Psychiatry Research 219 (2014) 625–630

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Cognitive and affective empathy in children with conduct problems: Additive and interactive effects of callous–unemotional traits and autism spectrum disorders symptoms

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ARTICLE INFO

Article history:
Received 6 December 2013
Received in revised form
2 May 2014
Accepted 17 June 2014
Available online 24 June 2014

Keywords:
Empathy
Oppositional defiant disorder
Callous–unemotional
Autism spectrum disorders
Warmth

ABSTRACT

Callous–unemotional (CU) traits and autism spectrum disorders (ASD) symptoms are characterized by problems in empathy; however, these behavioral features are rarely examined together in children with conduct problems. This study investigated additive and interactive effects of CU traits and ASD symptoms in relation to cognitive and affective empathy in a non-ASD clinic-referred sample. Participants were 134 children aged 3 to 9 years (M=5.60; 79% boys) with oppositional defiant/conduct disorder, and their parents. Clinicians, teachers, and parents reported on dimensions of child behavior, and parental reports of family dysfunction and direct observations of parental warmth/responsiveness assessed quality of family relationships. Results from multiple regression analysis showed that, over and above the effects of child conduct problem severity and quality of family relationships, both ASD symptoms and CU traits were uniquely associated with deficits in cognitive empathy. Moreover, CU traits demonstrated an independent association with affective empathy, and this relationship was moderated by ASD symptoms. That is, there was a stronger negative association between CU traits and affective empathy at higher versus lower levels of ASD symptoms. These findings suggest including both CU traits and ASD-related social impairments in models delineating the atypical development of empathy in children with conduct problems.

1. Introduction

Empathy-related dysfunction has been associated with a range of psychiatric disorders in children, most notably oppositional defiant disorder (ODD) and conduct disorder (CD). This risk is particularly apparent in relation to the aggressive and vindictive behavior that often features in presentations of these disorders (de Wied et al., 2010; Hawes and Dadds (2012)). In general terms, empathy is the ability to appreciate other people's emotions. Neurocognitive models that emphasize dissociable forms or dimensions of empathy have greatly informed research into these disorders in recent years. Cognitive empathy involves accurately recognizing and comprehending another person's feelings, while affective empathy refers to emotional resonance; that is, sharing another person's feelings (Decety, 2011).

Among children with conduct problems, those who are characterized by high levels of callous–unemotional (CU) traits (e.g., lack of guilt and remorse, constricted emotions) evidence a more severe and stable trajectory of antisocial behavior that is associated with unique etiological correlates (Frick and White, 2008). Impaired empathy is a core feature of children with conduct problems and elevated CU traits, and is linked to these children's low affective arousal and poor recognition of others' emotions – particularly fear and sadness (Blair, 2005). More specifically, in preadolescent children CU traits are associated with deficits in both cognitive and affective empathy in boys (Anastassiou-Hadjicharalambous and Warden, 2008; Dadds et al., 2009), and cognitive empathy deficits in girls (Dadds et al., 2009). However, data from some studies suggests that only deficits in affective empathy persist in boys as they transition into adolescence. That is, by adolescence they seemingly catch up to their peers in their level of cognitive empathy, despite being less likely to experience other people's emotions (Dadds et al., 2009; de Wied et al., 2012).

Akin to children and youth with conduct problems/high CU traits, children with significant symptoms of autism spectrum

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http://dx.doi.org/10.1016/j.psychres.2014.06.025
0165-1781/

disorders (ASD) (e.g., poor social-emotional reciprocity, impaired nonverbal communication skills) manifest problems in empathy (Bons et al., 2013,). Although these children appear to have a healthy capacity to affectively respond to others' emotions, they show impairments in cognitive perspective taking (i.e., identifying another person's thoughts) (Baron-Cohen, 2009), theory of mind (Hill and Frith, 2003), and processing facial emotions (Harms et al., 2010). These impairments are arguably associated with poor cognitive empathy in ASD. In support of the dimensional nature and common occurrence of ASD traits in the general population (Constantino and Todd, 2003), significant—albeit subclinical—ASD-related social impairments are evident in some children with conduct problems (Gadow and Nolan, 2002; Mulligan et al., 2009).

Empirical support is growing for the view that CU traits and ASD symptoms are associated with unique empathy impairments in adolescence and adulthood (Blair, 2008). Two studies have compared the cognitive and emotional profiles of youth with conduct problems and high/low CU traits, versus those with ASD. The results are consistent in suggesting that CU traits are related to deficits in affective empathy, whereas ASD symptoms are associated with poor cognitive empathy (Jones et al., 2010; Schwenck et al., 2012). Moreover, the same pattern of empathy deficits was found in relation to psychopathic traits and ASD symptoms in a community sample of adults (Lockwood et al., 2013). Interestingly, a prior study of children with an ASD diagnosis and elevated conduct problems showed that a modest proportion of these children also had high levels of CU traits and displayed a particularly severe presentation of antisocial behavior (e.g., cruelty to animals), potentially mediated by a pervasive lack of empathy (Rogers et al., 2006). Taken together, this body of research suggests that CU traits and ASD symptoms may be associated with unique empathy deficits, and there is reason to suspect that these behavioral features might co-occur in children with conduct problems.

Although the pattern of empathic dysfunction exhibited by children with ASD appears to be somewhat distinct from that exhibited by children with conduct problems and high CU traits, these patterns have typically been investigated in isolation from one another. The extent to which specific forms of empathy are uniquely associated with ASD symptoms versus CU traits in a non-ASD sample of children, remains unclear. As such, it is possible that one may act as a proxy for the other with respect to empathy-related correlates. The potential for this is suggested by evidence that both CU traits and ASD symptoms may be evident in children with conduct problems, and that both ASD and CU traits are associated with poor social functioning (e.g., peer problems, social adjustment issues) (Barker and Salekin, 2012; Charles et al., 2012).

Alternatively, CU traits might be uniquely associated with deficient cognitive empathy via mechanisms independent of ASD-related social impairments. For instance, the "uncaring" characteristic of CU traits (e.g., unconcerned about others' feelings) is uniquely related to cognitive empathy (Munoz et al., 2010); however, uncaring is not a typical feature of ASD (e.g., Jones et al., 2010). This alternative line of reasoning would suggest that CU traits and ASD symptoms may demonstrate independent associations with cognitive empathy. Furthermore, if CU traits and ASD symptoms involve distinct neuro-cognitive underpinnings (Rogers et al., 2006; Blair, 2008), then children who exhibit high levels of both may be predicted to demonstrate greater empathic dysfunction.

Children's behavioral and socio-emotional competencies are understood to be shaped by a continual interplay between biological liabilities and the contexts in which development occurs. The socialization processes that are most proximal to child conduct problems are understood to be highly embedded in parent–child interactions, as are the socialization processes of utmost importance to the development of empathy (Hawes and Dadds, 2005a). Parental warmth and responsiveness share concurrent and longitudinal associations with measures reflecting cognitive and affective empathy in children (Zhou et al., 2002; Davidov and Grusec, 2006). Moreover, at a broader level, dysfunctional patterns of family interaction (e.g., lack of emotional expressiveness, unsupportive relationships) shape the emotional climate of the family environment, and potentially influence children's opportunities to observe, learn about, and respond empathically to other people's feelings (Barnett, 1987). This evidence emphasizes the importance of considering associations between empathy and child psychopathology in the context of socialization within the family. In the present study we examined whether CU traits and ASD symptoms make unique contributions to components of empathy over and above parents' warmth/responsiveness and family dysfunction.

This study aimed to conduct the first examination of additive and interactive effects of CU traits and ASD symptoms on cognitive and affective empathy in children with conduct problems. Based on previous studies, we hypothesized that there would be unique associations between ASD symptoms and cognitive empathy, and CU traits and affective empathy (Jones et al., 2010; Schwenck et al., 2012; Lockwood et al., 2013). However, considering the dearth of past research on this topic, we were unsure whether CU traits would associate with cognitive empathy independently of ASD symptoms. An additional aim of the study was to examine the extent to which these associations are evident over and above associations between these domains and quality of family relationships (i.e., parental warmth/responsiveness and family dysfunction). Finally, we tested for interaction effects between CU traits and ASD symptoms in relation to cognitive and affective empathy. It was predicted that a "double-hit" of higher levels of co-occurring CU traits and ASD symptoms would be associated with more severe empathy impairments (Rogers et al., 2006).

2. Methods

2.1. Participants

Participants were 134 children aged 3 to 9 years (M=5.60; 79% boys) and their families community-referred to a Child Behaviour Research Clinic in Sydney, Australia, for assessment and treatment of their conduct problems. Parents were 134 mothers and 97 fathers. Ethics approval was obtained from the University of New South Wales (UNSW), and informed consent/assent obtained from all families. Children met DSM-IV criteria (American Psychiatric Association, 1994) for ODD (97%) or CD. Comorbidity included attention-deficit hyperactivity disorder (ADHD) (28%) and mood disorders (26%). Fourteen children were receiving medication for ADHD symptoms. We did not include children with significant ASD symptoms that met DSM-IV criteria for an ASD diagnosis, or children with a major neurological/physical illness or a developmental disability. Mothers' highest education level attained ranged from 4 years of secondary school (8%) to 6 years of secondary school (7%) to technical/skills-based tertiary education (34%) to university education (51%).

2.2. Procedures and measures

2.2.1. Cognitive and affective empathy

The Griffith Empathy Measure (GEM; Dadds et al., 2008) is a parent-report instrument that includes 23 items assessing children's cognitive (e.g., "It's hard for my child to understand why someone else gets upset") and affective (e.g., "My child becomes sad when other children around him/her are sad") empathy. Prior research supports the convergent, discriminant, and predictive validity of the GEM scales across age and gender (e.g., Dadds et al., 2008; Dadds et al., 2009). Reliability was acceptable/good for both cognitive (mother Cronbach's α=0.70; father α=0.71) and affective (mother α=0.81; father α=0.81) empathy. Mothers' and fathers' scores on each scale were standardized and then averaged (when both parents' reports were available) to form combined parent-reports.

2.2.2. Conduct problem severity

Clinicians conducted semi-structured diagnostic interviews with parents using the Diagnostic Interview Schedule for Children, Adolescents, and Parents (DISCAP;