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ORIGINAL PAPER

Stigma towards Mental Health Problems during Childhood and Adolescence: Theory, Research and Intervention Approaches

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Abstract Many children and teenagers living with mental health problems experience stigma from within their peer group, yet this remains an under-researched topic in developmental science and the broader mental health literature. This paper highlights the limitations of adopting measures, concepts and theories that have exclusively emanated from the adult mental health literature. We argue that the social context of children and adolescents is critical in understanding the development and maintenance of stigma towards those with mental health problems, alongside the changing developmental needs and abilities of children and adolescents. In this article we argue that a theory proposed to explain the development of stereotypes and prejudice in childhood has potential as a framework for integrating existing research findings on mental health stigma in childhood and adolescence and providing direction for further research. The need for interventions that are grounded within the developmental science literature and that explicitly state their theory of change are identified as key research priorities for reducing stigma during childhood and adolescence.

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Stigma refers to the belief that an individual has an undesirable attribute that renders him or her socially discredited (Goffman 1963). It is a complex concept, incorporating cognitive, emotional and behavioral components that manifest in stereotypes, prejudices and discrimination (Corrigan and Shapiro 2010). Stereotypes refer to beliefs about the attributes of a group (e.g. children with ADHD are disruptive in class); prejudices refer to negative feelings about a group (e.g. I would not like to be friends with someone who is depressed) and discrimination refers to behavior towards a group based on prejudice (e.g. I would not invite someone with ADHD to my party). Stigma is regarded as applicable only to those in a position of low power (Corrigan and Shapiro 2010). The term stigma has been widely used in the social sciences since the 1960s, however until recently it has rarely been applied in the context of mental health problems in childhood (Mukolo et al. 2010). This is notably different from the adult mental health literature (Hinshaw 2005).

Despite the absence of research on the stigma of mental health problems in childhood and adolescence, many of the components of stigma just outlined have been studied in these age groups. For example, discrimination has been commonly assessed with measures of social distance (e.g. Jorm and Wright 2008; Walker et al. 2008) or alternatively discrimination in the form of peer rejection has been commonly studied in relation to those with externalizing problems (e.g. Hoza et al. 2005). In addition, some research has focused on children's global attitudes towards peers with mental health difficulties (Bellanca and Pote 2013; Harnum et al. 2007). However, much less is known about affective

responses and stereotypes that are unique to mental health in childhood and adolescence (Mukolo et al. 2010).

There is wide acknowledgement in the adult mental health stigma literature that several types of stigma exist that can be separately classified and measured (Jones and Corrigan 2014). One such type is public stigma, which is the process by which the general public endorse stereotypes and act in a discriminatory manner towards an outgroup (Corrigan and Kosyluk 2014). It can be further conceptualized as the awareness of societal stigma (or perceived stigma) and one's own personal stigma. Research by Corrigan (Corrigan and Rao 2012; Corrigan et al. 2006) measured awareness of societal stigma as conceptually distinct from personal beliefs about people with mental health disorders. Finally, there is also widespread recognition in the literature of the existence of self-stigma, referring to the internalization of public stigma by individuals with mental health problems (e.g. Corrigan and Shapiro 2010). These important distinctions between conceptually distinct aspects of stigma have rarely been made in research on young people's stigma responses. There is also a dearth of research on the experience of self-stigma in those who have mental health problems during childhood and adolescence. Measuring these separate components of stigma is important in order to capture the range of potential consequences for those who are stigmatized.

Despite the fact that the stigma associated with mental health problems is better understood in adulthood than in childhood and adolescence, it is not appropriate to directly apply the findings from adults to these younger groups. Firstly children have far less power and their social status is not equivalent to adults at a societal level (Hinshaw 2005). Secondly, the different social contexts of childhood, adolescence and adulthood mean that the way in which stigma is enacted and experienced are likely to be very different at each stage. Thirdly, the unique social and cognitive capacities of children and adolescents influence how they conceive of social groups and respond to them. The developmental needs of each life stage also need to be addressed. For example, identity and peer relationships are highly salient in adolescence (Kroger 2007), so teenagers may be particularly negatively affected by the awareness that their peers may hold negative mental health stereotypes and these may be a direct threat to their emerging sense of self. Finally, it is important to note stigma-related constructs may be unique to different life stages. For example, the focus on discrimination in the adult literature is often on access to services, housing and employment (Farrelly et al. 2014), as opposed to social exclusion, hurtful treatment and reduced expectations that have been reported by some young people who have experienced mental health problems (Moses 2014).

There are also practical reasons for increasing our efforts to understand the stigma of mental health problems in childhood and adolescence. For example, stigma has been found to be negatively associated with help-seeking (Clement et al. 2015) and the ability to provide support and help others (Yap and Jorm 2011). Negative stereotypes can also have an adverse impact on social acceptance, even when mental health improves (Mrug et al. 2007).

While children may experience stigma from a variety of sources, the peer group is our sole focus within this paper. As children spend so much time in the company of their peers, the peer context can be a fertile ground for stigma to thrive. The peer group is, however, crucial for children's healthy social and emotional development (Gifford-Smith and Brownell 2003). In a recent comprehensive review of empirical research on the role of peer relationships in child and adolescent development, Rubin et al. (2015) concluded that rejection by the peer group is a risk factor for a very wide range of negative outcomes and, in contrast, being friends with socially competent peers serves as a protective factor. A further reason for focusing on peer groups is that they are a potential target for interventions. There is significant potential for evidence-based, theory-led interventions to promote positive peer interactions and to prevent the development of stigmatizing attitudes.

The purpose of this paper is firstly to reflect on the status of research on stigma towards mental health problems during childhood and adolescence. In doing so, we provide a brief overview of the literature and identify pertinent knowledge gaps in this area. Secondly, we highlight a developmental theory of social stereotypes and prejudice, namely Developmental Intergroup Theory (DIT; Bigler and Liben 2006) that could guide future work on the origins of mental health stereotypes and prejudice during childhood. Our goal in applying this theory to a novel social group is to highlight the importance of the developmental origins of stereotypes and prejudices and to advocate for the role of developmental theory in guiding future research on mental health stigma. Thirdly, we reflect on the conceptual approaches currently underpinning mental health stigma reduction efforts with young people. Finally, we highlight the need for a new conceptual model that adopts a developmental approach to understanding, explaining and reducing mental health stigma, while also embracing key developments in the adult stigma literature that have relevance for earlier life stages.

Nature of Mental Health Stigma

There is emerging evidence that young people have negative stereotypes of peers with mental health problems. MacLean et al. (2013) found that symptoms of

mental health problems were frequently characterized as 'rare' and 'weird' (10–15 year olds). Based on a national survey of 12–25 year olds, Jorm and Wright (2008) compared responses to young people with different types of mental health disorders and found evidence of stereotypes of dangerousness, unpredictability and belief that the person was 'weak not sick'. Further evidence from this research team on young teenagers' responses to a peer with depression confirms these stereotypes (Reavley and Jorm 2011). Walker et al. (2008) found that young people with depression and ADHD were perceived by their peers as more likely to get into trouble and as more violent than a child with asthma. However, many of these concepts in the aforementioned literature (e.g. dangerousness, blame) have been carried over from the adult literature, thus further work is required on the stereotypes that may be unique to mental health disorders during the early years (Mukolo et al. 2010).

Evidence also suggests that children presented as having psychological disorders experience prejudice (O'Driscoll et al. 2012; Whalen et al. 1983). On the whole, there is much less research on the affective components of stigma either in terms of global liking or specific affective responses such as anger, fear, compassion or empathy. However, recent qualitative work with adolescents suggests that they anticipate a range of prejudicial reactions when they imagine befriending a peer with ADHD. These include feelings of embarrassment, anger, and frustration due to the anticipation of negative social consequences as a result of the peer's impulsive behaviour (O'Driscoll et al. 2015). In addition, work on adolescents' responses to peers with depression has found that anger was more likely to be experienced when a male vignette character with symptoms of depression was inferred to be responsible for his behavior (Dolphin and Hennessy 2014). However, the pathway between responsibility and anger was not significant when the peer with depression was female thus illustrating that the influence of cognitive judgments on affective responses may vary by the gender of the target character.

Evidence on discrimination against children who have mental health problems comes from research on children's sociometric status within their peer group and also from research on behavioral intentions towards hypothetical peers with mental health problems. In comparison with typically developing peers, these studies clearly show that children with mental health problems experience greater exclusion from their peer group (Hoza et al. 2005; Parker et al. 1995), and peers report more negative behavioral intentions towards such children (Bellanca and Pote 2013; O'Driscoll et al. 2012). In light of this evidence it is not surprising that some young people with mental health disorders report negative or unfair treatment from others (Moses 2010).

Having established that there is evidence for mental health stigma during childhood and adolescence, it is also important to note that the extent and type of stigma varies according to a range of factors, including the type of diagnosis and the characteristics of the stigmatizer. With regard to the type of diagnosis, Walker et al. (2008) collected data using questionnaires and found that depression was more stigmatized than ADHD. However, other studies have found the opposite (Bellanca and Pote 2013; O'Driscoll et al. 2012). For example, using implicit and explicit assessments of stigma towards peers with mental health problems, O'Driscoll et al. (2012) found that a hypothetical peer with ADHD was rated more negatively than a peer with depression on a variety of explicit measures. However, implicit assessments revealed adolescent males had a more negative attitude towards a peer with depression, thus highlighting the importance of using a variety of assessment methods. Jorm and Wright (2008) also found that disorders can vary on different stigma dimensions. For example, relative to depression, psychosis was regarded as more dangerous and unpredictable, and elicited greater social distance, but there was no difference on the stigma dimension that was labeled 'weak not sick' (the belief that a person was weak and not sick). This research highlights the complex relationship between stigma and the nature of the mental disorder.

The age of the perceiver is also an important factor. Wahl (2002) suggests that negative conceptions of mental disorders can emerge as young as 5 years. Thereafter, the nature and extent of stigma can vary from childhood through adolescence. A recent systematic review, found a trend towards more stigmatizing beliefs amongst older children (Kaushik et al. 2016). However, Jorm and Wright (2008) report complex findings for the relationship between age and stigma. Among 12–25 year olds scores on the social distance scale and the 'weak but not sick' stigma dimension were found to decrease with age, while beliefs in dangerousness and unpredictability increased with age. A further example of such complexity can be seen in the work of Swords et al. (2011) who found that increasing age across childhood and adolescence was associated with greater acceptance of male and female peers with ADHD, but less acceptance of a male peer with depression. The meaning and acceptability of certain behaviors or attributes may also change with age. In early childhood, children with internalizing disorders are often perceived by their peers as less offensive than children with externalizing disorders, although withdrawn depressive behaviors become more salient and show links with peer rejection in middle childhood and adolescence (Ladd 1999).

A full understanding of the development of mental health stigma, therefore, demands attention to participants' age, gender (both that of the rater and the member of the

stigmatized group), the nature of the mental health problem, and the component of stigma being studied. In addition, it is important to note, that while the general trends suggests negative public stigma exists, there are gaps in the research evidence available because many studies fail to assess the multiple components of stigma (e.g. Adlaf et al. 2009; Faulkner et al. 2010). Closer attention is also required to the nature of children's responses. For example, are responses towards peers with mental health disorders manifestly negative, or are they just relatively less positive when compared with responses towards other peers not affected by such conditions? Efforts to understand a broader range of responses, including positive ones, may enhance understanding of how children and adolescents respond to peers with mental health problems.

Developmental Inter-group Theory

While the above research illustrates some of the work underway on age-related patterns, there has been little investigation of the origins of mental health stigma during the early years when negative associations are becoming firmly entrenched (Mukolo et al. 2010). As such, there is a need for appropriate and empirically tested theories and conceptualisations in the field, particularly explanatory frameworks rooted within developmental science, in order to better understand the emergence of stigma in childhood and adolescence, the factors that advance or maintain it, and strategies to overcome it. Numerous developmental and social psychological theories have been proposed to explain the development of prejudice during childhood and adolescence. However, as we note above, the term stigma has only recently been applied to the experiences of children and adolescents with mental health problems (Hinshaw 2005; Mukolo et al. 2010) and we know of no developmental theory that has been specifically applied to this topic. However, an important article on the conceptual structure of stigma and prejudice by Phelan et al. (2008) noted that there is considerable overlap between the two concepts, notwithstanding the fact that their focus has typically been different (prejudice research has typically focused on gender and race, whereas stigma research has tended to focus on disease and disability). We believe that developmental inter-group theory (DIT) (Bigler and Liben 2006) which focuses on the development of prejudice, may guide future efforts to understand, explain and reduce mental health stigma during childhood and adolescence.

Developmental Inter-group Theory (Bigler and Liben 2006) offers an account of the developmental origins of prejudice and stereotyping. It focuses on how cognitive and social development, as well as children's social and cultural environment impinges on the manner in which children perceive and respond to peers. It draws heavily on cognitive developmental theory and recognises how children's cognitive constraints and abilities impact on their construction of social groups and the meaning they ascribe to those groups. The authors provide an interactionist account of the emergence of stereotypes and prejudices. Children are regarded as active meaning-makers of their social worlds. Social environments can also differentially encourage certain characteristics as a basis for categorising individuals into social groups. They argue that the 'characteristics of individual children lead them to *select* certain types of intergroup environments in which to interact, and then to interpret their interactions in those environments differently, hence shaping their attitudes' thereafter (Bigler and Liben 2006, p. 49). To date, this theory has more commonly been used to explain gender and racial stereotypes and prejudice. While gender and race are clearly different than mental health disorders, most notably due to their visibility and enduring nature, nonetheless, we believe this domain-general account allows us to explore whether the mechanisms by which stereotypes and prejudices emerge are similar regardless of the out-group. The core processes of DIT include how certain attributes become psychologically salient for children, the tendency for children to categorise others into salient groups, and the development of stereotypes and prejudices towards these salient groups. As demonstrated in Fig. 1, these processes are influenced by an array of social and cognitive factors which will be further outlined below.

The salience of mental health problems

According to DIT, prejudice towards a social group begins with establishing its psychological salience. This is linked in part to the perceptual features of a group because the ability to identify members of a group must precede the development of affective or behavioral responses to that group. Children with behavioral or emotional responses that deviate from the 'norm' may become salient to their peers over time (Hinshaw 2005). Law et al. (2007) found that exposure to behavioral descriptions indicative of a mental health disorder was sufficient to trigger negative attitudes (irrespective of whether the child's behavior was labeled). However, there may be developmental changes in children's sensitivity to the behavioral expression of mental health problems in their peers. For example, aggressive behavior can be reliably identified by young children, whereas withdrawn behaviour (which might be associated with depression or psychosis) is not identified until later childhood (Younger and Boyko 1987).

Within DIT, social groups may also become salient to children when they are marked by society through the use of labels. Labels facilitate social categorization and children construct beliefs about groups based on these cues. Labels

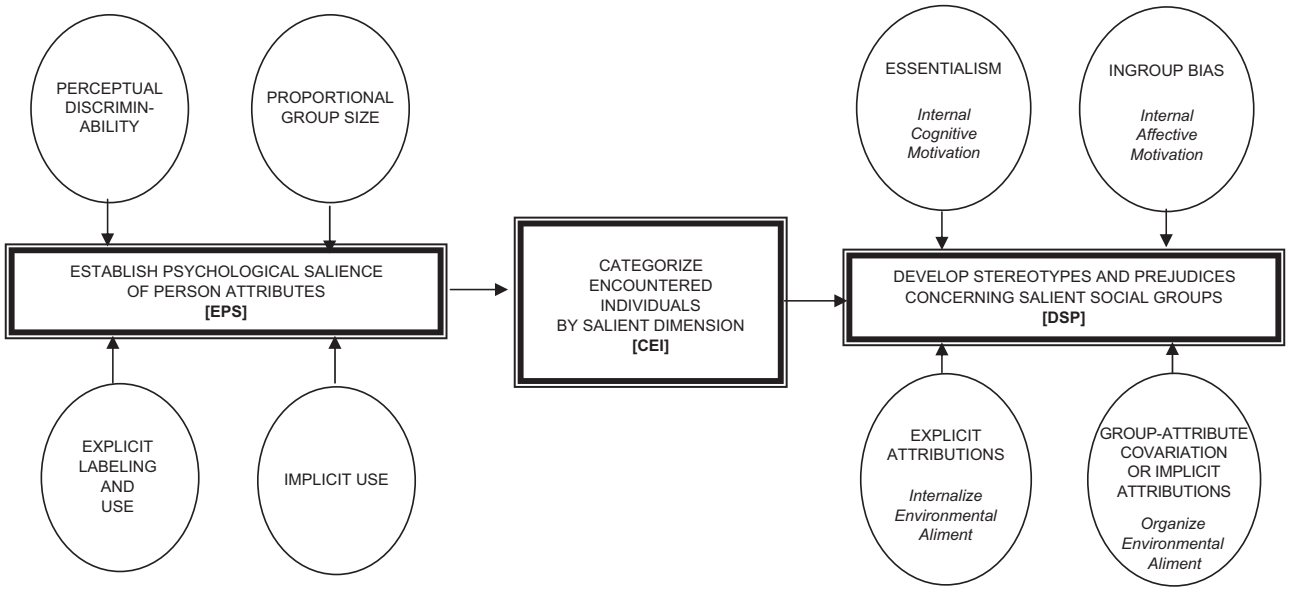

Fig. 1 Key processes involved in the formation and development of stereotypes and prejudice in developmental inter-group theory. *Source*: Bigler and Liben (2007)

within the domain of mental health can consist of official diagnostic terms but also an array of slang terms. Work with teenagers suggests that many pejorative labels are used to refer to people with mental health problems (e.g. 'mental', 'psycho', 'nutter', 'insane') (Chandra and Minkovitz 2007; Pinfold et al. 2003). Howell, Ulan and Powell (2014) argue that the use of noun labels such as 'schizophrenic' as opposed to referring to a 'person with schizophrenia', places emphasis on the social category and suggests an enduring condition, with shared characteristics amongst members of the group.

There is also some evidence that more generic labels or descriptors, such as identifying a child as a 'problem child' can lead to negative outcomes. For example, work by Harris et al. (1992) found that children respond negatively to peers who were described as having behavioral problems, and such descriptions lead to negative expectations irrespective of whether the peer actually had a behavior problem. While labels can demarcate people and identify them as different, there may be a complex relationship between knowledge of labels and stigmatizing responses. For example, survey based work with older adolescents and young adults, suggests that accurate labeling was associated with less stigmatizing responses (Yap et al. 2013). However, one exception to the benefit of labeling was found with regard to psychosis, where accurate labeling was associated with higher scores for dangerousness and unpredictability (Yap et al. 2013). Overall however, we know little about developmental changes in children and adolescents use and understanding of labels related to mental health disorders. While diagnostic labeling is common in the mental health and educational services, there is limited research on the explicit markers that adults provide to children and young people when discussing people with mental health problems.

DIT also allows for the possibility that groups will be marked implicitly. For example, children may be segregated for particular activities or receive special assistance in the classroom. Or older children or adolescents may come to observe that the care and treatment of mental health disorders is often provided for in different settings than physical health problems (e.g. psychiatric hospitals, child and adolescent mental health services). These environmental cues may prompt children to construct hypotheses about group differences. While evidence to support this assertion in relation to mental health stigma is lacking, recent ethnographic work with young people who are schooled in alternative settings due to suspensions and expulsions, suggests that such settings can identify young people as 'abnormal' forcing them to adopt stigmatized identities (McNulty and Roseboro 2009).

Children may also be exposed to a variety of implicit messages about mental health disorders in society at large and at a family and community level. For example, a recent review based on a small body of research, suggests that family conversations around mental health are often characterized by avoidance, and are largely driven by 'unconscious processes of taboo' (Mueller et al. 2016). DIT argues that the environment provides the 'raw material from which children construct the meaning of groups' (Bigler and Liben 2006, p. 57). Further research is required to explore the implicit and explicit messages children receive from

parents, teachers and peers around mental health problems and how this is related to children's stereotypes and prejudices. Ethnographic work would also be helpful to understand how children with mental health problems are responded to and communicated with, within the classroom to help identity the labels and messages that children may be exposed to.

A final process that is regarded as influencing psychological salience is proportional group size. Minority groups are regarded as more distinctive and hence more psychologically salient. While this has not been specifically investigated in the mental health area, research by Kranke et al. (2010) suggests that 'being different' is a major component of the stigma experienced by young people who take medication because of mental health problems. Qualitative work with young adults reflecting on their experiences of growing up with a mental health difficulty also refers to this sense of being different to others, with references to being 'weak', 'broken' and 'damaged' emerging within the accounts of some young people (McKeague et al. 2015).

Social categorization and mental health status

Once children have established the salience of a group, DIT proposes that there is a tendency to categorise members on that basis. This process is influenced by children's environmental experiences as well as cognitive processes, such as classification skills. Research on responses towards peers with mental health problems has not typically been researched within the tradition of DIT so we know of no research that has directly tested these propositions. However, some qualitative work on parental communication to primary school children suggests the core category of "Us and Them" was weaved throughout parents' responses when discussing issues relating to mental health with their children (Mueller et al. 2014). A distinction was made between "Us" which was typically associated with mental health, and "Them", which was typically associated with people with mental illness. Future research could perhaps aim to counter the categorical division between 'those with mental health problems' and 'those without' and explore outcomes associated with encouraging young people to view mental health along a continuum, as opposed to adopting a categorical approach. While this research may suggest the relevant social category is the presence or absence of mental health problems, we presently have little information to validate this.

We believe that there is now sufficient evidence to confirm the salience of mental health problems in children and adolescents' social perceptions of peers, however, we know very little about the prominence of mental health status in social categorization processes. This is in contrast to the existence of substantial evidence that gender and race are key defining features in social categorisation processes (Pauker et al. 2010; Pauker et al. 2016; Shutts et al. 2013) during childhood and adolescence. We also know very little about how mental health intersects with race and gender in social categorisation processes.

Development of stereotypes and prejudices towards those with mental health problems

Once classification takes place, children come to attach meaning and affect to salient groups through a series of internally and externally driven processes. Children are influenced by the attributions of others, and they may internalize the beliefs and emotional responses of parents and significant others. While parent–child similarity has been observed in general for inter-group attitudes (see recent meta-analysis by Degner and Dalege 2013), no research has examined this relationship in the mental health domain.

There are also a variety of internally driven processes that enable children to construct links between social categories, the characteristics of category members and consequent affective responses towards members of these categories or groups (Bigler and Liben 2007). Essentialism is one example of an internal constructive process, whereby children come to believe that group members share other non-obvious properties and that these characteristics are biologically determined, present at birth and developmentally stable (Bigler and Liben 2007; Gelman 2003; Gelman. et al. 2007). A belief that deviant behavior is stable has implications for children's willingness to engage in prosocial interactions with an affected peer (Giles and Heyman 2003). Children who endorse the notion that undesirable traits are fixed or that previous aggressive acts are predictive of future aggressive acts are less likely than their non-essentialist peers to suggest prosocial solutions to challenging social exchanges with an aggressive age-mate, or persevere when faced with such social difficulties (Giles and Heyman 2003; Juvonen 1991).

A further example of a self-generative cognitive process that has been implicated in the development of prejudice towards salient groups is the presence of in-group bias. In-group bias is where children have more positive views of the group they are part of, in comparison to out-groups. While in-group bias is a commonly reported finding in the social psychology literature, group identification processes have rarely been investigated within the mental health stigma literature. Recent qualitative work with young adults found that some young people befriended peers who also experienced mental health problems (McKeague et al. 2015). This research raises interesting questions about the nature of the in-group for young people with mental health problems and the relevance of mental health problems in the group identification process.

The final process identified by DIT that feeds into the development of stereotypes and prejudices is group-attribute co-variation, sometimes referred to as implicit attributions. This is where children observe the co-occurrence of certain characteristics or attributes, such as 'dangerousness', with certain defined groups, such as individuals with mental health problems. If these attributes are systematically linked with a particular group category, they become more salient as a basis for forming the group category. For example, portrayals of mental illness in different forms of children's media such as Disney films or cartoons frequently provide denigrating references to characters with mental health disorders in that they are depicted as hostile or violent and are generally feared, excluded and treated with contempt (Lawson and Fouts 2004; Wahl 2003; Wahl et al. 2007). DIT then further proposes that children will try to make sense of these observed co-variations and subsequently infer meaning from these associations. In this way broader socio-cultural messages, such as those observed through the media, may play a role in shaping the content of stereotypes, and in turn, prejudice.

Once stereotypes are formed, DIT proposes they are likely to be maintained. The authors attribute this to the role of cognitive structures or schemata whereby we have a tendency to remember stereotype consistent information and distort or forget stereotype inconsistent information (Bem 1981; Liben and Signorella 1980; Martin and Halverson 1981).

In conclusion, there is extensive research on social biases towards gender and racial groups within the developmental science literature, but this work has not been extended to explore social biases towards other groups. Conversely, within the mental health stigma literature, stigma has primarily been explored as it relates to adult mental health issues with a relative neglect of the earlier years. What little work is available, tends to focus on adolescence, and is notable for the absence of developmental theory. We believe that DIT (Bigler and Liben 2006) provides a novel way to think about the emergence of stereotypes and prejudice amongst children and that it would be a useful starting point for researchers interested in explaining the of development of mental health stigma in childhood. While DIT has not guided empirical research on mental health stigma to date, we believe sufficient information has been garnered to suggest that mental health status is a salient attribute in social perception and intergroup processes for young people. However, we have much less understanding of the other key processes central to this theory, namely, categorizing individuals according to mental health status and the subsequent development of stereotypes and prejudices towards this salient group.

Our work also highlights a number of other key areas for consideration arising from the application of DIT to mental health stigma research. For example, there is a need for research on the language and socialization practices that parents and significant others use when discussing deviant behavior or mental health disorders with children (Hinshaw 2005). Consideration is also required of how cognitive development and cognitive biases impact on the emergence of stigma towards those with mental health problems. It would also be beneficial to understand under what conditions mental health status functions as a meaningful basis for grouping individuals.

It is important to state, while this model is informative, it does not address the implications of stereotyping and prejudice for those affected. Lessons from the adult literature on the stigma of mental health problems demonstrates that stereotypes and prejudices held by others may become internalized by those with mental health problems, and self-stigmatization may occur (Corrigan and Shapiro 2010). This has not been extensively researched with children and adolescents so key questions remain unanswered, such as the conditions under which this may occur or its developmental timing (Mukolo et al. 2010).

Interventions to Combat Stigma in Childhood and Adolescence

In light of research findings already discussed it is clear that there is a need to develop interventions for children and adolescents in order to reduce or eliminate stigma towards peers with mental health problems. Interventions that are effective in reducing stigma would facilitate the integration of children with mental health problems with their peers, thereby promoting and supporting the development of healthy peer relationships and the important learning that results from those relationships (Rubin et al. 2015). Effective interventions might also reduce the number of individuals who become adults with stigmatizing attitudes towards individuals with mental health problems.

Despite the need for such interventions, the total number developed, implemented and tested among school-age children and adolescents is relatively small and almost all focus on 12–18 year olds. These interventions are diverse in content, duration and methodology. Based on models developed for work with adults, many of the interventions adopt either an education or a contact-based approach, with some combining the two. As such, education programmes commonly aim to address misconceptions surrounding mental health issues in young people, with a view to fostering more positive attitudes and behavior (or behavioral intentions). Others have adopted a contact-based model (Chisholm et al. 2012; Koller and Stuart 2016; Pinto-Foltz et al. 2011). It is important to note, however, that interventions based on adult models will not necessarily yield

the same results in work with young people. For example, Corrigan et al.'s (2012) meta-analysis noted important differences between the findings of interventions with adolescents and adults, with education yielding significantly greater effects than contact in the former age group.

Notwithstanding concerns about the application of adult models of intervention when used with school age children, many evaluations of such interventions report positive changes in knowledge about mental health disorders, attitudes, desire for social distance from people with mental health problems or some combination of these outcomes (e.g. Bulanda et al. 2014; Murman et al. 2014; Perry et al. 2014). However, systematic reviews have identified multiple failings in the design, implementation, and reporting of anti-stigma interventions for school age children (Sakellari et al. 2011; Schachter et al. 2008, Wei et al. 2013) so the positive findings must be interpreted with caution. These limitations include the lack of a control group, small sample sizes, poor reporting quality and lack of long term follow-up. Indeed, one of the most recently published systematic reviews of school-based interventions (Wei et al. 2013) concluded that not a single study in their review met the criteria for low risk of bias.

It is important to note, however, that another significant limitation in the anti-stigma intervention literature is the failure to identify either the developmental theory that underpins their beliefs about mental health stigma development or the theory of change on which the intervention is based. While it could be argued that many interventions are implicitly based on a model of change whereby knowledge, attitude and behaviour exist along a continuum (Stuart et al. 2012), we are not aware of any studies that have explicitly elaborated on the change mechanisms that they expect. Even the systematic reviews that have been published to date, do not consider the importance of the theoretical basis for understanding stigma development or intervention design. This stands in stark contrast to reviews of interventions to counter the development of other forms of prejudice development in childhood (e.g. Aboud et al. 2012; Beelmann and Heinemann 2014). We believe that there is a need for interventions that are grounded within the developmental science literature and that explicitly state their theory of change. We believe that Developmental Intergroup Theory has the potential to provide such a basis for intervention design by highlighting the potential salient societal and personal factors that may contribute to the development of stigmatizing attitudes towards peers with mental health problems.

Insights from Developmental Intergroup Theory highlight the potential for stigma to develop very early in life and the empirical literature reviewed above confirms this, pointing to the importance of developing anti-stigma interventions for children under the age of twelve. Despite this, little or no intervention work exists with primary school children. In addition, DIT has the potential to guide the focus of researchers to key questions of relevance, such as how to reduce the salience of mental health issues in group identification processes? What is the merit of teaching children about inter-group biases on mental health stigma? As a domain general theory, DIT may prompt researchers to ask questions about the potential to reduce the stigma associated with mental health problems using interventions that aim to reduce bias and increase empathy towards a range of different out groups. DIT also highlights the role of societal and community level factors in the development of stigma towards peers with mental health problems and emphasizes the importance of conceptualizing school based interventions in a wider social context.

Conclusion

Stigma is a reality for many children and teenagers living with mental health problems. In order to facilitate their development and full integration with their peers there is a need to understand the development of mental health stigma and the diverse ways in which it is expressed in childhood and adolescence.

We believe that in order to move the research on mental health stigma forward, it needs to become integrated within the social developmental literature on stigma (or prejudice as it is commonly referred to in developmental science) to allow for cross-fertilization of theoretical and methodological approaches. DIT provides one potential avenue for enhancing our understanding of the role of environmental and developmental factors in the formation of stereotypes and prejudices towards young people with mental health disorders. An integrative theoretical framework, like DIT can guide researchers on where to focus their research work and provide a foundation for formulating testable hypotheses about nature of stigma in childhood and adolescence and the mechanisms that underpin its development.

There is also much to be gained from maintaining links with research on adult mental health stigma. For example, evidence of the existence of self-stigma among adults with mental health problems should alert those working with young people to explore the possibility that such negative responses develop early in life. Similarly research with adults has pointed to the importance of distinguishing between perceived or societal stigma and personal stigma. Within the adult literature, there is also a reservoir of knowledge on the development of effective interventions that have potential to inform the design and evaluation of such interventions in childhood. Efforts to reduce stigma towards children and adolescents with diagnoses of mental health conditions has the potential to accrue long-term

benefits. However, greater collaboration between mental health stigma researchers and developmental scientists is required to enable this to happen.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

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