceived personal discrimination (T1) *(range: 1–7)*	3.83 (1.95)	1.00	0.57**	0.43**	0.37**	−0.14	−0.28*	−0.52**	−0.35**
Perceived personal discrimination (T2) *(range: 1–7)*	3.90 (1.97)		1.00	0.51**	0.67**	−0.07	−0.38**	−0.47**	−0.52**
Perceived group-based discrimination (T1) *(range: 1–7)*	5.07 (1.93)			1.00	0.56**	−0.17	−0.33**	−0.20*	−0.28*
Perceived group-based discrimination (T2) *(range: 1–7)*	4.99 (1.98)				1.00	−0.02	−0.31**	−0.27*	−0.38**
Multiple group membership since living at Salvation Army (T1) *(range: 1–7)*	3.54 (1.82)					1.00	0.39**	0.35**	0.17
Multiple group membership since living at Salvation Army (T2) *(range: 1–7)*	3.57 (1.89)						1.00	−0.34**	0.43**
Personal well-being (T1) *(range: 15.00–100)*	56.81 (18.40)							1.00	−0.57**
Personal well-being (T2) *(range: 18.75–100)*	66.30 (19.31)								1.00

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

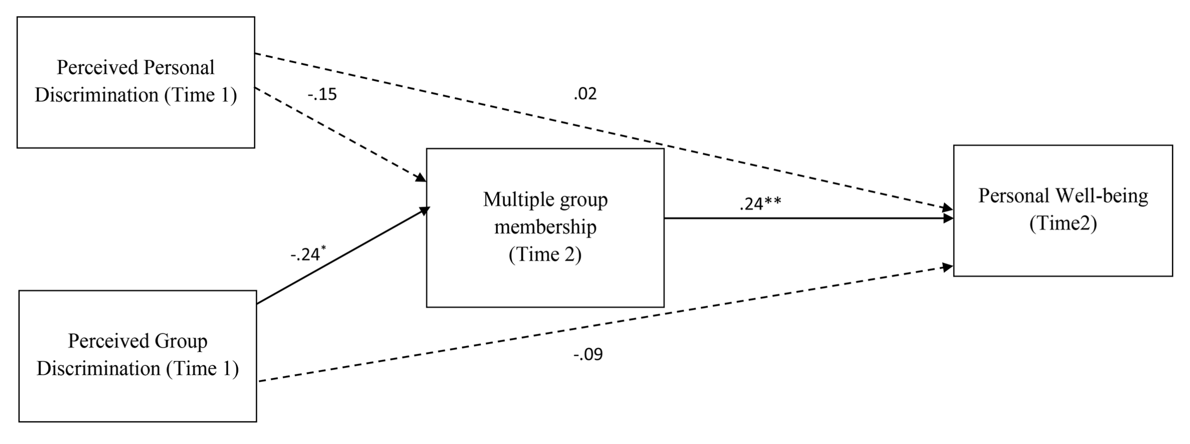

FIGURE 1 | Path model assessing the effects of perceived personal discrimination, perceived group discrimination on well-being (Time 2), through multiple group membership (Time 2). Standardized parameter estimates shown. Dashed lines indicate non-significant relationships. $^{*}p = 0.056$, $^{**}p < 0.05$; $^{+}$Controlling for well-being at T1.

discrimination was negatively associated with gains in group membership at T2, which subsequently predicted well-being (T2). Perceived personal discrimination did not predict multiple group memberships and, although there were significant inter-correlations, in the model neither personal discrimination nor group-based discrimination directly predicted later well-being.

A refined model was tested, removing the pathway from personal discrimination to multiple group membership and the direct pathways from group-based discrimination to later well-being. This refined model showed an improved fit: $\chi^2(3) = 7.12$, $p = 0.68$, CFI = 0.95, RMSEA = 0.11, AIC = 41.12. **Figure 2** shows the standardized parameter estimates for the model. Again, group-based discrimination was significantly associated with fewer gains in group membership at T2, which subsequently predicted well-being (T2). Perceived personal discrimination did not predict later well-being.

Alternative Model

In line with Major et al.'s (2002, 2003) argument that some people see discrimination more than others, it could be argued that those with multiple group membership perceive less discrimination. Put differently, being poorly connected and isolated means that one is more likely to see rejection. To test this alternative pathway, we specified a model where multiple group membership predicts discrimination perceptions. The alternative model did not fit the data as well as the previous models: $\chi^2(2) = 61.55$, $p = 0.00$, CFI = 0.39, RMSEA = 0.35, AIC = 93.55 (see **Figure 3**) and we retain the predicted models.

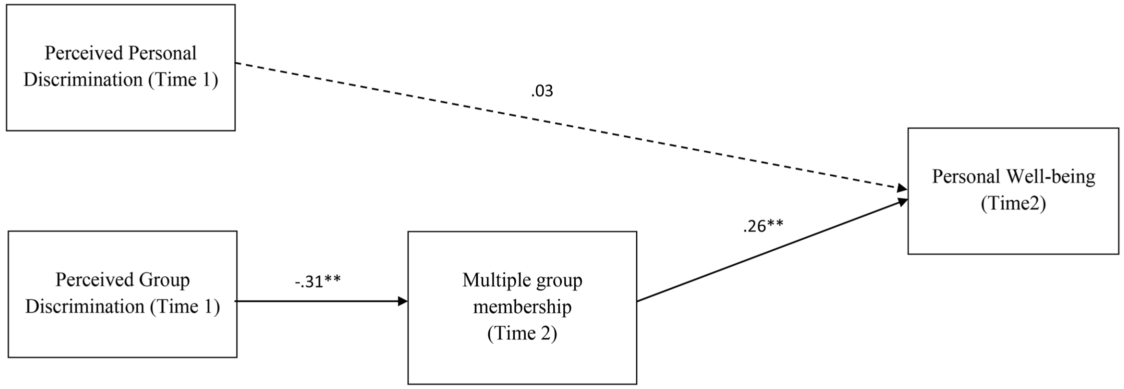

FIGURE 2 | Path model assessing the effects of perceived personal discrimination, perceived group discrimination on well-being (Time 2), through multiple group membership (Time 2). Standardized parameter estimates shown. Dashed lines indicate non-significant relationships. *$p < 0.05$, **$p < 0.01$; $^{+}$Controlling for well-being at T1.

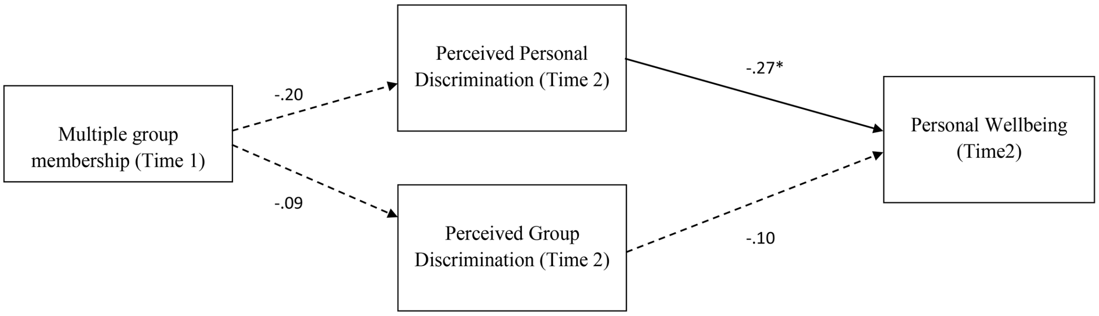

FIGURE 3 | Path model assessing the effects multiple group identities on perceived personal discrimination, perceived group discrimination and subsequent well-being (Time 2). Standardized parameter estimates shown. Dashed lines indicate non-significant relationships. *$p < 0.05$, **$p < 0.01$; $^{+}$Controlling for well-being at T1.

Discussion

Although multiple group memberships can improve well-being, we predicted that homeless people who are arguably most in need of such identity resources are least likely to benefit from them because stigma and discrimination act as barriers against building social connections. Consistent with predictions, the experience of group-based discrimination was associated with fewer group memberships at T2. This suggests that group-based discrimination stands in the way of multiple group membership development at T2, and this negatively impacts on well-being. An alternative model where multiple group memberships at T1 predicts well-being at T2 through perceived personal and group-based discrimination did not fit the data as well as the hypothesized model.

Noteworthy too, perceived personal discrimination did not predict multiple group memberships. A possible explanation may be that discrimination directed at oneself does not affect seeking out of social connections and group memberships, whereas group-based discrimination does. Specifically, it is group-based discrimination that affects the salience of 'us' versus 'them' distinctions and self-categorisations. As our data suggest, this powerfully affects the orientation of the individual in the social world whereby belonging to a stigmatized group becomes a barrier for seeking out other groups (that are part of a more inclusive "we") when facing discrimination on the basis of group membership.

Interestingly, when controlling for well-being at T1, there was no direct relationship between either measure of perceived discrimination and well-being at T2. There was only a relationship through multiple group membership, suggesting that for the homeless, this may be an important mechanism by which discrimination negatively affects health. That is, in particular for this population, the negative effects of discrimination may not so much be due to the painfulness of rejection, but more to the fact that group-based discrimination stands in the way of seeking support from other groups. It is being cut off from social identity resources to cope with discrimination that appears to negatively affect well-being over time.

Implications and Future Research

This work informs understanding of the experiences of people who are homeless. Specifically, it demonstrates how discrimination against the homeless can negatively impact social connections, and subsequent well-being. This work contributes to a growing body of research on the effect of multiple group membership on health (e.g., Jetten et al., 2014). While consistent with the existing research that more multiple group memberships are associated with enhanced well-being, this research provides a better understanding of how multiple group memberships are impacted within a more vulnerable population. Specifically, multiple group memberships and/or attempts at developing new connections amongst the homeless are hampered by experiences of discrimination. The findings suggests that for people experiencing homelessness, group-based discrimination may deter individuals from seeking out of social connections and group memberships, whereas discrimination directed at oneself does not affect the orientation in the social world.

It remains an empirical question whether the processes observed in the present research are unique to the homeless. There are some reasons to suspect that there are some important differences between the homeless and other stigmatized minority groups (e.g., on the basis of gender, ethnicity or age). For instance, the motivation to turn to other groups — other than their own minority group — following group-based discrimination may be higher among homeless individuals than among members of other stigmatized groups. Given the heterogeneous people who experience homelessness and the lack of identification with the homeless group itself (Walter et al., under review), it may be the case that for these individuals in particular, other groups may become more important sources of social support. The inability to join other groups (and the resulting negative well-being consequences of this) may therefore be felt more by homeless individuals than by members from other stigmatized groups.

Another reason why these findings may be population specific relates to the high levels of exclusion that homeless individuals face. Indeed, there are not many stigmatized groups in today's world that face this type of pervasive and legitimate discrimination (see Jetten et al., 2013 for a discussion). This would imply that the homeless are indeed a special case where the experience of discrimination may not necessarily lead to the provision and availability of support by others. The extent to which our findings can be generalized to other stigmatized groups should be examined in future research.

Even though the picture that is painted for the homeless looks bleak, these findings should not be taken as evidence that the homeless are powerless in the face of pervasive group-based discrimination. Indeed, there is now considerable evidence that suggest the contrary. For example, Johnson et al. (2008) demonstrated how people who were homeless actively managed and manipulated the stigma of homelessness to make sense of their worlds. In the context of outreach service provision, Parsell et al. (2014) demonstrated how people exercised agency and actively identified their sense of self and aspired trajectories to explain their exits from chronic homelessness. They demonstrated that people with experiences of homelessness were not passive service recipients whose housing status and identity was determined by the availability of social welfare and housing resources (Parsell et al., 2014).

There are limitations to this research that need noting. First, while our analyses meet the general rule of 10 cases per variable, our sample size was relatively small, reducing power. Further, whilst we control for initial levels of well-being, it should be noted that we did not control for other factors that could have affected the strength of relationships (e.g., mental illness, depression, psychosis, substance abuse). Having noted these weaknesses, our research also has a number of strengths. In particular, while we cannot assume causation, we did find that our associations were robust over a 3-months time period, in which participants were undergoing significant life changes and, for many, their situation at T2 was very different from T1.

Finally, these findings have important implications for those working with individuals who are homeless. Along with broader efforts to combat discrimination toward those experiencing homelessness, services structured to enhance group memberships where individuals are more integrated and connected, may enhance well-being and potentially contribute to breaking the cycle of homelessness. This is in line with other research findings showing group-based interventions for clients of homeless services provide well-being benefits beyond the stated purpose of the group activity. For instance, a study of homeless individuals attending a job- and life-skills program found that positive change in social network quality over time was associated with positive outcomes (specifically fewer individuals in the network using alcohol to intoxication; Gray et al., 2015). Our findings suggest that it may not be so much the building of social support networks, but the removal of barriers for people to turn to those social networks in times of need that is crucial in protecting the homeless' long-term well-being.

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Understanding help-seeking amongst university students: the role of group identity, stigma, and exposure to suicide and help-seeking

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Background: Despite a high prevalence of suicide ideation and mental health issues amongst university students, the stigma of help-seeking remains a barrier to those who are in real need of professional support. Social identity theory states that help received from an ingroup source is more welcome and less threatening to one's identity than that from a source perceived as outgroup. Therefore, we hypothesized that students' stigma toward seeking help from their university mental health service would differ based on the strength of their identification with the university.

Method: An online survey including measures of stigma of suicide, group identification, experience with help-seeking and exposure to suicide was administered to Irish university students ($N = 493$).

Results: Group identification was a significant predictor of help-seeking attitudes after controlling for already known predictors. Contrary to our expectations, those who identified more strongly with their university demonstrated a higher stigma of seeking help from their university mental health service.

Conclusions: Results are discussed in relation to self-categorization theory and the concept of normative fit. Practical implications for mental health service provision in universities are also addressed, specifically the need for a range of different mental health services both on and off-campus.

Keywords: help-seeking, mental health, suicide, group identification, stigma, university students

Introduction

Seeking help is essential if people are to access appropriate mental health services. While there are different sources of help, both formal and informal (Rickwood et al., 2005), there is acknowledged value in seeking formal help, in particular talking therapies and psychological services (NICE, 2004). It is therefore essential that people feel they can access them. In universities, amongst a constituency that is often perceived as having a high risk of suicide (Borges et al., 2010), these services are seen as an important arm of general pastoral care and student support (Bishop, 1990; Kitzrow, 2003). Indeed provision of services that are close, on campus are viewed as a key spend in these difficult financial times. For this reason the current study looks at help-seeking in students and how it is affected, negatively by social forces such as stigma as well as positively by a sense of belonging at university.

Students are an important group for the study of help-seeking. They have high prevalence rates of mental health problems and suicidal ideation. For example, one web-based study of 763 students showed that around one-third were experiencing a mental health problem at the time of test, of which 60% were present 2-years later (Zivin et al., 2009). In addition, a large survey of over 26,000 students in the US, showed that 18% of undergraduates had seriously considered taking their own lives (Drum et al., 2009). Commentators suggest numerous reasons for this trend including the stressors and pressures of student life, and the adjustment to life away from home and family (Furr et al., 2001), with risk factors including financial difficulty, poverty, substance abuse, sexual victimization, and issues related to sexual identity (Eisenberg et al., 2007). However, many students with mental health problems, particularly suicidal ideation, do not seek help from formal sources of support such as university counseling services or mental health services (Drum et al., 2009; Hunt and Eisenberg, 2010). This is despite the fact that these are often the most accessible forms of support for students, particularly for those living away from home.

The single most commonly cited barrier to professional help-seeking is stigma (Corrigan, 2004; Vogel et al., 2009). Mental health stigma can be conceptualized as a set of negative attitudes that represent prejudice or negative stereotypes about people with mental ill health, and in some cases can lead to significant discrimination (Corrigan and Penn, 1999; Corrigan, 2004; Masuda and Latzman, 2011). Stigma toward mental health is generally associated with negative help-seeking attitudes (Leong and Zachar, 1999; Vogel et al., 2005), and this has been shown to be particularly true for people who are experiencing suicidal thoughts (Rickwood et al., 2005; Batterham et al., 2013). Research demonstrates that this may potentially be due to less openness to and a lower perceived value of professional treatment amongst those with a higher stigma of mental health (Coppens et al., 2013). Previous research has also highlighted a desire for social distance from people with mental health issues or seeing mental ill health as a personal weakness as being related to a reluctance to seek professional help (Schomerus et al., 2009; Mojtabai, 2010; Griffiths et al., 2011).

There has been increasing recognition in recent years for the need to focus on reducing the stigma surrounding suicide in order to positively influence help-seeking attitudes amongst at-risk individuals, something that has been highlighted by the National Action Alliance for Suicide Prevention's Research Prioritization Task Force in their 2014 prioritized research agenda (Pearson et al., 2014). Evidence to date has shown that such strategies may be successful; a suicide prevention initiative implemented within a university setting successfully reduced the stigma of mental health problems and improved students' attitudes toward talking about mental health problems and suicide (Pearce et al., 2003). Stigma is far from the only factor influencing help-seeking behaviors however with a growing body of evidence detailing how it is not just attitudinal but also experiential variables that may impact upon how professional help is viewed.

Past experience with help-seeking has consistently been shown to influence attitudes toward help-seeking for mental health and suicide. These may be either personal experiences (e.g., Rickwood et al., 2005), or knowing someone else that has previously engaged with mental health professionals. Research suggests that attitudes toward formal support services for mental health and suicide are at least partially transmitted through an individual's social network, which also plays a vital role in determining whether a person makes the choice to seek professional help (Rickwood and Braithwaite, 1994; Angermeyer et al., 1999; Vogel et al., 2007). For example, university students who actually sought mental health services knew someone else who had sought help 92–95% of the time, and those who knew someone who had previously sought help had more positive attitudes toward mental health services (Vogel et al., 2007). Of course where these experiences have been negative they can have the opposite effect. A review focusing on determinants of help-seeking amongst young people experiencing issues with suicide found that when past experiences of seeking help were negative, particularly when the young person felt they were not helped or that their problems weren't taken seriously, they acted as substantial barriers to future help-seeking intentions and impacted heavily upon attitudes toward professional help (Rickwood et al., 2005).

Help-seeking attitudes may also be influenced by past exposure to suicide or experience with suicidal behaviors. Whilst some studies found no significant relationship between exposure to suicide and help-seeking attitudes or intentions (Calear et al., 2014), others found that exposure to suicide led to more negative attitudes toward help-seeking (Chan et al., 2014). Moreover, research also suggests that attitudes may differ dependent on the amount of exposure. Just 5% of Irish men would turn to a mental health professional as a source of support for suicide if they had no previous exposure to suicide. This increased to 19% when they knew one person who died by suicide but dropped to 8% again when they knew of more than one suicide (Begley et al., 2004).

Therefore, whilst it seems that this factor may influence attitudes toward help-seeking, the way in which this relationship works has not yet been fully established. On the one hand it is thought that past experience with help-seeking may act as a form of knowledge or mental health literacy which is deemed important in the help-seeking process (Gulliver et al., 2010; Coppens et al., 2013). Students who know someone that have accessed mental health services and that have positive expectations about how friends and family would think of them if they sought this type of service professional help are more likely to have positive attitudes to help-seeking (Gulliver et al., 2010; Coppens et al., 2013). These findings implicate shared attitudes and feelings of belonging, two important components of social identity, in determining help-seeking behavior which is entirely consistent with recent research which has pointed to the importance of shared social identities in determining access and availability to social support (Haslam et al., 2005).

Recent empirical evidence demonstrates that where individuals share group membership, they are more likely to provide each other with support, receive support, and interpret support offered in the manner in which it is intended, in comparison to those where shared membership is absent

(Reicher et al., 2006). However, the capacity for this social support to affect appraisal depends on the match between group membership of the support provider and recipient. So support does not always have the same or equivalent impact (Haslam et al., 2005). It seems to vary systematically as a function of the group membership of the support provider. For example, university students who were informed that a task was challenging rather than stressful appraised the task more positively and demonstrated less cardiac reactivity when the information provided came from an ingroup member rather than an outgroup member (Haslam et al., 2004; Gallagher et al., 2014; For a review of the potentially harmful effects that intense emotions, particularly stress, can have on cardiovascular health, see Steptoe and Kivimäki, 2013) This suggests that legitimacy of informational exchanges is shaped by a perceiver's belief that it originates from a relevant ingroup member who has direct personal experience and is therefore qualified to comment on the particular event (Haslam et al., 1996; Levine, 1999). Importantly however, it also suggests that support is socially mediated and will interact with its content (Gallagher et al., 2014). So whilst support offered by an ingroup source often appears to be the most beneficial, the impact of availing of support from within the group where it is potentially stigmatizing is less well-understood.

The current study then will investigate student attitudes toward help-seeking from a university source, which have been shown to be highly predictive of actual help-seeking behaviors (Vogel et al., 2005). It is hypothesized that stigma of help-seeking from a source within the ingroup (i.e., the university) will be successfully predicted by the factors discussed above which have previously been shown to be influential, namely stigma of suicide, experience of help-seeking, and exposure to suicide. As gender differences have continuously been noted in help-seeking behaviors and attitudes (Andrews et al., 2001; Gonzalez et al., 2005; Vogel et al., 2011) this will also be included in our predictive model. We further hypothesize that identification with the ingroup will predict stigma of help-seeking from a university source over and above the already known predictors and demographics. Based on previous research it can be expected that high group identification will result in a lower stigma of help-seeking from formal university support services, whilst low identification with the ingroup may act as a barrier to help-seeking when the source of help is drawn from that group.

Materials and Methods

We administered a comprehensive battery of questionnaires online using a web-based interface, SurveyMonkey, which allows the collection of quantitative and qualitative data. The study received full approval from the Education and Health Sciences Research Ethics Committee at the University of Limerick (2014_06_26_EHS).

Participants

The study sample comprised of students enrolled at the University of Limerick in the mid-west of Ireland. This population is largely comprised of Irish students, with 91% of the 14,300 students enrolled in the University of Limerick claiming Irish nationality. All registered students at the university were invited to participate in the study via an email web-link, with 693 volunteers clicking on the web-link in the first instance. The first page of the survey provided study information, assuring volunteers that participation was voluntary and anonymous, and screening questions relevant to the exclusion criteria. These were that participants had to be a current student and over the age of 18, which eliminated 33 respondents. The final sample consisted of 493 students who completed all elements of the survey, of whom 193 were male (39.1%). Participant ages ranged from 18 to 61 ($M = 25.22$, $SD = 9.56$). The majority of students that were excluded from the final sample due to non-completion did not proceed past either the information sheet ($n = 63$), or providing their demographic information at the beginning of the survey, and so did not respond to any of the measures assessing our key variables of interest. For those that completed the demographic information, One-Way ANOVA's revealed that there was no significant difference between completers and non-completers in either age [$F_{(1,\ 659)} = 0.96$, $p = 0.27$] or gender [$F_{(1,\ 659)} = 0.74$, $p = 0.38$]. Although the final sample of 493 students is representative of the total Irish third-level student population of 217,520 (2014/2015; HEA, 2015), with 384 participants required to achieve a 95% confidence level and confidence interval of 5, the participants in this study were all drawn from a single university.

Measures

Exposure to Suicide

Exposure to suicide was measured by two questions that were composed for this study, "Do you know somebody who has died by suicide?" and "Have you direct personal experience with suicidal thoughts, feelings or behaviors?." Answers were in a Yes/No format with "No" given a score of zero and "Yes" given a score of one. A total score for exposure to suicide was then obtained by summing these two items, with a potential range of 0–2 and higher scores indicating more exposure.

Experience with Help-seeking

Experience with seeking help was assessed through a single question that again was composed for this study: "Have you or somebody you know ever received professional help for any issues related to mental health?." Responses were in a Yes/No format (No = 0, Yes = 1).

Stigma of Suicide

Stigma of suicide was measured using the Stigma of Suicide Attempt (STOSA; Scocco et al., 2012) scale. This 12-item scale is based on Link's (1987) Perceived Discrimination-Devaluation Scale (PDD) and measures the perceived public stigma of those who attempted suicide. This particular scale was chosen as measuring public stigma rather than personal stigma has been shown to remove the potential social desirability response bias and give a more accurate reflection of internalized stigma (Griffiths et al., 2006; Peluso and Blay, 2009; Calear et al., 2011). Moreover, unlike most measures of suicide stigma, STOSA questions are oriented toward a person who attempted suicide rather than a person who died by suicide. Survivors of suicide attempts have been reported to be particularly stigmatized and often dismissed as attention-seekers, with little in the way of support offered (Sudak et al., 2008). As such this group can be seen to reflect the extent of negative attitudes and stigma amongst the general public toward suicide and suicidal behaviors. We also reasoned that by framing questions toward suicide attempts rather than the person who died by suicide underlying stigma may be revealed as the traditional reluctance of people to stray from the rhetoric of "never speaking ill of the dead" is eliminated. The 12 questions in the STOSA scale follow the semantic structure of the PDD, but investigate attempted suicide rather than depression, e.g., "Most people would treat a person who has attempted suicide just as they would treat anyone." Responses were scored on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree), with half the items reverse-scored. Mean scores were calculated with higher scores indicating higher levels of stigma ($\alpha = 0.85$).

Group Identification

Ingroup identification was assessed using Leach et al.'s (2008) 10-item Self-Investment scale which was used to measure identification with the individual's university. The scale design stipulates that for each item the researcher should insert the name of the group under investigation in place of "[Ingroup]." This widely used measure is comprised of three subscales, Solidarity ($\alpha = 0.84$), e.g., "I feel committed to people in my university," Satisfaction ($\alpha = 0.90$), e.g., "I think that people in my university have a lot to be proud of" and Centrality ($\alpha = 0.82$), e.g., "Being in my university is an important part of how I see myself," but only the overall scale was used in the current study. Items are scored on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), with a higher score indicating a greater level of identification with the ingroup ($\alpha = 0.90$).

Stigma of Help-seeking from the Ingroup

The Self-Stigma of Seeking Help scale (SSOSH; Vogel et al., 2006) measures a person's self-evaluation for seeking professional psychological help. This 10-item scale is scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with five items scored inversely. A higher total score indicates a higher stigma of seeking help. In the current study the SSOSH was used to predict attitudes and willingness of a person to seek professional help from the mental health service in their university if they were experiencing issues related to suicide or mental health, and the wording was adjusted to reflect this; for example, "It would make me feel inferior to ask a therapist in my university for help." This yielded a Cronbach's alpha of 0.87, which was in line with the range of internal consistencies demonstrated in previous college samples (0.86–0.90; Vogel et al., 2006).

Analytic Procedure

Preliminary Analysis

Pearson's correlation coefficients (point-biserial correlation coefficients for dichotomous variables) were computed in order to investigate the relationships between variables (see **Table 1**). These revealed significant positive relationships between the dependent variable (stigma of help-seeking) and all predictor variables other than exposure to suicide. Although a positive relationship was expected for stigma of suicide based on previous research, the direction of this relationship was more surprising for group identification and experience with help-seeking. Gender differences for study variables were assessed using a series of analyses of variance to see if there was a need to conduct analysis separately for males and females.

TABLE 1 | Pearson's correlation coefficients for study variables.

	1	2	3	4	5
1 Gender$^{\#}$					
2 Exposure to suicide	−0.05				
3 Experience with help-seeking	0.14**	0.20**			
4 Stigma of Suicide	0.08	0.02	−0.001		
5 Group identification	0.10*	−0.01	0.01	0.24**	
6 Stigma of help-seeking	0.14**	0.04	0.108*	0.29**	0.21**

$^{*}p < 0.05$, $^{**}p < 0.01$ (two-tailed). N = 493. $^{\#}$Coefficient for gender represents a point-biserial correlation given that it is a dichotomous variable).

Regression Analysis

Following preliminary analysis, a hierarchical multiple regression was conducted using IBM SPSS Statistics, Version 21, in order to predict stigma of help-seeking from an ingroup source. This analytic technique allowed for the additional predictive value of our key variable of interest (group identification) to be established while controlling for previously known predictors. Variables were added in two blocks with known predictors of help-seeking entered in Block 1 (gender, sigma of suicide, exposure to suicide, and experience with help-seeking) and group identification added in Block 2.

Results

Descriptive Statistics

Exposure to suicide was high amongst survey respondents with 74.6% of participants ($n = 368$) indicating that they knew someone who died by suicide and 66.9% ($n = 330$) reporting that they had direct personal experience with suicidal thoughts, feelings of behaviors. Experience with professional help-seeking was also high; 72.6% ($n = 358$) of the sample knew someone who had received professional help for issues related to mental health. Stigma of help-seeking was prominent amongst participants, with the mean score of 33.83 ($SD = 7.26$) falling within the range that Vogel et al. (2006) class as being high (32+). Gender differences for stigma of suicide, group identification and stigma of help-seeking were explored using a series of analyses of variances, the findings of which are presented in **Table 2**. Although some gender differences were noted the overall trend in the relationship between our key variables of interest remained the same (i.e., for both males and females stigma of help-seeking increased with higher group identification; see **Figure 1**), meaning they were not treated separately for the main analysis.

TABLE 2 | Analysis of variances for gender differences in study variables.

	Male ($n = 193$)		Female ($n = 300$)		Total ($n = 493$)		*F*	*df*	*p*
	M	*SD*	*M*	*SD*	*M*	*SD*			
Exposure to suicide	1.46	0.38	1.39	0.38	1.42	0.38	1.09	492	0.30
Experience with help-seeking	0.65	0.28	0.77	0.22	0.73	0.23	8.70	492	0.003
Stigma of suicide	2.64	0.44	2.70	0.45	2.68	0.45	3.10	492	0.08
Group identification	51.30	10.57	53.46	10.28	52.61	10.43	9.78	492	0.002
Stigma of help-seeking	32.60	7.30	34.65	7.13	33.83	7.26	5.08	492	0.03

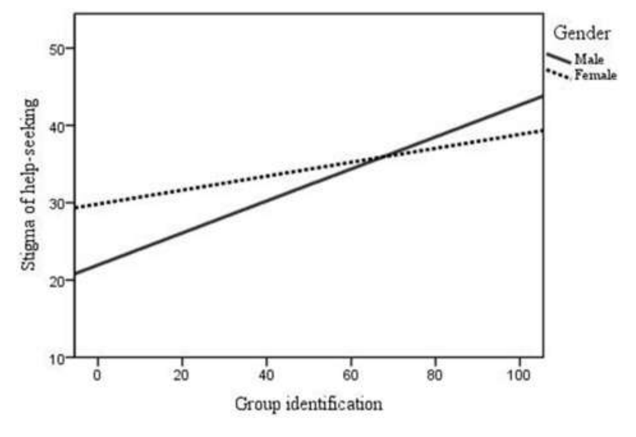

FIGURE 1 | Relationship between stigma of help-seeking and group identification for males and females.

TABLE 3 | Hierarchical regression coefficients for variables predicting stigma of help-seeking.

	B	*SE B*	β	*t*	*R*	R^2
Block 1					0.33	0.107
Constant	15.82	2.72		5.82***		
Gender	1.58	0.65	0.11	2.46*		
Exposure to suicide	0.21	0.46	0.02	0.46		
Help-seeking experience	1.46	0.72	0.09	2.04*		
Stigma of suicide	4.56	0.70	0.28	6.56***		
Block 2					0.35	0.125
Constant	12.36	2.91		4.25***		
Gender	1.42	0.64	0.09	2.17*		
Exposure to suicide	0.01	0.03	0.02	0.50		
Help-seeking experience	1.46	0.71	0.09	2.06*		
Stigma of suicide	4.02	0.71	0.25	5.66***		
Group identification	0.10	0.03	0.14	3.18**		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (two-tailed). N = 493.*

Regression Analysis

A hierarchical multiple regression analysis was carried out with stigma of help-seeking as the outcome variable. As gender, experience with help-seeking, exposure to suicide, and stigma of suicide are already known predictors of help-seeking these were entered into the model in Block 1. Group identification was then added to the model in Block 2 to establish the added predictive value of this variable once the known predictors were controlled for. Regression statistics are reported in **Table 3**.

At Block 1, the model was found to be significant, $F_{(3,\ 488)} = 14.54$, $p < 0.001$, with gender, experience with help-seeking, exposure to suicide and stigma of suicide accounting for 10.7% of the variance in stigma of help-seeking, and each predictor with the exception of exposure to suicide making a significant individual contribution. Adding group identification to the model in Block 2 accounted for an additional 1.8% of variance and this change in R^2 was significant, $F_{(1,\ 487)} = 10.12, p = 0.002$. Together these four variables explained 12.5% of the variance in stigma of help-seeking. Each of the variables entered in Block 1 one remained significant predictors once group identification was added to the model, with the exception of exposure to suicide which remained non-significant.

Stigma of suicide was the strongest predictor; for every additional unit on the stigma of suicide scale, stigma of help-seeking increases by 4.03. This was followed by experience with help-seeking, with those who knew someone that had received professional help for mental health problems scoring higher on the stigma of help-seeking scale by 1.46. Our key variable of interest, group identification had a positive relationship with stigma of help-seeking. Every additional unit on the group identification scale resulted in a 0.10 increase on the stigma of help-seeking scale.

Discussion

This study aimed to predict students' stigma of seeking help from their university mental health service using a combination of already known predictors in addition to a previously overlooked factor, group identification. These variables, namely gender, experience with help-seeking, exposure to suicide, stigma of suicide, and group identification, were found to significantly predict stigma of help-seeking from the university. Unexpectedly, higher levels of group identification, in this case identification with the university, were found to predict higher levels of stigma of help-seeking from the ingroup over and above the other known predictors. Thus, students who identified more strongly with their university demonstrated higher stigma in seeking help from university mental health services. These findings were not as we had predicted.

Similar to previous studies (Corrigan, 2004; Vogel et al., 2009), those perceiving higher stigma of suicide also demonstrated a higher stigma of help-seeking. For those who knew someone who had received professional mental health support in the past however, stigma of help-seeking was also higher. This contradicts previous findings showing that past experience with help-seeking is generally a facilitator of future help-seeking (e.g., Angermeyer et al., 1999; Vogel et al., 2007), but supports Rickwood et al. (2005) claims that such experience can also act as a barrier if the experience with mental health services was negative. Females were found to have a higher stigma toward help-seeking than males, which again deviates from past findings that demonstrate the opposite (Andrews et al., 2001; Gonzalez et al., 2005; Vogel et al., 2011). This may be due to the fact that the current sample was self-selected, with the possibility that only males who had an interest or awareness around mental health participated in the study.

In terms of theory, these findings add to the growing body of literature that link social identity and shared social relationships to both mental and physical health (Cohen, 2004). Social support it would appear depends on the match between group membership of the support provider and recipient, and support does not always have the same or equivalent impact (Haslam et al., 2005). We believe the results evident in this study are particularly congruent with self-categorization theory (Turner et al., 1987, 1994) which has an emphasis on the consequences of dynamics *within* groups in determining behavior. Our study provides evidence that it is those who are most identified with their university that has the most difficulty seeking help from its counseling services. Normative fit, a key concept associated with self-categorization theory (Turner et al., 1987), is an important element of the explanation for the findings in this study. This concept can be described as the extent to which the perceived behavior or attributes of group members conforms to the perceiver's knowledge-based expectations about the social meaning of group membership (Oakes et al., 1994). If a person seeking help perceives their normative fit to the group to be poor because of their problem (in this case a stigmatized mental health issue), availing of help from an ingroup source is very problematic as they are unlikely to want to expose that they are violating the perceived social norms of the group. As it was perceived stigma of suicide amongst ingroup members that was the strongest predictor of the stigma of help-seeking in this study, this concept is particularly relevant.

In terms of practice our findings suggest that help-seeking and offering support to students through university counseling is particularly challenging, not only because of the stigma of mental health issues but also because of the sense of community that being part of a university invokes. Whilst previous research has shown that identification with a particular group can be a basis for both giving and receiving social support, this study is the first to consider the role of group identification in seeking help. Shared social identities are of course associated with shared values and characteristics (Turner, 1975) and if these are values that stigmatize an issue, the ability to avail of support for that issue within the group is compromised. Importantly social identities have performative elements, they can drive the things we do as well as the how we feel and think (Walsh et al., 2015). So whilst a university counseling service has the advantage of shared university affiliation when it offers support to its students, students may be motivated to avoid availing of this service to avoid stigma within their own group. Indeed, that is what was found in the current study with students who strongly identified with their university demonstrating greater stigma toward help-seeking than those who identified less as a university student.

This leaves university counseling services with a dilemma because identification with the university also has considerable benefits. These include higher levels of wellbeing and better adjustment to university life (e.g., Bettencourt et al., 1999; Amiot et al., 2010). In order to address these conflicting processes it may be necessary for universities to reevaluate the organization of their mental health services. It is possible that counseling services off campus, offered by external agents may be more attractive to those students who are strongly affiliated to their institution; if counseling services were perceived as more independent of the institution in terms of physical proximity, embeddedness and because of their branding, students may be more likely to seek help. This is not to suggest that mental health services should be removed in their entirety from university campuses however. These are vital resources that are utilized by a vast number of students and for the most part provide an invaluable source of help and support. Rather a variety of sources may be the solution, with both internal and external options made available to students to ensure the needs of widest possible range are met.

It is important to note here that in the university where this study was conducted, counseling services are very much embedded within the university and its systems, including by proximity, by their very clear presence in all guidance offered to students, and the role they play in supporting students with academic processes (i.e., mitigation). Thus, it is important that future research compares institutions where counseling services are more or less embedded and perceived as part of the ingroup in order to further understand the practice implications of the effects we have reported here. Other limitations of the current study include the way in which participants were recruited. All of the students in our institution were emailed and asked to participate in this study. Our final sample represents a self-selected sample of this total population and as a consequence these respondents may not be representative of the wider student pool. Our sense is that students that were particularly interested in mental health issues may have been more inclined to complete the study. In addition, the population from which this sample was drawn represents a particularly homogenous group in terms of nationality and background, with 91% of all students in the university where the study was conducted identifying as Irish. Although this homogeneity may have contributed to the overall high level of identification with their university, it must also be noted that findings may differ in student bodies that are more diverse, or indeed amongst different cultures.

Future research is needed to address both this and other issues. As the effect sizes in this study were quite small, there is a need for more research to confirm our findings. This should also take into consideration additional factors that may influence help-seeking but were not included in the current study. For example, beliefs about the usefulness or effectiveness of mental health services have previously been shown to be important predictors of help-seeking behavior (Downs and Eisenberg, 2012) whilst intentions to seek help are thought to be influential here too (Schomerus and Angermeyer, 2008). Although past experience with suicide and help-seeking was measured, these questions did not go into depth or probe for the closeness of that experience, for example whether it was oneself, family member, friend, or other person. Furthermore, the current mental health status of the sample may be influential, and should be incorporated into future research. It should also be explored if students' stigma of help-seeking differs for internal and external (e.g., GP, independent counseling service) sources of help. Finally, our study was based solely on self-report measures as stigma and group identification are entirely subjective concepts and are crucial to decisions to seek help. However, this does mean that the study should be interpreted with due caution as a consequence of shared variance associated with the method, particularly as our results are correlational. Future research could usefully employ a longitudinal design to explore stigma and group identification as true determinants of help-seeking.

In conclusion, the current study found that that identification with their university may influence student attitudes toward seeking help from the university mental health service. After controlling for already known predictors of help-seeking for issues related to suicide and mental health (stigma of suicide, gender, experience with help-seeking, and exposure to suicide), it was found that students who identified more strongly with their university demonstrated a higher stigma of seeking help from this source. Possible explanations for this lie with the self-categorization theory and normative fit. This finding has potential implications for mental health service provision across higher level institutes, who may need to consider the need for a greater separation from university involvement in such services.

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The impact of anticipated stigma on psychological and physical health problems in the unemployed group

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Previous research has demonstrated that the unemployed suffer increased psychological and physical health problems compared to their employed counterparts. Further, unemployment leads to an unwanted new social identity that is stigmatizing, and stigma is known to be a stressor causing psychological and physical health problems. However, it is not yet known whether being stigmatized as an unemployed group member is associated with psychological and physical health in this group. The current study tested the impact of anticipated stigma (AS) on psychological distress (PD) and physical health problems, operationalized as somatic symptoms (SSs), in a volunteer sample of unemployed people. Results revealed that AS had a direct effect on both PD and SSs, such that greater AS significantly predicted higher levels of both. Moreover, the direct effect on SSs became non-significant when PD was taken into account. Thus, to the extent that unemployed participants anticipated experiencing greater stigma, they also reported increased PD, and this PD predicted increased SSs. Our findings complement and extend the existing literature on the relationships between stigmatized identities, PD and physical health problems, particularly in relation to the unemployed group. This group is important to consider both theoretically, given the unwanted and transient nature of the identity compared to other stigmatized identities, but also practically, as the findings indicate a need to orient to the perceived valence of the unemployed identity and its effects on psychological and physical health.

Keywords: anticipated stigma, stigmatization, psychological distress, depression, anxiety, physical health symptoms, unemployment, unemployed identity

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Introduction

Previous research has demonstrated that the unemployed suffer increased health problems compared to their employed counterparts. This is important as the aftereffects of the global financial crisis mean that unemployment rates are still high at the time of writing. In Ireland, the context of the current paper, the unemployment rate was 9.9% for the first quarter of 2015 (CSO, 2015), representing a large increase on 10 years previously (only 4.2%; CSO, 2005) and higher than the harmonized average for the OECD area for mid-2014 of 7.3% (OECD, 2014). Such high levels of unemployment can have far-reaching effects on health: there is evidence that unemployment is associated with both increased psychological health problems (Paul and Moser, 2009; Eriksson et al., 2010; Blau et al., 2013; Breslin and Breslin, 2013) and increased physical health problems, including self-rated physical health, illness and symptoms (McKee-Ryan et al., 2005) and psychosomatic disorders such as headache, stomach ache and sleeping disorders (Linn et al., 1985; Rantakeisu et al., 1997). Current known or hypothesized reasons for this include the impact of financial strain (Breslin and Breslin, 2013), stress associated with income loss (Eriksson et al., 2010), but also latent deprivation of employment-related functions (time structure, social contact, collective purpose, status, and activity; Jahoda, 1982; see also Creed and McIntyre, 2001). There is also a more general proposition that unemployment is in itself a stressful event (Linn et al., 1985; McKee-Ryan et al., 2005; Eriksson et al., 2010). Following on from this, and as noted in the literature (Eriksson et al., 2010; Quinn and Earnshaw, 2011), one missing piece of the puzzle in explaining health disparities between advantaged and disadvantaged groups – such as the unemployed – may be the effect of stigma. Stigma is the social devaluation of a person or group on the basis of some characteristic (Goffman, 1963) – in this case, unemployment-related stigma. To expand on this, stigmatization involves labeling someone as different, associating them with some negative stereotype on this basis, and discriminating against them (Link and Phelan, 2006). To date, the research on stigma and health among the unemployed is sparse, and given the negative impact of stigma for other stressed groups (Kaur and Van Brakel, 2002; Nyblade et al., 2003; Jacoby et al., 2004), it is worthy of investigation.

While all individuals are said to have a varied self-concept that is partly made up of many different social identities, some chosen (e.g., scientist) and some ascribed at birth (e.g., woman; Tajfel and Turner, 1979), other identities, such as unemployment, are thrust upon them. It is known that unemployment leads to an unwanted new social identity that is stigmatizing (Cullen and Hodgetts, 2001; Letkemann, 2002). Further, studies at both the population and individual level show that employers discriminate by declining to employ those who are already unemployed. In some of these studies it is assumed that there is a 'stigma effect'; that is, that the unwillingness to hire the unemployed is driven by inferences that their unemployment is due to personal failings (e.g., Oberholzer-Gee, 2008; Biewen and Steffes, 2010; Contini and Richiardi, 2012). However, in other studies, people's stigmatized views of the unemployed have been directly measured (e.g., Furåker and Blomsterberg, 2003) and indeed greater stigmatization of the unemployed has been shown to predict reduced willingness to employ them (e.g., Ho et al., 2011; see also Karren and Sherman, 2012, for a review). Consistent with this evidence, there has also been research focusing on the experience of unemployment, which demonstrates that the unemployed perceive it as stigmatizing (e.g., Rantakeisu et al., 1997; Kulik, 2000; Cullen and Hodgetts, 2001; Letkemann, 2002; Lee et al., 2005). Despite these studies showing the unemployed experience stigma, to our knowledge, the association between stigma and health in this group has yet to be examined.

Stigma is widely understood to be a stressor causing psychological and physical health problems. We know from previous research that stress in general impacts well-being. For example, it has been shown that stress can lead to psychological distress (PD; e.g., Schulz et al., 1995; Phillips et al., 2015) and that collectively, stress and PD can impact physical health (e.g., Cohen and Williamson, 1991; Hoge et al., 2007; Springer et al., 2007; Springer, 2009; Gallagher and Whiteley, 2013). Particularly relevant to the current study is the large body of evidence related to stigmatized identities other than unemployment, demonstrating that these stigmatized identities impact negatively on health and well-being in terms of: depression and/or anxiety (Markowitz, 1998; Meyer, 2003; Link and Phelan, 2006; Cluver et al., 2008; Quinn and Chaudoir, 2009; Quinn et al., 2014), post-traumatic stress (Katz and Nevid, 2005; Cluver et al., 2008), reduced quality of life (Earnshaw and Quinn, 2011; Earnshaw et al., 2011), reduced self-esteem (Chaudoir and Quinn, 2010), negative affect (Hatzenbuehler et al., 2009) and poor physical health, such as increased illness symptoms (e.g., chest pain, nausea, coughing; Quinn and Chaudoir, 2009), and even chronic illness comorbidity and low CD4 count in individuals with HIV/AIDS (Earnshaw et al., 2013). Importantly, many of these studies refer to stigmatized identities that are concealable, such as HIV/AIDS, mental illness and certain chronic diseases. Unemployment is also a concealable stigmatized identity, but it has not yet been clearly demonstrated how stigmatization associated with this particular identity is associated with increased PD and physical health problems.

At this point it should be noted that in the case of some stigmatized identities, it is clear that physical health problems precede stigmatization and PD because the stigma relates to a physical health problem (e.g., in the case of HIV/AIDS) which then leads to PD. In the case of unemployment, while there has been some suggestion that people experiencing ill health disproportionately self-select into unemployment, there is also evidence that there is a detrimental effect of unemployment on physical health that is not caused by self-selection (Korpi, 2001; Wanberg, 2012). Moreover, it is possible to investigate whether unemployment precedes psychological and physical ill health by controlling for illnesses experienced prior to the onset of unemployment.

It has not yet been demonstrated whether the belief that one is being stigmatized as an unemployed group member might drive the negative impact of unemployment on psychological and physical health. The current study will address this gap in the literature. Given that the anticipation of stigma has been identified as particularly relevant in studies of other concealable stigmatized identities (e.g., Earnshaw and Quinn, 2011; Earnshaw et al., 2011, 2013), and given that it can be even more disruptive to people's lives than experienced discrimination (Gilbert and Walker, 2010), the current study will focus on the impact of anticipated stigma (AS) associated with unemployment. We measure PD as a composite of depression and anxiety, both outcomes that have been identified as important and relevant in the literatures on unemployment (Linn et al., 1985; McKee-Ryan et al., 2005; Paul and Moser, 2009; Wanberg, 2012), stress (Schulz et al., 1995; Springer et al., 2007), and stigma (Markowitz, 1998; Cluver et al., 2008; Quinn and Chaudoir, 2009; Quinn et al., 2014). Finally we operationalize physical health via self-report of somatic symptoms (SSs), again a commonly used measure of physical health complaints (e.g., Hoge et al., 2007; Springer et al., 2007). We then test whether higher levels of AS are associated with increased PD and SSs (i.e., physical health problems) and also whether any effect of AS on SSs is carried by the effect of AS on PD.

Materials and Methods

Participants

Forty-eight people based in a small city in Ireland and currently experiencing unemployment took part in the study (15 male, 33 female). Their ages ranged from 18 to 65 years ($M = 33.49$, SD = 13.14; one participant did not indicate their age). The majority of participants (87.5%) reported that they had not been diagnosed with any mental or physical illness before becoming unemployed. Participants had been unemployed for a minimum of 1 month and a maximum of 120 months (10 years). The mean length of time unemployed was 20 months (1 year and 8 months; SD = 28.99). In terms of education level, participants ranged from those who had attended some secondary school but not completed it, to those with postgraduate degrees. The most common level of education among the sample was holding an undergraduate degree. Most participants were either single (45.8%) or married/cohabiting (43.8%), with a smaller proportion reporting being either separated/divorced (6.3%), widowed (2.1%), or declining to indicate marital status (2.1%). Household income for the participants ranged from less than €20,000 to somewhere between €60,001 and 80,000; however, the modal income bracket was the lowest one (€0–20,000).

Procedure

Ethical approval was granted by our Faculty's Research Ethics Committee, and indeed the research was conducted in line with the ethical principles of the Declaration of Helsinki and the American Psychological Association (APA, 2010). Participants were recruited to take part in the study either online, via advertisements circulated on Twitter and Facebook, or in person at Social Welfare offices, and through groups and organizations geared toward helping the unemployed. It was possible to complete the survey either online, using Questback software, or using a pen-and-paper version of the questionnaire, depending on the participant's preference. Online advertisements included a link to the online survey, but those recruited online could still opt to receive a paper version of the survey if preferred, and likewise those recruited in person could also choose the online version. By necessity, those recruited in person had some contact with the research team, although they completed the surveys themselves, while those recruited online had no contact. All participants were informed that the study was investigating the health outcomes of unemployment. Participants indicated their informed consent either by signing or by ticking a box, depending on their mode of participation. Participants did not receive compensation for completing the survey.

Measures

Participants first responded to demographic items and then completed the following measures, all of which are reliable and valid as outlined below. As indicated in the Introduction, AS was measured as a predictor variable, PD as a mediator variable, and SSs as an outcome variable.

Anticipated Stigma

An adapted version of the Day-to-Day Discrimination scale (Kessler et al., 1999) was used to measure AS. A similarly adapted measure has previously been used to assess AS amongst a sample possessing various concealable stigmatized identities (Quinn and Chaudoir, 2009). The original scale lists nine examples of discrimination, and participants must respond how often these have occurred to them in the past. In the present study, the same nine items were used, but the instruction was adapted to ask participants to indicate how likely or unlikely they think each one would be to occur if people knew about their unemployment status. In this way, the measure was used to capture the extent to which participants anticipated being socially stigmatized if they were to reveal their unemployed identity. Two example items were "People acting as if you are inferior" and "Being treated with less respect than others." Participants indicated their responses on a scale ranging from 1 (Not at all likely) to 5 (Very likely). Total scores can range from 9 to 45 with higher scores indicating greater AS. This scale has shown good internal reliability and construct validity in previous studies (Paradies, 2006), and in the current study also demonstrated high internal reliability ($\alpha = 0.90$).

Psychological Distress

Psychological distress was measured by assessing participants' levels of depression and anxiety using the Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983). This measure has been demonstrated as effective in assessing the severity of anxiety and depression symptoms in the general population as well as psychiatric and primary care patients (Bjelland et al., 2002), and has also been utilized in previous research with unemployed samples (Berth et al., 2003; Limm et al., 2012). In the present study, internal reliability was very good ($\alpha = 0.91$). Responses to this 14-item scale were indicated on four point scales ranging from 0 to 3, although anchors varied depending on the item. Seven items were reverse scored so that higher scores denoted more PD (scores can range from 0 to 42).

Somatic Symptoms

Participants' experience of SSs was measured using the 14-item Physical Health Questionnaire (PHQ; Schat et al., 2005). Participants indicated how often they experienced various SSs, including headaches, constipation/diarrhea and colds, over the last year using a scale ranging from 1 (Not at all) to 7 (All of the time). One item was reverse scored, such that higher scores denoted more impaired physical well-being. In the present study, all items were summed into one total score, which has been done in previous research (e.g., Schat and Kelloway, 2003; Arnold and Dupré, 2012). Total scores can range from 14 to 98. As noted by Dupré and colleagues, self-perceived health status has been shown to accurately predict actual health outcomes in prior research (Dupré and Day, 2007; Arnold and Dupré, 2012). This particular scale has been used to measure somatic health in other distressed samples (Cantwell et al., 2014) and has also been employed in previous research with an unemployed sample (Carnicella, 2013). In the present study it demonstrated high internal reliability ($\alpha = 0.88$).

Data Analysis

The impact of AS on both PD and SSs was tested using simple linear regression analyses. Bootstrapping methods (Hayes, 2009) were then used to determine whether the effect of AS on SSs might be partly accounted for by the effect of AS on PD. We chose bootstrapping because it allows for the analysis of data that are not normally distributed, and because it works by taking repeated samples from the dataset, thousands of times, and estimating the indirect effect with each of these resampled datasets. This is particularly useful for datasets that are relatively small, such as this one. We used IBM SPSS 20 to analyze the data, and to carry out the mediation analysis we used the custom dialog PROCESS for SPSS by Hayes (2013).

Results

Descriptive Statistics

Table 1 presents the means, standard deviations and correlations between AS, PD, and SSs. It also contains data on potential confounds, i.e., the socio-demographic variables discussed earlier. Mean levels of AS were moderate, being slightly below the mid-point of the scale, which is comparable to studies of other stigmatized identities (e.g., Earnshaw et al., 2013; Quinn et al., 2014). Mean levels of PD would be classified as mild (Zigmond and Snaith, 1983). Classifications are not available for the PHQ, but the mean score is just under the mid-point and is comparable with levels observed in other recent studies (e.g., Cantwell et al., 2014) so can be considered moderate.

As can be seen below, AS, PD, and SSs were significantly correlated with one another. These associations were positive, such that unemployed people who reported higher AS reported both greater PD and more SSs; similarly, those who reported higher PD also reported more SSs. There were no significant correlations between these variables and any of the potentially confounding variables, but the duration of unemployment in months was marginally associated with PD and SSs.

Testing the Effect of Anticipated Stigma on Somatic Symptoms as Mediated by Psychological Distress

The aim of this analysis was to test whether the direct effect of AS on SSs would be mediated by PD. We tested for mediation by regressing the predictor variable, AS, on the outcome variable, SSs, while also including the proposed mediator, PD. We first conducted these analyses including the six potential confounds identified above as covariates, specifically because one of them was found to be marginally associated with two of the key measures. None of the covariates was significant in the model, and the results were the same as when we conducted the analyses without the covariates. As such, here we report the results without controlling for these variables, as it allows us to include the Kappa squared (κ^2) effect size (Preacher and Kelley, 2011), which cannot be calculated for models that include covariates.

The mediation analysis was conducted using 5000 bootstrap samples and confirmed that there was a significant direct effect of AS on SSs, but that as predicted, this was rendered non-significant when the effect of PD was also taken into account (see **Table 2** below for parameter estimates, and **Figure 1** for an illustration of the effects). Thus, it appears that the association between AS and SSs in unemployed adults is underlined by PD.

It can be seen that collectively, AS and PD account for 44% of the variance in SSs. Moreover, the Kappa squared effect size was found to be 0.38, which represents a large effect (Preacher and Kelley, 2011).

Discussion

The current study aimed to investigate whether the anticipation of being stigmatized as an unemployed group member might drive the negative impact of unemployment on psychological and physical health. To address this question, we surveyed a sample of people experiencing unemployment to ascertain their self-reported levels of AS, PD, and SSs. As predicted, results showed that higher levels of AS were associated with both increased PD and increased SSs. Moreover, the effect of AS on SSs disappeared when PD was taken into account. This suggests that AS directly

TABLE 1 | Intercorrelations, means, and standard deviations of the measures of this study.

	1	2	3	4	5	6	7	8	9	*N*	*M* (SD)
1. Anticipated stigma	–	0.63**	0.42*	0.13	0.13	−0.04	−0.09	−0.11	−0.14	48	20.81 (7.75)
2. Psychological distress		–	0.66**	−0.14	0.33†	−0.09	−0.05	−0.19	−0.11	48	14.81 (8.66)
3. Somatic symptoms			–	0.16	0.33†	−0.02	−0.11	−0.12	0.00	48	45.69 (13.93)
4. Prior illness				–	0.07	−0.11	−0.02	0.16	0.15	48	–
5. Duration unemployed (months)					–	−0.33†	0.49*	−0.16	0.17	34	20.00 (28.99)
6. Highest educational level						–	−0.22	0.19	0.20	48	–
7. Marital status							–	0.06	−0.09	47	–
8. Household income								–	0.25	48	–
9. Sex									–	48	–

**Correlation is significant at the 0.001 level; *correlation is significant at the 0.01 level; †correlation is marginal ($p \leq 0.06$).

TABLE 2 | Parameter estimates of the model examining the mediating role of psychological distress in the relationship between anticipated stigma and somatic symptoms.

Model	Estimate	*SE*	*p*	CI (lower)	CI (upper)
Model without mediator					
Intercept	30.14	5.35	<0.001	19.37	40.90
AS → SSs (*c*)	0.75	0.24	<0.01	0.26	1.23
R^2 (*y,x*)	0.17				
Model with mediator					
Intercept	29.98	4.45	<0.001	21.03	38.93
Model 1: PD as outcome variable					
AS → PD (*a*)	0.70	0.13	<0.001	0.45	0.96
Model 2: SS as outcome variable					
PD → SSs (*b*)	1.07	0.23	<0.001	0.61	1.54
AS → SSs (*c'*)	−0.01	0.26	0.969	−0.53	0.51
Indirect effects (*a* x *b*)	0.76	0.20		0.42	1.23
κ^2 for indirect effects	0.38	0.07		0.24	0.51
R^2 (*m,x*)	0.40				
R^2 (*y,m,x*)	0.44				

We have also illustrated regression weights for a, b, c, and c' in ***Figure 1****. For information,* R^2 *(y, x) is the proportion of variance in y explained by x,* R^2 *(m, x) is the proportion of variance in m explained by x and m. the 95% CI for a × b is obtained by the bias-corrected bootstrap with 5000 resamples. AS (anticipated stigma) is the predictor variable (x), PD (psychological distress) is the mediator (m), and SSs (somatic symptoms) is the outcome (y). CI (lower), lower bound of 95% confidence interval; CI (upper), upper bound of 95% confidence interval.*

affects levels of PD, and that this then impacts on SSs, either in terms of actual differences in symptoms or in interpretation and report of symptoms. These findings add to our understanding of the relationship between unemployment and health, and suggest that interventions aiming to reduce AS, or improve coping mechanisms, would have the potential to offer health benefits to this cohort.

Our first finding, that anticipating greater levels of stigma predicted both increased PD and more SSs, fits with prior research on other stigmatized identities which shows they are associated with impaired well-being (e.g., Markowitz, 1998; Cluver et al., 2008; Hatzenbuehler et al., 2009; Quinn and Chaudoir, 2009; Earnshaw et al., 2013; Quinn et al., 2014). While it was known from previous research on unemployment that becoming unemployed leads to a new social identity that is stigmatized (e.g., Rantakeisu et al., 1997; Cullen and Hodgetts, 2001; Letkemann, 2002; Furåker and Blomsterberg, 2003; Lee et al., 2005), the specific link between unemployment stigma and impaired health has not been demonstrated before.

As such, our findings extend the stigmatized identities literature by demonstrating that this negative effect of AS on health also applies to the unemployed identity. Importantly, they also advance the unemployment literature by demonstrating the impact of a psychosocial factor – stigma – on the experience of impaired health in the unemployed group. This is particularly significant given that much research on stigma and unemployment has focused more on its impact on re-employment than its impact on health.

Moreover, and importantly, the current study also showed that there was an indirect effect of AS on SSs via PD. While there has been some evidence that unemployment is associated with poor physical health and that stigma is associated with poor health, we believe this is the first study showing that anticipated unemployment stigma affects PD and that this impacts self-reported physical health. Based on the existing literature, we suggest that stigma might exert such effects on both psychological and physical health by heightening levels of stress. While unemployment itself has been identified as a stressor (Linn et al., 1985; Wanberg, 2012), stigma is also a chronic stressor (Link and Phelan, 2006). Specifically, knowing that others are labeling and judging you can lead to withdrawal from support systems, which might otherwise provide a buffering effect, and hence increased stress (Markowitz, 1998). Of course, it must be noted that causality cannot be inferred when using mediation analysis on cross-sectional data. However, our predicted causal pathway is supported by previous research showing that more generally, stress can lead to PD (Schulz et al., 1995; Phillips et al., 2015) and that collectively, stress and PD can impact physical health (Cohen and Williamson, 1991; Hoge et al., 2007; Springer et al., 2007; Springer, 2009).

Finally, the current research also adds to the literature seeking to explain the association between unemployment and health problems, which demonstrates there is an impact of unemployment on health over and above any self-selection effect of people who are unwell into unemployment. In the current sample previous illness was uncommon, and moreover had no impact on the relationships between AS, PD, and SSs.

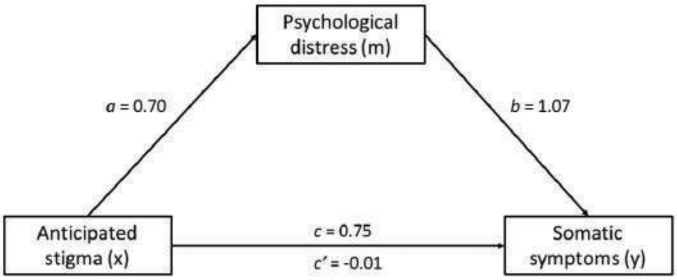

FIGURE 1 | Mediation of the effect of anticipated stigma on somatic symptoms by psychological distress.

Our findings add to a small but growing literature showing that, while self-selection may indeed exert an effect, this does not explain all health problems in the unemployed group. Rather, research now suggests there is also a distinct effect of unemployment on health (Korpi, 2001; Wanberg, 2012). The current study uniquely adds to our understanding in this area as it shows that the stigma related to being unemployed has an undesirable impact on one's health, in addition to the documented impact that it already has on re-employment.

Although the study contributes in a novel way to multiple literatures, naturally it has some limitations that could be addressed in future research. First, the study provides cross-sectional data suggesting there is an indirect effect of AS on SSs through PD. Ideally, future research should investigate this longitudinally in order to establish causality. The sample in this study was also small, which is actually not untypical of research on the unemployed group, and difficulties with recruitment have been noted by other researchers (e.g., Blau et al., 2013). While our findings are very much in line with previous research on unemployment and health, nonetheless, it must be acknowledged that the small sample size means our study is underpowered. As such, in order to further advance research in this area, researchers must consider how best to promote recruitment of this vulnerable group, many of whom understandably do not wish to be asked about their experiences.

Future research should also incorporate objective measures of physical health outcomes, to disentangle whether PD is affecting actual SSs, the interpretation and reporting of same, or both. There has been some suggestion in the literature that effects may relate more so to perceptions of health than health itself (Cohen and Williamson, 1991), but it would be advisable to gather more evidence on this matter.

It would also be prudent to expand the measurement of stigma to include both experienced stigma and internalized stigma as well as AS. These measures have been identified as highly important in determining the impact of other concealable stigmatized identities (e.g., Earnshaw and Quinn, 2011), but have not yet been studied much in relation to the unemployed group. Internalized stigma in particular may be highly relevant to the unemployed group as unemployment is an identity that one acquires, having most likely had preconceptions about the group beforehand (Quinn and Earnshaw, 2011). Future research could also in some way take into account the economic climate, as previous findings suggest stigmatization may be highest when unemployment is low (Furåker and Blomsterberg, 2003; Ho et al., 2011; Karren and Sherman, 2012). Although unemployment is currently high in Ireland, the unemployment rate is also steadily dropping (CSO, 2015), and in any case, *perceptions* of this rate are perhaps more relevant to experienced, anticipated and internalized stigma, than the objective rate itself.

Finally, it would be ideal for future studies in this area to sample a more accurate gender representation relative to the entire unemployed group. In the present study, two thirds of our participants were female, which does not reflect the gender breakdown in the unemployment figures for Ireland (CSO, 2013). The most recent figures suggest that while women are less likely to be employed than men (55.9% of women are employed, compared to 65.7% of men), they are also less likely to be identified as *un*employed (9.9% of women compared to 13.9% of men). As such, the gender imbalance in the present study is likely to be due to women's greater willingness to take part in surveys (Mackety, 2007). Although in the present study gender was not demonstrated to affect our results, more accurate gender representation in future research is important, as previous research has identified that unemployment can affect men and women differently, in terms of both stigma and PD outcomes. For example, unemployed men may feel more stigma than women due to work being more central to their sense of self (Kulik, 2000), and may experience more anxiety and mental health problems while women suffer more in terms of reduced self-esteem (Breslin and Breslin, 2013).

Overall, our findings are consistent with prior literature suggesting that stigma may be one missing piece of the puzzle in explaining health disparities between advantaged and disadvantaged groups (e.g., Eriksson et al., 2010; Quinn and Earnshaw, 2011), in this case, unemployment-related stigma. This empirical evidence is valuable as there has not been much research focusing on how the experience of stigmatization might help explain poor health in the context of unemployment. Unemployment is known to be stressful and to impact on psychological and physical health, and it is important to understand the processes by which it has these impacts.

In seeking to go beyond existing incomplete understandings of these processes, we argue it is vital to take into account social factors such as stigma. Stigma is especially important as it can be considered to exert effects at both the socio-structural level and the psychosocial level. That is, the low status of the unemployed group in the social structure leads people to experience actual discrimination due to unemployment-related stigma in the minds of others, but the expectation of such stigmatization and discrimination also has a negative effect on the well-being and functioning of the unemployed person at the psychological level. Aside from the clear theoretical implications, the research therefore has strong practical implications as well. For example, while stigmatization itself may be extremely hard to tackle, there is scope to expand job skills training to incorporate techniques for coping with stigmatization. In conclusion, our ability to boost people's psychological and physical health during unemployment is likely to be far increased if we take into account social factors such as stigma.

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Changes in aspects of social functioning depend upon prior changes in neurodisability in people with acquired brain injury undergoing post-acute neurorehabilitation

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Post-acute community-based rehabilitation is effective in reducing disability. However, while social participation and quality of life are valued as distal outcomes of neurorehabilitation, it is often not possible to observe improvements on these outcomes within the limited time-frames used in most investigations of rehabilitation. The aim of the current study was to examine differences in the sequence of attainments for people with acquired brain injury (ABI) undergoing longer term post-acute neurorehabilitation. Participants with ABI who were referred to comprehensive home and community-based neurorehabilitation were assessed at induction to service, at 6 months and again at 1.5 years while still in service on the Mayo-Portland Adaptability Index (MPAI-4), Community Integration Questionnaire, Hospital Anxiety and Depression Scale, and World Health Organisation Quality of Life measure. At 6 months post-induction to service, significant differences were evident in MPAI abilities, adjustment, and total neurodisability; and in anxiety and depression. By contrast, there was no significant effect at 6 months on more socially oriented features of experience namely quality of life (QoL), Community Integration and Participation. Eighteen month follow-up showed continuation of the significant positive effects with the addition of QoL-related to physical health, Psychological health, Social aspects of QoL and Participation at this later time point. Regression analyses demonstrated that change in QoL and Participation were dependent upon prior changes in aspects of neurodisability. Age, severity or type of brain injury did not significantly affect outcome. Results suggest that different constructs may respond to neurorehabilitation at different time points in a dose effect manner, and that change in social aspects of experience may be dependent upon the specific nature of prior neurorehabilitation attainments.

Keywords: acquired brain injury, rehabilitation, mental health, disability, participation, QoL, prospective study

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Introduction

Acquired brain injury (ABI) is the leading cause of death and disability in young people aged 18–24 years: it also disproportionately affects children (up to 4 years-old) and people aged over 65 years (Yates et al., 2006). ABIs can result from a number of causes including traumatic brain injury [including road traffic accidents, assault or falls, cerebrovascular accidents (e.g., strokes or bleeds), or other internal processes (encephalitis, infection, anoxia, etc.)]. ABI brings with it the significant potential for life-long functional changes encompassing a range of physical, cognitive, emotional, behavioral and social changes, which mandate a process of often lengthy rehabilitation to enable the person with ABI to optimize their recovery (Turner-Stokes, 2008; Cicerone et al., 2011).

The value of specialized rehabilitation for brain injury, including community-based rehabilitation, is becoming increasingly apparent in terms of both functional outcomes (Schnitzler et al., 2014), and cost effectiveness (van Heugten et al., 2012; Oddy and Ramos, 2013). Evidence based reviews have generally reported positive outcomes of engagement in comprehensive holistic home and community-based rehabilitation programs (Turner-Stokes, 2008; Geurtsen et al., 2010; Cicerone et al., 2011; van Heugten et al., 2012), although with some exceptions depending on the outcomes assessed (Institute of Medicine, 2011; Brasure et al., 2012).

A number of features of participant's experience have been suggested to be important targets for, and outcomes of, intervention. Changes in neurodisability is one of the most prominent outcomes and in addition to targeting changes in physical and cognitive abilities and mental health, rehabilitation programs increasingly utilize more socially moderated factors such as quality of life and participation in society (Eicher et al., 2012; Stiers et al., 2012; Altman et al., 2013; Malec et al., 2015). Such social/community integration factors are becoming important features of outcome (Haslam et al., 2008; Cicerone et al., 2011; Algurén et al., 2012; Brasure et al., 2012; Stalder-Lüthy et al., 2013; Walsh et al., 2015).

Mental health difficulties, particularly anxiety and depression have relatively common currency in ABI and pose a significant barrier to rehabilitation progress (Gould et al., 2011; Bertisch et al., 2013; Stalder-Lüthy et al., 2013). Indeed the odds of developing depression following brain injury are more than five times higher than in the general population (Osborn et al., 2014). A number of studies have suggested that 6 months following ABI, one third of individuals develop clinically relevant symptoms of depression (Stalder-Lüthy et al., 2013), and that in the first year, over 60% have a diagnosable psychiatric disorder, principally anxiety, and depression (Gould et al., 2011). While it has been suggested that rehabilitation may improve psychological difficulties (Geurtsen et al., 2010; Stalder-Lüthy et al., 2013), inadequate follow-up has hampered the information that can be derived from such studies (Brown et al., 2011). It is compelling that a recent meta-analysis of psychological interventions for depression following ABI expressed "amazement" at the small number of published studies available for analysis despite the high prevalence of mental health difficulties in ABI (Stalder-Lüthy et al., 2013).

Community participation and quality of life (QoL) are increasingly valued as neurorehabilitation outcomes (Cicerone et al., 2011). Participation has much in common with social and community reintegration and relates to acceptable levels of function in social roles or relationships (Whiteneck et al., 2011). The most recent review specifically examining participation outcomes reported that the available evidence was too limited to draw robust conclusions about the effects of neurorehabilitation on participation (Brasure et al., 2013). Thus while participation and indeed QoL are important pragmatic outcomes in rehabilitation, relatively brief periods of intervention, limited opportunity to address the application of interventions to everyday functioning, lack of follow-up assessing community functioning, and failure to include relevant outcome measures has led to limited data in this area (Cicerone et al., 2011).

In terms of QoL, Geurtsen et al. (2011), reported improvements in QoL, societal participation and community integration, and emotional well-being that were maintained in 96% of cases at 1 year follow-up, but did not increase at 3 years follow-up (Geurtsen et al., 2012). In people with cerebrovascular accident (CVA), Algurén et al. (2012) reported that in the first 3 months of rehabilitation, body functions, activities, and participation explained the majority of the variance in participants' QoL. At 1 year, only body functions and environmental factors accounted for significant variance in QoL. This difference in outcome across time raises the question as to whether a dose effect of rehabilitation duration significantly affects outcome or whether a sequence effect is evident with certain prior attainments needing to be set in place to bolster subsequent changes in these outcomes.

There is some recent evidence supporting a dose-effect relationship on outcome of neurorehabilitation. In a large study of a cohort of people with CVA (Altman et al., 2013), participants who completed their full neurorehabilitation program – what the authors term a full dose – had improved outcomes in terms of neurodisability when compared with those who were precipitously discharged and thus did not complete their full program. A dose effect of multidisciplinary intervention would seem plausible and indeed in terms of cortical plasticity, Kolb and Muhammad (2014), make the point that an effective treatment for individuals after brain injury would have to be intense, regular, and interdisciplinary including cognitive, behavioral, social, and physical/biological aspects of intervention. While there are a number of studies examining intake factors that may predict rehabilitative outcome (van Heugten et al., 2012; Hayden et al., 2013; Snell et al., 2013), there is a paucity of studies that have addressed the effects of participants' prior attainment of within-program outcomes on subsequent attainment of further outcomes. Moreover, a recent landmark review of evidence based cognitive rehabilitation (Cicerone et al., 2011), makes the point that although social participation and quality of life are valued as the distal health-related outcomes of neurorehabilitation, it is often not possible to observe improvements on these outcomes within the limited time-frames used in most investigations of neurorehabilitation.

The objectives of the current study were therefore, firstly to examine whether participants demonstrate significant improvement on a broad number of domains assessed at shorter and longer durations of community-based neurorehabilitation: namely neurodisability, community integration, mental health, and quality of life. Secondly to examine the contribution of differences in clinical features of injury such as age at onset, injury severity, type and duration of brain injury, age, and sex on changes from pre-treatment to follow-up. Thirdly to investigate whether changes in the more socially oriented factors including QoL, participation and social/community integration occurred later than changes in neurodisability and mental health outcomes and furthermore whether such changes in QoL, participation and community integration may be dependent upon prior changes in neurodisability and mental health outcomes.

Materials and Methods

Participants

Eighty three people were eligible for participation in the cohort study. A total of six participants dropped out of the study between their initial induction assessment and follow-up assessment. Given that there was only one significant difference between the induction data for these six participants and the cohort (with people who dropped out reporting marginally lower quality of life related to physical health at induction – Mann–Whitney $U = 118.5$, $p = 0.047$), for parsimony, these six participants were excluded from further analysis. The final cohort consisted of 77 participants who were assessed at induction to service (time 1), 6 months later (time 2) and at 1.5 years post-induction (time 3). In addition to the cohort of participants followed up over three time points during their service, a total of 151 additional people with ABI who were referred to service after the cohort had been established, during this 2 years period were assessed at induction to the service for comparison purposes with all induction data of the cohort. The purpose of this cross sectional sample was to examine goodness of fit of the cohort to those routinely referred to post-acute neurorehabilitation services.

Inclusion criteria for participation in this study were age > 18 years, clinical confirmation of ABI specifying acquired non-progressive injury to the brain, onset of ABI < 65 years, and sufficient proficiency in English to undertake the study. All participants were engaged in an individualized Home and Community Based Rehabilitation program accredited by the Commission for Accreditation of Rehabilitation Facilities (CARFs).

Procedure

The protocol was approved by the ABI Ireland national research ethics committee and all participants provided full consent for participation. Assessments were administered by staff as semi structured interviews. All clients of the service were eligible for participation where the inclusion criteria was deemed appropriate by members of the Clinical Service Team.

Measures

Demographic, clinical and social information was recorded at induction to the study (**Table 1**).

TABLE 1 | Demographics, injury characteristics, and clinical features of cohort.

Gender	
Male *n* %	51 (66%)
Female	26 (34%)
Age years mean *SD*	47.19 (12.8)
Duration ABI (years)	10.02 (8.4)
Age at onset (years)	37.80 (15.3)
Cause of injury n %	
Traumatic brain injury	37 (48%)
Cerebrovascular accident	33 (43%)
Tumor	3 (4%)
Anoxia	3 (4%)
Encephalitis	1 (1%)
Severity of ABI	
Moderate	33 (43%)
Severe	44 (57%)

Injury Severity

Injury severity in TBI was calculated using the standard assessments of severity using Glasgow Coma Scale (GCS) scores, duration of Post-Traumatic Amnesia, and Loss of Consciousness (LOC) using the following procedure: Severe Brain Injury = GCS score less than 9, LOC longer than 24 h, or PTA longer than 1 week. Moderate Brain Injury = GCS score of 9–12, LOC of 30 min to 24 h, or PTA of 24 h to 1 week. Mild Brain Injury = GCS score higher than 12, LOC less than 30 min, or PTA less than 24 h. If more than one indicator was present and differed in level of severity, the more severe level was assigned. For other causes (e.g., CVA, encephalitis, anoxia, and tumor), severity was assessed by multidisciplinary team discharge report from acute (hospital based) rehabilitation services specifying moderate and severe disability.

Participants completed the following measures of Neurodisability, Community Integration, Mental Health, and Quality of Life at induction to post-acute neurorehabilitation, at 6 months follow-up and at 1.5 years post-induction.

NeuroDisability – Mayo Portland Adaptability Inventory – (MPAI-4)

The MPAI-4 is a widely used measure of limitations imposed by brain injury (Malec, 2004; Malec and Lezak, 2008). The measure yields a total score reflecting overall disability, as well as three subscale scores for the Ability Index (e.g., mobility, cognitive functioning, communication), Adjustment Index (e.g., pain, mood, fatigue), and Participation Index (e.g., social contact, independent living, employment). Prior studies have demonstrated satisfactory internal consistency and construct validity, as well as concurrent and predictive validity, for the full measure and its indices (Wilde et al., 2010; Kean et al., 2011; Malec et al., 2012). The MPAI-4 has been shown to be sensitive to clinical change in studies of rehabilitation interventions (Eicher et al., 2012), and that all 30 items could be mapped to components and categories in the WHO-ICF (Lexell et al., 2012). In the current study, internal consistency was good for the MPAI total scale score (0.91), Abilities (0.74), Adjustment (0.82), and Participation Indices (0.85).

Community Integration Questionnaire

The Community Integration Questionnaire (CIQ; Corrigan and Deming, 1995; Salter et al., 2011), is a brief assessment of community integration that comprises 15 items assessing effective role performance in three domains: home integration (active participation in the operation of the home or household), social integration (participation in social activities outside the home) and productivity (regular performance of work, school or volunteer activities). Internal consistency in previous studies has been reported as good, with Cronbach's alpha's ranging from 0.76 to 0.84 for total scale scores (Corrigan and Deming, 1995). The CIQ is predominately linked to the major life areas (35%), community, social and civic life (31%), and domestic life (19%) chapters of the WHO ICF (Salter et al., 2011). A measure of Minimal Clinically Important Difference (MCID) of 4.2 CIQ points has been provided for the CIQ (Cicerone et al., 2004). Internal consistency was good in the current study for CIQ total score (0.71) and Home integration subscale (0.83), but was unacceptably low for Social integration (0.45), and Productivity (0.23). As such it was decided not to use the Social Integration and Productivity subscales further in the analyses.

Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983), a 14-item measure, was used to assess symptoms of anxiety and depression. Items are rated on a 0–3 point scale indicating the strength of agreement with each item. Thus, scores for each subscale range from 0 to 21. It has been widely used in studies with patients with brain injury and has been shown to be an appropriate measure of anxiety and depression and of distress more generally (Dawkins et al., 2006; Schönberger and Ponsford, 2010). A score of >7 on either scale indicates the presence of clinically relevant distress. In the current study, the anxiety and depression subscales yielded good internal consistency scores (0.79 and 0.76 respectively).

World Health Organisation's Quality of Life Scale (WHOQoL- BREF)

The WHOQoL-BREF is a 26 item international cross-culturally comparable quality of life assessment instrument. The assessment examines a person's Quality of Life in relation to four domains: QoL related to Physical Health, Psychological Health, Social Relationships, and the person's living Environment. Higher scores denote better QoL. The measure has demonstrated appropriate reliability and validity (WHOQOL Group, 1998; Skevington et al., 2004), and has been used successfully in people with ABI (Chiu et al., 2006; Polinder et al., 2015). In the current study, internal consistency was good for the QoL subscales of Physical Health (0.72), Psychological Health (0.78), and environmental aspects of QoL (0.79). While the Social aspects of QoL subscale was somewhat lower (0.61), it was decided to retain this particular subscale as the alpha was more likely due to the small number of items in the subscale rather than problem in psychometrics (e.g., intercorrelations between items were good).

Statistical Analysis

Descriptive statistics were computed for variables relating to injury and demographics. Q-Q plots and Kolmogorov–Smirnov test were used to examine the distribution of outcome data. Given that outcome data showed no significant deviation from normality (Z's > 1.21, p's > 0.14), means and standard deviations were calculated for the four main outcome measures and subscales as appropriate. Repeated measures analysis of variance models were used to model the means of each of the outcome measures over time. Effect sizes [Partial eta squared (η_p^2)] were considered small when between 0.5 and 0.10, medium when between 0.10 and 0.20, and large when greater than 0.20. *Post hoc* pairwise comparisons were conducted and a Bonferroni adjustment ($\alpha = 0.004$) was performed to examine differences between outcomes at time 1 and time 2, and between time 2 and time 3. Categorical data were analyzed by Chi square test and longitudinal categorical data by Cochrane's Q-test for three time points and the McNemar test for two time points. Repeated measures ANCOVA was used to examine differences in outcome for the two principal causes of ABI; injury resulting from an external force (TBI), or injury resulting from an internal disease process (CVA, encephalitis, hypoxia, or tumor), and severity of injury. Zero order correlations and multiple regression analysis were used to examine the potential influence of prior changes in neurodisability and mental health on subsequent changes in QoL and Participation.

Results

Table 1 details demographics, injury characteristics and clinical features of the sample. Participants were predominantly male, and TBI was the most common mechanism of injury, chiefly resulting from road traffic accidents and falls. The majority of participants had a severe brain injury.

Comparison of the Induction Data of the Cohort with Induction Data of Referrals within the Lifetime of the Study

There were no significant differences between the cohort ($N = 77$) and people who were referred for service in the 2 years of the study ($N = 158$) on any of the outcome assessments at induction ($t_{226} < 2.31$, $p > 0.02$). There were also no significant differences between the cohort and single assessment groups on participants' age, age at onset of their ABI, or duration with ABI (t's$_{215} < 2.27$, $p > 0.03$), or on clinical severity of their injury ($\chi^2 = 2.35$, $p = 0.13$). There was also no significant difference between the cohort and people who completed their assessments at induction on numbers of people with CVA vs. TBI ($\chi^2 = 0.71$, $p = 0.41$). The cohort was therefore not unrepresentative of the profile of people with ABI routinely referred to post-acute neurorehabilitation services in the Republic of Ireland.

Demographic Effects on the Cohort at Induction

At induction to the study, cohort participants' performance on neurodisability, community integration, distress and QoL did not differ as a function of gender (t's < 2.24, $p > 0.03$), participants' age, duration with ABI, or age at onset of their injury (r's < 0.27, $p > 0.03$).

Independent t-tests ($\alpha < 0.004$) demonstrated that when compared to participants with mild/moderate injury, people who had sustained a severe brain injury were functioning at a poorer level at induction in terms of the MPAI assessment of Abilities ($t_{77} = -4.40$, $p = 0.001$), Adjustment ($t_{77} = -4.08$, $p = 0.001$), and Participation ($t_{77} = -5.27$, $p = 0.001$). Whether a person sustained a moderate or severe brain injury did not significantly affect scores on Community Integration, Mental Health or QoL at induction (t’s$_{77} < 1.50$, $p > 0.0.13$). Means and standard deviations for all outcome measures are presented in **Table 2**.

Neurodisability

A single repeated measures analysis of variance was used to model the MPAI Abilities, Adjustment, Participation, and Total scale score over the three time points. Significant increases were apparent for people with ABI in terms of their Abilities ($F_{1,76} = 15.29$, $p = 0.001$, $\eta^2_p = 0.17$), Adjustment ($F_{1,76} = 36.87$, $p = 0.001$, $\eta^2_p = 0.33$), Participation ($F_{1,76} = 19.33$, $p = 0.001$, $\eta^2_p = 0.20$), and total Neurodisability ($F_{1,76} = 33.82$, $p = 0.001$, $\eta^2_p = 0.31$). To permit comparisons with previously published studies, the standardized T score for the total MPAI was 48.58 at induction and 39.81 at the final assessment time-point (lower scores = better outcomes).

Pairwise comparisons revealed significant induction to 6 months follow-up improvements for Abilities ($t_{76} = 3.11$, $p = 0.003$), Adjustment ($t_{76} = 4.44$, $p = 0.001$), and total Neurodisability ($t_{76} = 3.12$, $p = 0.003$), but not for Participation ($t_{76} = 0.93$, $p = 0.35$).

Significant pairwise comparisons of 6 months to 1.5 years data were found for Adjustment ($t_{76} = 4.82$, $p = 0.001$), Participation ($t_{76} = 5.97$, $p = 0.001$), and total Neurodisability ($t_{76} = 5.27$, $p = 0.001$). However, changes in Abilities failed to reach significance ($t_{76} = 2.44$, $p = 0.01$).

TABLE 2 | Mean (*SD*) of measures at induction and follow-up time points.

Measure	Induction mean	6 months follow-up mean	1.5 years follow-up mean
Neurodisability			
MPAI-4 total scale score	43.83 (21.97)	40.09 (20.93)	33.70 (17.91)
MPAI abilities	15.15 (8.30)	13.49 (7.85)	12.11 (7.03)
MPAI adjustment	15.61 (9.71)	13.35 (8.38)	10.63 (7.10)
MPAI participation	13.06 (7.40)	13.41 (7.49)	11.05 (6.73)
Community integration			
CIQ total score	14.48 (5.04)	15.29 (5.13)	15.39 (5.35)
CIQ home integration	4.24 (3.08)	4.65 (3.15)	4.76 (3.29)
Mental health – HADS			
HADS anxiety	5.95 (4.08)	4.96 (3.21)	4.28 (3.46)
HADS depression	6.16 (4.22)	5.12 (3.27)	4.56 (3.33)
Quality of life – WHOQoL-Bref			
Physical QoL	12.66 (2.04)	12.73 (2.05)	13.38 (1.91)
Psychological QoL	12.61 (2.16)	12.90 (2.20)	13.50 (2.29)
Social QoL	13.17 (3.77)	13.31 (3.72)	14.03 (3.76)
Environmental QoL	15.25 (2.54)	15.59 (2.68)	15.79 (2.98)

Given that participants with severe brain injury performed more poorly than participants with moderate brain injury in terms of their MPAI performance at induction, an adjusted model was fit to the data which included an interaction effect for time by severity of ABI. The interaction term was significant for Abilities ($F_{1,75} = 7.09$, $p = 0.002$, $\eta^2_p = 0.08$) and total scale score ($F_{1,75} = 5.90$, $p = 0.003$, $\eta^2_p = 0.07$), but not for Participation ($F_{1,75} = 1.91$, $p = 0.15$, $\eta^2_p = 0.02$), or Adjustment ($F_{1,75} = 2.64$, $p = 0.07$, $\eta^2_p = 0.03$). Effect sizes were small.

Community Integration

A single repeated measures analysis of variance was used to model the total Community Integration scale score and Home Integration scores over time. Neither Home Integration ($F_{1,75} = 2.21$, $p = 0.09$, $\eta^2_p = 0.03$), or total Community Integration ($F_{1,75} = 2.58$, $p = 0.07$, $\eta^2_p = 0.03$) showed statistically significant improvements over time.

Using published MCID scores (Cicerone et al., 2004), for the total scale score of the CIQ (MCID = 4.2), 16% of participants had achieved the MCID score at 6 months, with 35% achieving it at 1.5 years. McNemar’s test demonstrated that this change from time 2 to time 3 was significant ($p = 0.009$).

Mental Health

Depression

Repeated measures ANOVA demonstrated that mean reductions in depression scores over time were statistically significant ($F_{1,75} = 6.82$, $p = 0.001$, $\eta^2_p = 0.09$) albeit with a modest effect size. Pairwise comparisons also showed significant pre-treatment to 6 months improvements ($t_{76} = 2.78$, $p = 0.001$), however, the 6 months to 1.5 years data was not significant ($t_{77} = 1.55$, $p = 0.12$).

Using the established cut-offs for the presence of clinical distress, at induction to the study 39% of clients ($n = 30/77$) scored above the cut-off for clinically relevant depressive symptoms (HADS Depression subscale > 7). This figure had fallen to 24.6% ($n = 19/77$) after 6 months of rehabilitative intervention, and to 20% ($n = 15$), 1 year later (1.5 years post-baseline). This represented a significant effect (Cochrane’s $Q = 11.31$, df 2, $p = 0.003$). *Post hoc* McNemar test with Bonferroni correction suggested that the principal difference was between induction and 6 months follow-up only ($p = 0.01$).

Anxiety

Repeated measures ANOVA suggested that mean differences in anxiety over time were statistically significant ($F_{1,75} = 9.90$, $p = 0.001$, $\eta^2_p = 0.12$). Pairwise comparisons also showed significant improvements from induction to 6 months ($t_{76} = 3.96$, $p = 0.001$) but not 6 months to 1.5 years ($t_{76} = 3.96$, $p = 0.001$). Mean (*SD*) scores are presented in **Table 2**.

In terms of clinically relevant anxiety (HADS Anxiety subscale > 7), at induction 31.2% of clients assessed ($n = 24/77$), scored above the cut-off for clinically relevant symptoms of anxiety. This figure had fallen to 14.3% ($n = 11/77$) after 6 months of rehabilitative intervention, and had increased slightly to 15.6% ($n = 12/77$) 1 year later. Cochrane’s Q-test suggested this represented a significant effect (Cochrane's $Q = 13.08$, df 2, $p = 0.001$), with *post hoc* McNemar tests again finding that the significant reduction was between induction and 6 months only ($p = 0.001$).

Quality of Life

A single repeated measures analysis of variance was used to model the Quality of Life data. Significant mean differences over time were evident for QoL related to Physical Health ($F_{1,75} = 9.49, p = 0.001, \eta_p^2 = 0.11$), Psychological Health ($F_{1,75} = 10.31$, $p = 0.001$, $\eta_p^2 = 0.12$), and Social aspects of QoL ($F_{1,75} = 3.61, p = 0.03, \eta_p^2 = 0.05$), but not environmental aspects ($F_{1,75} = 2.66, p = 0.07, \eta_p^2 = 0.03$).

Pairwise comparisons ($\alpha < 0.004$) demonstrated no significant induction to 6 months follow-up improvements for any of the quality of life measures ($t_{75} < 1.86$, $p = 0.06$). Comparisons of 6 months to 1.5 years follow-up revealed significant improvements on QoL related to Physical Health ($t_{76} = -3.31$, $p = 0.001$), Psychological health ($t_{76} = 2.83, p = 0.003$), but not Social aspects of QoL ($t_{76} = 2.09, p = 0.03$).

Prediction of Quality of Life and Participation Improvements by Prior Improvements in Neurodisability and Mental Health

We next examined whether the significant changes in QoL and Participation from 6 months to 1.5 years were dependent upon prior (induction to 6 months) changes in neurodisability and mental health.

Prior to building the regression model, correlation analysis was undertaken (**Table 3**) which suggested that significant 6 months to 1.5 years changes in Participation was related to prior improvements in the Neurodisability factors of Abilities ($r = -0.49$, $p = 0.001$) and Adjustment ($r = -0.36$, $p = 0.01$) and in prior changes in Depression ($r = -0.31, p = 0.01$). *t*-test showed no significant effect of injury severity on 6 months to 1.5 years Participation scores ($t_{76} = 0.96, p = 0.34$).

The regression model (**Table 4**) for change in Participation was significant for the three variables – prior improvements in Depression, Adjustment to disability and Abilities ($R^2 = 0.24$, $F_{1,75} = 14.49$, $p = 0.001$). However, only prior improvement in Abilities predicted subsequent improvements in Participation in the final regression equation ($\beta = 0.49, t = -3.81, p = 0.001$).

TABLE 3 | Correlations between changes in disability and distress from induction to 6 months, changes in QoL and participation from 6 months to 1.5 years.

	Induction – 6 months difference scores			
6 month – 1.5 years difference scores	**MPAI abilities**	**MPAI adjustment**	**HAD depression**	**HAD anxiety**
Physical health related QoL	−0.31*	0.32**	0.02	−0.10
Psychological Qol	0.13	0.17	−0.04	−0.12
Social QoL	0.09	−0.12	0.03	0.06
MPAI participation	−0.49**	−0.36**	−0.31*	0.06

$*p < 0.05$, $**p < 0.01$.

TABLE 4 | Prediction of improvements in participation and quality of life at 1.5 years post-induction by earlier improvements in neurodisability and mental health.

Measure	**Predictors**	***B***	***p***	**95% CI**
Participation				
	Abilities	−0.49	0.001	−0.82 to −0.02
	Depression	−0.22	0.09	−0.64 to 0.05
	Adjustment	0.06	0.77	−0.32 to −0.42
Physical health related QoL				
	Adjustment	−0.32	0.01	−0.23 to −0.03
	Abilities	0.04	0.85	−0.16 to −0.19

The significant improvement in QoL related to Physical Health at 1.5 years follow-up was associated with prior significant changes from baseline in Abilities ($r = -0.31$, $p = 0.01$) and Adjustment ($r = -0.32$, $p = 0.01$). Neither changes in QoL related to psychological health nor social aspects of QoL were associated with prior changes in neurodisability or mental health (*r*'s < 0.17). The regression model for positive change in QoL-related Physical health at time 3 was initially significant for prior improvements in both Abilities and Adjustment ($R^2 = 0.10$; $F_{1,75} = 6.26, p = 0.01$). However, improvements in QoL-related Physical Health was solely predicted by prior improvements in MPAI Adjustment only ($\beta = -32$, $t = -2.50$, $p = 0.01$) in the final equations (**Table 4**).

Discussion

This study has presented data on a prospective cohort of longer-term individuals with moderate to severe brain injury in continuous service at 6 months and 1.5 years on a range of measures that are a common focus of outcome assessment and goal setting with people with ABI. In view of the need to provide outcome information across a broad domain of functioning including physically oriented, social/community oriented, and well-being outcomes, this study has added important additional information on the level of improvement and differences in the rate of improvement for proximal and distal outcomes across time for people with moderate-severe brain injury.

The first two objectives of the study were to examine whether and to what extent people in receipt of home and community-based neurorehabilitation showed improvements in terms of neuro-disability, community integration, mental health and QoL over time in service, and secondly to investigate whether changes in the more distal outcomes of QoL, Community Integration and Participation occurred at a later stage than changes in more general aspects of neurodisability and mental health. To this end, participants in service showed significant improvement in terms of their cognitive and physical abilities, adjustment to brain injury, in aspects of QoL, and in anxiety and depression. While the use of continuous data did not reach significance for Community Integration, use of published MCID values (Cicerone et al., 2004) showed significant changes in the number of participants attaining Community Integration MCIDs from 6 months to 1.5 years follow-up.

Patient's performance on measures of neurodisability, essentially participants' Abilities and Adjustment to brain injury showed the most consistent improvements over time for the cohort. Using the MPAI-4's standardized T scores for the total scale, the difference in T scores from induction to rehabilitation to 1.5 years follow-up was broadly similar to recent published work on comprehensive community rehabilitation for longer term cases (Altman et al., 2010; Curran et al., 2014), and indeed the difference in T scores in the current study approaches that recently published for people with duration of ABI of more than 1 year (Altman et al., 2013). This suggests a robust improvement across time on this measure in the context of people in continuing service in the current study.

The well-recognized barrier that mental health difficulties can pose to rehabilitation progress (Stalder-Lüthy et al., 2013; Merzenich et al., 2014), was also addressed as an outcome and our results suggest that the significant time for improvement of anxiety and depression is between induction and 6 months in service. Commensurate with this finding, the number of participants whose scores positioned them in the more severe anxiety and depression categories declined and consolidated over the course of the program. However it is apparent that a small but significant proportion of people (14–16%) were dealing with mental health difficulties arising from their ABI that were resistant to change and were continuing to experience on-going mental health challenges at 1.5 years follow-up. Identification and management of this particular group of participants' demands careful assessment at induction to neurorehabilitation programs. Such assessment is required to ensure that participants are triaged toward the most effective content and duration of intervention for their particular mental health needs.

Recent studies have begun to suggest a dose-effect relationship on outcome of neurorehabilitation. Previous research in a cohort of people with CVA (Altman et al., 2013), reported that completing a planned neurorehabilitation program (a full dose) resulted in superior outcomes when compared with those who did not complete their full rehabilitation program, and suggested that that this dose effect relationship may relate to intensity, quality and appropriateness of services and not simply time in the program. The results of the current study extend these finding to the broader ABI population and also adds to this finding by providing data that suggests that the nature of the outcome is related to the dose of neurorehabilitation, but also to the nature of what prior changes have already been set in place by participation in neurorehabilitation. Our results suggest that changes in Qol and Participation were initially associated with prior changes in neurodisability and mental health. However, the final model suggested that longer-term improvements in QoL and Participation were predicted by Neurodisability factors alone. This finding suggests that change following ABI, particularly in relation to these more nuanced outcomes, may be sequenced and dependent upon the content, duration, and prior attainment of neurodisability aspects of outcome.

Limitations

The current study is a cohort study and caution should therefore be exercised in drawing any conclusion that neurorehabilitation alone is responsible for the changes observed. The use of long-term cases, while making spontaneous improvement less likely does not remove its possibility. Further, while participants were engaged in a national Home and Community-based rehabilitation program accredited through international best practice (CARF), the participants in this study were individuals at the more severe end of the brain injury spectrum and as such results may not generalize to individuals with less severe brain injuries or with a shorter duration of injury.

Conclusion

Nonetheless, this study has demonstrated improvements over time for participants in long-term service with moderate to severe brain injury across a range of measures of outcome. Results also suggested the presence of a dose effect which varied as a function of the nature of the outcome, with some outcomes showing the need for increased time duration, and others demonstrating consolidation after a shorter duration of intervention. Importantly, this study revealed that significant changes in more nuanced person-centered and social aspects of outcome such as quality of life and participation only occurred after significant changes in aspects of neurodisability had become established. These results have obvious implications for specifying the sequence of neurorehabilitation interventions in order to best optimize proximal and distal treatment outcomes, and relates, as has been proposed previously (e.g., Walsh et al., 2014), to the need for interventional integration across the physical, psychological and social aspects of the person's experience.

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REVIEW
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Post-traumatic growth following acquired brain injury: a systematic review and meta-analysis

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The idea that acquired brain injury (ABI) caused by stroke, hemorrhage, infection or traumatic insult to the brain can result in post-traumatic growth (PTG) for individuals is increasingly attracting psychological attention. However, PTG also attracts controversy as a result of ambiguous empirical findings. The extent that demographic variables, injury factors, subjective beliefs, and psychological health are associated with PTG following ABI is not clear. Consequently, this systematic review and meta-analysis explores the correlates of variables within these four broad areas and PTG. From a total of 744 published studies addressing PTG in people with ABI, eight studies met inclusion criteria for detailed examination. Meta-analysis of these studies indicated that growth was related to employment, longer education, subjective beliefs about change post-injury, relationship status, older age, longer time since injury, and lower levels of depression. Results from homogeneity analyses indicated significant inter-study heterogeneity across variables. There is general support for the idea that people with ABI can experience growth, and that various demographics, injury-related variables, subjective beliefs and psychological health are related to growth. The contribution of social integration and the forming of new identities post-ABI to the experience of PTG is explored. These meta-analytic findings are however constrained by methodological limitations prevalent in the literature. Clinical and research implications are discussed with specific reference to community and collective factors that enable PTG.

Keywords: brain injury, head injury, trauma, post-traumatic growth, rehabilitation outcomes

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Introduction

Acquired brain injury (ABI) typically occurs as a result of road traffic accidents, assaults or falls, problems in the supply of blood in the brain such as a bleed (hemorrhage) or blockage (stroke), problems in the supply of oxygen (hypoxia) inflammation or swelling of the brain (encephalitis), tumor (meningioma), or surgical issues such as might be involved in tumor management. The incidence of ABI is estimated to be one per 500 of the population globally; children under four, adults under 30, and those over 65 years of age are disproportionately affected (Jones et al., 2011). In fact, ABI is considered one of the most common neurological disorders (Howes et al., 2005). Traumatic brain injury (TBI) is thought to be eight times more common than a combination of breast cancer, AIDS, spinal cord injury, and multiple sclerosis in the USA (Kolb and Whishaw, 2009). Life following ABI is often associated with intense changes including significant social, cognitive, and physical challenges. In addition, people can experience intense changes in identity (Gracey and Ownsworth, 2012). Over 40% of people hospitalized with non-fatal ABI sustain impairments that lead to long-term disability and require acute and post-acute neurorehabilitation to facilitate their appropriate re-adjustment into everyday life (Corrigan et al., 2010). Given the severity of disability and the considerable life expectancy for an ABI survivor, research on ABI and in particular, factors that contribute to the health and well-being of survivors is particularly important. Traditionally, research has focused on the negative consequences of ABI. Whilst this is understandable given that 6 months post-ABI approximately one third of survivors develop clinically relevant psychological distress (Hackett et al., 2005; Bombardier et al., 2010), the fact that a substantial proportion of people with ABI do not develop psychological distress means that positive and protective mechanisms are also worthy of consideration.

Applying positive psychological principles to ABI rehabilitation is growing, encapsulated in a movement that emphasizes "building what's strong" rather than "fixing what's wrong" (Evans, 2011). Over the past 13 years more people are subscribing to the idea that positive growth may be possible after ABI, particularly when changes occur in relation to a person's sense of meaning, purpose, heightened spirituality and enhanced relationships after brain injury (Tedeschi and Calhoun, 2004). In fact, some authors have reported that up to half of their research sample reported post-traumatic growth following the occurrence of ABI (Hawley and Joseph, 2008). Previously, the effects of ABI were seen as irreversible due to a perception that brain injury was a fixed outcome unaffected by the idea of brain plasticity—however, current thinking suggests that social and psychological processes can be harnessed to support and recover brain function to improve outcomes in this population (Walsh et al., 2014). Thus, it is important to seek to understand more about the predictors and processes associated with positive psychological outcomes following ABI. At present, it is unclear what the prevalence of PTG is after injury, what factors predict growth, and what the trajectory of growth might look like for people with ABI.

Until recently there was not sufficient published research on PTG to justify a systematic review. In 2011, Collicutt McGrath published a paper examining the relationship between spirituality and PTG following ABI, including a summary of studies previously published. That article has contributed a solid foundation for us to conduct the first systematic review and meta-analysis of PTG in brain injury survivors, including a more nuanced and thorough analysis of studies published between 1990 and 2014. Here the aim is to address a number of important questions that are previously unanswered in the literature. The review begins by briefly reviewing conceptual and measurement issues in the area of post-traumatic growth. Next, particular attention is paid to the development of PTG in ABI literature and outlining the methods employed here to conduct a systematic review and meta-analysis. The review findings are then presented under four headings. First, the relationship between demographic variables and PTG is considered. Second, the relationship between injury factors and PTG is examined. The remaining two analytic sections consider the relationships between psychological health and PTG, and cognitive processes and PTG. This analysis forms the basis of the subsequent discussion which integrates this work into current conceptual and theoretical debates about PTG and highlights areas where understanding is still poor and/or hampered by methodological controversies. Finally, the implications of this synthesis for clinical practice is considered and an agenda for future research is outlined.

Current Conceptualizations of Post-traumatic Growth

Positive changes following trauma and adversity have long been recognized in philosophy and religion (Tedeschi and Calhoun, 1995; Tedeschi et al., 1998; Linley and Joseph, 2004), as well as existential (Frankl, 1963; Yalom, 1980) and psychological literature (Park et al., 1996). In research, positive changes have been reported after a range of life challenges (for review, see Linley and Joseph, 2004), including cancer (Collins et al., 1990; Stanton et al., 2006; Cormio et al., 2014, 2015), HIV (Bower et al., 1998), bereavement (Davis et al., 1998), rape (Burt and Katz, 1987; Thompson, 2000), war and conflict (Elder and Clipp, 1989; Waysman et al., 2001), and illness and surgery (Affleck et al., 1987; Tennen et al., 1992). PTG is likely to occur along a continuum, with people differing in their interpretation of the presence and degree of growth experienced. Estimates of perceptions of some degree of growth among people who have experienced psychological trauma typically range from 30 to 80% (Linley and Joseph, 2004).

Three broad areas of positive outcomes after trauma have been identified in the PTG literature. First, individuals report that their relationships with other people are enhanced in some way, including a greater connection to others and greater compassion for others who have suffered. Second, people report changing self-views, including an appreciation of their own personal strength as well as a greater awareness of new possibilities for one's life. Third, individuals report changes in their philosophy about life including changing views about what is important in life. Collectively, these changes have been labeled as post-traumatic growth (PTG: Tedeschi and Calhoun, 1995, 1996), adversarial growth (Linley and Joseph, 2004), benefit finding (Affleck and Tennen, 1996; Tennen and Affleck, 2002; Kangas et al., 2011), and stress-related growth (Park et al., 1996). These terms—particularly PTG and benefit finding—are sometimes used interchangeably. While there are similarities between these constructs, benefit finding is typically described in terms of the acquisition of benefit from adversity, whereas post-traumatic growth is described as the success with which individuals cope or strengthen their perceptions of self, others and the meaning of events after a traumatic event (Brand et al., 2014). Previous studies have also shown that the determinants of PTG and benefit finding are different in other chronic conditions, such as cancer (e.g., Jansen et al., 2011). Thus, for the purposes of the current article, PTG was chosen as the most empirically coherent construct on which to base the meta-analysis.

There has also been confusion regarding the differences between PTG and qualities such as resilience, optimism, hardiness—terms which refer to a person who has adjusted successfully despite adversity (O'Leary and Ickovics, 1995). PTG differs from resilience and recovery in the sense that it is usually understood to refer to an individual moving *beyond* their baseline functioning in terms of relationships, self-views and opening up of life possibilities, rather than simply returning to baseline (Collicutt McGrath, 2011). Throughout this article the term post-traumatic growth (PTG) is used to refer to perceptions of positive changes following a significant life event or trauma (consistent with Collicutt McGrath, 2011), but other terms are used when referring to literature that has used those same terms.

From a theoretical perspective, PTG has been conceived as an outcome of successful accommodation to a traumatic event (Tedeschi and Calhoun, 1995, 2004) and also, as a means of coping with trauma (Taylor and Armor, 1996). Initial conceptualizations of PTG referred to an objective complex cognitive, behavioral and emotional *outcome* after an initial struggle to deal with stressful life circumstances (see Tedeschi and Calhoun, 1995, 2004). Those authors argued that the trauma presents a compelling challenge to basic assumptions about the world, and that PTG occurs when the cognitive schemas that represent these assumptions are rebuilt in a more nuanced and complex form, as a result of the traumatic experience (Collicutt McGrath, 2011). Several models have now been proposed regarding the occurrence and development of PTG. Three comprehensive models exist—Functional Descriptive Model (Tedeschi and Calhoun, 1995, 2004), Organismic Valuing Theory (Joseph and Linley, 2005), and Biopsychosocial-Evolutionary Theory (Christopher, 2004). Although each model has a somewhat different emphasis, each suggests that experiencing a highly stressful or traumatic event shatters an individual's self-views and world-views, and that a meaning-making process or cognitive-affective process occurs in order to adapt or rebuild one's views, resulting in perceptions of growth (Horowitz, 1986; Janoff-Bulman, 2004; Tedeschi and Calhoun, 2004). Most of these theories posit that people are intrinsically motivated toward growth.

Concerns about the theoretical validity of PTG have been raised, where authors suggest that positive cognitive, emotional and behavioral changes are functional illusions. Those researchers (see Taylor, 1983; Affleck and Tennen, 1996; Park and Folkman, 1997; Davis et al., 1998; Filipp, 1999) have argued that perceptions of growth are the result of trying to cope with trauma and reduce feelings of distress. Through this lens, PTG is viewed as a story that we tell ourselves to get throught the challenge, rather than reflecting any real psychological change as a result of struggling with trauma. Other authors (see McMillan and Cook, 2003; Dohrenwend et al., 2004; Cheng et al., 2006) suggest that individuals present themselves in an overly positive light and deny the negative impact of stressful life events, known as defensive denial, as an explanation of PTG. Also, Cognitive Adaptation Theory (Taylor, 1983; Taylor and Brown, 1988) suggests that people have self-protective cognitive biases for seeing positive aspects of negative experiences when they encounter threats—this theory may have relevance for understanding PTG. For example, most people who survive breast cancer report that they are coping as well or better than others facing the same challenge (Wood et al., 1985). Temporal Comparison Theory (Albert, 1977) suggests that individuals make comparisons between their past selves and current selves, and typically distort the past to perceive positive growth. In other words, people sometimes draw the conclusion they are a better version than before (e.g., I am more caring than I used to be). Interpreting PTG as self-enhancing cognitive biases, particularly after ABI where cognitive impairment is often severe, requires a great deal of careful theoretical and empirical attention. It is likely that self-enhancing biases and coping strategies may account for PTG in some individuals. However, It is not possible to distinguish between these processes in the present review.

Measurement of PTG

Although at least 14 measures of PTG exist, two of the most widely used are the Post-traumatic Growth Inventory (PTGI; Tedeschi and Calhoun, 1996) and the Changes in Outlook Questionnaire (CiOQ; Joseph et al., 1993). The PTGI contains five domains of PTG: (1) new possibilities, (2) relating to others, (3) personal, (4) appreciation of life, and (5) spiritual change. Confirmatory factor analysis has provided further empirical support for this five-factor model (Taku et al., 2008). The CiOQ measures positive changes in the aftermath of trauma in domains similar to that of the PTGI, and has also demonstrated satisfactory psychometric properties (Joseph et al., 2005). There has been some debate in the literature regarding the measurement of PTG. Many scales have been developed to measure growth in response to the incongruencies in its conceptual and theoretical foundations. While overlap exists across these measures, it has been argued that not all are strictly measuring PTG (see Davis et al., 1998; Phipps et al., 2007). The lack of one single definition of PTG has led to measurement difficulties and has caused confusion regarding its correlates, predictors and relation to outcomes. Thus, the current synthesis of existing empirical data on the topic of PTG in ABI, and analysis of the correlates and pathways to growth is particularly timely.

Method

Literature Search

A computerized literature search was conducted in EBSCOhost on MEDLINE, PsycINFO, PsycARTICLES, CINAHL, AMED, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, EMBASE, Science Direct, Scopus and Web of Science. To ensure adequate coverage of all PTG relevant papers, searches were conducted using the terms "brain injury," "head injury," "brain tumor," "meningioma," and "stroke" with "posttraumatic growth," "post-traumatic growth," "adversarial growth," "perceived benefits," "stress-related growth," "benefit finding," "positive growth," "meaning-making," "positive adjustment," "finding meaning," "positive consequences," "sense-making," and "thriving." In addition, the reference lists of all studies included in the review were examined to identify any further relevant articles, as were the reference lists of any systematic reviews identified through this search strategy.

Inclusion and Exclusion Criteria

To be included in the systematic review, studies were required to meet the following criteria: (1) be published in English in a peer reviewed journal; (2) report quantitative analysis of post-traumatic growth; (3) involve adults with ABI undergoing rehabilitation as defined by the World Health Organization Definition of Rehabilitation; (4) be based within a health-care or community rehabilitation setting. The title and abstract of each article, and the full article where necessary, were independently screened against the inclusion criteria by two reviewers (Jenny J. Grace and Elaine L. Kinsella). In total 744 studies were identified using the search terms, with this number being reduced to eight using the inclusion and exclusion criteria outlined (**Figure 1**).

The primary reviewers (Jenny J. Grace and Elaine L. Kinsella) independently screened the title and abstract of each article, and the full article where necessary, against the inclusion criteria. Duplicates were removed from the search records ($N = 196$). There was no disagreement among either reviewer as to the final inclusion of studies obtained through the systematic search. Of the 548 studies identified, articles were excluded because participants had not sustained an ABI ($N = 208$), included children or adolescents ($N = 4$), or were review articles, editorials or conference presentations ($N = 21$). Other exclusion criteria included qualitative analysis of the impact of ABI ($N = 30$), articles that did not formally examine PTG ($N = 211$), were animal studies ($N = 22$), erratums and comment articles ($N = 4$), dissertations ($N = 25$), books ($N = 5$) and theoretical articles ($N = 7$). Three further studies were excluded as they did not use a validated scale to measure PTG ($N = 2$), or because the sample was not generalizable to the ABI population ($N = 1$). Of the final eight studies, three contained insufficient information for calculating the effect size (ES^{r}) for certain constructs. The authors of these articles were contacted, resulting in additional data being provided for one of these studies. In total, the analysis reviewed eight articles with eight independent samples, covering 554 participants and providing 14 ES^{r} associations between a variety of constructs and PTG.

Data Extraction

Study characteristics and statistical information were coded into a database by two authors (Jenny J. Grace and Elaine L. Kinsella) using a data coding manual which was developed and revised to include details of the studies (Lipsey and Wilson, 2001). Coded data included methodological factors (sample size, sampling methods, type of measures, study design), sample characteristics

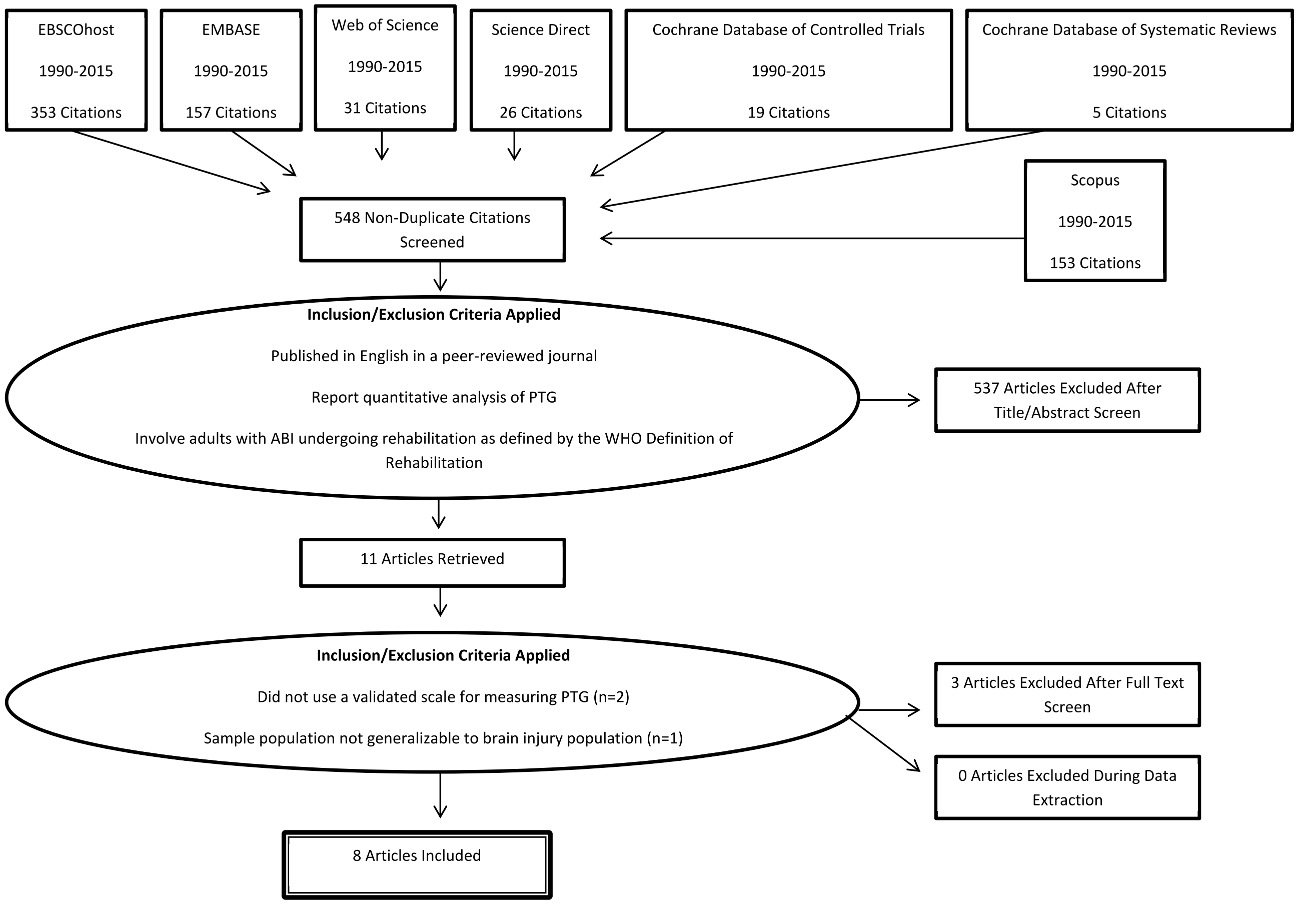

FIGURE 1 | Number of examined studies and reasons for exclusion by stage.

(age, time since injury, type of injury), and statistical information for calculating effect sizes (e.g., Pearson correlation coefficient).

From the eight studies included in the analysis, two studies used the same sample at different time points. As recommended by Rosenthal (1995), where samples are not independent significance errors can be avoided by treating the non-independent studies as a single study with several dependent variables. The analysis examines only one dependent variable across studies (PTG) and its association with various independent variables, thus the non-independent samples are treated as *independent*, resulting in eight independent samples.

Measures

A comprehensive list of measures used to assess PTG and related constructs can be found in **Table 1**.

Seven studies utilized the Post-Traumatic Growth Inventory (PTGI; Tedeschi and Calhoun, 1996) to assess PTG, and one study used the Positive Changes in Outlook questionnaire (CiOP; Joseph et al., 1993). The CiOP examines positive psychological change following trauma and adversity and was deemed suitable to include in the analysis as a measure of growth. The variables measured across each of the eight studies were grouped in line with the classifications of demographics, injury and functional variables, psychological health and cognitive processes (see **Table 2**).

Data Synthesis and Analysis

Effect Size Calculation

Pearson's product-moment correlation coefficient (r) was the primary effect size index used to examine the association between PTG and each of the variables. ES^r was obtained either directly from the zero-order correlation coefficient reported in the publication, or was extracted and estimated from other reported statistical information (t-test, F statistic, χ^2, η^2, U, means, and standard deviations) using DeCoster's effect size calculator (DeCoster, 2012) and Wilson's practical meta-analysis effect size calculator (Wilson, 2001). Where there was insufficient statistical information to calculate an ES^r, authors of the corresponding studies were contacted to obtain this information. If this statistical information could not be obtained, effect sizes were assigned a value of zero and test statistics were reported as *ns*. This represents a commonly used (Helgeson et al., 2006; Sawyer et al., 2010; Quon and McGrath, 2014) but conservative strategy, as effect sizes seldom equal zero. Six associations in the analysis were assigned an effect size of zero. When only a p-value was reported, ES^r was calculated from the p-value using an $r_{\text{equivalent}}$ equation (Rosenthal and Rubin, 2003). If only $p < 0.05, p < 0.01$, $p < 0.001$ was reported, an $r_{\text{equivalent}}$ with p-values of 0.0245, 0.005, 0.0005 (one-tailed) was calculated. This method has been shown to provide a conservative estimate of ES^r (Rosenthal and Rubin, 2003). Where there were two or more ES^r for one variable within a study, these were averaged to create one ES^r (Lipsey and Wilson, 2001). Aggregated ES^r were calculated for the variables of relationship status (Powell et al., 2012) and subjective beliefs about changes post-injury (Powell et al., 2012). An effect size estimation confidence rating (ranging from 1 to 3, with higher numbers representing greater confidence in estimation) was given by the coders to highlight the extent of estimation accuracy of each ES^r (Lipsey and Wilson, 2001).

Analytic Strategy

Using Comprehensive Meta-Analysis V2 software program (Borenstein et al., 2005), random effects meta-analytic models were used to examine the association between cognitive processes, psychological health, demographic and injury variables, and PTG. Random effects models assume that each sample is drawn from a population with different effect sizes and thus allows for both random variance and variance due to true differences between the populations. Random effects models also permit generalization of inferences due to this explicit inclusion of between-study variability (Lipsey and Wilson, 2001; Borenstein et al., 2009).

Aggregated ES^r statistics were calculated for the variables where two or more studies investigated the association between a variable and PTG. The homogeneity of ES^r in each meta-analytic model was examined using the Q statistic (Lipsey and Wilson, 2001) and I^2 statistic (Borenstein et al., 2005). The Q statistic measures the variation of ES^r in each model, where a non-significant Q statistic indicates a homogenous distribution (Borenstein et al., 2005). The I^2 statistic estimates the percentage of between-study variability due to heterogeneity rather than chance (Borenstein et al., 2005).

In order to test for the presence of publication bias, Rosenthal's *fail-safe N* (Rosenthal, 1979) was employed. This technique involves estimating the number of unpublished studies reporting null results required to overturn the results of the meta-analysis. A higher number of studies indicate a more robust estimate of ES^r. Publication bias was examined for each variable by funnel plot (Stearne et al., 2005).

Results

Study Characteristics and Quality

The research design of each study is summarized in **Table 1**. Studies meeting the inclusion criteria were published between 1990 and 2015. Sample sizes ranged from 19 to 190 participants. Two studies examined PTG in individuals who had suffered a stroke, three studies examined PTG in those who sustained a TBI, and three examined PTG in individuals who suffered a stroke, TBI, or "other" ABI causes such as encephalitis or subarachnoid hemorrhage.

Detailed demographic information for the included studies is listed in **Table 1**. Overall, 39% of participants were female and 61% were male. Participant ages ranged from 16 to 88 years. The mean length of education for participants was reported in only three studies ($M_{\text{years}} = 14.19$, $SD = 1.13$).

The quality of each study was determined on the basis of four study characteristics as developed by Ferro and Speechley (a modified version of the quality index; Ferro and Speechley, 2009): (i) reporting, (ii) internal validity, (iii) external validity, and (iv) power. This quality index comprises four subscales consisting of 15 items: reporting (0–7), external validity (0–3), and internal validity (0–4), and power (assessed with a

TABLE 1 | Demographic and design characteristics of included studies.

Study	*N*	Design	Age	Gender	Time since injury	Measures
Collicutt McGrath and Linley, 2006	14 Stroke 2 TBI 3 SAH[1]	Cross-sectional	Early group: $M_{\text{age}} = 52$ Range = 27–66 Late group: $M_{\text{age}} = 46$ Range = 27 – 63	Early group: 4 females, 6 males Late group: 6 females, 5 males	7 months; 10 years	PTGI[2] SOC-13[3] HADS[4]
Gangstad et al., 2009	60 stroke	Cross-sectional	$M_{\text{age}} = 71.67$, $SD = 10.64$	26 females 34 males	5 – 99 months ($M = 32.03$, $SD = 23.91$)	PTGI CPOTS[5] HADS
Hawley and Joseph, 2008	165 TBI; 62% severe 15% moderate 23% mild	Longitudinal follow-up 6 months post-recruitment; 10 years	Early group: $M_{\text{age}}=32.7$, $SD = 12.98$ Late group: $M_{\text{age}} = 34$, $SD = 13.82$	Early group: 122 females 441 males Late group: 61 females 104 males	6 months post-recruitment: 2–127 months ($M = 15.1$, $SD = 22.35$) 10 year follow-up: 9–25 years ($M = 11.5$, $SD = 2.64$)	CiOP[6] Structured interview GOSE[7] FIM + FAM[8] HADS COS[9] ERR[10]
Powell et al., 2007	48 TBI	Cross-sectional	Early group: $M_{\text{age}} = 41.1$, $SD = 13.8$ Late group: $M_{\text{age}} = 43.6$, $SD = 13.5$	Early group: 4 females 19 males Late group: 5 females 20 males	1–3 years; 10–12 years	PTGI, LSC[11] HADS BICRO[12] GOS[7] Perception of effects of injury
Powell et al., 2012	21 TBI	Longitudinal follow-up; 11 and 13 years post-TBI	$M_{\text{age}} = 42.8$, $SD = 12$	2 females 19 males	11 years; 13 years	PTGI, LSC, GOS, HADS, BICRO, PMI[13], LOT-R[14], GSES[15], LOCI[16], PSS[17], RBSF[18], LEQ[19], OS-CCEI[20], Perception of effects of injury
Rogan et al., 2013	70 ABI; 56% TBI 31% CVA 13% other	Cross-sectional	Range: 19 – 65, $SD = 12$	21 females 49 males	7–350 months ($M = 70.43$, $SD = 55.30$)	PTGI IPQ-R[21] Brief COPE HADS FIM + FAM GCS[22] Demographics
Silva et al., 2011	60 Severe ABI; 58% TBI 42% ABI	Longitudinal follow-up; Discharge and 6 month follow-up	$M_{\text{age}} = 44.18$, $SD = 11.32$	16 females 44 males	$M = 32.92$ days (discharge); 6 months	MPAI-4[23] DASS[24] PTGI
Zhenxiang et al., 2012	190 Stroke	Cross-sectional	$M_{\text{age}} = 58.57$, $SD = 12.05$	72 female 118 male	60% < 6 months 40% > 6 months	PTGI HADS

[1] Subarachnoid hemorrhage; [2] Post-traumatic growth Inventory; [3] Sense of Coherence scale-13; [4] Hospital Anxiety and Depression Scale; [5] Cognitive Processing of Trauma Scale; [6] Changes in Outlook Questionnaire; [7] Glasgow Outcome Scale (Extended); [8] Functional Independence Measure and Functional Assessment Measure; [9] Community Outcome Scale; [10] Early referral to rehabilitation; [11] Life Satisfaction Checklist; [12] Brain Injury Rehabilitation Outcome Scales; [13] Personal Meaning Inventory; [14] Life Orientation Test – Revised; [15] Self Efficacy Scale; [16] Locus of Control Inventory; [17] Perceived Social Support; [18] Religious Belief Short Form; [19] Life Event Questionnaire; [20] Obsessionality scale from Crown-Crisp Experimental Index; [21] Illness Perception Questionnaire-Revised; [22] Glasgow Coma Scale; [23] Mayo-Portland Adaptability Scale – 4; [24] Depression Anxiety Stress Scales.

TABLE 2 | ES*r*, confidence intervals, and homogeneity analyses.

Variable	*N*	*k*	ES$_r$	95% CI	*Z* score	*P*-value for *Z* score	*Q* statistic	*P*-value for *Q* statistic	I^2
DEMOGRAPHIC									
Age	235	2	0.14	0.01, 0.26	2.11	0.04	0.05	0.83	0.00
Education	130	2	0.29	0.13, 0.44	3.36	0.001	0.18	0.67	0.00
Employment	91	2	0.39	0.20, 0.56	3.84	0.00	0.81	0.37	0.00
Gender	235	2	0.01	−0.16, 0.18	0.07	0.95	1.55	0.21	35.35
Relationship status	91	2	0.21	−0.001, 0.40	1.95	0.05	0.50	0.48	0.00
INJURY/FUNCTIONAL									
Activity in community	234	3	0.19	−0.23, 0.54	0.87	0.39	13.15	0.001	84.79
Injury severity	283	3	0.01	−0.11, 0.13	0.11	0.91	0.81	0.67	0.00
Time since injury	385	6	0.38	−0.04, 0.69	1.77	0.08	80.72	0.00	93.81
COGNITIVE									
Subjective beliefs	69	2	0.36	0.13, 0.55	2.96	0.003	0.14	0.71	0.00
PSYCHOLOGICAL HEALTH									
Life Satisfaction	69	2	0.38	−0.27, 0.79	1.16	0.24	6.21	0.01	83.90
Anxiety	575	7	−0.07	−0.21, 0.07	−1.00	0.32	13.35	0.04	55.05
Depression	635	8	−0.23	−0.37, −0.06	−2.91	0.04	21.99	0.003	68.16

N, total number of study participant; k, number of studies; ES$_r$, correlation coefficient effect size; Q, Q statistic which appropriates a chi-square distribution with k − 1 degrees of freedom for test of homogeneity.

single item, 0–1). For each of the eight studies included in the analysis, each item was scored 0 (no/unable to determine) or 1 (yes). Studies could achieve a maximum score of 15. Higher scores on the quality index indicated greater methodologic quality. **Table 3** provides an overview of scores achieved by each study in each of the domains measured by the quality index. The total mean score on the modified quality index was 11.38 (*SD* = 1.86, range 8–14). The mean subscale scores were 5.25 (*SD* = 1.24, range 3–7) for reporting, 2.63 (*SD* = 0.72, range 1–3) for external validity, 3.50 (*SD* = 0.51, range 3–4) for internal validity, and scores of zero for power. The intra-class correlation (ICC = 0.952) indicates very high interrater agreement for study quality between both coders (Jenny J. Grace and Elaine L. Kinsella). **Table 4** includes a summary of mean PTG scores across ABI and other trauma-related populations.

TABLE 3 | Study quality assessment (Ferro and Speechley, 2009).

	Reporting (0–7)	External validity (0–3)	Internal validity (0–4)	Power (0–1)	Total (0–15)
Collicutt McGrath and Linley, 2006	4.5	1	3	0	8.5
Gangstad et al., 2009	7	3	4	0	14
Hawley and Joseph, 2008	5.5	3	3	0	11.5
Powell et al., 2007	3	3	3	0	9
Powell et al., 2012	5	3	3	0	11
Rogan et al., 2013	6	3	4	0	13
Silva et al., 2011	5	3	4	0	12
Zhenxiang et al., 2012	6	2	4	0	12
Total	42	21	28	0	91

Mean Effect Sizes

A stem-and-leaf plot of all effect sizes in the analysis is presented in **Table 5**.

For demographic variables, ES^r ranged from 0.01 to 0.39, for injury and functional variables ES^r ranged from 0.01 to 0.38. Cognitive processes demonstrated ES^r of 0.36 and psychological health variables demonstrated ES^r ranging between −0.23 and +0.38 (see **Table 2**).

Publication Bias and Tests of Homogeneity

Rosenthal's (1979) *fail-safe N* was used to estimate the effect of publication bias in the analysis. Begg and Mazumdar's (1994) rank correlation test is usually preferred for this purpose but can lack power for smaller meta-analyses (Rothstein et al., 2005). Publication bias could not be estimated for age, life satisfaction, employment, education, subjective beliefs about changes post-injury, relationship status and gender due to the limited number of studies examining the relationship between each of these variables and PTG. For depression, Rosenthal's *fail-safe N* was 55, and for time since injury *fail-safe N* was 34 (**Table 6**).

Given the original number of observed studies for each of these variables, this would indicate that the ES^r for these variables are reliable estimations. Rosenthal's *fail-safe N* was 0 for each of the following variables: activity in community, anxiety, and injury severity. These results would indicate that publication bias likely impacted the ES^r of these variables and as a result, the robustness of these ES^r estimations.

Results from homogeneity analyses indicated significant inter-study heterogeneity for the variables of: activity in the

TABLE 4 | Summary of mean PTG scores for ABI and other events.

Study	Event	N	Measure	Mean (*SD*)
ABI STUDIES				
Collicutt McGrath and Linley, 2006	Stroke TBI* SAH**	Early: 4 female, 6 male Late: 6 female, 5 male	PTGI	Not reported Not reported
Gangstad et al., 2009	Stroke	26 female 34 male	PTGI	50.33 (19.92)
Hawley and Joseph, 2008	TBI*	Early: 122 female 441 male Late: 61 female 104 male	CiOP	43.41 (10.76)
Powell et al., 2007	TBI*	Early: 4 female 19 male Late: 5 female 20 male	PTGI	36.50 (18.70) 68.1 (16.60)
Powell et al., 2012	TBI*	2 female 19 male	PTGI	64.6 (16.50)
Rogan et al., 2013	TBI* CVA*** Other	21 female 49 male	PTGI	53.76 (22.88)
Silva et al., 2011	TBI* ABI****	16 female 44 male	PTGI	33.47 (18.26)
Zhenxiang et al., 2012	Stroke	72 female 118 male	PTGI	58.10 (13.72)
OTHER EVENTS				
Calhoun et al., 2000	Various	54	PTGI	76.5 (22.00)
Cordova et al., 2001	Breast cancer	70 Female 70 Healthy comparison (Female)	PTGI	64.1 (24.80) 56.3 (26.30)
Polatinsky and Esprey, 2000	Bereaved of child	49 Female 18 Male	PTGI	83.47 (20.21) 79.72 (19.50)
Snape, 1997	Accident/assault	13 Female 40 Male	PTGI	52.15 (25.59) 55.43 (18.14)
Tedeschi and Calhoun, 1996	Various	405 Female 199 Male	PTGI	75.18 (21.24) 67.77 (22.07)
Tedeschi and Calhoun, 1996	Various	62 Female 55 Male	PTGI	81.60 (21.09) 70.25 (21.87)
Weiss, 2002	Breast cancer	41 Female 41 Male	PTGI	60.21 (18.81) 46.00 (22.83)

**Traumatic brain injury; **Subarachnoid hemorrhage; ***Cerebrovascular accident; ****Acquired brain injury.*

TABLE 5 | Stem-and-Leaf plot of all effects sizes (*r*).

Stem	Leaf
−0.5	3
−0.4	2
−0.3	1
−0.2	0,9
−0.1	8
−0.0	1,2,3,3,4,6,6,9
0.0	0,0,0,0,0,2,8,9,9
0.1	0,0,2,3,6,7
0.2	6
0.3	3,5,5,6
0.4	2,6
0.5	3,4
0.6	5,7
0.7	
0.8	
0.9	7

TABLE 6 | Rosenthal's *fail-safe N* for estimation of publication bias.

Variable	Number of observed studies	Fail-safe N
Activity in community	3	0
Anxiety	6	0
Depression	8	55
Injury severity	3	0
Time since injury	6	34

community, time since injury, life satisfaction, anxiety and depression. The magnitude of the observed Q statistics indicated variable levels of unexplained heterogeneity across ES^r, and the I^2 statistic for these variables demonstrated the percentage of inter-study variability due to heterogeneity rather than chance. The remainder of the variables demonstrated non-significant Q statistics, suggesting that the ES^r for these variables were homogenous (see **Table 2**). In the presence of unexplained heterogeneity, further exploration of potential moderators may be suggested (Rosenthal, 1995). However, due to the relatively small number of studies included in each of the current analyses, such moderator analyses were beyond the scope of this review (Tabachnick and Fidell, 2007).

Results from the meta-analysis indicated small to medium effect sizes across all examined variables. Positive associations were evident for demographic variables and cognitive processes, with both positive and negative associations demonstrated for psychological health and injury variables (see **Table 2**). In particular, results demonstrated that subjective beliefs about change in one's life post-injury, longer duration of education, being employed, older age, longer time since injury, being in a relationship, and lower levels of depression are significantly associated with PTG after ABI.

Discussion

In the next section, these meta-analytic findings relative to four key dimensions are discussed: demographic factors, injury level variables, psychological health and cognitive processes.

Demographic Factors and PTG

Age of Participants

Age demonstrated a small effect size indicating that older individuals report greater levels of PTG than younger persons (the average age of participants in the current analysis was 46 years). A curvilinear relationship between age and PTG following ABI may exist (see Thompson, 1991), where persons in the mid-stage of their life are best placed to abstract positive change from the experience of their ABI. In contrast, previous meta-analyses have reported a general trend, in non-ABI samples, toward younger persons experiencing greater levels of PTG following trauma or illness than older adults (Helgeson et al., 2006; Barskova and Oesterreich, 2009; Sawyer et al., 2010). For this reason, some authors posit that being diagnosed with a serious medical condition or experiencing trauma at a younger age may implode one's worldview of natural and fair social order, thus allowing for a greater reconstruction of previously held worldviews and act as a catalyst for growth (Helgeson et al., 2006; Sawyer et al., 2010). However, some inconsistencies in the relationship between age and PTG have been acknowledged in the literature (Barskova and Oesterreich, 2009). Those authors suggest that age may influence the processes by which growth occurs at the onset of an illness or life-altering event, and suggest that different questions on the PTGI scale may be more applicable and relevant at different life stages. For instance, younger people may report greater levels of "new possibilities," whereas older adults may relate to other items more strongly.

Employment

Employment demonstrated a medium effect size in the analysis indicating that employment is associated with greater levels of growth. The ABI literature has reported that employment is associated with greater perceived well-being, improved social integration within the community, more frequent pursuit of leisure and home activities, and greater health status, less usage of health services, more social contact, greater autonomy and a clearer sense of personal identity (Webb et al., 1995; O'Neill et al., 1998, 2004; Corrigan et al., 2001; Steadman-Pare et al., 2001; Wehman et al., 2005). The World Health Organization's International Classification of Functioning, Disability and Health (IFC) highlights that returning to work is a key component of rehabilitation and should not remain a marginal outcome of recovery (WHO, 2001). Powell et al. (2012) reported that participants who demonstrated higher levels of PTG more frequently reported that they were able to work. Employment following ABI may help to develop social support systems that provide a buffer against distress and allow a person to derive meaning from their ABI, thus increasing perceptions of PTG—however, these processes remain underexplored.

Education

The analysis demonstrated a medium effect size for education such that people who reported a longer duration of pre-injury education experienced greater levels of PTG. Barskova and Oesterreich (2009) reported that level of education was unrelated to PTG in a sample of people with serious medical conditions, but highlighted limitations in the sample distribution for education in their review. Gangstad et al. (2009) demonstrated that education predicted PTG in persons who had sustained an ABI. Theories of cognitive reserve (Satz, 1993; Stern, 2003) have attempted to explain why, in the face of similar objective injury severity and injury location, the impact of ABI on cognitive ability differs across individuals. These theories suggest that education may act as an aspect of reserve that maintains greater levels of cognitive functioning despite objective injury severity.

Gender

There was a very small effect size for gender in the analysis. Recent meta-analyses demonstrated greater levels of PTG in women than in men (Barskova and Oesterreich, 2009; Vishnevsky et al., 2010), however these results appeared to depend on the type of measure used to examine PTG (Barskova and Oesterreich, 2009). Two reviews (Helgeson et al., 2006; Sawyer et al., 2010) found that gender did not moderate the relationship between PTG and positive psychological adjustment, depression, intrusive-avoidant thoughts, and subjective physical health, and reported that significant variability remained present when gender was examined as a moderator in these relationships.

Relationship Status

Results indicated a small effect size for relationship status and PTG. Similarly, Helgeson et al. (2006) reported a very small effect size for the association between marital status and PTG following health-related or personal trauma. Updegraff and Taylor (2000) propose that marital status should be associated with positive psychological growth following loss or trauma through the support system provided by a close relationship. Indeed, a review of the literature relating to stress and coping among families following TBI demonstrated a positive link between family member coping and recovery for the person with TBI (Verhaeghe et al., 2005). On a different but related topic, results from Powell et al. (2012) demonstrated that being in a new relationship since sustaining an ABI differentiated between persons high and low in PTG, while being in the same relationship as before injury did not. Perhaps being in a new relationship facilitates a person with ABI to develop a new positive identity after injury and boost perceptions of PTG, while also reducing the likelihood of temporal comparisons between pre- and post-injury selves. Alternatively, it is possible that a person who reports PTG is more open to forming new social bonds and interpersonal relationships than those who have not experienced growth. Interestingly, Ackroyd et al. (2011) reported that PTG in persons with multiple sclerosis tended to be predicted by PTG in their partners, reiterating the importance of constructive social relationships on positive psychological outcomes. These findings are complex but suggest a fruitful avenue of future research investigating the relationship between social capital and PTG following ABI.

Characteristics of ABI and PTG

Time Since Injury

Results demonstrated a medium effect size for time since injury and PTG highlighting that over time people with ABI experience more growth. In the current analysis, the average time since injury was 5.6 years. Findings across reviews of the temporal course of PTG in diverse samples are inconsistent and seem to be a function of methodological differences across studies—for instance, the use of a cross-sectional or longitudinal research design, the measures used, the type of trauma in question, and the different time points when participants were assessed after the trauma or challenging life event. Helgeson et al. (2006) and Sawyer et al. (2010) found that time since trauma was a significant moderator in the relationship between PTG and both positive and negative mental health. Specifically, Sawyer et al. (2010) found that in the early years following trauma, PTG appeared to play a role in reducing the negative effects of trauma but as time passed, PTG appeared to enhance well-being. Research has demonstrated that across an entire sample of participants who were between 7 months and 10 years post-ABI, an enhanced appreciation for life was the most endorsed aspect of PTG, followed by relating to others, the realization of personal strengths, new possibilities, and spiritual change (Collicutt McGrath and Linley, 2006).

Injury Severity

Injury severity demonstrated a small effect size for PTG. Importantly, the literature on PTG suggests that it is the subjective appraisal of a threatening event rather than its objective characteristics that are associated with growth (Tedeschi and Calhoun, 1995, 2004; Linley and Joseph, 2004). In the context of ABI, one might expect that a severe injury is likely to affect a person's ability to engage in the cognitive processes theorized to be required for growth. Powell et al. (2012) reported that having a mild level of disability as a result of ABI differentiated between high and low levels of PTG. Interestingly, most of the overall sample in the current analysis sustained severe brain injuries but reported levels of growth comparable to and greater than those with less severe head injuries (Powell et al., 2007; Hawley and Joseph, 2008; Rogan et al., 2013). This finding is consistent with arguments that high levels of trauma and distress are needed to provoke perceptions of PTG (see Cognitive Processes section below for further discussion).

Activity in the Community

The analysis demonstrated a small effect size for activity in the community and PTG. Activity in the community was measured across studies using validated scales that examined a person's engagement in paid and voluntary work, study or looking after children, and in terms of mobility, occupation, engagement, and social integration. This is an important aspect of brain injury rehabilitation as people often report isolation and reduced social support following ABI (Johnson and Davis, 1998).

Research on the relation between activity in the community and PTG is relatively sparse. Chun and Lee (2008) qualitatively identified that the experience of meaningful engagement in activities was one of the most salient themes of PTG in a sample of individuals with spinal cord injury. Further, they identified that meaningful engagement involved the recognition of personal strengths, experience of strengthened social relationships through activities, and experience of positive emotion. Activity in the community following ABI may represent a form of meaningful engagement by giving a person a sense of purpose and social identity through work-based activities (Haslam et al., 2000), and may facilitate the creation of new social networks and support systems which in turn promote growth.

Psychological Health

Life Satisfaction

The meta-analysis demonstrated a medium effect size for the relationship between life satisfaction and PTG. Findings across the literature have been inconsistent regarding the relationship between well-being and PTG (Zoellner and Maercker, 2006). Recent research has demonstrated that life satisfaction is indirectly related to levels of PTG through the sense of meaning and purpose that growth can imbue following a traumatic event (Triplett et al., 2012).

Results of our analysis reveal that following ABI people who report growth also report life satisfaction and psychological well-being. Meta-analyses examining psychological well-being and PTG in cancer or HIV/AIDS (Sawyer et al., 2010) and personal or other health-related trauma (Helgeson et al., 2006) have reported positive associations between these two variables. One meta-analysis revealed that when time since trauma was greater than 2 years, PTG was more strongly related to positive well-being (Helgeson et al., 2006). A strong relation between life satisfaction and PTG was demonstrated 11–13 years post-TBI (Powell et al., 2012), while another study demonstrated that 1–3 years and 10–12 years post-TBI there was no such association (Powell et al., 2007). This finding is instrumental in the context of ABI, as outcomes following brain injury can be poor (Langlois et al., 2006; Bazarian et al., 2009). The opportunity for psychological well-being following trauma adds a new dimension to brain injury rehabilitation and sentiments of "building what's strong" rather than "fixing what's wrong" (Evans, 2011).

Depression

Our analysis revealed a small effect size for the relationship between depression and growth. To date, research has not demonstrated a consistent relationship between depression and PTG cross-sectionally, with mean correlation coefficients ranging between −0.1 and 0.1 (Linley and Joseph, 2004; Zoellner and Maercker, 2006). Barskova and Oesterreich (2009) reported that eight (out of 15) cross-sectional studies and four longitudinal studies examining the association between depression and PTG in individuals with serious medical conditions found a negative relationship between depression and growth.

In Tedeschi and Calhoun's (1995, 2004) model of PTG, it is assumed that the initial distress associated with a traumatic event is fundamental in the process of catapulting the individual in a search for meaning, which initiates cognitive processing that is used to make sense of the trauma and its related consequences. They suggest that this initial distress maintains cognitive processing, and the sometimes lengthy period during which distress persists may be fundamental to the occurrence of maximum levels of growth. Helgeson et al. (2006) and Sawyer et al. (2010) reported that the relationship between depression and PTG was moderated by time since event. Specifically, Helgeson et al. (2006) reported that 2 years or less post-trauma, PTG was related to more global distress, however lower levels of depression and greater positive affect were correlated with greater levels of PTG when time since event was more than 2 years. Gangstad et al. (2009) reported a positive relationship between depression and anxiety and PTG in the early stages following a stroke, which became more significant and negative over time. It is likely that a person with ABI may face ongoing difficulties and traumatic periods while they adjust to the physical, psychological, and social changes occurring in their lives (e.g., further cognitive impairment as a result of a seizure or a relationship breakdown many years after the onset of injury). The extent that existing research methodologies and measures of PTG capture the often ongoing set of challenges presented by ABI is still unclear.

Anxiety

The present analysis demonstrated a very small effect size for the relationship between anxiety and PTG. The wider literature has mainly demonstrated no relationship between anxiety and growth (Helgeson et al., 2006), however this has varied depending on the type of trauma experienced by the individual, with some studies reporting a positive relationship between anxiety and PTG (Barskova and Oesterreich, 2009). Given that the present analysis demonstrated a very small effect size for anxiety and PTG and the inconsistent findings in the wider literature, anxiety may not play a prominent role in the development of PTG in ABI, but may be part of a wider set of interrelations that promote growth.

Cognitive Processes

Theories of PTG, whether conceptualized as a coping process or the outcome of a struggle with adversity (Tedeschi and Calhoun, 1995, 2004; Affleck and Tennen, 1996) suggest that the concept of growth is underpinned by subjective appraisals of a traumatic event. The relationship between cognitive processes and PTG in the wider literature is complex. In an examination of the presence of a two-component model of PTG (the "Janus-face" model of PTG) as a potential explanation for the often inconsistent results reported in the empirical PTG literature, Maercker and Zoellner (2004) and Zoellner and Maercker (2006) suggest that different cognitive processes (constructive vs. illusory) may be involved at different times in the growth process. Furthermore, different cognitive processes may relate differently to PTG and outcomes following trauma. Given that people who have sustained a moderate to severe brain injury are highly likely to experience cognitive impairment (Cicerone et al., 2011), this population may be very well placed to permit examination of the extent to which growth can be experienced, particularly in light of theories of PTG that highlight the importance of cognitive processes in the development of growth (Tedeschi and Calhoun, 1995, 2004; Linley and Joseph, 2004).

Subjective Beliefs about Changes Post-injury

The present analysis demonstrated a medium effect size for the relationship between subjective beliefs about changes post-injury and PTG following ABI. Two studies (Powell et al., 2007, 2012) have considered subjective beliefs about changes post-injury, under the heading "perception of effects." This variable concerned the extent to which participants agreed with two polarized statements: "the effects of my head injury have meant that in some ways my life has been richer and fuller" and "the effects of my head injury have ruined my life." Powell et al. (2007) found that greater agreement with the statement "the effects of my head injury have meant that in some ways my life has been richer and fuller" was significantly positively correlated with PTG, but did not find a significant correlation between "the effects of my head injury have ruined my life" and PTG. Similarly, Powell et al. (2012) reported that positive subjective beliefs about changes post-injury (i.e., perception of effects) were significantly correlated with PTG. As such, it would seem that how a person perceives the effects of their ABI is crucial to growth.

Subjective Beliefs about Changes Post-injury, Severity of Injury and PTG

Powell et al. (2007) reported that individuals who fell into the "severe" category of severity of injury and disability agreed significantly more with the statement "the effects of my head injury have ruined my life" compared to those who were classed as having a "moderate" or "mild" level of injury severity and disability. It would seem obvious to suggest that a severe brain injury would confer greater levels of disability and life changes and thus, the effects of these changes might amount to the interpretation of one's life being ruined. Yet, there were no significant differences across levels of severity and disability and the perception that one's life has been richer and fuller as a result of brain injury. Further evidence for the importance of subjective beliefs about changes post-injury in the development of PTG can be found in Powell et al. (2012), where subjective beliefs of one's life as richer and fuller differentiated between those who reported high and low levels of PTG. Silva et al. (2011) also reported that subjective impairment at discharge following ABI was positively associated with PTG at 6-months follow-up.

Illusory Mechanisms and PTG

The idea that growth may not reflect genuine changes in terms of meaning, new life priorities, relationships or an enhanced appreciation for life but instead may represent a self-preservation or illusory coping strategy has gained momentum in light of the often contradictory and inconsistent relationships evident in the empirical study of PTG (see Taylor and Brown, 1988; Taylor et al., 2000; Zoellner and Maercker, 2006; Sumalla et al., 2009). While many of the studies in the current analysis reported greater levels of PTG over time, only Gangstad et al. (2009) examined potentially illusory cognitive mechanisms that may serve to preserve a person's self- and world-views in the initial stages following brain injury. In line with literature examining the potential for co-existing adaptive and maladaptive types of growth (Zoellner and Maercker, 2006; Sumalla et al., 2009;

Sawyer et al., 2010), Gangstad et al. (2009) reported that denial and downward comparison—a process in which an individual compares their situation to that of another who they perceive to be less fortunate as a way to draw value from their own situation—were both associated with reports of PTG; denial was shown to predict growth. The mean time since ABI for the sample in the study was 32 months and as such could be regarded as early in the process of recovery. At this stage, people may use denial as a coping strategy to reduce the levels of distress they are experiencing as a result of their injury. Interestingly, they also observed that as time since injury increased levels of depression reduced, while engagement in downward comparison increased. Perhaps in this instance, PTG may represent a "palliative coping strategy" (see Zoellner and Maercker, 2006) where the proposed illusory mechanism at play is paving the way for future genuine growth by allowing the person to perceive positive aspects by comparing themselves to those they perceive as less fortunate than themselves. This may promote voluntary use of adaptive coping strategies over time, leading to a reduction of distress in the short-term, and an increase in genuine levels of growth over time.

The goal of the current article was to examine the correlates of PTG following brain injury and to assess the value of future examination of the interplay between the complexities of ABI and PTG. Overall, the current analysis revealed that less depression, relationship status, employment, longer duration of education, longer time since injury, subjective beliefs about change post-injury, and older age are significantly associated with PTG following ABI.

Limitations

The results of this meta-analytic review should be interpreted with the following limitations in mind. While the analysis provided us with average effect sizes across included studies, the relatively small number of empirically acceptable studies published on the topic of PTG in brain injury left us with a limited number of studies to include in the analysis and as such, it was not possible to examine moderator variables in the analysis.

It is important to bear in mind that both cross-sectional and longitudinal studies were included in this meta-analysis. The wider growth literature has highlighted that cross-sectional and longitudinal research designs may yield different results across relationships with PTG (Zoellner and Maercker, 2006; Sumalla et al., 2009). While the inclusion of longitudinal studies in the analysis provides some evidence for the increase of PTG over time, the interaction with results from cross-sectional studies is unknown. Moderator analysis that investigates study design and study quality as moderators in the relationships between variables may have shed more light on effect of methodological practices on results.

Where authors did not report sufficient statistical information to calculate effect sizes and this information could not be obtained from researchers directly, the effect sizes were coded as zero. This is a very conservative approach and as such may have impacted the effect size for the analyses that included these "zero" effect sizes. Second, only published studies were included in the analysis. Where the analysis allowed us to conduct publication bias analyses, Rosenthal's *fail-safe N* highlighted significant publication bias for a number of effect sizes. There may be methodologically strong but unpublished studies in this area which if included in the analysis may have had an effect on the results of the current analysis.

The term PTG was originally applied to survivors of war and natural disasters, and other one-off traumatic events. The extent that the PTGI accurately captures the often ongoing and non-linear levels of distress after brain injury is not confirmed. For example, a survivor of ABI may continue to have seizures many years after the first diagnosis of ABI which may cause further physical and cognitive decline, and in turn the survivor's perceived levels of PTG may appear to fluctuate. Also, recent reports in the literature indicate that cultural factors influence the development of post-traumatic growth (Shakespeare-Finch and Copping, 2006; Cormio et al., 2014). The studies included in this analysis involve participants sampled in the USA, Ireland, China, and the UK, but unfortunately detailed cross-cultural comparisons are beyond the scope of the available data. There is a growing need to pay attention to the patterns of growth after brain injury across cultures and the extent that PTGI is a suitable measure of growth in non-USA samples.

Clinical Implications

It is expected (but not assumed) that many people will experience their ABI as a traumatic event. PTG offers us an alternative way to view trauma (Joseph, 2012), and the evidence suggests that many people with ABI *do* report PTG. The possibility that growth may be experienced by persons with ABI is a far departure from a traditional approach of focusing on disability and deficit during neurorehabilitation. Recognition that traumatic events may in time engender growth may permit an additional consideration of the manner in which wider systemic, structural and contextual factors impact on positive appraisal processes underpinning PTG in people with ABI. As such, clinicians, health professionals and carers could look for potential ways to instigate and facilitate positive and meaningful changes in the lives of people with ABI (Linley and Joseph, 2004; Tedeschi and Calhoun, 2004). For instance, clinicians could promote the use of adaptive cognitive processing strategies, including deliberate rumination and positive cognitive re-appraisal to engender a new perspective. Gaining a new perspective of a changed reality may facilitate the use of adaptive coping strategies and the instigation of PTG following ABI (Rogan et al., 2013).

Furthermore, laying out realistic prospects of a person's post-injury recovery trajectory, which may include the possibility of growth, could help to manage the individual's expectations of a potentially non-linear journey including both distress and growth. Specific strategies that support the communal search for meaning (Ackroyd et al., 2011) where the person with ABI and their partner attempt to make sense of the significant changes together may be an additional powerful instigator of change for persons in committed relationships.. In addition, active plans to support persons with ABI in their return to productive roles including work, training or other meaningful occupations may be instrumental in helping the individual to build a new social identity, social network, and provide a platform for PTG.

Future Directions

How do individuals who have sustained cognitive deficits as a result of ABI experience growth, when the basis for growth is proposed to rely on cognitive processing of a traumatic event? Severity of injury demonstrated a very small effect size for PTG in the analysis. Most of the sample in the analysis sustained severe brain injuries yet reported levels of growth similar to those who experienced different types of trauma (see **Table 4**). Future research could examine the interaction of specific cognitive difficulties, or indeed particular brain lesion locations, and reports of PTG. In addition, many studies did not measure participants' levels of self-awareness. Future research could aim to examine the relationship between self-awareness, specific cognitive difficulties, and PTG.

Clinical interventions for rebuilding identity following ABI demonstrate meaning-making dimensions (e.g., meaning centered therapy, Gracey et al., 2008; client-focused and value-driven approaches, Muenchberger et al., 2008) and are placed within the social context. PTG involves a significant meaning-making aspect, where an attempt to make sense of one's circumstances may lead to growth (Tedeschi and Calhoun, 1995, 2004) and well-being (Triplett et al., 2012). An interesting area of future research could examine the relation between identity and PTG following ABI, the social context in which this occurs, and how social factors interact with identity development and PTG after ABI.

Conclusions

The current study has extended the literature by highlighting correlates of PTG in the context of ABI. The analysis demonstrated that while significant inter-study heterogeneity across variables was extant, subjective beliefs about changes post-injury, greater levels of education and employment, older age, relationship status, time since injury, and lower levels of depression are related to PTG following ABI. The findings from this meta-analytic review have important implications for rehabilitation planning, and in particular highlight that ABI not only represents negative life changes, but can also demonstrate an "existential heart to trauma" (Frankl, 1963). A great deal of future research is needed to examine the extent that persons perceive their brain injury as traumatic, the extent that growth is perceived following ABI, and the consistency and causality of relationships between PTG and other variables. An interesting and perhaps previously overlooked notion is that social relationships, as well as the creation of a positive social identity after ABI, may play a role in perceptions of growth and positive adjustment. Such social capital aspects of experience are likely to enhance attainment of more distal rehabilitation goals such as improved community integration and participation for people with ABI (Larsson et al., 2013). Indeed given that the final endpoint of rehabilitation is the person's integration and participation in their social community, the social and communal aspects of growth reviewed in this paper may hopefully add to the evidence base for promotion of PTG as an increasingly legitimate focus for post-acute rehabilitation. Further exploration of the nature and predictors of PTG and other meaning-based coping efforts that might improve the quality of research evidence and ultimately result in improved outcomes for people who are living with ABI is encouraged.

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GENERAL COMMENTARY
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Commentary: Psychosocial screening and assessment in oncology and palliative care settings

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A commentary on

Psychosocial screening and assessment in oncology and palliative care settings
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Depression and anxiety are common in patients with cancer and psychosocial screening in oncology and palliative care settings is suggested as a means to reduce emotional distress in cancer situations (Grassi et al., 2014). In their study, Grassi and colleagues report the results of a review investigating factors associated with depression and anxiety in cancer patients. As regards psychosocial screening, the findings are reassuring: assessment of distress enables the practitioner to attend to symptomatology, interpersonal dynamics and cultural aspects of distress, which captures distress as a multifaceted phenomenon. In particular, focusing on the interpersonal aspects, for example attachment, is highlighted as a way to detect distress. There is a long-standing tradition of attachment research within developmental and clinical psychology, but in the field of the psychosocial dimensions of cancer, studies of attachment are of only rather recent of origin. Introducing established attachment measures into health psychology seems, prima facie, a promising avenue. However, important theoretical and conceptual knowledge derived from investigating adult attachment in the contexts of clinical and developmental psychology has been omitted in the transition to the setting of health psychology. Ultimately, this has led to an uncertainty of the fundamental nature of attachment, as is also pointed out by Grassi et al. (2014) in their evaluation of attachment research in the fields of oncology and palliative care. They avoid conceptualizing and defining attachment and important questions therefore remain; to which definition of attachment do the authors adhere? How do they conceptualize attachment? What is the convergence between their definition and the conceptualization? Grassi and colleagues state that "the way in which the patient has experienced early relations with caregiving figures in the past relates to her view of herself and to the expectation (…)." The description of attachment is relevant to the understanding of the phenomenon, and the quotation above indicates that Grassi et al. consider past experiences to be crucial to the attachment construct. They emphasize past relationships in their description of attachment and they make reference to a self-report instrument for measuring attachment, namely the Experience in Close Relationships questionnaire (ECR). Historically, attachment research has split into two schools using two distinct methodological approaches, i.e., the social psychology tradition and the development of parent-child relations from the child psychology tradition (Bouthillier et al., 2002; Ravitz et al., 2010). Attachment measures involving self-report questionnaires such as the ECR (Brennan et al., 1998) and the Relationship Questionnaire (RQ) (Bartholomew and Horowitz, 1991) stem from the social psychological tradition and the aim is to assess adult attachment in the context of current close relationships with a spouse, a relative, or a close friend. Adult attachment, as measured with self-report questionnaires, varies according to the context in which it is measured and it expresses attachment within thoughts and feelings in current close relationships (Brennan et al., 1998). In contrast, adult attachment measured with the Adult Attachment Interview (AAI) originates from the child psychology tradition and it assesses the organization and the processing of attachment experiences in childhood (Hesse, 2008; Ravitz et al., 2010). Given that self-report measurements of attachment and attachment as measured with the AAI are intended to assess the same construct, then the two methodologies could be expected to show at least a moderate association. However, research shows that they fail to correlate (de Haas et al., 1994; Crowell et al., 1999; Bouthillier et al., 2002; Creasey and Ladd, 2005). The distinction between attachment measured with the AAI and attachment as measured with self-reports is important, because, in fact, the two approaches assess two distinct constructs. Therefore, it is necessary to define attachment consistently with the attachment measure being used. Little can be learnt about attachment and psychosocial distress if there is lack of convergence between the measurement instrument employed (e.g., self-report questionnaires) and the description of the phenomenon (e.g., thoughts and feelings in current close relationships or the organization of experiences of child-parent attachment). The evaluation of attachment research in Grassi et al. (2014) is encouraging, but it is also problematic since it omits important distinctions and specifications of the attachment phenomenon. These shortcomings may consequently lead investigators collectively to adhere to an imprecise definition of adult attachment and this in turn will lead to the impact of attachment research within the field of health psychology being considerably diminished. The psychological legacy of attachment research as an approach to improving the health, well-being and rehabilitation of patients and families, needs to continue its development. The challenge for clinicians, service providers and administrative authorities will be to build up the clarity of the phenomenon such that research will be able to establish what attachment is all about.

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