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Parent-Child Processes in Childhood Conduct Problems and Callous-Unemotional Traits: An Observational Analysis

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Submitted in partial fulfilment of the requirements of the degree of

Doctor of Philosophy / Master of Psychology (Clinical)

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ORIGINALITY STATEMENT

I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Signed …………………………………………...............

Date …………………………………………...............

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ABSTRACT

The overall purpose of this thesis was to examine parent-child processes in the families of antisocial children with high compared to low levels of callous-unemotional (CU) traits. Prior research suggests that the conduct problems of children with high levels of CU traits develop somewhat independently of the coercive processes—such as harsh and inconsistent parenting—emphasised in existing theoretical and clinical models of antisocial behaviour. A major goal of this research was to test the alternative conceptualisation that processes involved in defining the affective quality of the parent-child relationship; i.e., relational processes, hold particular value for the socialisation of conduct-problem children elevated on CU traits. To this end, three observational studies were specifically designed to investigate distinct domains of parent-child processes in relation to CU traits and conduct problems.

Study 1 examined the moderating role of CU traits on relationships between parental coercion and warmth and conduct problems. Participants were 95 families with conduct-problem boys (aged 4 to 12 years). Coercive parenting was coded from observations of family interaction and parental warmth was coded from Five-Minute Speech Samples. CU traits and conduct problems were rated by multiple informants. In both mothers and fathers, CU traits moderated links between observed parenting and conduct problems. Specifically, coercive parenting was more strongly positively associated with conduct problems in boys with lower levels of CU traits, whereas parental warmth was more strongly negatively associated with conduct problems in boys with higher levels of CU traits.

Study 2 investigated the relationship between CU traits and emotion-focused family dynamics in a sample of 59 conduct-problem boys (aged 3 to 9 years) and their parents. Expression of emotion, focus on emotion, and parents' responding to child affect were coded from direct observation of family interactions involving the discussion of emotional

experiences. Unexpectedly, boys higher on CU traits tended to be more expressive of negative emotions in conversation with their caregivers – specifically for sadness and fear. As predicted, mothers of higher CU boys were more dismissing of child emotion. This study also examined whether CU traits moderated the relationship between parents' focus on emotions and conduct problem severity. Higher levels of maternal focus on negative emotions were found to be associated with lower conduct problems in high CU boys; but related to higher conduct problems in low CU boys. The emotion communication dynamics of fathers were unrelated to either child CU traits or conduct problems.

Study 3 examined associations between representations of parent-child attachment relationships and levels of CU traits in antisocial children. Attachment classifications in 55 conduct-problem boys (aged 3 to 9 years) were assessed using the Manchester Child Attachment Story Task. Various child and family variables were examined as potential confounds. Results indicated that boys with higher levels of CU traits had a significantly increased likelihood of insecure attachment; specifically, they were more likely to have disorganised attachment representations; however, CU traits were not associated with avoidant representations.

Taken together, the findings demonstrate that antisocial children high on CU traits experience disrupted emotional relationships with their caregivers; and that the conduct problems in children with these traits are strongly linked to relational processes, marked by warm and emotionally expressive parenting. In contrast, coercive parenting showed a stronger relationship with conduct problems in children without elevated CU traits. As such, distinct parent-child processes may characterise the developmental trajectories of antisocial behaviour in children with high compared to low CU traits. The implications of these findings for the development of tailored interventions for antisocial subtypes are discussed.

NOTES ON THE STUDIES REPORTED IN THIS THESIS

Findings from the pilot study have been published:

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Study 1 has been published:

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Study 2 has been submitted for publication:

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Study 3 has been submitted for publication:

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INTRODUCTION

Childhood Conduct Problems: An Overview

Conduct problems in children—e.g., temper tantrums, oppositional behaviour, and aggression—are one of the most common sources of child referrals to mental health services (Frick & Silverthorn, 2001; Hoare, Norton, Chisolm, & Parry-Jones, 1996). Children with a chronic trajectory of antisocial behaviour are at high risk for a wide range of adverse mental health consequences in adulthood (Ferguson, Horwood, & Ridder, 2005; Kim-Cohen et al., 2003; Odgers et al., 2007; Odgers et al., 2008). Moreover, individuals with a persistent pattern of antisocial behaviour from childhood through to adulthood cause considerable social and financial costs to society; in terms of the suffering caused to innocent victims of crimes, and the heavy financial toll from the higher usage of public services by antisocial individuals (Scott, Knapp, Henderson, & Maughan, 2001). Even before children begin school, clinical levels of childhood conduct problems are financially costly and disruptive to families (Raaijmakers, Posthumus, van Hout, van Engeland, & Matthys, 2011). Thus, there is a real need to identify early risk factors that have the potential to become the focus for treatment and prevention efforts for childhood antisocial behaviour.

The DSM-IV (APA, 1994) specifies two different classifications for childhood conduct problems: Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). ODD is diagnosed on the basis of a persistent pattern of defiance and hostility against authority figures (e.g., parents and teachers). Common ODD symptoms include frequent loss of temper, arguing with adults, and intentionally doing things to annoy other people. CD is diagnosed on the basis of a basic violation of other people's rights or the norms followed by a society. Common CD symptoms include destruction of property, starting fights with other children, and truancy. The point prevalence rate of ODD/CD in childhood is approximately 5% (Dadds & McGregor, submitted); with a range of 2 – 16% across different studies (e.g.,

Loeber, Burke, Lahey, Winters, & Zera, 2000; Maughan, Rowe, Messer, Goodman, & Meltzer, 2004). Higher prevalence rates for ODD/CD are generally found in boys and in children living in families with a lower socioeconomic status (SES) (Lahey, Miller, Gordon, & Riley, 1999; Loeber et al., 2000; Maughan et al., 2004; Offord, Alder, & Boyle, 1986). There is considerable evidence to suggest that ODD often precedes the development of CD in children (e.g., Burke, Loeber, & Birmaher, 2002; Burke, Waldman, & Lahey, 2010; Rowe, Maughan, Pickles, Costello, & Angold, 2003); thus many researchers consider ODD and CD to be age-related manifestations of a common syndrome (Lahey, Loeber, Quay, Frick, & Grimm, 1992), with CD representing a more severe developmental progression of conduct problem behaviour (Loeber, Burke, & Pardini, 2009); although, it is important to note that many children with ODD do not go on to develop CD in later years (Loeber et al., 2000).

A shortcoming of the current DSM-IV nosology for conduct problems is that it does not adequately capture the heterogeneity in childhood antisocial behaviour. Even within ODD and CD diagnostic groups, antisocial children appear to vary considerably in their manifestation of conduct problems and associated outcomes over time (Hinshaw, Lahey, & Hart, 1993; Odgers et al., 2007). Furthermore, children with ODD/CD demonstrate a variety of patterns of comorbidity with various behavioural and emotional disorders (McMahon & Frick, 2005); including Attention-Deficit-Hyperactivity Disorder (ADHD) (Waschbusch, 2002) and mood disorders, such as anxiety and depression (Angold, Costello, & Erkanli, 1999; Greene et al., 2002; Wolff & Ollendick, 2006). Findings from a recent study using a large community sample of British children (aged 5 – 16 years), suggests that ODD symptoms might be best captured by three underlying dimensions: "irritable" (e.g., temper tantrums and a low threshold for being annoyed), "headstrong" (e.g., argumentativeness and defiance towards adults), and "hurtful" (e.g., spiteful and vindictive behaviour) (Stringaris & Goodman, 2009a). A three-year follow-up of children in this study further revealed that these

three putative dimensions of ODD were uniquely associated with future behavioural and emotional disorders. The irritable dimension predicted anxiety and depression, headstrong dimension predicted ADHD, and both the headstrong and hurtful dimensions predicted CD; although once baseline psychopathology was controlled, only headstrong remained a unique predictor (Stringaris & Goodman, 2009b). Apart from illustrating the symptomatic and prognostic heterogeneity within childhood oppositionality, these findings implicate the need for researchers to examine subtypes of antisocial children that may have divergent etiologies and pathways of antisocial behaviour (Loeber et al., 2009; McMahon, Wells, & Kotler, 2006).

Approaches to Subtyping Antisocial Children

Age-of-Onset

In DSM-IV, youth with CD are differentiated based on the developmental timing of their conduct problems. That is, CD that has a childhood-onset (i.e., conduct problems prior to age 10 years) versus adolescent-onset (i.e., no evidence of conduct problems prior to age 10 years). The age-of-onset approach to subtyping antisocial youth is advocated in prominent developmental theories of childhood conduct problems (Moffitt, 1993, 2003; Patterson, DeBaryshe, & Ramsey, 1989). The core of Moffitt's (1993) developmental taxonomy of antisocial behaviour is the thesis that children with early-onset conduct problems are more likely to have antisocial behaviour that persists into adulthood, and are fewer, than youth with adolescent-onset conduct problems. Early-onset "life-course persistent" antisocial individuals have been shown to experience more negative outcomes in adulthood across a range of personal and social factors (Odgers et al., 2007; Odgers et al., 2008). Moffitt also suggests that there are unique etiologies associated with early- versus late-onset conduct problems. Life-course persistent conduct problems are considered to develop out of interactions

between neuropsychological and environmental risk factors. In support of this claim, longitudinal research has linked life-course persistent conduct problems to child-specific risk factors (e.g., inattention-hyperactivity, low IQ, and difficult temperament), negative parenting, parental antisocial behaviour, and other adverse family and social circumstances (e.g., low SES and poverty) (Bartusch, Lynam, Moffitt, & Silva, 1997; Jeglum-Bartusch, Lynam, Moffitt, & Silva, 1997; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Moffitt et al., 2001). In contrast, "adolescence-limited" conduct problems are considered to be largely the result of social mimicry; wherein youth imitate risky and disruptive behaviour exhibited by their life-course persistent peers, because they crave a more mature social status that attracts power and privileges (Moffitt, 1993; Moffitt & Caspi, 2001). Consistent with this theoretical assertion, there is a relationship between adolescence-limited conduct problems and affiliation with deviant peers (Jeglum-Bartusch et al., 1997).

While there is considerable support for the utility of the age-of-onset taxonomy for delineating more homogenous groups of antisocial youth, this approach is tempered by some limitations. First, research suggests that there may also be a "childhood-limited" trajectory of conduct problems. That is, children who develop conduct problems prior to puberty, but then desist from their antisocial behaviour in early adolescence (Odgers et al., 2008; Raine et al., 2005). Individuals with the childhood-limited subtype of antisocial behaviour were originally conceptualised and labelled as "recoveries" (Moffitt et al., 1996). Longitudinal findings on the adult prognosis of the putative childhood-limited subtype are equivocal (Moffitt et al., 2008), with some studies reporting that even though these conduct-problem children do not necessarily manifest antisocial outcomes in adulthood, they tend to display other markers of maladjustment (e.g., depression, social isolation, and financial difficulties) (Farrington, Gallagher, Morley, St. Ledger, & West, 1988; Moffitt, Caspi, Harrington, & Milne, 2002; Wiesner & Capaldi, 2003). In this light, there appears to be some confusion about how to best

conceptualise the trajectories of children with early-onset conduct problems, and research is not yet clear on how to reliably assess young antisocial children for the life-course persistent versus childhood-limited subtypes in clinical settings (Moffitt et al., 2008). In addition, there is also the criticism that the age-of-onset subtyping approach may mask significant individual differences in children's characteristics that are associated with the most severe and chronic trajectories of antisocial behaviour (Lynam, 1997). In other words, Moffitt's developmental taxonomy fails to capture differences in features of temperament/personality among the children that develop early-onset conduct problems, which might be important in accounting for heterogeneity in antisocial behaviour at this and later developmental stages.

Forms and Functions of Antisocial Behaviour

There are alternative approaches to characterising the heterogeneity within childhood conduct problems based on conceptual distinctions between the forms (i.e., manifestation) and functions (i.e., underlying motivations) of antisocial behaviour (Little, Jones, Henrich, & Hawley, 2003), particularly aggression and oppositionality. Findings from meta-analyses that have examined the diversity in patterns of childhood conduct problems support a primary distinction between "overt" or aggressive behaviour (e.g., fighting and cruelty to animals), and "covert" or non-aggressive/rule-breaking behaviour (e.g., lying and truancy) (Burt, 2009; Frick et al., 1993; Loeber & Schmaling, 1985). In children and adolescents, there appear to be stronger genetic influences for physically aggressive versus non-aggressive/rule-breaking antisocial behaviour; whereas environmental influences appear to be stronger for rule-breaking versus physically aggressive antisocial behaviour (Burt, 2009; Edelbrock, Rende, Plomin, & Thompson, 1995). Moreover, higher levels of physical aggression are observed in children with early-onset conduct problems, whereas non-aggressive/rule-breaking behaviour appears to be characteristic of both groups of children with early-onset and adolescent-onset conduct problems (Burt, Donnellan, Iacono, & McGue, 2011; Lahey et al., 1998). There is

also some suggestion that subtyping conduct-problem children according to the pattern of their antisocial behaviour may have more predictive value over the previously described age-of-onset approach. Burt et al. (2011) examined the prediction of adult antisocial personality features from age-of-onset (i.e., life-course persistent versus adolescence-limited) and physically aggressive and rule-breaking forms of antisocial behaviour. Both physical aggression and rule-breaking predicted adult antisocial outcomes over and above age-of-onset, which did not retain its significance when the former factors were entered into regression equations (Burt et al., 2011).

Taken together, these findings suggest that a distinction can be made between antisocial children based on their form, or manifestation, of conduct problems. Higher levels of physically aggressive versus rule-breaking forms of conduct problems appear to characterise a more severe subgroup of antisocial individuals with a potentially distinct etiology (Burt, 2009). The distinction between antisocial children based on physical aggression versus rule-breaking behaviour, however, only takes into account children's expression of antisocial behaviour, and does not factor in the underlying mechanisms.

Antisocial children also differ according to the underlying reasons, or motivations, for their aggressive behaviour. Findings from a recent meta-analysis sampling 51 studies and 17,965 children and adolescents support a distinction between reactive and proactive functions of aggressive acts (Polman, Orobio de Castro, Koops, van Boxtel, & Merk, 2007). Reactive aggression has been defined as hostile responding to perceived threats or provocations, and is associated with anger and frustration (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). Proactive aggression, on the other hand, can be considered as "cold-blooded"—i.e., lacking in affect—and premeditated violent behaviour that is largely goal-oriented and reward-focused (Dodge et al., 1997). Divergent patterns of social-cognitive processing appear to be implicated in these different types of aggressive behaviour (Dodge &

Coie, 1987). Reactive aggression has been shown to be associated with errors in encoding and interpreting social cues; specifically a pattern of attributing hostile intent to other people's actions in ambiguous social situations (Crick & Dodge, 1996). In contrast, proactive aggression has been linked to positive evaluations regarding the instrumental use and outcome expectancies of aggressive behaviour (Crick & Dodge, 1996).

There may also be unique risk factors associated with the different functions of aggression. Early experiences of physical abuse show stronger associations with elevated levels of reactive aggression; whereas abuse is not related to levels of proactive aggression (Ford, Fraleigh, & Connor, 2010; Dodge et al., 1997). Moreover, proactive rather than reactive aggression, assessed during adolescence, is predictive of later ODD/CD symptoms and delinquent behaviours (e.g., theft, vandalism, and drug use) at mid-adolescence (Vitaro, Gendreau, Tremblay, & Oligny, 1998); and antisocial outcomes (e.g., violence and antisocial personality) at early adulthood (Fite, Raine, Stouthhamer-Loeber, Loeber, & Pardini, 2010). Other studies have found evidence for distinct pathways from proactive and reactive aggression to later problem behaviours (Fite, Colder, Lochman, & Wells, 2008a; Fite, Colder, Lochman, & Wells, 2008b).

In summary, there is emerging support for subtyping antisocial children according to their motivation for aggressive behaviour. This approach to delineating more homogenous groups of conduct-problem children also has clear implications for clinical practice; such as the use of cognitive behavioural therapy (CBT) for treating social-cognitive deficits in children with reactive aggression, and the monitoring and subsequent removal of reinforcers for instrumental antisocial behaviour in children with proactive aggression (Dodge et al., 1997). Considering that proactive and reactive aggression are highly correlated (average r = .68 across studies; Card & Little, 2006), such that children rated high on proactive aggression are generally also rated high on reactive aggression (Kempes, Matthys, de Vries, & van

Engeland, 2005); it could be argued that proactive aggression is a proxy for higher conduct problem severity more broadly, rather than a "pure" subtype of aggression with a distinct etiology. This criticism can also be applied to the abovementioned approach to antisocial subtyping based on forms of conduct problems; children with elevated levels of physical aggression tend also to be elevated on rule-breaking behaviour (Burt et al., 2011). Thus, it is important to consider alternative, and perhaps complementary, approaches to subtyping conduct-problem children that more effectively characterise the unique nature; that is, temperament and/or personality, of the most severe and persistent antisocial individuals. One such approach that has attracted considerable empirical support is subtyping conduct-problem children according to the presence or absence of callous-unemotional (CU) traits.

Subtyping Antisocial Children According to Levels of CU Traits

Assessment and Stability of CU Traits

Among adult criminal offenders, individuals with the most severe antisocial behaviour are characterised by a "psychopathic personality" (Harpur & Hare, 1994; Porter, Birt, & Boer, 2001). Cleckley's (1941/1976) seminal clinical observations of the psychopath (e.g., as superficially charming, yet lacking in affective experience) provided impetus for subsequent empirical investigations into the nature of such individuals. The assessment of the construct of psychopathy has undergone major revisions over the past few decades, which has coincided with its emerging utility across research, clinical, and forensic settings (Hare, 1996). Notably, more recent accounts of psychopathy emphasise co-occurring emotional and antisocial features of the personality disorder (Hare & Neumann, 2008). There is strong empirical support for a two-factor model of adult psychopathy comprising of affective/interpersonal features (e.g., lack of remorse or guilt, glibness, and grandiosity) and antisocial behaviour/deviant lifestyle (e.g., early behaviour problems, impulsivity, and

parasitic orientation) (Hare et al., 1990; Hare & Neumann, 2008). This model has been translated into the 20-item Hare Psychopathy Checklist—Revised (PCL-R; Hare, 1991, 2003); a widely used assessment tool for psychopathy in clinical and community research studies. The DSM-IV specifies features of psychopathy in its conceptualisation of Antisocial Personality Disorder (APD). However, the APD diagnostic scheme has been criticised for its lack of specificity in identifying more homogenous groups of antisocial individuals (Lykken, 2006).

The construct of adult psychopathic traits has been downwardly extended to children to demarcate subgroups of antisocial youth with distinct etiologies and pathways of conduct problems (Frick, O'Brien, Wootton, & McBurnett, 1994; Frick & Viding, 2009). The affective/interpersonal dimension of the construct of psychopathy, encompassing callous-unemotional (CU) traits (Frick & Hare, 2001), has been receiving burgeoning attention from researchers investigating heterogeneity within childhood conduct problems. As a testament to the now well-established literature base on childhood CU traits, Frick & Moffitt (2010) recently submitted a proposal to the DSM-V Disruptive Behaviour Disorder Work Group to include a CU-specifier to the diagnosis of CD. They are proposing that childhood CD be further sub-classified into CD with/without the presence of high levels of CU traits. In this proposal, CU traits are characterised by the following: lack of remorse or guilt, callous lack of empathy, unconcerned about performance, and shallow or deficient affect. To receive a diagnosis of "CD with significant CU traits", it is suggested that two or more of the abovementioned characteristics of CU traits be present in CD youth over a period of at least 12 months, and that they be evident across relationships and settings (e.g., home and school) (Frick & Moffitt, 2010).

It is important to note that Frick and Moffitt (2010) are not proposing that CU traits also be considered as a specifier to the diagnosis of ODD. As mentioned earlier, ODD and

CD symptoms may lie on a continuum of severity, with a developmental progression from ODD to CD symptoms with increasing age. Considering that some children with ODD do not go on to develop CD, CU traits may be a catalyst in the developmental continuity between ODD and CD. As discussed in more detail shortly, clinically-meaningful levels of CU traits can be manifest in young antisocial children with ODD or CD diagnoses (Christian, Frick, Hill, Tyler, & Frazer, 1997). Therefore it is debatable and seemingly controversial, whether CU traits should also be used to specify subtypes of children with ODD in the DSM-V nosology. In clinical settings, there is the potential issue of the stigma and negative connotations associated with labelling a young child with ODD as "high on CU traits"; considering that the conceptualisation of CU traits is based on a model of psychopathy (Kotler & McMahon, 2005; Seagrave & Grisso, 2002). Notwithstanding this, there is now considerable evidence in the extant literature to support the claim that children and adolescents with conduct problems can be reliably and meaningfully differentiated based on the presence or absence of CU traits (Frick & White, 2008). The following section provides an overview of the research suggesting that CU traits in children and adolescents are relatively stable over time and characterise a unique and important subgroup of antisocial children with distinct developmental outcomes and correlates.

Several independent research groups have examined the stability of CU traits across development in community samples of children and adolescents. Using a sample of 98 American children (aged 7 – 13 years), Frick, Kimonis, Dandreaux, and Farrell (2003c) found that, after controlling for baseline levels of conduct problems, parent-reported CU traits were relatively stable over a 4-year period (average Intraclass Correlation Coefficient; ICC = .71). In a sample of 780 Australian children (aged 4 – 9 years), Dadds, Fraser, Frost, and Hawes (2005) reported a moderate stability estimate of $r = .55$ for parent-rated CU traits over a 12-month period. Using a sample of 159 Dutch children (aged 9 – 12 years), van

Baardewijk, Vermeiren, Stegge, and Doreleijers (2011) found that self-reported CU traits were moderately stable over an 18-month period (ICC = .63). In a sample of 80 American children (aged 7 – 12 years) with moderate aggression, Barry, Barry, Deming, and Lochman (2008) reported good stability for parent (ICC = .83) and teacher (ICC = .75) rated CU traits over a 3-year period. Taken together, the results from these independent studies suggest that levels of CU traits, as measured by different informants, remain reasonably stable throughout childhood and adolescence. This is important to demonstrate, because a core assumption of the concept of a personality trait is its continuity across an individual's life (Matthews, Deary, & Whiteman, 2009).

Developmental Outcomes Associated with CU Traits

Considering that CU traits are relatively stable over time, it is not surprising that research also suggests that there are unique developmental outcomes associated with CU traits across childhood and adolescence. Most notably, antisocial children with high versus low levels of CU traits are at risk for more severe and persistent conduct problems throughout development. For instance, Frick, Cornell, Barry, Bodin, and Dane (2003a) found that children elevated on both conduct problems and CU traits, had higher levels of aggression and delinquency 1-year later, compared to children rated high on conduct problems only. In a further investigation of this sample, Frick, Stickle, Dandreaux, Farrell, and Kimonis (2005) reported that the children with coexisting conduct problems and CU traits had the highest levels of antisocial behaviour and police contacts across a 4-year period. Similar findings were reported by Rowe et al. (2010) in a large community study; children with CD and high CU traits exhibited more severe behaviour problems, and were more likely to retain their CD diagnosis, at a 3-year follow-up.

A recent study by McMahon, Witiewitz, and Kotler (2010) is important in demonstrating the *unique* predictive value of CU traits in relation to antisocial outcomes.

These authors found that CU traits assessed in a community sample of children in Grade 7, predicted antisocial outcomes (e.g., delinquency, arrests, and APD symptoms) at adolescence and early-adulthood, over and above the effects of other established risk factors; including, age-of-onset of CD, conduct problem severity, and ADHD symptoms. In addition to predicting a more severe and stable trajectory of conduct problems, high levels of CU traits appear to be associated with an early-onset pattern of antisocial behaviour (Barker, Oliver, Viding, Salekin, & Maughan, 2011; Dandreaux & Frick, 2009; Rowe et al., 2010; Silverthorn, Frick, & Reynolds, 2001).

Research has also investigated whether CU traits are predictive of emotional problems in youth. Findings from the British Child and Adolescent Mental Health Survey 2004; a large community study sampling 5 – 16 year-old children and adolescents, showed that CU traits were uniquely (albeit modestly) predictive of higher rates of emotional symptoms (e.g., unhappy, "clingy", and somatic complaints) 1 to 3 years later, over and above the effects of conduct problem severity, baseline levels of functioning, and various demographic variables (Moran, Ford, Butler, & Goodman, 2008; Moran et al., 2009). Moreover, in a study using the same sample of children, Rowe et al. (2010) reported that youth with high levels of CU traits, but without a CD diagnosis, exhibited higher rates of anxiety disorders at 3 year follow-up in comparison to typically developing youth (i.e., without CD and CU traits). However, within youth with a diagnosis of CD, there were no significant differences between high and low CU traits groups in follow-up rates of depression and anxiety (Rowe et al., 2010). Furthermore, in a longitudinal study with a sample of 1,517 children (*M* age = 10.7 years), CU traits predicted *decreasing* levels of internalising problems across a 2-year follow-up, after controlling for conduct problems (Pardini & Fite, 2010). This is in line with findings from a previous study of clinic-referred children (aged 6 – 13 years), wherein CU traits were negatively related to anxiety once conduct problem severity was taken into account (Frick, Lilienfeld, Ellis,

Loney, & Silverthorn, 1999). Lastly, a cross-sectional study of 704 youth (aged 11 – 13 years) did not find a significant relationship between CU traits and emotional problems (Viding, Simmonds, Petrides, & Frederickson, 2009).

Taken together, these studies report mixed findings regarding the relationship between CU traits and levels of emotional problems. It appears necessary, however, to take into consideration the severity of children's conduct problems when examining this association. This may be because of the elevated rates of conduct problems in youth high on CU traits, and the negative consequences that logically follow; such as more frequent encounters with authority figures (e.g., school principals and the police) and anticipation of punishments (Frick et al., 2003a). This type of stressful lifestyle would presumably contribute to emotional problems (e.g., anxiety symptoms) on some minimum level in any child throughout development. However, relative to their low CU peers, antisocial children with high CU traits are less distressed by the effects of their behaviour (Frick et al., 1999; Pardini, Lochman, & Frick, 2003). These findings should also be considered in the context of the differing temperaments of conduct-problem children with high compared to low CU traits.

Distinct Characteristics of Antisocial Children with High and Low CU Traits

Table 1 provides an overview of the putative differences between conduct-problem children high and low on CU traits across various domains of individual and interpersonal functioning. In terms of their style of temperament, antisocial children with high versus low CU traits appear to be lower on emotionality (Frick and Morris, 2004). Research shows that conduct-problem children high on CU traits have lower levels of fear (e.g., blunted arousal to aversive stimuli) (Barker et al., 2011; Pardini, 2006) and score higher on measures of thrill-seeking (Frick et al., 1999), compared to their low CU peers. Moreover, high CU youth subjectively report lower levels of personal distress in response to stressful and fear-eliciting situations (Marsh et al., 2011; Pardini et al., 2003), which may play a protective role against

Table 1.

Putative Differences between Conduct-Problem Children High and Low on CU Traits across Different Domains of Functioning

CU traits level	Domain of functioning			
	Temperament	**Aggression**	**Emotion**	**Cognition**
Low	• High emotional arousal/fear	• Reactive	• Dysregulated affect	• Hostile attribution biases • Social problem solving deficits
High	• Low emotional arousal/fear • High thrill-seeking	• Reactive and proactive	• Blunted responsiveness to negative affect • Impaired recognition of others' distress • Weak affective empathy	• Insensitivity to punishment stimuli • Positive outcome expectancies of aggression • Difficulties understanding others' feelings[a]

Note. [a] In pre-adolescent children only.

the development of anxiety disorders. In contrast, conduct-problem children with low CU

traits appear to have higher levels of emotional reactivity and difficulties regulating negative

affect (Frick & Morris, 2004).

Further support for the distinction in emotionality between high and low CU subtypes,

comes from findings in a study investigating infant temperament and early childhood CU

traits. Willoughby, Waschbusch, Moore, and Propper (2011) found that 3 year-old children

elevated on both ODD symptoms and CU traits, were less likely to become upset during a

distress task ("still-face situation") and were less responsive to parents' attempts to soothe

them when upset, during infancy. On the contrary, preschoolers with ODD symptoms and

low CU traits had the most trouble as infants regulating negative affect after becoming upset.

However, as the authors point out, the finding that children elevated on both ODD symptoms

and CU traits had the highest levels of physiological arousal throughout the distress task, is

not consistent with a temperament characterised by low fear (Willoughby et al., 2011).

Interestingly, another study found that higher levels of autonomic arousal and orienting at age

3 were associated with higher psychopathy scores in adulthood (Glenn, Raine, Venables, &

Mednick, 2007). Although, lower levels of fear and responsiveness to aversive stimuli were

also found to relate to later psychopathy (Glenn et al., 2007). It is unclear, however, to what

extent high arousal/orienting is capturing increased attentional processing in high CU

children and whether this arousal is qualitatively distinct from fear. Notwithstanding this,

findings in the existing literature are consistent in showing that low fear is a feature of the

temperaments of children with high versus low CU traits.

The distinct temperaments characteristic of conduct-problem children high and low on

CU traits dovetails with their divergent patterns of aggression. Across samples of children

and adolescents, elevated CU traits have been found to be associated with both proactive and

reactive functions of aggression, whereas children with "pure" reactive aggression tend to be

characterised by lower levels of CU traits (Fanti, Frick, & Georgiou, 2009; Fite, Stoppelbein, & Greening, 2009; Frick et al., 2003a; Kimonis, Frick, Fazekas, & Loney, 2006). The higher levels of emotional reactivity and deficits in regulating negative affect characteristic of antisocial children without elevated CU traits, may be underpinning a "hot-headed" and largely retaliatory style of aggression (Frick & Morris, 2004; Shields & Cicchetti, 1998). In contrast, lower levels of fearful arousal associated with high CU traits, would appear to be necessary—although not sufficient—for engagement in more predatory acts of aggression (e.g., sexual offences). Furthermore, elevated levels of CU traits are associated with more direct bullying (e.g., physical and unprovoked aggression) of peers at school (Munoz, Qualter, & Padgett, 2010; Viding et al., 2009b).

Consistent with the low emotionality and "cold-blooded" style of aggressive behaviour distinguishing antisocial children with high versus low CU traits; elevated levels of CU traits are associated with impairments in processing and responding to emotional stimuli. Research suggests that children high on CU traits show reduced physiological and behavioural responsiveness to negative emotional stimuli (Kimonis et al., 2006; Loney, Frick, Clements, Ellis, & Kerlin, 2003), lower levels of affective empathy (i.e., sharing in another's feelings) (Anastassiou-Hadjicharalambous & Warden, 2008; Dadds et al., 2009), and poorer recognition of other people's distress (i.e., fear and sadness) (Blair, 1999; Blair, Budhani, Colledge, & Scott, 2005; Blair & Coles, 2000; Dadds et al., 2006; Munoz, 2009). Moreover, in contrast to their antisocial peers, conduct-problem children high on CU traits pay less attention to salient emotional stimuli—i.e., other people's eyes—which is suggested to underpin their impairments in emotion recognition. For instance, in a community sample of 100 boys (aged 8 – 15 years), youth with high CU traits were less accurate in identifying fear on emotional faces presented via a computer task, however, when these youth were instructed to look at the eye region of faces, their fear recognition deficits largely disappeared (Dadds,

El Masry, Wimalaweera, & Guastella, 2008). In subsequent clinical studies, Dadds and colleagues have demonstrated ecological validity of eye contact deficits associated with elevated CU traits. In two studies with independent samples of clinic-referred conduct-problem participants, children high on CU traits were found to exhibit lower levels of eye contact towards their parents during naturally occurring interactions (Dadds et al., in press; Dadds, Jambrak, Pasalich, Hawes, & Brennan, 2011).

Antisocial children with and without elevated CU traits can be further demarcated according to their distinct patterns of social-cognitive processing. Conduct-problem youth high on CU traits tend to focus more on the positive outcomes of aggression (e.g., dominance, revenge, and rewards) and less on the negative consequences (e.g., punishment and the suffering caused to victims) (Pardini et al., 2003; Pardini, 2011). Similarly, experimental studies have shown that high CU children exhibit less sensitivity to cues of punishment, particularly when a reward-oriented response is primed (Fisher & Blair, 1998; Frick et al., 2003b). Moreover, in contrast to their low CU peers, conduct problems in high CU children are not related to hostile attribution biases or deficits in social problem solving (Frick et al., 2003b; Waschbusch, Walsh, Andrade, King, & Carrey, 2007). Finally, elevated CU traits have been linked to lower levels of cognitive empathy (i.e., understanding another's feelings) in children (Anastassiou-Hadjicharalambous & Warden, 2008; Dadds et al., 2009); although not in adolescents (Dadds et al., 2009; Jones, Happe, Gilbert, Burnett, & Viding, 2010).

Lastly, research has highlighted environmental versus genetic contributions to the development of antisocial behaviour in children with high compared to low CU traits. In a large community sample of 3,687 twins aged 7, Viding, Blair, Moffitt, and Plomin (2005) found that CU traits, and conduct problems in children high on CU traits, were both under strong genetic influences, with minimal influences from shared environment. In contrast,

conduct problems in children low on CU traits were found to be under substantial environmental and moderate genetic influences. A similar pattern of findings emerged when the children were assessed at age 9 (Viding, Jones, Frick, Moffitt, & Plomin, 2008). In a further investigation using the same sample of twins, Fontaine, Rijsdijk, McCrory, and Viding (2010) found gender differences in genetic and environmental influences on trajectories of CU traits from childhood to early adolescence. For boys, the most chronic and severe trajectory of CU traits across development, "stable-high", was found to be under strong genetic influences; for girls, a stable-high trajectory of CU traits was found to be under strong environmental influences.

Another line of research has investigated the neural functioning of conduct-problem children with elevated CU traits. Two independent studies reported that, in comparison to typically developing children, youth high on both CU traits and conduct problems demonstrate amygdala hyporeactivity to emotional stimuli (Jones, Laurens, Herba, Barker, & Viding, 2009; Marsh et al., 2008). On a cognitive-behavioural level, amygdala hyporeactivity can manifest as low fear, diminished emotional responsiveness, and impairments in eye gaze and fear recognition (Blair, 2005); which as discussed above, are unique correlates of antisocial children with high CU traits. Unfortunately neither of these studies included a control group consisting of children with high levels of conduct problems and low CU traits; thus, their findings cannot rule out potential effects of elevated conduct problems on amygdala dysfunction. Moreover, a recent neuroimaging study did not find a relationship between CU traits and amygdala gray matter volume in a sample of adolescents with CD (Fairchild et al., 2011). Thus, abnormal amygdala structure and function is yet to be clearly demonstrated in youth high versus low on CU traits, despite been given prominence in etiological theories of psychopathy (e.g., Blair, 2003).

Summary

In summary, there is a general consensus among researchers that children with conduct problems are a heterogeneous group. Several past attempts to characterise more homogenous types of antisocial children have focused on age-of-onset of conduct problems and the forms and functions of aggression and antisocial behaviour. CU traits are relatively stable across development and can provide a useful taxonomy for characterising distinct subtypes of antisocial children, which is consistent with, but also extends on, previous subtyping approaches. For instance, *within* children with early-onset conduct problems, high versus low CU traits are associated with a more severe and persistent pattern of antisocial behaviour, and higher engagement in both reactive and proactive aggression. Moreover, there is evidence to suggest that antisocial children with high compared to low CU traits have unique impairments across emotional, social-cognitive, and behavioural domains of functioning. As such, it appears that divergent causal mechanisms may be implicated in the development of conduct problems within each group.

Emerging research suggests that, in comparison to their low CU peers, conduct problems in children elevated on CU traits are under stronger genetic influences and are less susceptible to the effects of psychosocial factors, such as parenting, that have been traditionally associated with antisocial behaviour in children. The evidence for the role—or lack thereof—of parent-child processes in the development of CU traits, and conduct problems in children high on CU traits, will be reviewed shortly. The following section of this literature review, however, focuses on past research that has examined the interactive contribution of child temperament, relating to emotionality, and parent-child processes to developmental outcomes. This body of research will provide a conceptual framework for understanding distinct dimensions of parent-child processes that may be implicated in emerging antisocial behaviour in children with high compared to low CU traits.

Temperament and Parent-Child Processes in Developmental Pathways to Child Outcomes

Coercive Processes

Ineffective parenting practices, such as harsh and inconsistent discipline, are robust predictors of conduct problems in children (e.g., Lansford et al., 2011; Rothbaum & Weisz, 1994; Snyder, Cramer, Afrank, & Patterson, 2005). Patterson's (1982) "coercion model" provides a seminal account of parent-child processes linking these ineffective parenting practices to emerging antisocial behaviour. To build and test his model, Patterson (1982) conducted direct observations of family dynamics and examined patterns of social interaction according to operant conditioning principles. Relative to families with typically developing children, families with conduct-problem children were observed to more frequently engage in coercive cycles; wherein parents and children escalate aversive behaviour—e.g., yelling, screaming, and hitting—until one or the other capitulates (typically the parent). In this context, the child's persistent defiance is negatively reinforced by the termination of the parent's scolding; which in turn is reinforced by the termination of the child's aversive behaviour. Patterson argued that parents are essentially training their children to behave aggressively and become oppositional through these coercive exchanges. Moreover, as the frequency of coercive cycles increases, parents become progressively more inconsistent and harsh in their discipline. This model of coercive processes in families of antisocial children was pivotal in the design of parent training interventions for conduct problems that target goal-directed parenting practices such as positive reinforcement and effective discipline (e.g., McMahon & Forehand, 2003; Sanders & Dadds, 1993; Webster-Stratton & Hancock, 1998).

Coercion theory has a strong focus on parents' management of children's behaviour, although it is largely silent on variations in type of conduct problems and child temperament (Shaw, Bell, & Gilliom, 2000). In an extension of Patterson's (1982) theory, Scaramella and Levine (2004) postulated an "early childhood coercion model" which delineates both

behavioural and affective components of parent-child dynamics implicated in the emergence of coercive cycles and child conduct problems. Their model suggests that, at toddler age, children with a propensity for higher levels of emotional reactivity are more likely to provoke and be affected by parenting that is harsh and volatile. In turn, reciprocal interactions between a reactive temperament and harsh parenting amplify children's difficulties in regulating negative affect by preschool age. Once again, poor affect regulation is considered to mutually interact with harsh parenting throughout early childhood; by this stage children and parents are constantly embroiled in coercive interactions. Overall, Scaramella and Levine (2004) argue that high levels of emotional reactivity in children should be considered a risk factor for chronic trajectories of coercive parent-child dynamics and conduct problems across childhood.

There is considerable empirical support for the model proposed by Scaramella and Levine (2004). Specifically, findings from several studies converge in suggesting that harsh and ineffective parenting may be a stronger risk factor for the development of conduct problems in children high rather than low on emotionality. First, observed maternal ineffective discipline (e.g., physically intrusive and permissive responding) related more strongly to behaviour problems in toddlers rated as having a "difficult temperament"; that is, frequent and intense expression of negative affect (van Zeijl et al., 2007). Second, in comparison to their peers, school-aged boys with high levels of emotionality (e.g., high on fear and negative arousal) had behaviour problems that were more strongly associated with harsh and inconsistent discipline (Blackson, Tarter, & Mezzich, 1996). Third, a significant positive relationship between harsh discipline and aggression was only evident for boys with high (and moderate) versus low levels of fear (Colder, Lochman, & Wells, 1997). Finally, physical punishment was positively related to behaviour problems for boys high on anxiety; but for boys low on anxiety, physical punishment was negatively associated with behaviour

problems (Lengua, 2008). Together, these findings corroborate the thesis that coercive processes—such as harsh discipline—may play a predominant role in the development and/or maintenance of antisocial behaviour in children high on emotional reactivity (Scaramella & Leve, 2004).

Relational Processes

Coercion theory focuses on dysfunctional patterns of interaction between parents and children with an emphasis on dynamics of control and power (Grusec & Davidov, 2010). Competing socialisation theories that focus on the importance of the affective quality of parent-child relationships and associated dimensions of caregiver behaviour (e.g., warmth), have been receiving increasing attention from researchers examining developmental outcomes in children. From hereon, the term "relational processes" is used to refer broadly to dimensions of parent-child processes that are important in defining the quality and emotional tone of parent-child relationships; that is, dynamics of attachment, warmth, and emotional communication.

Kochanska (1993) proposed a model that integrates the contribution of child emotionality and parent-child processes to children's emerging conscience. The model places importance on children's level of fearful arousal as a moderator of parental socialisation influences. Kochanska suggested that relatively fearful children are more prone to experiencing "internal discomfort" associated with transgressing, which acts as a deterrent against future wrongdoing. Gentle parental discipline—i.e., de-emphasising power—can be a catalyst in eliciting this affective reaction in fearful children, and can effectively promote internalisation of parental morals and values. In contrast, gentle discipline may be less effective in producing a sufficient level of affective arousal in relatively fearless children. Increasing the firmness of discipline might raise levels of aversive arousal in fearless children and gain their immediate compliance, but may not be productive for moral development in

the long-term (Maccoby & Martin, 1983). Thus, for fearless children, Kochanska proposed an alternative mechanism for moral development that capitalises on the child's positive motivation rather than on affective arousal. She suggested that fearless children may be more motivated to comply with parental requests, and internalise parental morals and values, within the context of a reciprocally positive parent-child relationship.

Kochanska (1995, 1997) has demonstrated empirical support for her model in longitudinal research. In a sample of 103 toddlers and their caregivers, behavioural observations and parent-report measures were used to assess levels of fear in children as well as examine different domains of parent-child processes; namely, parental discipline, parental warmth/responsiveness, and attachment security. At ages 4 and 5, different dimensions of children's conscience (e.g., internalised restraint and moral understanding) were examined using observational and report measures. In line with predictions made by Kochanska's (1993) model, for relatively fearful children, parents' discipline that was gentle and non-coercive significantly predicted later conscience. For relatively fearless children, in contrast, a reciprocally positive parent-child relationship—as indicated by secure attachment and high levels of parental warmth/responsiveness—significantly predicted conscience development (Kochanska, 1997). Moreover, as a testament to the robustness of these findings, the same pattern of results emerged when children's temperamental fear was measured using levels of electrodermal (i.e., physiological) reactivity (Fowles & Kochanska, 2000).

Overall, this line of research provides further evidence that children high on emotionality are more susceptible to the effects of parents' discipline on developmental outcomes. In addition, Kochanska's (1993) model provides a unique perspective for understanding the development of conscience in children low on emotionality. That is, in children low on emotionality, parent-child relational processes—such as a secure attachment relationship and parental warmth/responsiveness—appear to be implicated in the

development of conscience; with relatively little contribution from parental discipline (Kochanska, 1995, 1997). It is also important, however, to consider other domains of relational processes that may also make a significant contribution to the socialisation of children low on emotionality. The extant literature hints at another related, yet distinct, relationship process that may hold value for developmental outcomes in children lacking in affective arousal; namely, parent-child emotional communication.

Everyday interactions between parents and children are loaded with emotion. There are considerable differences among families, however, with respect to how they process and how much they pay attention to, or explicitly discuss, positive and negative emotions that arise during parent-child encounters (Dunn, Bretherton, & Munn, 1987; Eisenberg, Cumberland, & Spinrad, 1998; Gottman, Katz, & Hooven, 1996). Research suggests that the frequency of communication about emotions between parents and children can have an effect on child developmental outcomes. For instance, using direct observations of parent-child discourse in the homes of families, Dunn, Brown, and Beardsall (1991) found that more frequent maternal references to emotions during parent-child conversations when children were aged 3, predicted children's later ability to understand other people's emotional states at age 6. Moreover, in a sample of preschool children and their caregivers, Laible and Thompson (2000) directly observed parent-child discussions about the child's past behaviour. The authors found that more frequent maternal references to feelings and moral evaluations were concurrently associated with children's guilt after wrongdoing and internalised restraint in a temptation task. Other studies have also shown that individual differences in levels of parents' engagement in discussion about emotions with their child have long-lasting effects on children's emotional communication styles (Brown & Dunn, 1996; Dunn et al., 1991). Taken together, these studies suggest that parent-child emotional communication may play a

significant role in shaping children's processing and understanding of emotions in social interactions; which in turn may be important for conscience development.

The quality and frequency of parent-child emotional communication may be particularly important for the socialisation of children low on emotionality that are also less inclined to respond to other people's feelings. Blair (1995, 2006) argues for the importance of emotional arousal in the development of empathy and morality. Children experience varying levels of affective arousal in response to distress cues, i.e., fear and sadness, displayed by other people. Blair (1995, 2006) contends that some children experience a lack of, or very minimal, emotional arousal in response to others' distress, and subsequently are less likely to show empathic responding. Moreover, a lack of affective arousal in response to others' suffering may reduce the likelihood that the child will inhibit engaging in antisocial behaviour that causes distress in others (Blair, 2006). Parents can help foster empathic responding in children, however, by drawing their attention to the effects of their behaviour on other people's feelings; particularly in discipline scenarios when the child is being reprimanded for hurting another person (Hoffman, 1994). Moreover, the abovementioned data suggests that more frequent discussion about emotions during parent-child interactions can promote empathy and conscience development in children (Dunn et al., 1991; Laible & Thompson, 2000). Thus, there is reason to suspect that the dynamics of emotional communication between parents and children may be particularly important for developmental outcomes—such as antisocial behaviour, empathy, and morality—in children low on emotional arousal.

Summary

In summary, there is considerable evidence that there are distinct parent-child processes associated with developmental outcomes in children with high compared to low levels of emotionality. Children high on emotionality appear to be differentially susceptible

to the positive and negative effects of discipline on child outcomes. Coercive processes marked by harsh parenting and child dysregulated affect and hostility, appear to characterise a distinct pathway to conduct problems in children prone to high levels of emotional reactivity. Moreover, these children benefit from an alternative style of discipline, one that is gentle and de-emphasises power, for the development of conscience. On the contrary, children low on emotionality appear to be less responsive to discipline; be it harsh or gentle. For this group of children, relational processes, such as secure attachment and parental warmth, play an important role in the development of conscience. A mutually positive parent-child relationship is suggested to capitalise on the child's positive motivation for change, rather than on emotional arousal. Moreover, the dynamics of emotional communication between parents and children was identified as a further relationship process that may also hold value for developmental outcomes in children low on affective arousal.

Overall, the existing literature suggests that parent-child processes are differentially associated with developmental outcomes in children according to their style of emotionality. That is, coercive processes appear to be implicated in emerging conduct problems in children with high emotionality; whereas relational processes appear to be important for the socialisation of children low on emotionality. With this conceptual framework in mind, the focus of this literature review will now turn to an outline and discussion of the data from studies that have examined parent-child processes in relation to CU traits, and conduct problems as a function of CU traits.

CU Traits, Parent-Child Processes, and Conduct Problems

Moderating Role of CU Traits on Associations between Parent-Child Processes and Conduct Problems

Three separate lines of research have examined the moderating effect of CU traits on the relationship between parenting and child conduct problems. An overview of this body of research is presented in Table 2. First, cross-sectional studies have examined the link between dimensions of parenting—as measured using parent and child questionnaire reports—and antisocial behaviour as a function of CU traits. The findings from these studies are consistent in showing that, relative to their low CU peers, conduct problems in children and adolescents with high CU traits are less strongly associated with ineffective parenting practices; predominantly harsh and inconsistent discipline (Edens, Skopp, & Cahill, 2008; Hipwell et al., 2007; Oxford, Cavell, & Hughes, 2003; Wootton, Frick, Shelton, & Silverthorn, 1997). Interestingly, one study that only included girls, also examined the link between parental warmth and conduct problems and found that this association was stronger for girls low versus high on CU traits (Hipwell et al., 2007).

Second, in a longitudinal study, Kroneman, Hipwell, Loeber, Koot, and Pardini (2011) examined the interaction between parenting behaviour and CU traits in the prediction of conduct problems. The developmental trajectories of girl's (aged 7 to 8 years) conduct problems were assessed over a 5-year period. Kroneman et al. (2011) found that CU traits did not moderate the relationship between harsh discipline and conduct problems. That is, increasing levels of disruptive behaviour symptoms were predicted by harsh discipline in girls high and low on CU traits. Lower levels of parental warmth, however, were associated with more disruptive behaviour in girls with high CU traits. The moderating effect of CU traits was not evident at later time points in girl's development.

Third, treatment outcome studies have examined whether CU traits predict poorer improvements in conduct problems after family-based interventions. For instance, in a parent training intervention for conduct-problem boys, Hawes and Dadds (2005) found that higher CU traits increased the likelihood of retaining an ODD diagnosis at 6-month follow-up; even

Table 2.

Studies Investigating the Moderating Role of CU Traits on Relationships between Parent-Child Processes and Conduct Problems

Study	Participants	Sample	Parenting measures	Results
Cross-sectional				
Wootton et al., 1997	• 166 boys and girls • Aged 6 – 13 years	Clinic and community	Parent and child reports of parenting practices	• Significant relationship between ineffective parenting and conduct problems in low CU; but not in high CU
Oxford et al., 2003	• 243 boys and girls • *M* age = 8.24 years	Community	Parent reports of parenting practices	• Weaker association between ineffective parenting and conduct problems in high versus low CU
Hipwell et al., 2007	• 990 girls • Aged 5 – 8 years	Community	Parent reports of parenting practices and parental warmth	• Weaker relationships between harsh discipline and warmth and conduct problems in high versus low CU
Edens et al., 2008	• 76 boys • *M* age = 15.61 years	Adjudicated	Child reports of parenting practices	• Weaker association between harsh and inconsistent discipline and conduct problems in high versus low CU

Table 2. *(Continued)*

Study	Participants	Sample	Parenting measures	Results
Longitudinal				
Kroneman et al., 2011	• 1,233 girls • Aged 7 – 8 years	Community	Parent reports of parenting practices and parental warmth	• Harsh discipline predicted increasing conduct problems regardless of levels of CU • Warmth predicted decreasing conduct problems in high CU; but not in low CU
Treatment outcome				
Hawes & Dadds, 2005	• 56 boys • Aged 4 – 8 years	Clinic	Direct observations and parent reports of parenting practices	• Conduct problems in high CU less responsive to parent training intervention • Discipline less effective for high CU; praise equally effective for high and low CU
Kolko & Pardini, 2010	• 177 boys and girls • Aged 6 – 11 years	Clinic	N/A	• Conduct problems in high and low CU did not respond differently to modular treatment (including parent training and family therapy)

after controlling for pre-treatment ODD severity and other potential confounds (e.g., parents' correct implementation of parenting strategies taught during treatment). Children higher on CU traits were also less responsive to, and displayed less negative affect during, "time-out" discipline; although they appeared to be responsive to parents' praise (Hawes & Dadds, 2005). On the contrary, Kolko and Pardini (2010) found that CU traits did not significantly predict poorer treatment outcomes following a modular intervention, which included parent training and family therapy components, targeting conduct problems. Unfortunately these authors did not report on which components of the treatment families received; thus it is not clear whether children high and low on CU traits received different forms of treatment and if this factor had any effect on the results.

Summary and Limitations

In summary, cross-sectional findings converge to suggest that ineffective parenting practices, such as harsh discipline, are less strongly related to conduct problems in children with high CU traits. An exception to this was noted for a longitudinal study with girls. Evidence from two studies with girls is equivocal on the alternative hypothesis that the relationship between warmth and antisocial behaviour is stronger in high compared to low CU children. Furthermore, the two treatment outcome studies report contradictory results; thus the effects of improving parenting practices and dynamics of parent-child interaction on conduct problems in high CU children are unclear. There are also several limitations of the abovementioned studies. First, the majority of these studies have relied on questionnaire reports of parenting behaviour. Second, there has been a relatively small focus on relational processes in this body of research; furthermore parental warmth has only been examined in studies which have included girls exclusively. Third, fathers have not been included in past research. Thus, considering that some of the previous findings are mixed, it will be an important next step for research to address these limitations to better understanding on the

relationship between parent-child processes and conduct problems in children high and low on CU traits.

Associations between CU Traits and Parent-Child Processes

It is important to distinguish between studies that have examined the moderating effect of CU traits on associations between parent-child interaction and conduct problems, and research that has directly examined relationships between CU traits and differing dimensions of parent-child processes (see Table 3 for an overview of these studies). The extant literature examining the latter topic can similarly be divided up into three separate lines of research. First, cross-sectional studies have investigated relations between CU traits and quality of parent-child interactions as rated by parents and children. Findings from this line of research are consistent in showing that high CU traits are related to difficulties in the parent-child relationship; namely parents' disrupted emotional bonds with their child (Fite, Greening, & Stoppelbein, 2008) and poor quality of parent-child relationships (Schneider, Cavell, & Hughes, 2003). In addition, a study using a community sample of girls found that ineffective parenting practices were not significantly associated with CU traits (Vitacco, Neumann, Ramos, & Roberts, 2003).

Second, longitudinal studies have examined relationships between parent-child processes and CU traits across different stages of childhood and adolescence. Findings from these studies dovetail to suggest that ineffective parenting practices (e.g., harsh discipline and poor monitoring) predict increases in CU traits over time independent of the effects of baseline conduct problem severity (Frick et al., 2003c; Hawes, Dadds, Frost, & Hasking, 2011; Pardini, Lochman, & Powell, 2007). An exception to this is a study using a monozygotic twin differences design, which showed that the twin receiving more negative discipline at age 7 did not have significantly higher levels of CU traits at age 12; thereby suggesting that negative discipline might not operate as a non-shared environmental risk

Table 3.

Studies Investigating the Relationship between CU Traits and Parent-Child Processes

Study	Participants	Sample	Measures of parent-child processes	Results
Cross-sectional				
Schneider et al., 2003	• 263 boys and girls • *M* age = 8.24 years	Community	Parent reports of parenting practices and parent-child relationship quality	• Ineffective discipline and weaker parent-child relationship associated with high CU
Vitacco et al., 2003	• 136 girls • Aged 10 – 15 years	Community	Child reports of parenting practices	• Poor monitoring and inconsistent parenting were not related to CU
Fite et al., 2008	• 212 boys and girls • Aged 6 – 12 years	Inpatient	Parent reports of parent-child relationship quality	• Parents' weaker emotional bonds with their child were related to higher CU
Longitudinal				
Frick et al., 2003c	• 98 boys and girls • *M* age = 12.43 years	Community	Parent and child reports of parenting practices	• Negative parenting predicted increases in CU
Pardini et al., 2007	• 120 boys and girls • Aged 9 – 12 years	Community	Parent reports of parenting practices and child reports of parental warmth	• Corporal punishment predicted increases in CU • Warmth predicted decreases in CU

Table 3. *(Continued)*

Study	Participants	Sample	Measures of parent-child processes	Results
Pardini & Loeber, 2008	• 506 boys • *A*ged 14 – 18 years	Community	Parent and child reports of parenting practices and parent-child communication quality	• Poor parent-child communication predicted chronic CU over time
Viding et al., 2009a	• 4508 boys and girls (twins) • Aged 7 years	Community	Parent reports of parenting practices	• Negative discipline not predictive of CU
Sonuga-Barke et al., 2010	• boys and girls • Aged 4 years	Romanian adoptees	Parent reports of attachment disorder behaviour in child	• Attachment difficulties predicted higher CU
Hawes et al., 2011	• 1,008 boys and girls • Aged 3 – 10 years	Community	Parent reports of parenting practices	• Positive parenting and parental involvement predicted decreases in CU; poor monitoring predicted increases in CU • CU predicted increases in harsh and inconsistent discipline; and decreases in parental involvement

Table 3. *(Continued)*

Study	Participants	Sample	Measures of parent-child processes	Results
Treatment outcome				
Hawes & Dadds, 2007	• 56 boys • Aged 4 – 8 years	Clinic	Direct observations and parent reports of parenting practices	• CU reduced in some children after parent training intervention • Stable-high CU associated with least responsiveness to discipline
Kolko et al., 2009	• 139 boys and girls • Aged 6 – 11 years	Clinic	N/A	• Improvements in CU after modular intervention (including parent training and family therapy)
McDonald et al., in press	• 66 boys and girls • Aged 4 – 9 years	Clinic	Parent reports of parenting practices	• Parenting intervention resulted in improvements in CU; treatment effects on CU were mediated by improvements in harsh and inconsistent parenting

factor for the development of CU traits (Viding, Fontaine, Oliver, & Plomin, 2009). It could be argued however, that some of the items in this study's negative discipline measure captured seemingly appropriate, or even positive, discipline strategies as well (e.g., "Ignoring the child when they are misbehaving" and "Withdrawing privileges"). Thus, this discrepancy may be due to differences in the measures of discipline. Moreover, findings from this line of research also demonstrate that negative dimensions of the parent-child relationship; i.e., poor quality of communication and attachment disturbances, predict later elevated levels of CU traits (Pardini & Loeber, 2008; Sonuga-Barke, Schlotz, & Kreppner, 2010); whereas positive dimensions of the parent-child relationship; i.e., warmth and parental involvement, predict decreasing CU traits across time (Hawes et al., 2011; Pardini et al., 2007). Lastly, Hawes et al. (2011) found that CU traits predicted increases in negative discipline and decreases in parental involvement; thus suggesting bi-directional effects between parenting and CU traits over time.

Third, treatment outcome studies have investigated whether family-based interventions for conduct problems effect change in levels of CU traits. Three independent studies are consistent in showing that rates of CU traits can decrease after parent training (Hawes & Dadds, 2007; McDonald, Dodson, Rosenfield, & Jouriles, in press), or modular intervention including a parent training component (Kolko et al., 2009). Addressing the limitations of previous treatment outcome studies, McDonald et al. (in press) included a control group receiving no intensive intervention, and found that children in families who received parent training intervention exhibited greater decreases in CU traits across several follow-up assessments. Thus, their study design enabled them to conclude that changes in CU traits were likely attributable to the effects of parent training. Moreover, the authors found that improvements in harsh and inconsistent parenting mediated the effects of the parenting intervention on levels of CU traits (McDonald et al., in press).

Summary and Limitations

In summary, findings from the three different lines of research provide somewhat consistent evidence that CU traits are associated with various parent-child processes. In both cross-sectional and longitudinal samples, CU traits appear to be related to ineffective parenting practices, as well as the quality of parent-child relationships. Moreover, there is also some indication of bi-directional effects between parenting and CU traits across childhood. Finally, improvements in parenting during parent training intervention appear to be associated with decreasing CU traits. This body of research suffers from the same limitations as noted above for the studies examining CU traits as a moderator of parenting; that is, a reliance on questionnaire reports of parent-child processes; a relative scarcity of research examining relational processes – particularly in young children; and an absence of fathers in the samples. These limitations provide an impetus for the current research, which will now be outlined.

Overview of the Present Research

Rationale

In recent years, considerable research attention has been devoted to the investigation of distinct subtypes of antisocial behaviour as marked by the presence or absence of CU traits. As a result of this now large body of research, it is apparent that children with high compared to low CU traits develop conduct problems along divergent pathways. While there is some evidence that conduct problems in children with elevated CU traits develop through causal mechanisms that are largely independent of parental socialisation, there are good reasons to suspect that CU traits may moderate the type of parent-child processes most strongly related to emerging antisocial behaviour. Recall that the developmental literature showed that coercive processes appear to be involved in emerging conduct problems in children high on emotionality; whereas relational processes may hold value for the socialisation of children low on emotionality. Thus far, the existing literature concerning CU traits and family processes provides partial support for this

model. Inconsistent and harsh parenting practices have been found to be more strongly related to the conduct problems of children with low rather than high CU traits. However, the relationship between parental warmth and conduct problems in high and low CU children is unclear; and is yet to be examined in boys.

In order to clarify and extend on these past findings, further research needs to address several significant limitations that were noted above. First, prior studies in this area have all relied on retrospective, self-report measures of parenting and the quality of parent-child interactions. There is only modest agreement between these and observational measures of parent-child dynamics (Gardner, 2000). Seminal models of parent-child processes involved in the development of conduct problems were built and tested using the "gold standard" method of direct observation of parenting during family interaction (Patterson, 1982). Thus, the lack of observational data is an important omission in the existing literature. Second, most of these previous studies have only focused on coercive processes as measured via parenting practices such as harsh and inconsistent discipline. As previously discussed, antisocial children low on emotionality, i.e., those arguably high on CU traits, may be more responsive to relational processes such as warmth, attachment, and emotional communication. There is a paucity of research, however, examining these relational processes in families of high CU children, and their associations with conduct problems. Finally, despite the existence of a large literature documenting the importance of both mothers and fathers for child development (e.g., see Lamb, 1997), it is not known whether CU traits moderate the association between fathers' parenting behaviour and conduct problems. A recent meta-analysis on parenting and delinquency suggests that fathers may have a greater influence than mothers on child antisocial behaviour (Hoeve et al., 2009). The present research was specifically designed to address each of these limitations.

Overall Aim and Research Questions

The overall aim of this thesis is to examine parent-child processes in the families of conduct-problem children with high compared to low CU traits. The main focus is on relational processes in families of antisocial children elevated on CU traits. This topic has received limited attention in prior studies yet has strong potential to inform the design of future clinical interventions for this subgroup of conduct-problem children. This thesis is comprised of three studies that investigate unique dimensions of parent-child processes in relation to CU traits and conduct problems. Each study incorporates direct observations of parent-child processes that are yet to be examined in families of children with high CU traits. Finally, children's interactions with both their mothers and fathers are examined.

The studies were designed to investigate the following primary research questions:

- Study 1: Do CU traits moderate relationships between parental coercion and warmth and conduct problems?

- Study 2: Are disrupted dynamics of parent-child emotional communication in families of antisocial children associated with CU traits? Does parents' focus on emotions differentially relate to conduct problems in high and low CU children?

- Study 3: Is there an association between disrupted parent-child attachment relationships and CU traits in conduct-problem children?

Specific hypotheses pertaining to each study, and a more detailed rationale for Study 2 and 3, will be outlined in their respective sections.

METHODS: OVERVIEW, ISSUES, AND STRATEGIES

This section provides a description of the methods common to the individual studies

in this thesis, as well as an account of the various methodologies for capturing the unique

domains of parent-child processes. The strategies used to deal with particular methodological

issues are discussed throughout. Information on other specific measures included in each of

the studies, in addition to a more detailed description of each study's participants, is provided

in their respective sections.

Common Methods

Participants

Across the studies, children's age ranged from 3 to 12 years. The focus of this thesis

was on young, pre-adolescent children; as parent-child processes are robustly associated with

conduct problems during this developmental period (Fearon, Bakermans-Kranenburg, van

Ijzendoorn, Lapsley, & Roisman, 2010; Hoeve et al., 2009). As children enter adolescence,

other social processes outside of the family context, such as interactions with deviant peers

(Dishion, Spracklen, Andrews, & Patterson, 1996), become increasingly potent in influencing

their antisocial behaviour.

All child participants were boys for two main reasons. First, conduct problems are

more prevalent in boys, and boys typically constitute the majority of clinical referrals for

disruptive behaviour disorders. Second, there appear to be differences in emotional correlates

of CU traits in girls compared to boys, which may implicate distinct etiologies associated

with their CU traits and antisocial behaviour. For instance, psychopathic traits are associated

with intact affective empathy in girls, although not in boys (Dadds et al., 2009). Moreover, in

contrast to their male counterparts, CU traits in girls have been found to positively relate to

internalising symptoms (Essau, Sasagawa, & Frick, 2006). Thus, in order to control for this

potential confound, a decision was made to focus exclusively on boys in the present research.

Children and their families were recruited from Child Behaviour Research Clinics (CBRC) located in Sydney at the University of New South Wales (UNSW) and Royal Far West. UNSW ethics approval was gained for this study's protocol, and full participant consent used throughout the research. Children and families receiving assessments and treatment at the CBRC were either self-referred or referred by health professionals in the community (e.g., psychologists and general practitioners). Only children who received a diagnosis of either ODD or CD at initial assessment were eligible to participate in these studies. Comorbid diagnoses including ADHD (if stabilised by medication) and anxiety/mood disorders were permitted. Children with an Autism Spectrum Disorder or a developmental delay or disability were not included in the samples. All diagnoses were based on DSM-IV criteria and made by the treating clinician (i.e., registered psychiatrists and clinical psychologists, or clinical psychologist registrars completing masters/doctorate degrees) during an initial assessment with parents, using the Diagnostic Interview Schedule for Children, Adolescents, and Parents (DISCAP; Holland & Dadds, 1997). Treating clinicians met regularly for case presentations and discussions. In order to assess diagnostic inter-rater reliability, a team of psychiatrists/psychologists—who were unaware of the primary clinician's formulation—made independent diagnoses based on the presentation of case material. Across the studies, inter-rater agreement for DISCAP diagnostic classifications was good (average Cohen's Kappa = .77), and acceptable for diagnostic severity ratings (average r = .50).

<div align="center">Multi-Informant Measures</div>

Child Behavioural and Emotional Symptoms

The UNSW system (Dadds et al., 2005) of pooling items from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and Antisocial Process Screening Device (APSD; Frick & Hare, 2001) was used to create aggregated measures of children's conduct

problem, hyperactivity, and anxiety symptoms. This system has proven reliability in clinic (e.g., Dadds et al., 2011; Hawes & Dadds, 2005) and community (e.g., Dadds et al., 2005; Hawes et al., 2011) samples. Correlations between teacher and parents' reports for child symptoms varied from weak to modest (e.g., r range = .18 – .39 for conduct problems) across the studies. As the focus of this thesis was on family processes, a decision was made to use parent reports of children's symptoms as the primary measure, as these provide the most accurate accounts of children's functioning at home. Across the studies, mother and father reports showed modest to good reliability (Cronbach's α range = .65 – .82) and were positively correlated (r range = .45 – .61, all p's < .01). Thus, mother and father reports were standardised using z transformations and then averaged to form combined parent reports for children's symptoms.

Child CU Traits

CU traits were similarly assessed using the UNSW system of combining items taken from the SDQ and APSD. Dadds et al. (2005) demonstrated an improvement in reliability obtained from this amalgamated measure, compared to using the APSD-CU scale alone. In their DSM-V proposal for a CU specifier to CD, Frick and Moffitt (2010) suggest that CU traits should be evident across different relationships and settings to be deemed "significant". The construct of personality traits implies a reasonable level of continuity across contexts (Matthews et al., 2009). Therefore, CU traits were measured using a combination of reports from mothers, fathers, teachers, and children (aged 9 years and over on self-report versions of questionnaires). These reports demonstrated acceptable reliability (α range = .69 – .87) across the studies. Researchers have used different approaches to combining multiple informant reports of CU traits in prior studies. For instance, some researchers take the highest score made by any reporter on an item-by-item basis and use the sum as a total (e.g., Frick et al., 2003a). In clinic samples, however, it is unclear to what extent individual informants "over-

report" problematic behaviour at initial assessment. Arguably, at the very least, there is not a strong social demand for informants to withhold reporting on the presence of CU features when a child is being referred for treatment for conduct problems (cf. Frick et al., 2003a). As such, assigning more weight to the ratings of a single reporter (albeit at the level of an individual item) may be a more biased approach in clinical research.

While there is no gold standard method for combining multi-informant CU ratings, a novel approach was used in the present research that was designed to capture the level of children's CU traits across various relationships and settings. There is debate in the literature over whether CU traits should be treated as a dimensional or taxonic construct; with empirical support for both approaches (Murrie et al., 2007; Vasey, Kotov, Frick, & Loney, 2005). Although the previously discussed literature review and forthcoming discussions in this thesis make reference to "high" and "low" CU traits, the current research incorporated an amalgamated categorical/continuous measure of CU traits. The top one-third of CU traits scores relative to each informant group was used to designate "high CU". This high CU cut-off percentile value is consistent with prevalence estimates of high CU generally found in conduct-problem samples (e.g., Frick, Bodin, & Barry, 2000; Woodworth & Waschbusch, 2008). A hybrid categorical/continuous CU traits score was then made by calculating the percentage of reporters classifying a child as high CU. Dependent on the number of informant reports available, possible CU traits scores ranged from: 0%, 25%, 33.3%, 50%, 66.7%, 75%, and 100%. The number of missing informants for CU traits scores did not correlate with multi-informant CU traits scores across the studies (r range = -.06 – .05, p's > .50). In each study, there were strong positive correlations between the multi-informant and individual informant (i.e., mother, father, child, and teacher) CU traits scores (range r = .45 – .72, all p's < .01); thus demonstrating good convergence between the measures. The associations among individual informant CU traits scores ranged from -.02 – .47.

Child Verbal Ability

To control for children's general language skills (in Study 2 and 3), verbal ability was captured by the following age appropriate assessments: Verbal IQ scores from the Wechsler Preschool and Primary Scale of Intelligence – Third Edition (WPPSI-III; Wechsler, 2002) for 3 – 5 year-olds; Verbal IQ scores from the Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV; Wechsler, 2003) for 6 – 8 year-olds; and the Language Composite scores from WebNeuro (Silverstein et al., 2007) for 9 – 12 year-olds. *Z* scores within each age appropriate language measure were calculated and then merged across participants to produce an index of verbal ability.

Parent-Child Processes

Observational Procedures

Family Observations

Prior to commencing treatment, families—i.e., parents, referred child, and siblings—participated in a semi-structured observational procedure undertaken in the clinic (see Appendix A for the complete protocol). The number of siblings that participated in family observations ranged from 0 to 4 ($M = 0.86$). The entire observational procedure lasted approximately 1hr. The sequence and nature of the tasks was as follows:

1. <u>Free play</u> (10 minutes): A variety of age-appropriate toys were provided in a box placed on top of a table positioned at one end of the room. Participants were seated on chairs and were asked to play with the toys on top of the table (to be in view of the camera; see Figure 1 for a still-frame picture of this set-up). Families were instructed to play as they normally would at home, and told that the experimenter would return shortly.

2. Parenting instructions (2 minutes): Parents were requested to instruct their children to pack-up the toys as quickly as possible, so they can move onto the next task.

3. Family evaluation activity (10 minutes): Families were asked to complete a drawing "as a family". They were requested to draw each member of the family and then come up with a word/label that best describes each person. Moreover, all family members had to agree on the labels before they could be written under the pictures.

4. Stress inducing instructions (2 minutes): The experimenter set a perturbation on the family system (Granic & Patterson, 2006) by knocking on the door and telling the family—in a slightly stressed tone—that they only have a couple more minutes to complete the task.

5. Emotion talk (10 minutes): This task only involved the referred child and his parents; the referred child's siblings were taken to play in the waiting room. Families were requested to talk about a happy time that they have all shared together and a sad time that they have all shared together. Figure 2 shows the seating arrangements for parents and children at the commencement of this task.

6. Five-minute speech sample (5 – 10 minutes): Each parent individually completed a five-minute speech sample (FMSS). Parents were left alone in the room (with the camera switched off) to speak into a digital voice recorder. They were requested to speak for five minutes regarding their thoughts and feelings about their child and how they get along together.

Figure 1. Set-up for "free play" component of family interaction.

Figure 2. Set-up for "emotion talk" component of family interaction.

Child Observation

On a separate visit to the clinic, the referred child completed an attachment assessment (as described in more detail below) with an experimenter. Parents were not permitted in the room while children were being assessed, although they could escort the child to the assessment room and stay until the child became settled. Prior to participating in the attachment assessment, the experimenter and the child played a 10-minute game of "Connect Four". This enabled the child some time and space to "warm-up" to the setting, and provided the experimenter with opportunities to reinforce the child's turn-taking behaviour.

Parental Coercion

The Family Observation Schedule 6th Edition (FOS–VI; Pasalich & Dadds, 2009) was specifically designed for coding the data in the present research. Previous versions of the FOS have demonstrated clinical utility and validity (e.g., Dadds & McHugh, 1992; Hawes & Dadds, 2006). Coercive parenting was coded from direct observation of family interaction during the free play, clean-up, and family evaluation tasks (i.e., procedures 1 – 4 as outlined above). Following the written guidelines in the FOS–VI manual (see Appendix B), frequency and intensity of harsh parenting (e.g., punitive discipline and aversive threats) and parents' criticism (e.g., scolding and negative comments) directed at the referred child was coded using a 5-point scale at 1 minute intervals for the entire observation. Mean interval scores for harsh parenting and parents' criticism were positively correlated (mother $r = .24$ and father $r = .68$; all p's < .05) and were z-transformed then summed to form the measures of coercive parenting. A team of five coders consisting of psychology students/graduates were trained by the investigator (20 hrs total) on the FOS–VI manual and passed reliability tests before coding. Post-training coding meetings were conducted regularly (i.e., on a fortnightly basis) to prevent coder's drift. Disagreements in coding were resolved by consensus. Coder's were

blind to children's diagnoses and scores on all other measures (e.g., CU traits). There was

good inter-rater reliability for coercive parenting (Intraclass correlation; ICC = .86; *n* = 19).

Parental Warmth

While the FOS–VI includes the coding of relationship-based dimensions of parenting

(e.g., warmth and responsiveness), it was considered important that the measure of parents'

warmth was not taken from the same observational setting that was used to code parents'

coercion; largely because these domains of parenting were going to be examined concurrently

in Study 1. Moreover, warmth is considered to reflect a more global and less situation-

specific quality of parents' behaviour, compared to their goal-oriented practices such as

discipline (Grusec & Davidov, 2010). Thus, parental warmth was coded from parents'

narratives about the parent-child relationship; that is, their FMSSs. The Family Affective

Attitude Rating Scale (FAARS; Bullock & Dishion, 2004) was used in scoring parents'

FMSS. The FAARS was designed to provide a brief, cost-effective measure of parents'

overlearned patterns of interpersonal relatedness—i.e., their relational schemas—that has

utility, and is feasible, in clinical research (Bullock & Dishion, 2007). The FAARS is an

extension and re-formulation of the original coding system for the FMSS (Magana et al.,

1986), and provides indexes of parents' warmth (e.g., "Positive relationship with child" and

"Statements of love/caring toward child") and criticism (e.g., "Critical regarding behaviour of

child" and "Reports of anger/hostility toward child").

The psychometric properties of the FAARS have been evaluated in only one prior

study using a small community sample of youths (*M* age = 17 years) and their mothers,

assessed over a two year period. In this study, Bullock and Dishion (2007) sampled

adolescents who had either demonstrated relatively high (*n* = 20) or low (*n* = 20) levels of

antisocial behaviour in early adolescence. The authors reported that the FAARS warmth and

criticism codes for mothers were internally consistent and could be reliably implemented by

trained coders. Warmth and criticism scales were significantly related to the original FMSS measure of parental positive remarks and criticism respectively, thereby providing evidence of concurrent validity. Warmth and criticism also discriminated between levels of adolescent antisocial behaviour. Mothers in the high antisocial behaviour group tended to have lower levels of warmth and higher levels of criticism than mothers in the low antisocial behaviour group. There were also significant associations between the FAARS and directly observed parent-adolescent interaction. For instance, higher scores on warmth were associated with more frequent maternal positive comments and lower levels of maternal coercion. Moreover, elevated scores on criticism correlated with more frequent maternal coercion and negative affect.

While the reliability and validity of the FAARS has been supported in families of adolescents with antisocial behaviour, the measurement properties of this brief assessment have not previously been examined in parents of pre-adolescent children with clinic-referred behaviour problems. Therefore, it was necessary to evaluate the psychometric properties of the FAARS in a clinic sample of families with young behaviour-disordered children, to warrant its inclusion in the current research.

Pilot Study: Reliability and Validity of the FAARS

The aims of this pilot study were to examine the reliability and validity of the FAARS with mothers and fathers of school-aged children with clinic-referred behaviour problems. The design of the study included a comparison sample of children with either an internalising or developmental/learning disorder, for the purpose of examining the discriminant validity of the measure in a clinic sample. In line with Bullock and Dishion (2007), it was predicted that parents in the externalising disorders group would evidence lower scores on warmth and higher scores on criticism than parents in the non-externalising disorders control group, where the rate of child behaviour problems is lower. Similarly, it was hypothesised that in the

entire clinic sample, lower scores on warmth and higher scores on criticism would be associated with conduct problem severity. In examining the FAARS construct validity, it was predicted that the scales would converge with direct observations of parent-child interactions. Finally, this pilot study examined whether FAARS scales would add value over gold standard observations of family interaction. It was hypothesised that FAARS scales would be predictive of conduct problems over and above directly observed parenting behaviour.

Method

 Participants. Participants were 178 families (166 mothers, 97 fathers) referred to CBRC. Children (137 male, 41 female) were aged 4 to 11 years ($M = 7.49$, $SD = 2.23$). Children were not eligible for participation in this study if they had a significant intellectual disability (i.e., IQ < 80). Parents' education level ranged from primary (mothers: <1%, fathers: 3%), to secondary (mothers: 26%, fathers: 38%), to tertiary (mothers: 73%, fathers: 59%). The majority of families (68%) consisted of two-caregivers.

 The externalising disorders group used in this study's analyses, comprised 150 children (M age = 7.45 years, $SD = 2.20$; 115 male, 35 female) who presented with problem behaviour consistent with diagnostic criteria for CD, ODD, and/or ADHD. The majority of children in this group received a primary externalising disorder diagnosis (93%). Externalising disorder diagnosis rates were as follows: CD (3%), ODD (76%), ADHD (21%). Rates for comorbidity: CD/ODD + ADHD (30%), CD/ODD + Mood Disorder (18%), CD/ODD + ADHD + Mood Disorder (5%). There were 28 children (M age = 7.71 years, $SD = 2.40$; 22 male, 6 female) included in the clinic control group, referred for behaviour consistent with diagnostic criteria for a mood disorder, developmental disorder, or learning disorder. Primary diagnosis rates were as follows: Depression (4%), Anxiety Disorder (60%), Autism Spectrum Disorder (32%) or Learning Disorder (4%). There was evidence of

adequate inter-rater reliability for diagnoses (Cohen's kappa = .77, $n = 27$) and clinical

severity ratings ($r = .62$, $n = 26$) made using the DISCAP.

Procedures and measures. Parents' FMSSs were recorded using a digital voice

recorder and later converted into wav audio files for coding. Differing slightly to Bullock and

Dishion (2007), parents provided speech samples uninterrupted without an experimenter

present in the room. This procedure was chosen to control for the effects that different

experimenters and frequency of experimenter prompts (i.e., verbal and non-verbal gestures)

may have on the quality and duration of parents' speech samples. The adapted procedure was

successfully trialled prior to the commencement of the current study. The FAARS (Bullock &

Dishion, 2004) was used to score levels of warmth and criticism expressed in parents'

narratives. Following the methodology of Bullock and Dishion (2007), mean scores were

calculated from items—individually rated using a 9-point scale—reflecting parental warmth

and criticism (see Table 5 for a list of the items in each scale). Two clinical research

assistants with qualifications in psychology were trained by the investigator (15 hrs total) in

the coding of parents' speech samples according to the FAARS manualised procedure

(Bullock, Schneiger, & Dishion, 2005). Akin to Bullock and Dishion, after completion of

training, individual speech samples took between 7 to 10 minutes to code. Coding meetings

were conducted regularly to control for coder drift and resolve discrepancies in coding. All

coders were blind to children's diagnostic status. Inter-rater reliability ratings were calculated

from a random sample of 34 families coded a second time by an independent coder. ICCs

ranged from .80 to .95 ($M = .89$) for warmth, and from .68 to .89 ($M = .79$) for criticism.

Cronbach's alpha values were within acceptable limits for both parents' scales (α range = .71

– .81).

As described in detail above, parent-child interactions were coded from family

observations (see pp. 55 – 56 for procedures) using the FOS–VI. The FOS–VI uses a global

coding system with likert scales ranging from 0 (behaviour did not occur) to 4 (behaviour occurred a lot of the time and/or was of very high intensity). The relationship-based parenting codes reported on in this study were: warmth (e.g., positive affect and physical affection), responsiveness (e.g., sensitivity and responding without delay), and engagement (e.g., talk and social attention). Parents were scored on these codes after two phases of the observation. Final scores were calculated from means. A combined warmth/responsiveness code reflecting an overall level of a parent's expressed positivity was formed by standardising and then summing the individual scores. The parenting behaviour codes grounded in social learning theory included praise (e.g., global and descriptive positive comments), criticism (e.g., sarcasm and negative comments), and harsh parenting (e.g., physical discipline and verbal threats). Due to the discrete nature of these behaviours, parents were scored on these codes along a 1-minute interval schedule, with final scores computed from means. Only the parenting behaviour directed at the clinic-referred child in the family was reported on in this study. As discussed above, a team of five psychology students/graduates uninvolved in the coding of parents' speech samples, received 20 hrs of training and passed reliability tests on training videos prior to coding this study's sample. The coding team met regularly after the training phase. Family observations took between 60 to 90 minutes to code. Coders were blind to children's diagnoses. To calculate inter-rater reliability, a random sample of 20 families was coded a second time by the lead coder. ICCs for the behaviour codes ranged from .66 to 1.00 ($M = .81$).

Conduct problems were captured using the combined measures approach described on pp. 52 – 53.

Results

Reliability. FAARS reliability was assessed by examining the internal consistency and inter-rater reliability ($n = 34$) of the scales. There was adequate to good internal consistency

for all scales. Cronbach's alphas were as follows: mother warmth α = .73, mother criticism α = .81; father warmth α = .71, father criticism α = .78. These alpha values for mothers' scales were very similar to those reported in Bullock and Dishion (2007). Bivariate inter-item correlations within the warmth scale were moderate (r range = .34 – .57, all p's < .01) with some weaker associations involving the "Statements of love/caring" item (r range = .08 – .35). For the criticism scale, inter-item correlations were moderate to strong (r range = .24 – .82, all p's < .01). Indicating good consensus among the coders, mean ICCs for both scales were strong; warmth = .89 and criticism = .80. As shown in Table 4, there were significant moderate associations between mothers' and fathers' scales, with the exception of a non-significant weak association between mothers' criticism and fathers' warmth.

Table 4.
Associations between Mothers' and Fathers' Warmth and Criticism as Rated by the FAARS

	Mother warmth	Mother criticism	Father warmth
Mother criticism	-.42*		
Father warmth	.32*	-.11	
Father criticism	-.31*	.33*	-.41*

* p < .01.

Discriminant validity. It was tested whether the FAARS would discriminate between parents of children with externalising disorders and parents of children with either a mood or developmental/learning disorder. The results confirmed that the rate of conduct problems was significantly lower in the clinic control group (see Table 5). Further analyses revealed that the

Table 5.

Mean Differences between the Externalising Behaviour Disorders and Clinic Control Groups on FAARS Items and Conduct Problem Symptoms

FAARS items	Group mean (SD)		*t*	Cohen *d*
	Externalising disorders	Clinic control		
Mother warmth	3.92 (1.67)	4.84 (1.39)	-2.62**	-.60
Positive regarding behaviour	3.80 (2.05)	5.20 (2.40)	-3.07***	-.63
Positive regarding traits or personality	5.89 (2.94)	7.12 (2.09)	-2.01**	-.48
Positive relationship	4.01 (2.50)	5.80 (2.16)	-3.37***	-.77
Attributes positive intentions	2.60 (2.08)	3.36 (2.10)	-1.68*	-.36
Statements of love or caring	3.30 (2.32)	2.76 (2.28)	1.07	.23
Mother criticism	3.71 (1.78)	1.90 (.96)	4.96***	1.27
Critical regarding behaviour	4.94 (2.31)	2.96 (1.90)	4.05***	.94
Critical regarding traits or personality	4.58 (2.82)	2.76 (1.90)	3.10***	.76
Negative relationship	3.61 (2.70)	1.32 (.75)	4.21***	1.16
Attributes negative intentions	2.16 (2.02)	1.00 (.00)	2.86***	.81
Reports conflict or anger	3.26 (2.31)	1.44 (1.16)	3.86***	1.00
Conduct problems				
SDQ-APSD combined measure	8.42 (4.38)	4.23 (2.59)	4.48***	1.16
N	141	25	*df* = 164	
Father warmth	3.74 (1.51)	4.47 (1.91)	-1.64	-.42
Positive regarding behaviour	3.63 (2.14)	4.67 (2.50)	-1.67*	-.45
Positive regarding traits or personality	5.85 (2.80)	6.13 (3.23)	-.35	-.09
Positive relationship	4.29 (2.57)	5.93 (2.89)	-2.23**	-.60
Attribute positive intentions	2.02 (1.34)	2.73 (2.28)	-1.66	-.38
Statements of love or caring	2.89 (2.29)	2.87 (2.03)	.04	.01
Father criticism	3.28 (1.45)	1.95 (.63)	3.50***	1.19
Critical regarding behaviour	4.63 (1.94)	2.87 (1.19)	3.40***	1.09
Critical regarding traits or personality	4.73 (2.59)	3.27 (1.71)	2.11**	.67
Negative relationship	2.85 (2.22)	1.13 (.52)	2.97***	1.07
Attributes negative intentions	1.72 (1.49)	1.13 (.52)	1.51	.53
Reports conflict or anger	2.48 (1.77)	1.33 (.90)	2.44**	.82
Conduct problems				
SDQ-APSD combined measure	7.72 (3.60)	3.57 (1.82)	4.19***	1.45
N	82	15	*df* = 95	

Note. SDQ = Strengths and Difficulties Questionnaire; APSD = Antisocial Processing Screening Device.

* *p* < .10. ** *p* < .05. *** *p* < .01.

two groups did not differ significantly on age, parents' education, or marital status. There were a similar proportion of females in the externalising disorders (23%) and clinic control (21%) group.

As can be seen in Table 5, in comparison to the control group, the speech samples of mothers of externalising-disordered children contained less positive and more negative references about their child overall, with most of the items in the scales supporting this significant difference. For paternal speech samples, fathers in the externalising disorders group indicated significantly less positive relationship references and generally more negative references about their child, than the fathers in the clinic control. In contrast to the results for mothers, significant between-groups differences for paternal warmth occurred at the item level only. Further supporting the sensitivity of the FAARS measure in families of children with antisocial behaviour, higher rates of conduct problems were associated with lower warmth scores and higher criticism scores (see Table 7).

Construct validity. It was investigated whether directly observed parent-child interaction would be significantly associated with FAARS scores; both in terms of zero-order correlations and the unique variance contributed by the variables. Table 6 displays the correlations between scores on the FAARS and observed parenting behaviour codes. The five parenting codes (warmth/responsiveness, engagement, praise, criticism, and harsh parenting) were simultaneously entered into separate linear regression equations for each parent, with FAARS scores as dependent variables. There were significant positive zero-order correlations between observed maternal warmth/responsiveness and engagement codes and maternal warmth as rated by the FAARS. The overall model was significant for maternal warmth, adjusted $R^2 = .10$, $F (5,130) = 4.03$, $p < .01$, but not for criticism, $R^2 = -.01$, $F (5,130) = .85$, $p = .52$. Mother engagement made a unique contribution to variance in FAARS maternal warmth (standardised $\beta = .25$, $p = .03$). For fathers, the two relationship-based parenting

codes (i.e., warmth/responsiveness and engagement) and praise significantly correlated with FAARS paternal warmth and criticism scores. The overall model was significant for both paternal warmth, $R^2 = .09$, $F(5,76) = 2.68$, $p = .01$, and criticism, $R^2 = .09$, $F(5,76) = 2.51$, $p = .02$. Father praise was uniquely associated with FAARS paternal warmth ($\beta = .24$, $p = .04$).

Table 6.
Associations between FAARS and Observed Parent-Child Interaction

	Mother FAARS (n's = 136 – 153)		Father FAARS (n's = 82 – 91)	
	Warmth	Criticism	Warmth	Criticism
Observed mother-child interaction				
Mother warmth/responsiveness	.30[a]	-.11		
Mother engagement	.33[a,b]	-.12		
Mother praise	.11	-.03		
Mother criticism	-.04	.11		
Mother harsh parenting	-.03	-.03		
Observed father-child interaction				
Father warmth/responsiveness			.30[a]	-.24[a]
Father engagement			.24[a]	-.20[a]
Father praise			.28[a,b]	-.25[a]
Father criticism			-.05	-.17
Father harsh parenting			-.13	-.09

Note. PRS = positive relational schema; NRS = negative relational schema; SDQ = Strengths and Difficulties Questionnaire; APSD = Antisocial Processing Screening Device.
[a] $p < .05$. [b] standardised $\beta < .05$.

Comparative prediction of conduct problems from FAARS scores and observed parenting behaviour. Lastly, it was examined whether FAARS scores would be predictive of children's conduct problem severity, over and above parenting scores obtained from directly observed parent-child interaction. The five parenting behaviour codes (as previously listed), and parental warmth and criticism rated by the FAARS, were entered simultaneously into separate regression equations for each parent, with conduct problems as the dependent variable (see Table 7 for the results). For mothers, the overall model was significant, $R^2 = .20$, $F (7,122) = 5.64$, $p < .01$, with observed mother criticism ($\beta = .28$, $p = .01$) and FAARS rated maternal warmth ($\beta = -.21$, $p = .03$) and criticism ($\beta = .21$, $p = .04$) demonstrating unique variance in the prediction of conduct problems. Similarly, for fathers, the overall model was significant, $R^2 = .11$, $F (7,74) = 2.49$, $p = .01$, with FAARS paternal criticism ($\beta = .37$, $p < .01$) and a trend towards observed father criticism ($\beta = .21$, $p = .08$) contributing independently to the prediction of conduct problems.

Discussion

This pilot study evaluated the measurement properties of the FAARS with mothers and fathers of school-aged children with behaviour problems. Parental warmth and criticism rated by the FAARS were found to be internally consistent, and could be coded reliably in a short amount of time following manualised training. In line with predictions, parents of children with externalising disorders generally exhibited less positivity and more negativity in their speech samples than parents of children with other disorders. Moreover, for both mothers and fathers, levels of warmth and criticism were negatively and positively associated with conduct problem severity respectively. Warmth and criticism converged with some elements of observed parenting behaviour during family interaction, further supporting the validity of the FAARS interpersonal measure. Finally, FAARS scores demonstrated associations with conduct problems over and above measures of parenting behaviour coded

Table 7.

Prediction of Child Conduct Problems from Directly Observed Parent-Child Interaction and FAARS

		Conduct problems		
	r	*B* (SE)	β	*R²*
Observed mother-child interaction				
Mother warmth/responsiveness	-.21***	-.30 (.27)	-.12	
Mother engagement	-.10	.16 (.26)	.06	
Mother praise	-.09	-1.41 (2.45)	-.05	
Mother criticism	.31***	12.80 (3.79)	.28***	
Mother harsh parenting	-.03	-6.51 (4.62)	-.12	
Mother FAARS				
Mother warmth	-.32***	-.54 (.24)	-.21**	
Mother criticism	.33***	.50 (.21)	.21**	.20***
Observed father-child interaction				
Father warmth/responsiveness	-.05	.16 (.35)	.07	
Father engagement	-.11	-.06 (.35)	-.02	
Father praise	.04	4.54 (3.62)	.15	
Father criticism	.14*	17.53 (9.88)	.21*	
Father harsh parenting	.06	-2.21 (14.61)	-.02	
Father FAARS				
Father warmth	-.24**	-.38 (.33)	-.14	
Father criticism	.34***	1.11 (.37)	.37***	.11**

Note. N ranges from 130 to 153 for mothers; *N* ranges from 82 to 91 for fathers.
* $p < .10$. ** $p < .05$. *** $p < .01$.

from direct observations of family interaction. Taken together, these findings provide support for the reliability and validity of the FAARS in clinic samples of families with young children with behaviour disorders; thus this data warrants the inclusion of the FAARS measure of parental warmth in the current research.

Parent-Child Emotional Communication

As mentioned above, families were observed during a 10–minute emotional reminiscing task that is commonly used in research with parents and children (e.g., Fivush, Marin, McWilliams, & Bohanek, 2009). Instructions were to "talk about a happy time that you have all shared together and a sad time that you have all shared together". Family emotion dialogues were transcribed verbatim and the transcripts were randomly checked for accuracy by a senior research assistant. An example of a family's transcribed conversation is provided in Appendix C. The transcripts and video-recorded observations were both used in coding dynamics of parent-child emotional communication; namely, expression of, and focus on, emotions, and parental responding to child emotion. Various other dimensions of families' emotional conversations were coded to control for potential confounding variables. The coding system developed for this research (see Appendix D) was based on manuals and procedures used in past research (Adams, Kuebli, Boyle, & Fivush, 1995; Dunn et al., 1991; Shields, Lunkenheimer, & Reed-Twiss, 2002). Coding was completed in two-stages: 1) the observation was viewed in its entirety and the global affective quality of family interaction, i.e., warmth (e.g., positive affect and affectionate touch) and negative affect (e.g., crying, yelling, whinging, grimacing) for each participant, was rated on a 0 (did not occur) to 4 (high frequency and/or high intensity) scale; 2) the transcript and video-recording were used to code the content and style of participants' utterances; where utterances were defined as all of one speaker's comments enclosed by another speaker's comments (Dunn et al., 1991).

Family Emotion Expression and Focus on Emotions

Explicit references to emotion terms—emotional behaviours, states, and evaluations (Adams et al., 1995)—were used to index *emotion expression*. Explicit emotion references were only coded if they were not used in a repetitive context, i.e., were not part of verbatim repetitions of previous utterances or repetitions of the task's instructions; and only coded once when the same word was repeated within an utterance. Categories of negative emotion words included: sadness, fear, anger, negative state (e.g., guilty), and negative evaluation (e.g., hate). Categories of positive emotion words included: positive state (e.g., happy), affection (e.g., love), and positive evaluation (e.g., favourite). Utterances with no explicit emotion word but which pertained to an emotion referenced in a previous utterance were coded as having either a positive or negative emotion theme. Utterances with emotion themes and emotion words were then summed to create frequency variables indexing the level of families' *focus on emotions*. Frequencies were also used for families' expression of emotions in analyses (Dunn et al., 1991; Fivush et al., 2000). Considering that the focus of the present research is on CU traits and antisocial behaviour, specific results for parent/child expression of distress (sadness and fear) and anger are also reported.

Parental Responding to Child Emotion

The frequency of two types of parental reactions to child expression of emotion were coded: 1) *validation* included confirmations of children's emotion (e.g., "Yeah, I can see why you were upset") and reflective listening (e.g., "So you are saying that you were happy when we went to see Grandma?"); 2) *dismissing* included statements (e.g., "You were silly to be upset about that" and "That's not how you felt") and behaviour (e.g., eye-rolling and sighing) that criticised, minimised, or ignored child emotion (Shields et al., 2002).

Quality of Family Conversation

To control for potential confounds, various indicators of the quality of family conversation were coded: (i) child avoidance of emotion discussion was defined as active or passive non-compliant child behaviour in direct response to parents' bids for discussion about emotions, and included statements (e.g., "I don't want to talk about that") and actions (e.g., child attempts to leave the room or child covers his ears) (Waters et al., 2010); (ii) frequency of utterances including parental requests for child compliance (e.g., "Come and sit back down over here"); (iii) frequency of emotional utterances referencing family conflict themes (e.g., discipline and child antisocial behaviour); (iv) frequency of emotional utterances pertaining to discussion on the "happy" and "sad" topics (as guided by families' conversation); (v) frequency of all utterances made by participants for the entire task; (vi) emotional utterances that were disconnected, i.e., the next person's utterance in the conversation was not semantically related to the previous speaker's utterance; as a proportion of the total of connected and disconnected emotional utterances (Ensor & Hughes, 2008). Codes included children disconnecting from mothers' and fathers' emotional utterances, and parents disconnecting from children's emotional utterances. Past research has reported more disconnected conversation in families of conduct-problem children compared to controls (Brophy & Dunn, 2002).

Two psychology postgraduates (uninvolved in any of the previously discussed observational measures) were trained on the coding procedures by the investigator (15 hrs total) and passed reliability tests on sample observations before coding the data reported on in the current research. Coding meetings to control for coder's drift were held regularly, and discrepancies in scores were resolved by consensus. Coders were blind to children's CU traits scores and all other diagnostic information. 25% of the families were re-coded by an independent coder to examine inter-rater reliability. ICCs ranged from .85 – 1.00 for emotion talk variables and from .67 – .99 for all other behavioural variables.

Child Attachment Representations

The focus of this thesis is on children in the preschool and primary school years. While the Strange Situation is considered the gold standard measure of attachment in infancy and toddlerhood; the most commonly used, and developmentally appropriate, form of attachment assessments in school-aged children are story-stem completion tasks (O'Connor & Byrne, 2007) that purportedly tap into children's representation—i.e., cognitive-affective schema—of the attachment relationship. Moreover, considering that the previously described measures of parent-child processes were taken from parent-child interactions and parents' narratives of the parent-child relationship; measures of children's attachment narratives consolidate the multi-informant nature of the observational assessments in the current research. Thus, the Manchester Child Attachment Story Task (Green, Stanley, Smith, & Goldwyn, 2000) was used to capture the quality of the parent-child attachment relationship, from the perspective of the children.

Manchester Child Attachment Story Task

The Manchester Child Attachment Story Task (MCAST) is a story-stem completion task that includes four vignettes with attachment themes—i.e., nightmare, hurt knee, tummy ache, and lost in shops—and a control vignette (breakfast time) for comparison. Stories are enacted using a doll house with play furniture and figurines that are representative of the child and his/her primary caregiver (namely the mother for all children that participated in Study 3). Figure 3 shows the set-up of this task. The examiner introduces each attachment-related dilemma, and uses mood induction to create a mildly distressing setting for the child. Children are then asked to complete the stories, followed by a set of standardised prompts at the end of each vignette: "What is Mum/(child's name) doll thinking now?" and "What is Mum/(child's name) doll feeling now?". A range of dimensions of children's attachment narratives and behaviour throughout the task are coded (see Futh, O'Connor, Matias, Green,

& Scott, 2008 for an exhaustive description of these codes; and Appendix E for a copy of the score sheet used in coding individual vignettes).

In the current research, the focus was on children's overall attachment classification (considered across all four attachment vignettes) as well as their continuous score for disorganisation. Secure narratives are marked by caregiver proximity seeking and effective interpersonal contact for resolution of distress. Ambivalent narratives show frequent occurrences or significant events of motivational conflict, e.g., alternating pattern of clinginess and anger towards caregiver. Avoidant narratives are marked by non-interpersonal means of assuaging distress that may or may not be effective. In disorganised narratives, there is a complete lack of goal-directed behaviour, i.e., an absence of any strategy for resolving distress; or a use of multiple and incompatible attachment strategies. A "forced-choice" secondary attachment classification can be assigned in the case of disorganised attachment. Continuous scores for disorganisation (e.g., freezing or lapses in narratives, disoriented or contradictory behaviour, and bizarre/chaotic themes) were rated on a 9-point scale.

The MCAST has demonstrated reliability and validity in community (e.g., Barone et al., 2009; Green et al., 2000) and clinic (e.g., Futh et al., 2008; Green et al., 2007) samples. Two examiners (one being the investigator) completed an official 3-day training workshop on MCAST administration and coding. This was followed-up with two examinations. First, the examiners had to demonstrate competency in administering the MCAST in an experimental setting. Second, in a sample of 10 test vignettes, the examiners had to achieve a minimum level of agreement (i.e., 80%) with MCAST founders on attachment classifications and continuous scores. These conditions were met by both examiners prior to coding the current sample. The investigator coded the entire sample and 25% of the assessments were re-coded by the second trained examiner. Inter-rater reliability was high for classifications of insecure

(kappa = .85) and disorganised (kappa = .81) attachment; although lower for avoidant

attachment (kappa = .42), due to the small (n = 2) number of these recognised by each coder

in this subsample. Coders showed good convergence on ratings for continuous

disorganisation scores (ICC = .88). As in the previous observational procedures, coders were

blind to children's CU traits scores and all other diagnostic information.

Figure 3. Set-up for child attachment assessment.

Observational Data

Due to the low base rate (i.e., relative infrequency) of some behaviour under examination in observational studies, researchers often encounter non-normal distributions with positive skew. In such cases, rather than dismissing more extreme scores as outliers, these scores should be considered meaningful in observational research, largely because participants' behaviour has been captured by relatively objective methods that may be less prone to more aberrant forms of measurement error compared to participant self-reports. Thus, in order to meet the assumption of normality in parametric statistics, it is necessary to correct the skew and kurtosis in observational data with non-normal distributions. Although there is no "right" way of dealing with skewness and kurtosis (Delucchi & Bostrom, 2004), a common and preferred method among researchers is log-transformation (Tabachnick & Fidell, 1996). In the current research, scores for observational variables with more extreme leptokurtic distributions (kurtosis > 7; Kline, 1998) were log-transformed after adding a constant – because zero fell within the range of scores (i.e., using the formula: $\log[X + 10]$). This procedure successfully reduced skew and kurtosis to acceptable levels. In addition, it was checked whether the results differed when using the raw data for the adjusted variables; however, across the studies the pattern of findings did not change.

There were two main reasons why the abovementioned domains of parent-child relational processes; that is, warmth, emotional communication, and attachment; were examined in independent studies in this thesis. First, on a conceptual level, it was considered important that the contribution of these domains to the prediction of CU traits and/or conduct problems in high and low CU children be understood individually, prior to examining their overlapping and unique contributions. Second, because recruitment of participants for each study commenced at different time periods, there were only limited numbers of families that had data for at least two different dimensions of relational processes. Thirty-two families had

both attachment and warmth scores, 33 families had both attachment and emotional

communication scores, and 43 families had both warmth and emotional communication

scores. Sample sizes were considerably lower for fathers' scores alone. Thus, studies would

have been underpowered to investigate the simultaneous effects of these domains in

multivariate analyses.

STUDY 1: PARENTAL WARMTH AND COERCION AND CONDUCT PROBLEMS:

MODERATION BY CU TRAITS

The previously discussed literature provided a conceptual framework for understanding distinct parent-child processes that may be associated with developmental outcomes in children with varying levels of emotionality. Coercive processes appear to be involved in the development of antisocial behaviour in children high on emotionality; whereas relational processes may be important for the socialisation of children low on emotionality. The present study was designed to examine this model in a sample of antisocial children, while addressing the limitations of previous research that were described in detail in the introduction (see p. 49).

The aims of this study were to improve and extend on prior studies examining the moderating effects of CU traits on associations between parenting and conduct problems. The current study focused on two key dimensions of parenting hypothesised to differentially associate with antisocial outcomes in children with high compared to low CU traits: coercive parenting and warmth. No study to date has examined these concurrently in *boys*, despite conduct problems being more prevalent in boys. This study also invested in measuring parenting via direct observation of family interaction and parents' narratives of the parent-child relationship. It was hypothesised that CU traits would moderate links between parenting and conduct problems; specifically that (i) parental coercion would be more strongly positively related to conduct problems in boys with lower levels of CU traits, and (ii) parental warmth would be more strongly negatively associated with conduct problems in boys with higher levels of CU traits. Fathers were also included as a first step towards identifying the relationship between paternal behaviour and conduct problems as a function of children's levels of CU traits. As a result of the lack of research on this topic, the inclusion of fathers was exploratory, and this study was largely interested in whether the same pattern of findings

would be evident for both mothers and fathers. As such, mothers' and fathers' parenting

behaviour were examined in separate analyses.

Method

Participants

Participants were 95 boys aged 4 to 12 years ($M = 7.24$, $SD = 2.28$) and their families,

referred to CBRC. 87 boys (92%) were diagnosed with ODD and 8 with CD. Fifty boys had

comorbid diagnoses: 42% presented with comorbid ADHD and 11% with comorbid

Anxiety/Mood Disorders. Parents were 94 mothers and 62 fathers (20 single mothers and one

single father). Six "fathers" were step-parents and had been living with the child a minimum

of 2 years and for most of the child's life in the majority of cases. There were five biological

grandmothers and one biological grandfather. These grandparents had been the child's

primary caregiver(s) for most of his life, predominantly due to child protection concerns at

birth. No foster families were included in the study. Parents' highest education level attained

ranged from: 4 years of secondary school (mothers: 13% and fathers: 10%), to 6 years of

secondary school (mothers: 10% and fathers: 11%), to technical/skills-based tertiary

education (mothers: 43% and fathers: 44%), to university education (mothers: 34% and

fathers: 35%).

Measures

Multi-informant measures of children's *conduct problems* and *CU traits* were

assessed using the methods previously described on pp. 52 – 54. As outlined on pp. 58 – 59,

coercive parenting was coded from direct observation of family interaction using the FOS–

VI. Parental *warmth* was coded from FMSSs using the FAARS; see pp. 59 – 60 for a

description.

Results

Table 8 presents descriptive statistics for the independent and dependent variables. *Z*-scores for conduct problems and parenting variables were computed prior to screening out participants missing family observation data. Coercive parenting scores were log-transformed to reduce skew for statistical analyses. Zero-order correlations among children's age and the independent and dependent variables are presented in Table 9. As expected, conduct problems were significantly associated with CU traits, children's age and parents' coercive behaviour and warmth. CU traits only evidenced one significant correlation with parenting; higher rates of CU traits were associated with lower levels of paternal warmth. The lack of significant associations between coercive parenting and parental warmth for both mothers and fathers indicated that they were measuring distinct dimensions of parenting.

Table 8.
Descriptive Statistics for the Main Variables in Study 1

	N	*M*	*SD*	Minimum	Maximum
Conduct problems[a]	95	.23	.97	-1.77	1.98
CU traits	95	32.11	34.38	.00	100.00
Mother coercive parenting[a]	94	-.20	.85	-.64	4.09
Father coercive parenting[a]	62	.04	1.98	-.80	12.31
Mother warmth	91	3.90	1.56	1.00	8.00
Father warmth	62	4.11	1.44	1.00	7.20

Note. CU = Callous-Unemotional. [a] *z* score

Table 9.

Correlations among Children's Age and the Main Variables in Study 1

Variables	1	2	3	4	5	6
1. Age						
2. Conduct problems	.42***					
3. CU traits	.03	.27**				
4. Mother coercive	.39***	.18†	-.09			
5. Father coercive	.11	.17	-.05	.19		
6. Mother warmth	-.20†	-.26*	-.06	-.06	-.24†	
7. Father warmth	-.21†	-.19	-.40**	-.06	-.15	.49***

Note. CU = Callous-Unemotional; *N* ranges from 91 – 95 for correlations among age, conduct problems, callous-unemotional traits, and maternal parenting measures; *N* ranges from 58 – 62 for correlations involving paternal parenting measures.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Moderating Effect of CU Traits on Parenting and Conduct Problems Associations

Hierarchical multiple regression was used to examine the moderation of CU traits on links between parenting and conduct problems. Separate analyses were conducted for mothers and fathers. Demographic variables associated with conduct problems and parenting were treated as covariates. The following variables were entered in step 1: age, family demographics (parent's education, grandparent caregiver, and siblings present during family observation), and main effects of CU traits, coercive parenting, and warmth. In step 2, the product terms: CU traits × coercive parenting and CU traits × warmth, were entered in order to test interaction effects. The dependent variable in both analyses was parent-reported conduct problems *z* scores. Significant interaction effects were examined by testing whether the slopes of the regression lines at low, medium, and high values of CU traits differed

significantly from zero (Cohen, Cohen, West, & Aiken, 2003). Meaningful values were used

to represent the varying levels of CU traits: low CU = 100% of raters agreed that child was

low CU; medium CU = 50% of raters classified child as high CU; and high CU = 100% raters

classified child as high CU. Regression equations were used to plot mean values for conduct

problems at minimum and maximum observed values for the independent variables (i.e.,

coercive parenting and warmth) as a function of the three levels of CU traits.

Table 10 shows the results from the regression analyses for mothers and fathers.

Three mothers that had missing values for warmth were excluded using listwise deletion. For

mothers, the overall regression model was significant, $F(9,81) = 5.38$, $p < .01$. CU traits

were significantly positively associated with conduct problems, and there was a trend ($p =$

.09) towards a negative association between mothers' warmth and conduct problems. The

inclusion of the interaction effects in the model explained an additional 6% in the variance of

conduct problems, $\Delta F = 3.94$, $p = .02$. As predicted, there were significant unique interaction

effects between CU traits and mothers' coercion and CU traits and mothers' warmth. Upon

closer inspection, and consistent with this study's first hypothesis, mothers' coercion was

significantly positively associated with conduct problems in children with low levels of CU

traits ($\beta = .30$, $p = .03$), but not in children with medium ($\beta = .12$, $p = .33$) or high ($\beta = -.07$, p

= .78) levels of CU traits (see Figure 4 for the plots of the simple slopes). In line with the

second hypothesis, mothers' warmth was significantly negatively associated with conduct

problems in children with high ($\beta = -.56$, $p = .02$) and medium ($\beta = -.34$, $p = .01$) levels of

CU traits, but not in children with low levels of CU traits ($\beta = -.13$, $p = .32$) (see Figure 5).

For fathers, the overall regression model was significant, $F(9,52) = 3.82$, $p < .01$.

Higher rates of CU traits were uniquely associated with higher scores on conduct problems.

Consistent with predictions and the results for mothers, CU traits significantly moderated the

independent associations between fathers' coercive parenting and conduct problems, and

Table 10.

Regression Analyses Testing for Moderation of Callous-Unemotional Traits on Associations between Parenting Variables and Conduct Problems

| Step | Independent variables | Conduct problems | | |
		β	R^2	$R^2\Delta$
Mother				
1.	CU traits	.27**		
	Coercive parenting	.06		
	Warmth	-.16†	.26***	
2.	CU traits × Coercive parenting	-.25*		
	CU traits × Warmth	-.18*	.30***	.06*
Father				
1.	CU traits	.43**		
	Coercive parenting	.18		
	Warmth	.05	.21**	
2.	CU traits × Coercive parenting	-.35*		
	CU traits × Warmth	-.25*	.29**	.10*

Note. CU = Callous-Unemotional; $N = 91$ for mothers; $N = 62$ for fathers; Demographics (age, parent's education, grandparent caregiver, siblings present during family observation) were entered in Step 1.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

fathers' warmth and conduct problems; with the interaction effects together accounting for an additional 10% of variance in conduct problems, $\Delta F = 4.42$, $p = .02$. Tests of the significant interaction effects revealed that fathers' coercive parenting was positively associated with conduct problems in children with low levels of CU traits (β $= .34$, $p = .05$), but not in

children with medium ($\beta = .09$, $p = .52$) or high ($\beta = -.15$, $p = .63$) levels of CU traits (Figure 4); providing further support for the first hypothesis. Consistent with the second hypothesis, fathers' warmth displayed a stronger (albeit non-significant) negative association with conduct problems in children with high levels of CU traits ($\beta = -.28$, $p = .34$), than children with medium ($\beta = -.10$, $p = .50$) or low ($\beta = .08$, $p = .65$) levels of CU traits (Figure 5).

Discussion

This study examined the moderation of CU traits on associations between directly observed parenting behaviour and conduct problems in clinic-referred boys with disruptive behaviour disorders. Previous research is limited by its measurement of parenting using self-reports, as goal-directed behaviour, and in mothers only. The present study predicted that two key and distinct dimensions of parenting, coercion and warmth, would be more strongly related to antisocial behaviour in children contingent on lower versus higher rates of CU traits respectively.

First, the present findings replicated others (Edens et al., 2008; Hipwell et al., 2007; Oxford et al., 2003; Wootton et al., 1997) that there are stronger associations between ineffective/harsh parenting practices and conduct problems in low compared to high CU children. Coercive parenting was positively related to conduct problems only in boys with low levels of CU traits, and CU traits moderated this dimension of parenting in mothers and fathers alike. This replication is important because it involved the first use of independent observations of parental coercion during family interaction rather than self-reports.

Second, consistent with results from a recent study using a community sample of school-aged girls (Kroneman et al., 2011), this study found that CU traits significantly moderated the link between parental warmth and conduct problems. Specifically, maternal warmth was negatively related to conduct problems only in boys with high levels of CU
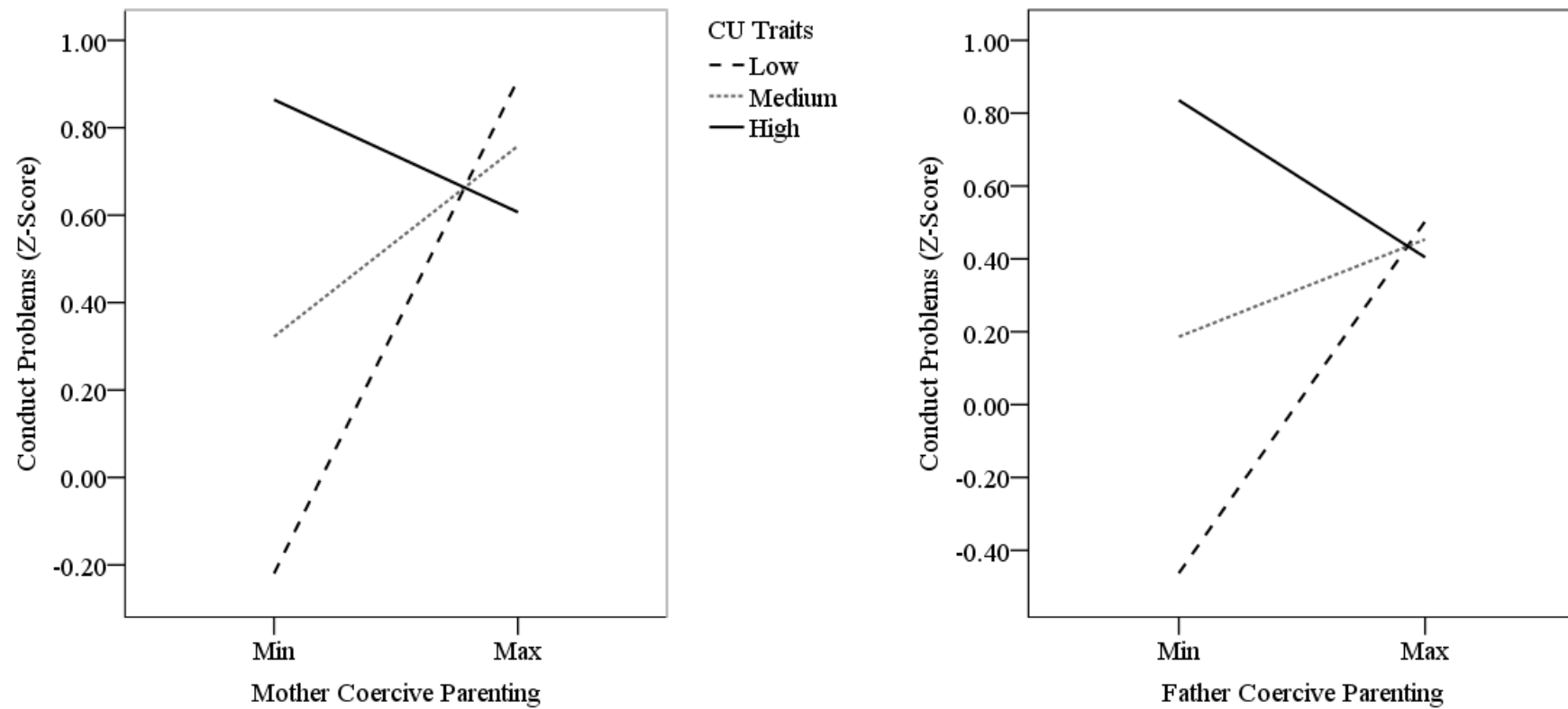
Figure 4. Simple slopes of the associations between mothers' and fathers' coercive parenting and conduct problems at low, medium, and high levels of callous-unemotional (CU) traits.

Note. Min = minimum observed value; Max = maximum observed value.
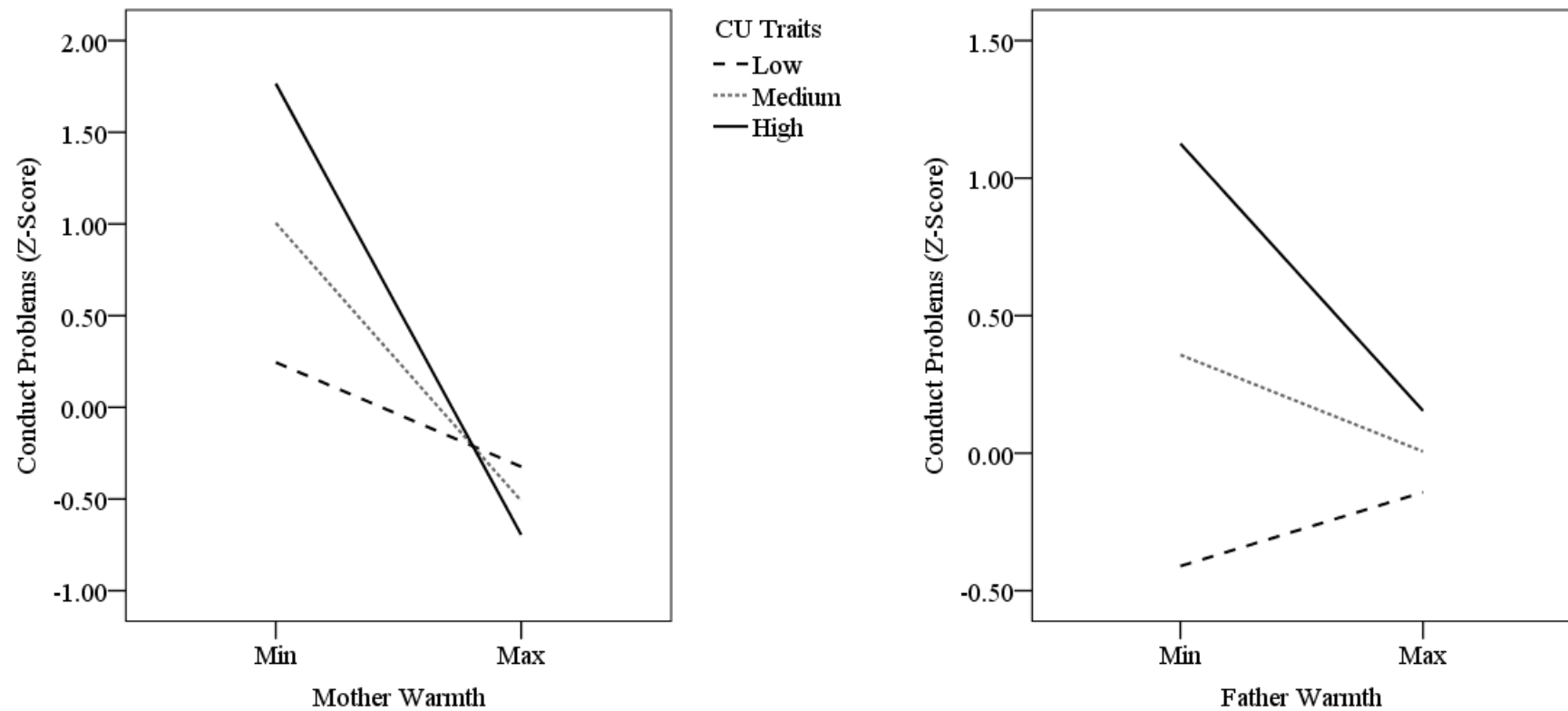
Figure 5. Simple slopes of the associations between mothers' and fathers' warmth and conduct problems at low, medium, and high levels of callous-unemotional (CU) traits.

Note. Min = minimum observed value; Max = maximum observed value.

traits, and paternal warmth shared a stronger negative (albeit non-significant) association with conduct problems in boys with high compared to low levels of CU traits. The Kroneman et al. (2011) study used self-report measures of parents' warmth in the parent-child relationship. The measure of warmth in this study was coded from direct observation of parents' narratives regarding their child and the parent-child relationship. Literature searches indicate that the current study provides the first demonstration of a link between parents' warmth and antisocial behaviour in boys elevated on CU traits.

Paternal warmth was also associated with lower levels of CU traits. Child-reported parental warmth/involvement has previously been found to predict a reduction in CU traits over a 1-year period (Pardini et al., 2007). However, in contrast to the findings reported in prior studies (Hawes et al., 2011; Pardini et al., 2007), coercive parenting was not significantly related to CU traits scores. Importantly, the scarcity of significant relationships between parenting measures and CU traits in these results, rules against the possibility that there was restricted range in data for parenting measures at either higher or lower levels of CU traits, that may have contributed to the main CU moderation results reported on in this study.

There are some cautions in interpreting the results of this study. First, due to the cross-sectional nature of the data, one cannot rule out the possibility that stronger relationships between parental warmth and conduct problems in high CU children were the result of a common genetic factor in boys and their parents, because of the higher genetic loading on elevated levels of coexisting CU traits and conduct problems (Viding et al., 2005). Interestingly though, this hypothesis would still have to account for why conduct problems in children high on CU traits were only related to one specific dimension of parenting. Second, despite having enough power to detect significant CU moderation effects in the group of

fathers, this study may have been lacking power for its post-hoc simple slope analysis involving paternal warmth.

In summary, the results of this study provide solid support for the model developed in the literature review. Coercive processes marked by harsh and critical parenting were strongly related to antisocial behaviour in children with low CU traits. As previously discussed, conduct-problem children without elevated CU traits are considered to be more emotionally volatile than their peers, and display a reactive style of aggression. In this light, such children would appear to be particularly prone to engaging in "emotionally rich" coercive exchanges with parents; providing a fertile training ground for antisocial behaviour. Conversely, antisocial children high on CU traits are less sensitive and responsive to aversive stimuli such as punishment, particularly when they are focused on gaining rewards. In this study a key relationship process—parental warmth—was strongly associated with conduct problems in children with elevated CU traits. For such children, the rewarding value of parents' warmth might foster compliance with, and internalisation of, parents' rules and values. These ideas will be revisited in the general discussion. The following study will continue and expand on this line of research by examining a complementary, yet distinct relational domain of parent-child dynamics – emotional communication.

STUDY 2: DYNAMICS OF EMOTIONAL COMMUNICATION, CU TRAITS, AND CONDUCT PROBLEMS

The results of the preceding study support the claim that parental warmth may play an important role in shaping the problem trajectories of antisocial children with elevated CU traits. However, little is known about the dynamics by which warmth, and emotion in general, is communicated and exchanged in such families. This study extends this line of inquiry by conducting a fine-grained analysis of emotional interactions in families of children with conduct problems and CU traits.

As previously highlighted in the introduction, children with high compared to low CU traits have been shown to differ fundamentally in their emotion profiles. For instance, higher levels of CU traits are associated with lower levels of fear (Frick et al., 1999; Pardini, 2006), decreased responsiveness to negative emotional stimuli (Blair, 1999; Loney et al., 2003), and poorer recognition of others' negative affect (Blair, Colledge, Murray, & Mitchell, 2001; Dadds et al., 2006). Styles of emotion processing in families have been consistently linked to emotional traits and behaviour in children (Eisenberg, et al., 1998), although literature searches were unable to identify any prior research on styles of emotion processing in the families of children with high CU traits. Thus, the general aim of this study was to examine the ways in which emotions are expressed and dealt with in the families of high CU conduct-problem children, and the potential consequences of parent-child emotion processes for child antisocial outcomes.

Family interactions provide a rich source of opportunities for children to experience and learn about emotions (Harris, 1994). Antisocial children with high CU traits are at risk to miss out on critical stages of emotional learning within parent-child interactions. Due to their failure to pay attention to significant emotional stimuli communicated by caregivers (Dadds et al., 2011; Dadds et al., in press), high CU children might need extra input to develop

healthy emotional processing skills. For example, emotion recognition deficits in children elevated on CU traits can be temporarily overcome by redirecting their attention to core emotional stimuli on other people's faces (Dadds et al., 2006). Similarly, high CU children can inhibit aggression towards a pseudo rival during an interactive computer game when their victim's distress is made suitably salient (van Baardewijk, Stegge, Bushman, & Vermeiren, 2009). Taken together, these findings suggest that children high on CU traits are less cognizant of others' affect and may require more directed scaffolding from their environment in order to focus on, and respond to, emotional cues within interpersonal interactions.

In comparison to their low CU counterparts, conduct-problem children with high levels of CU traits do not appear to have difficulties inhibiting excessive negative affect, but rather have difficulties "up-regulating" attention and responsiveness to others' negative affect (Blair, 1999; Blair et al., 2001), which is manifested in broad empathy impairments (Anastassiou-Hadjicharalambous & Warden, 2008; Dadds et al., 2009) and theoretically linked to their antisocial behaviour (Blair, 1995, 2006; Frick & Viding, 2009). When parents engage children in emotion-focused discussion they are scaffolding children's processing of emotions and encouraging children to pay attention to the affective qualities of social interaction (Dunn et al., 1991). For instance, the frequency with which parents communicate about emotions during parent-child discourse is predictive of children's later ability to understand other peoples' emotions (Denham, Zoller, & Couchoud, 1994; Dunn et al., 1991), a necessary emotional process for moral conduct (Hoffman, 2000). Open verbal communication about emotions within the parent-child relationship, might be a particularly important source of emotional learning for children high on CU traits, given their impairments in processing other peoples' non-verbal emotional cues.

Findings from naturalistic observational studies of family interactions suggest that families differ considerably in the frequency and quality with which they engage in emotion-

related discussion during everyday conversations (Dunn et al., 1987). Child characteristics, such as emotionality, are important in explaining individual differences in the frequency of families' emotion talk (Laible, 2004; Suveg, Zeman, Flannery-Schroeder, & Cassano, 2005). The creation of a "shared emotional forum" in which parents and children can discuss emotions might be particularly disrupted in the families of children elevated on both conduct problems and CU traits. Arguably, high CU children are less likely to engage in conversation about their own or others' feelings because one of the core conceptual characteristics of CU traits in children is "shallow or deficient affect"; that is, lack of expression or showing of emotions to others, except in a superficial way or for personal gain (Frick & Hare, 2001; Frick & Moffitt, 2010). A lack of emotion expression in high CU children may impair family channels of open emotional communication because of the reciprocal nature of parent and child emotional expression (Fivush, Brotman, Buckner, & Goodman, 2000). Literature searches indicate, however, that (lack of) emotion expression in high CU children has never been directly observed in the context of social interactions; most importantly, not in the context of interactions with attachment figures. Thus, the extent to which the sharing of emotions is restricted in the families of children with high levels of CU traits remains unknown.

This study was also interested in examining how parents respond to high CU children when they do express emotions. Children first come to experience the social value and impact of their emotions within attachment relationships with caregivers (Ainsworth, Bell, & Stayton, 1974; Bowlby, 1982). Parents' responses to child emotion have a powerful socializing force on children's emotion-related behaviour (De Wolff & van Ijzendoorn, 1997; Eisenberg et al., 1998). Gottman and colleagues have distinguished between parents' emotion-socialisation styles that are either supportive/coaching or dismissing of emotions (Gottman et al., 1996). "Emotion-coaching" parents are validating of child affect and see

emotions in their children as opportunities for intimacy and teaching. Conversely, "emotion-dismissing" parents are invalidating of child affect and encourage avoidance or minimisation of emotions. Parents' emotion-dismissive behaviour can influence children to suppress their expression of emotions (Eisenberg et al., 1998; John & Gross, 2004). Thus, parents' style of responding to child emotion socialises children's expression of emotion, but it is also likely that child emotionality impacts on how parents respond to emotion expressed by children (Eisenberg et al., 1998). There is some indication of bi-directional effects between dimensions of parenting behaviour (e.g., warmth and involvement) and CU traits over time (Hawes et al., 2011; Pardini et al., 2007). Literature searches do not reveal, however, any prior research on emotion-related parenting behaviour in families of children with high CU traits.

In this study, family interactions involving the discussion of shared emotional experiences were directly observed and coded in a sample of conduct-problem boys. The current study was interested in families' expression of, and focus on, emotions, as well as parents' responding to child affect. The first aim was to examine the relationship between CU traits and emotion expression—as verbally communicated—in children and their parents. Based on the aforementioned conceptualisation of CU traits and its consequences for family emotion expression, it was predicted that higher CU children and their parents would express emotions at lower frequencies during family conversations. The second aim was to examine how parents of high CU children respond to child expression of emotion. Considering bi-directional parent and child influences on CU traits and parenting (Hawes et al., 2011), the style of emotion-related behaviour in parents of high CU children is likely influenced by CU features (e.g., shallow affect), while also reinforcing of emotional detachment in interpersonal relations. Thus, it was hypothesised that parents of higher CU children would exhibit a less validating and more dismissive style of responding to child emotion. Finally,

the third aim was to examine the moderating effect of CU traits on the relationship between parents' focus on emotions during parent-child interactions and conduct problems. As interpersonal emotional impairments in CU traits are most pronounced in the domain of negative affect (Frick & White, 2008), it could be suggested that parents' focus on *negative* emotions is more important for antisocial outcomes in high CU children. Therefore, it was predicted that higher levels of parental focus on negative emotions would be more strongly associated with lower conduct problems in children with high versus low CU traits.

Method

Participants

Participants were 59 families with children aged 3 to 9 years ($M = 5.85$, $SD = 1.83$) referred to CBRC. Only children with a primary diagnosis of ODD (97%) or CD were included. Children had the following co-morbid diagnoses: ADHD (29%) and Anxiety Disorder (7%). The majority of children resided in two-parent families (78%). 59 mothers and 49 fathers participated. Parents' highest education level attained ranged from: 4 years of secondary school (mothers: 7% and fathers: 7%), to 6 years of secondary school (mothers: 3% and fathers: 7%), to technical/skills-based tertiary education (mothers: 56% and fathers: 58%), to university education (mothers: 34% and fathers: 28%).

Measures

Children's *conduct problems* and *CU traits* were captured by the multi-informant measures outlined on pp. 52 – 54. Children's *verbal ability* was measured using the various age appropriate assessments described on p. 55. Children and their parents completed a 10–minute emotional reminiscing task, and family *emotion expression* and *focus on emotions*, *parental responding to child emotion*, and various *quality of family discussion* variables (to include as potential confounds), were coded following the guidelines in the emotion talk

manual (see Appendix D). A detailed account of the task's procedures and codes can be found on pp. 70 – 72.

Results

Preliminary Analyses

Table 11 shows descriptive statistics for the main variables in the study; i.e., CU traits, conduct problems, and frequencies of family emotion references and parents' responding to child emotion. Descriptive statistics for demographics and quality of family interaction variables are displayed in Table 20 (see Appendix F). Observational variables with more extreme leptokurtic distributions (kurtosis > 7) were log transformed. Directional a priori hypotheses (i.e., predicted associations) were examined using one-tailed tests, and two-tailed significance levels are reported for all other results.

First it was examined whether there were differences between mothers', fathers', and children's overall communicative behaviours using Person (mother, father, child) as a repeated measure in MANOVA. There was an overall main effect for person, $F(14,35) = 3.65, p < .01$. Univariate tests showed that the differences were significant for references to sadness, $F(2,96) = 3.65, p = .03$, and overall positive emotion expression, $F(2,96) = 10.97, p < .01$. For both of these, mothers expressed the highest level followed by fathers, and the lowest levels were expressed by the children.

As displayed in Table 12, frequencies of mothers' and children's expression of positive and negative emotions were significantly positively associated. There was a positive relationship between frequencies of mothers' and fathers' dismissing of child emotion. Mothers with higher negative emotion expression tended to validate and dismiss child emotion more frequently. Frequencies for children's expression of positive and negative emotions were positively associated with frequencies of parents' dismissing.

Table 11.
Descriptive Statistics for the Main Variables in Study 2

	M	*SD*	Minimum	Maximum
CU traits	38.14	34.33	.00	100.00
Conduct problems[a]	.01	.94	-1.73	2.44
Emotion references				
Mother sad	4.75	4.37	.00	30.00
fear	.51	1.04	.00	6.00
anger	.37	1.00	.00	5.00
neg emotion expression	6.39	6.02	.00	42.00
focus on neg emotions	14.03	9.80	.00	50.00
pos emotion expression	3.63	3.83	.00	17.00
focus on pos emotions	19.73	11.97	.00	53.00
Father sad	3.69	2.91	.00	11.00
fear	.45	.84	.00	4.00
anger	.39	1.04	.00	6.00
neg emotion expression	4.84	3.61	.00	15.00
focus on neg emotions	11.86	7.70	.00	34.00
pos emotion expression	1.94	2.23	.00	10.00
focus on pos emotions	16.63	8.35	1.00	36.00
Child sad	2.66	2.43	.00	10.00
fear	.24	.99	.00	7.00
anger	.42	.77	.00	3.00
neg emotion expression	4.08	3.02	.00	13.00
focus on neg emotions	14.50	8.51	.00	35.00
pos emotion expression	1.07	1.73	.00	8.00
focus on pos emotions	15.34	7.41	1.00	39.00
Parental responding				
Mother validation	3.86	3.37	.00	15.00
dismissing	.63	1.50	.00	6.00
Father validation	2.92	3.60	.00	16.00
dismissing	.43	1.08	.00	6.00

Note. CU = callous-unemotional; [a] *z* score.

Table 12.
Associations among Frequencies of Family Negative and Positive Emotion Expression and Parental Responding to Child Emotion

Variables	1	2	3	4	5	6	7	8	9
1. Mother neg emotion									
2. Father neg emotion	.18								
3. Child neg emotion	.28*	.17							
4. Mother pos emotion	.35*	-.07	-.02						
5. Father pos emotion	.13	.29*	-.06	.37**					
6. Child pos emotion	.16	-.01	.40**	.35**	.22				
7. Mother validation	.56**	.04	.09	.49**	.06	.12			
8. Father validation	-.08	.32*	-.05	-.11	.05	-.20	.12		
9. Mother dismissing	.53**	-.01	.48**	.19	-.23	.35**	.13	-.08	
10. Father dismissing	-.04	.03	.39**	-.23	-.10	.01	-.20	-.23	.33*

* $p < .05$. ** $p < .01$. Two-tailed.

It was examined whether age, verbal ability, conduct problems, family demographics, parent/child warmth and negative affect, and quality of family interaction variables (listed in Table 20) needed to be treated as covariates in main analyses. First, their associations with CU traits were tested. Conduct problems ($r = .30$, $p = .02$) and child avoidance of discussion of positive emotions ($r = -.26$, $p = .04$) were the only potentially confounding variables significantly associated with CU traits. Second, it was examined whether these two variables were related to any of the family emotion variables. Only conduct problems demonstrated significant relationships with some of these variables, so it was controlled for in subsequent analyses where it was not being examined directly.

Relationships between CU Traits and Families' Emotion Expression and Parents'

Responsiveness to Child Emotion

Table 13 displays correlations between CU traits and frequencies of family emotion expression and parental responding to child emotion. Partial correlations controlling for conduct problems are in parentheses. For children's expression of emotions, there were several unexpected findings: higher levels of CU traits were associated with more child negative emotion expression – specifically for sadness and fear. These associations held while controlling for levels of conduct problems. There was no significant relationship between CU traits and frequency of child positive emotion expression. There was only one significant relationship for parents' emotion expression: higher levels of CU traits were associated with more frequent maternal references to fear. As predicted, mothers of children higher on CU traits more frequently dismissed child emotion. This finding still held while partialling out the effects of conduct problems, but was not replicated for paternal dismissing.

Effects of Parents' Focus on Negative Emotions on Conduct Problems in High and Low CU

Children

Hierarchical multiple regression was used to examine whether parents' focus on negative emotions is more strongly negatively related to conduct problems in children with higher versus lower levels of CU traits. The effects of mothers' and fathers' focus on negative emotions were examined in separate regressions. As there were significant associations between frequency of mothers' dismissing and both CU traits and conduct problems, and to control for this negative style of responsiveness to child emotion in both parents, dismissing was included as a covariate in the regressions. Moreover, children's focus on negative emotions was controlled for to examine the independent effects of parents' focus on negative emotions on conduct problems. Thus, the two covariates: dismissing and child focus on negative emotions, and the main effects: CU traits and parents' focus on negative emotions,

Table 13.

*Associations between Callous-Unemotional Traits and Frequencies of Family Emotion
Expression and Parental Responding to Child Emotion*

Family emotion variables	CU traits and family emotion variables correlated for:		
	Mother	Father	Child
Emotion expression			
Sad	.12 (.14)	-.10 (-.08)	.34** (.31*)
Fear	.35** (.33*)	-.06 (-.07)	.27* (.29*)
Anger	-.08 (-.20)	.14 (-.05)	.21 (.04)
Neg emotion	.18 (.18)	-.08 (-.11)	.40** (.33*)
Pos emotion	-.03 (-.04)	-.07 (-.05)	.17 (.09)
Parental responding			
Validation	-.02 (-.01)	-.05 (-.12)	
Dismissing	.29† (.23†)	.04 (.04)	

Note. CU = callous-unemotional; partial correlations controlling for conduct
problems are in parentheses.

† *p* < .05. One-tailed. * *p* < .05. ** *p* < .01. Two-tailed.

were entered in the first step of the regression. In step 2, the CU traits × parents' focus on

negative emotions interaction effect was entered. Significant interaction effects were

dismantled by examining whether the slopes of the regression lines at low, medium, and high

values of CU traits differ significantly from zero (Cohen et al., 2003). Consistent with Study

1, the values for the different levels of CU traits were: low CU = 100% of raters agreed that

child was low CU; medium CU = 50% of raters classified child as high CU; and high CU =

100% raters classified child as high CU. Regression equations were used to plot mean values

for conduct problems at minimum and maximum observed values for parents' focus on negative emotions as a function of the three levels of CU traits.

Table 14 displays the results from the regression analyses. For mothers, the overall regression model was significant, $F(5,53) = 4.71$, $p < .01$. Despite significant zero-order positive correlations between conduct problems and CU traits, child focus on negative emotions, and maternal dismissing; none of the variables entered in step 1 were significantly independently associated with conduct problems. The CU traits × mothers' focus on negative emotions interaction effect was significant and accounted for an extra 15% of variance in conduct problems, $\Delta F = 11.75$, $p < .01$. Figure 6 illustrates the simple slopes of the regression lines at the three levels of CU traits. As predicted, at high levels of CU traits, higher levels of maternal focus on negative emotions were associated with lower conduct problems ($\beta = -.44$, $p = .04$). There was no significant relationship between mothers' focus on negative emotions and conduct problems at medium levels of CU traits ($\beta = .04$, $p = .76$). Unexpectedly, at low levels of CU traits, higher levels of maternal focus on negative emotions were associated with higher conduct problems ($\beta = .52$, $p = .01$).

For fathers, the overall regression model was significant, $F(5,43) = 4.91$, $p < .01$. CU traits and child focus on negative emotions were both independently positively associated with conduct problems. The CU traits × fathers' focus on negative emotions interaction effect was non-significant.

The regression analyses above were repeated to verify that the differential moderation of CU traits on parents' focus on emotions, is specific to negative emotions. The covariates and main effects: parental dismissing, child focus on positive emotions, CU traits, and parents' focus on positive emotions; were entered in step 1; and the interaction effect: CU traits × parents' focus on positive emotions, was entered in step 2. For mothers, the overall regression model was significant, $F(5,53) = 3.92$, $p < .01$; and predicted 20% of variance in

conduct problems. In step 1, only child focus on positive emotions was uniquely associated with conduct problems ($\beta = .34$, $p = .02$). The main and interaction effects were non-significant. For fathers, the overall regression model was significant, $F(5,43) = 5.65$, $p < .01$; and predicted 33% of variance in conduct problems. CU traits ($\beta = .37$, $p = .01$) and child focus on positive emotions ($\beta = .42$, $p < .01$) were independently associated with conduct problems. There were no other significant effects in the model.

Table 14.
Regression Analyses Testing for Moderation of Callous-Unemotional Traits on Associations between Parents' Focus on Negative Emotions and Conduct Problems

Step	Independent variables	Conduct problems			
		r	β	R^2	$R^2\Delta$
Mother					
1.	CU traits	.30*	.20		
	Mother focus on neg emotions	.15	-.12		
	Child focus on neg emotions	.29*	.24		
	Dismissing	.26*	.16	.09[a]	
2.	CU traits × Mother focus on neg emotions	-.23[a]	-.44**	.24**	.15**
Father					
1.	CU traits	.51***	.38**		
	Father focus on neg emotions	.06	-.06		
	Child focus on neg emotions	.43**	.41*		
	Dismissing	.01	-.17	.31***	
2.	CU traits × Father focus on neg emotions	.05	-.00	.29**	.00

Note. CU = callous-unemotional
[a] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed.
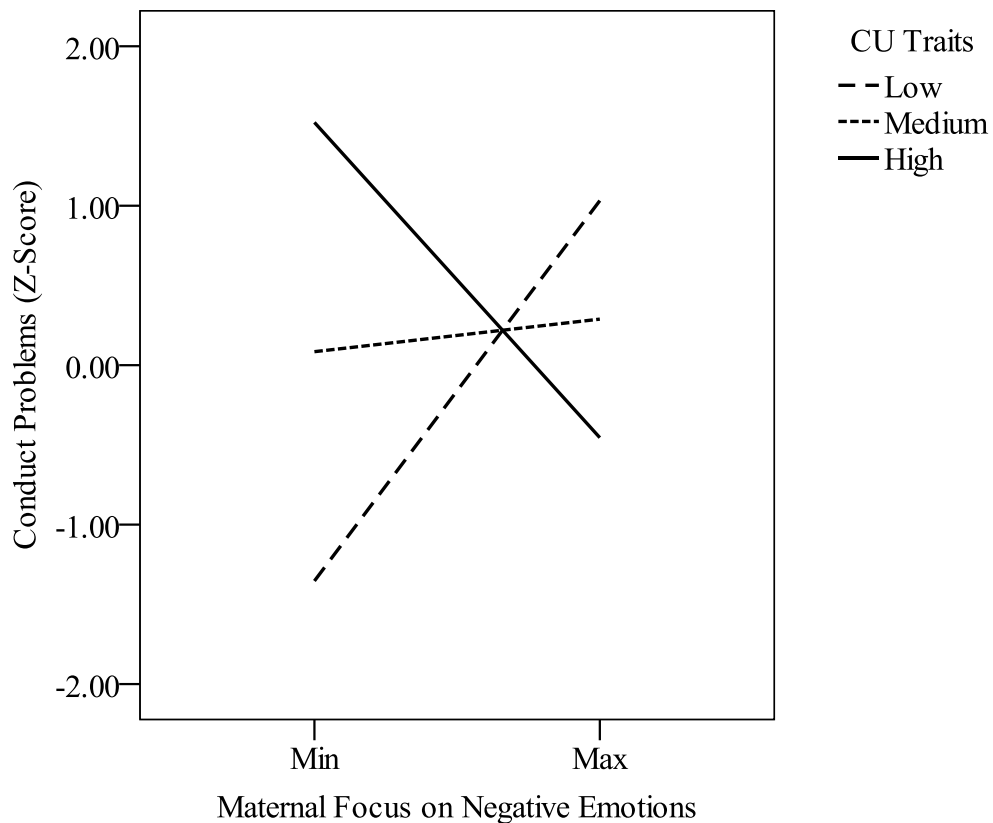
Figure 6. Simple slopes of the association between mothers' focus on negative emotions and conduct problems at low, medium, and high levels of callous-unemotional (CU) traits.

Note. Min = minimum observed value; Max = maximum observed value.

Further Examination of Emotion Expression in High CU Children

The finding that children higher on CU traits were more frequently expressing negative emotions—especially for sadness and fear—was contrary to this study's hypothesis. Thus, several competing explanations for these findings were examined.

First, it was investigated whether the unexpected findings could be attributable to the system of measuring CU traits used in the present research. Based on previous research (Dadds et al, 2005), this study's measure of CU traits did not include the APSD item, "Does not show feelings". Thus, it was important to make sure that the absence of this item in reports of CU traits was not accounting for the unexpected findings. There were non-

significant relationships between all reporters' scores on this item and observed levels of child expression of negative emotions, fear, and sadness (r range = -.17 – .14; all p's > .20). Moreover, the multi-informant CU traits measure was re-computed with the addition of this item; however the pattern of findings did not change.

Second, it was examined whether the unexpected findings could be explained by "misclassification" of some high CU children. In this study, the number of informants ranged from 1 to 3 for each child's CU traits scores. It could be possible that a small number of children were scored high CU by one erroneous report. This was not supported, however, as there were non-significant correlations between number of missing reporters for CU traits and child expression of negative emotions (r = .21, p = .11), fear (r = -.12, p = .36), and sadness (r = .07, p = .61). Furthermore, closer examination of the data revealed that the child (aged 4 years) who expressed most fear references—seven mentions of fear (and two of sadness)— was classified high CU by all three reporters; that is, mother, father, and teacher.

Third, it was examined whether children high on CU traits were expressing distress emotions in a different context than their low CU peers (e.g., simply repeating statements about distress emotions made by their parents, or talking less about their own emotions). CU group comparisons (majority of reporters classifying child as high CU: N = 19, low CU: N = 40) were made on the proportion of children's total expression of sadness/fear that was child-instigated; in other words, were not replies to parents' statements or questions explicitly referring to these emotions; and the proportion of total sadness/fear expression that was used by children to refer to their own internal states. For high CU boys, 83% of fear expression was child-initiated and 92% of the time it was in reference to the child's internal state. One low CU boy mentioned fear twice: once instigated by himself and both times referring to his own internal state. For expression of sadness, comparisons were made between five high CU and five low CU boys who referenced sadness at least four times. For high CU boys, 21% of

sad expression was child-initiated and 36% of the time it was in reference to the child's internal state. For low CU boys, 25% of sad expression was child-initiated and 34% of the time it was in reference to the child's internal state. Thus, both groups seemed to express sadness in similar contexts.

Finally, it was investigated whether children with high CU traits were expressing distress emotions in a qualitatively distinct manner compared to children low on CU traits (e.g., talking about distress in a manipulative or a vengeful way, or making seemingly nonsensical statements). Thus, an inspection was made of the specific expressions of distress emotions in high CU children, as taken from the conversational transcripts (see Table 15 for examples). "On paper", high CU boys appeared to be expressing sadness and fear appropriately in a variety of meaningful ways. Interestingly, distress emotions were expressed to convey empathy for others (see Examples 4 and 6).

Table 15.
Examples of Sad and Fear Expression in Children High on Callous-unemotional Traits

Example 1	"Sometimes you shout at me and I get *scared*."
Example 2	"It was so *scary*…because I might fall in the water."
Example 3	"What times are *sad* to me is when you like start swearing at me for something I didn't do."
Example 4	"It's a *sad* moment when you get hurt."
Example 5	"When we had to leave…that was *sad*."
Example 6	"When they climb up that made me *sad*…I was a bit *scared* for them."

Is Warmth Related to Parents' Focus on Negative Emotions?

Based on the observed associations in Study1 between parents' warmth and antisocial behaviour in children elevated on CU traits, it was examined whether there was a relationship between parents' warmth—as directly observed during the family emotion discussions—and their focus on negative emotions; in high CU (as rated by the majority of reporters) and low CU children. In high CU, results from zero-order correlations indicated that more parental warmth was related to higher levels of parental focus on negative emotions in both mothers ($r = .40$, $p = .09$, $N = 19$) and fathers ($r = .70$, $p = < .01$, $N = 16$). In low CU, by contrast, there were negligible associations (mothers: $r = .17$, $p = .29$, $N = 40$; fathers: $r = .10$, $p = .57$, $N = 33$).

Discussion

This study examined associations between emotion-focused family dynamics and levels of CU traits and conduct problems in antisocial children. Families were directly observed while discussing shared emotional experiences; and family expression of, and focus on, emotions, and parents' responding to child emotion were coded; along with markers of the quality of family interaction to control for potential confounds. This study expected to observe the following in families with higher CU boys: 1) less frequent emotion expression; 2) less validating and more dismissive parental responding to child emotion; 3) a stronger inverse relationship between parents' focus on negative emotions and conduct problems compared to lower CU families. There was mixed support for these predictions; some unexpected findings prompted further post-hoc inquiries into the nature of the findings.

First, unexpectedly, it was observed that boys higher on CU traits *more frequently* expressed negative emotions in conversations with their caregivers – specifically pertaining to sadness and fear. This is very intriguing given that CU traits are associated with precise

deficits in recognising and affectively responding to these distress emotions in other people (Blair, 1999; Blair et al., 2001; Dadds et al., 2008). Because CU traits were not associated with how much children conversed with their parents overall and frequency of child positive emotion expression; there is no evidence that higher CU boys were more verbose during family discussion or generally more verbally expressive of emotions. Furthermore, families of higher CU children did not spend more time reminiscing on sad emotional experiences. Thus, there appears to be a unique association between higher CU traits and more child emotion expressiveness for negative affect only.

These unexpected findings prompted further examination of various alternative and spurious explanations of the data. After ruling out several confounds, it was clear that children who were rated high CU by multiple informants were expressing emotions in appropriate, sometimes self-referent ways, at a relatively high rate. Perhaps the only explanation this study has not been able to rule out is that these children were expressing emotions in a superficial or manipulative way (e.g., Frick & Moffitt, 2010). This explanation would be consistent with the mothers' behaviour which showed higher levels of dismissiveness in the higher CU children. This study did not however, code for genuineness or other pragmatic aspects of the speech and so it is difficult to be more precise with this hypothesis. Whether these children were expressing emotions in a more superficial vein, is perhaps a judgment more likely made by their caregivers and will be discussed shortly.

It is also possible that children lower on CU traits responded more adversely to discussion of negative emotions, thus exaggerating findings for higher CU boys in the domain of negative affect. This would fit with the conceptualisation that conduct-problem children lower on CU traits are emotionally volatile and have dysregulated negative affect (Frick & Morris, 2004). However, this study anticipated and controlled for these types of potential confounds. Results suggested that lower CU children did not make more attempts to

avoid discussion of negative emotions, nor did they express more global negative affect across the task. Moreover, parents of children lower on CU traits did not make more requests for children to comply with task instructions and there was no relationship between CU traits and how much children were "disconnecting" from parents' emotion discourse. Therefore, it appears that low CU children were not reacting differently to either specific discussion of negative emotions or the emotion-related content of the conversation overall. Families also exhibited a tendency to discuss conflict-related themes in their emotional discussions, but once again, this was not more frequent in higher or lower CU families. In light of the fact that this study did not have a non-clinic-referred control group, it would be remiss to suggest that high CU children are more open and expressive about negative emotions than other children. What these findings do suggest, is that within conduct-problem boys, CU traits—in the very least—are not associated with poverty in verbal expression of emotions in interactions with caregivers.

It was also predicted that parents of children higher on CU traits would show deficits in emotion expression. Mothers' expression of emotions was positively and significantly associated with those observed in their sons, and in terms of specific emotions, higher levels of CU traits were associated with more frequent expression of fear by mothers. No relationship was found between levels of emotion expression in fathers and sons. Post-hoc qualitative analyses indicated that children were initiating the fear talk in the clear majority of cases, thus mothers of higher CU children were most likely responding to more fear talk by their sons. Overall, in answering the first aim of this study, the results of this study did not support the hypothesis that higher CU children and their parents would show lower levels of emotion expression; it appears that there is no general deficit in the expression of emotions in the families of high CU children.

Second, and as hypothesised, mothers of children with higher CU traits were more dismissing of child emotion. This finding was not replicated in fathers, and there were no associations between positive parental responding to child emotion, i.e., validation, and CU traits. Mothers' dismissive responding to child emotion could be reinforcing the emotionally-detached interpersonal style in children high on CU traits. For instance, parents' dismissing of child emotion might influence children to inhibit their expression of emotions (Eisenberg et al., 1998; John & Gross, 2004). This did not seem to be the case, however, for the higher CU children in this study; that is, both child negative emotion expression and maternal dismissing of child emotion were positively associated with CU traits. One interpretation of this paradoxical pattern of findings is that, consistent with the conceptualisation of CU traits as consisting of superficial emotion expression, mothers of higher CU children were more frequently dismissing what they perceived to be insincere or shallow emotion-related comments made by their child. At the minimum, these findings speak to a lack of emotional reciprocity between mothers and children in higher CU families.

Finally, it was hypothesised that parents' focus on negative emotions would have a stronger negative relationship with conduct problems in children with high versus low CU traits, considering that high CU antisocial behaviour is thought to be underpinned by impairments in processing and responding to others' negative affect (Blair, 1995, 2006; Frick & Viding, 2009). In line with this prediction, higher levels of maternal focus on negative emotions were significantly associated with lower conduct problems in children at high rates of CU traits; controlling for mothers' emotion-dismissing behaviour and child focus on negative emotions. Mothers' focus on positive emotions did not have similar effects on conduct problems at high CU, confirming the value of parents' focus on negative emotions for high CU conduct problems.

Children elevated on both antisocial behaviour and CU traits have broad empathy impairments; namely, difficulty both sharing in and understanding another's feelings (Anastassiou-Hadjicharalambous & Warden, 2008; Dadds et al., 2009). Open and more frequent parental communication about emotions as they arise within the parent-child relationship scaffolds children's processing of emotions and affective perspective taking skills (Denham et al., 1994; Dunn et al., 1991). Moreover, by focusing on negative emotions during parent-child encounters, parents are seemingly training children to attend to other peoples' negative affect, which has been shown to help high CU children overcome emotion recognition deficits and inhibit aggressive victimization in previous experimental research (Dadds et al., 2008; van Baardewijk et al., 2009). Interestingly, CU traits did not correlate with children's attention to parents' verbal emotion expression, despite higher CU traits correlating with a lack of attention to parents' non-verbal emotional stimuli in previous research (Dadds et al., 2011). Thus, verbal communication about emotions in parent-child relationships could be one way of compensating for—or perhaps remediating—deficits in non-verbal affective learning in high CU children.

Somewhat unexpectedly, higher levels of parental focus on negative emotions were associated with *higher* conduct problems at low rates of CU traits. Excessive parental communication about negative affect with children, might have a more "ruminative effect" in conduct-problem children higher on emotional arousal, which is detrimental to their regulation of negative emotion and mood. Moreover, conduct-problem children low on CU traits could be more susceptible to the influences of contextual factors on the effectiveness of parents' emotional communication for child emotion and conduct regulation. For instance, in family environments that are particularly hostile, more focus on negative emotions within parent-child interactions might disrupt regulation of affect in children higher on emotional arousal (Eisenberg, Spinrad, & Eggum, 2010).

These results need to be considered in the context of this study's limitations. First, as discussed earlier, the lack of a non-clinic control group meant that this study did not have scores for emotion expression in families of typically developing children in which to compare the results for conduct-problem children against. Moreover, this study focused on families' verbal emotion expression and there is no prior research examining non-verbal emotion expression in families of high CU children; this also needs to be investigated. Third, these findings may not be generalisable to girls, particularly considering that parents use different emotional communication behaviour when interacting with girls compared to boys (Adams et al., 1995). Fourth, the children in this sample were all preadolescent. Important developmental changes in cognitive functioning occur during the transition from childhood to adolescence; thus it is not known how these changes may alter the trajectories of emotion-related behaviour in conduct-problem youth with high versus low CU traits. Lastly, the clinic sample size was relatively small for fathers and lacked power for the detection of significant moderation effects. However, considering the consistently small effect sizes reported for fathers' emotion-related behaviour, it is also possible that the nature of the task—emotional reminiscing—is more geared towards mothers' style of emotional communication (Fivush et al., 2009). Future research may benefit from examining fathers' emotion expression during father-child discourse in a range of naturalistic settings.

In summary, literature searches indicate that this is the first study directly examining emotion-focused parent-child dynamics in families of children with high compared to low CU traits. Interestingly, children higher on CU traits were more expressive of negative emotions in conversations with their caregivers. The data were unable to reveal, however, whether these children were more superficial or manipulative in their expression of emotions. More generally, apart from maternal dismissing discussed below, there was no evidence of any deficits in emotional expression in the families of children higher on CU traits.

Furthermore, it was observed that higher levels of maternal focus on negative emotions are only related to lower conduct problems in children elevated on CU traits. This finding is consistent with, yet expands on, the results generated by Study 1, and provides further support for the proposal that relational processes are particularly important for the socialisation of children with high CU traits. Consistent with theorising on the importance of positive parent-child relationships for open discussion of emotions in families (Bretherton, 1993), here more parental warmth was associated with higher levels of parents' focus on negative emotions in families with high CU children. These findings are consistent with the idea that parent-child emotional processes—such as emotional communication—potentially mediate some of the influence of parental warmth on conduct problems in children elevated on CU traits. Arguably, in such children, warmth fosters a necessary level of emotional engagement with caregivers for finer processes of affective learning within parent-child interactions to take effect.

This study also gathered concurrent evidence for a lack of emotional reciprocity between high CU boys and their mothers. It seems that higher CU children are more willing to communicate about negative emotions with their caregivers, yet paradoxically, mothers of higher CU children are more dismissive of child emotion. In this light, the present findings provide some indication of a disrupted emotional bond between conduct-problem children high on CU traits and their caregivers. The following study will extend on these findings by examining the parent-child emotional bond through the "eyes" of the children themselves.

STUDY 3: CHILDREN'S ATTACHMENT REPRESENTATIONS AND CU

TRAITS

In addition to the findings in Study 1 and 2, as discussed earlier, results from several studies in the existing literature suggest that children with high levels of CU traits experience a poorer quality of parent-child relationship; marked by parents' disrupted emotional bonds with their child (Fite, Greening, & Stoppelbein, 2008) and less warmth in parent-child relationships (Pardini et al., 2007; Schneider, Cavell, & Hughes, 2003). However, these studies relied on questionnaire reports of parent-child dynamics – predominantly from the perspective of parents, and literature searches do not reveal any prior studies that have examined how young children with high CU traits and conduct problems "make sense" of interactions with their parents. Children come to internalise early interactions with, and expectations of, attachment figures and form mental representations—i.e., cognitive-affective schemas—of attachment relationships (Bowlby, 1982, 1986). These attachment representations influence children's cognitions, feelings, and behaviour in subsequent relationships and interactional settings; having an overall effect on the style in which an individual relates to others (Bowlby, 1982; Bretherton & Munholland, 1999). This study attempts to overcome limitations of, and extend on, prior research by examining representations of attachment relationships in antisocial children with elevated CU traits.

Attachment has long been considered important in conceptualisations of psychopathy. Prominent models of psychopathy argue that psychopathic individuals are incapable of forming genuine affectional bonds (Cleckley, 1976; McCord & McCord, 1964). Interestingly, Bowlby's (1982) attachment theory grew out of his early work with "affectionless" children (Follan & Minnis, 2010). He claimed that early disruptions in attachment relationships were important in explaining affectionless traits—e.g., indifference to others' feelings and superficial charm; akin to CU traits—in antisocial children (Bowlby, 1944). This claim is

supported by recent findings from the English and Romanian Adoptees (ERA) longitudinal study which included youth showing emotional and cognitive disturbances as a result of early institutional neglect. Attachment problems at age 4 were found to be associated with CU features, namely interpersonal insensitivity and lack of concern for others, at age 15 (Sonuga-Barke et al., 2010). Moreover, existing research on attachment representations in adolescents and adults with personality features conceptually similar to psychopathy, suggests that these individuals tend to be dismissive of early attachment experiences (corresponding to avoidant attachment classification in childhood) (Frodi, Dernevik, Sepa, Philipson, & Bragesjo, 2001; Rosenstein & Horowitz, 1996; Timmerman & Emmelkamp, 2006).

There is a relatively high prevalence of insecure attachment in children with clinical levels of early-onset conduct problems (Greenberg, Speltz, DeKlyen, & Endriga, 1991; Speltz, DeKlyen, & Greenberg, 1999). In terms of attachment classifications, insecure-disorganised attachment is particularly common in conduct-problem samples (e.g., Green, Stanley, & Peters, 2007) and shows a robust association with antisocial behaviour (Fearon et al., 2010). Disorganised attachment is marked by an absence of goal-directed attachment behaviour—i.e., no coherent or meaningful strategy for resolution of distress—and often chaotic and bizarre child behaviour (Main & Solomon, 1986). Children with disorganised attachments at the representational level, tend to control their caregivers in actual attachment scenarios; either through caregiving or punitive-controlling behaviour (Bureau, Easlerbrooks, & Lyons-Ruth, 2009; Bureau & Moss, 2010; Solomon, George, & De Jong, 1995). These controlling forms of behaviour might be an attempt by children to increase their caregiver's attention and involvement in attachment interactions (Jacobvitz & Hazen, 1999). The latter form of coercive attachment behaviour is more frequently observed in children with conduct problems (Greenberg et al., 1991; Moss, Cyr, & Dubois-Comtois, 2004; Speltz, Greenberg, & Deklyen, 1990).

Interestingly, a coercive style of relating to others is conceptualised by some researchers as a core feature of adult psychopathy (Blackburn, 1998) and appears to be particularly characteristic of conduct-problem children with high levels of CU traits. For instance, antisocial children higher on CU traits use more interpersonal aggression to achieve social power; including premeditated acts of aggression and direct bullying behaviour (Frick et al., 2003a; Viding, Simmonds, Petrides, & Frederickson, 2009). Moreover, on a cognitive level, higher CU traits in conduct-problem youth are associated with stronger beliefs in the importance of asserting dominance and seeking revenge in peer-relationships (Pardini, 2011; Pardini et al., 2003); as well as a tendency to misperceive conflict in friendships (Munoz, Kerr, & Besic, 2008).

In summary, there is some preliminary evidence for an association between childhood attachment disturbances—as a result of early institutional deprivation—and CU traits in adolescence (Sonuga-Barke et al., 2010); however attachment classifications in high CU children raised in comparatively more typical family environments is yet to be investigated. The abovementioned findings suggest that both high levels of CU traits and disorganised attachment representations can be manifested in antisocial children by a coercive style of interpersonal relating. Moreover, high CU traits and disorganised attachment in childhood both predict a more severe trajectory of conduct problems (Fearon & Belsky, 2011; Frick & White, 2008) and psychopathology in general (Carlson, 1998; Moran et al., 2009; Rowe et al., 2010); perhaps indicating potential overlap between these risk factors in the development of more pervasive child maladaptive behaviour and cognitions. Therefore, it could be argued that, in children with conduct problems, there might be a relationship between high CU traits and disorganised representations of attachment relationships. However, it is also possible that conduct-problem children high on CU traits have attachment representations that minimise the significance of interpersonal contact—i.e., avoidant representations—as potentially

manifested by their restricted emotionality and emotional detachment in relationships. This is somewhat supported by the link between antisocial behaviour/personality features and avoidant attachment styles in both children and adults (Fearon et al., 2010; Timmerman & Emmelkamp, 2006).

The aim of this study was to examine the association between CU traits and attachment representations in conduct-problem children. In Study 1 and 2, families were directly observed while participating in play and other shared activities, and dimensions of their interactional behaviour were coded. The present study expands on this work by examining the "inner relational worlds" of antisocial children high on CU traits. It was hypothesised that higher CU traits would predict a greater likelihood of insecure attachment representations; more specifically, the evidence reviewed regarding coercive control and emotional distance indicate that children elevated on CU traits should show higher levels of both disorganised and/or avoidant attachment representations.

Method

Participants

The initial sample included 60 boys aged 3 to 9 years who were referred to CBRC. Attachment data were not able to be collected and/or coded for five boys: two due to task refusal and three due to incomprehensible or limited use of language during the attachment assessment (one of these children was diagnosed with Selective Mutism). These boys were significantly younger than the final cohort and were excluded from the study. Thus, the final sample was 55 boys (3 – 9 years, $M = 6.31$, $SD = 1.80$). All children received a diagnosis of either ODD (95%) or CD. Comorbidity included ADHD (35%) and Mood Disorders (18%). The majority of children came from two-parent families (77%). Mothers' highest level of education attained ranged from 4 years of secondary school (6%), to 6 years of secondary

school (7%), to technical/skills-based tertiary education (38%), to university education (49%).

<div align="center">Measures</div>

Child Measures

Children's levels of *CU traits* and behavioural and emotional symptoms; namely, *conduct problems*, *hyperactivity*, and *anxiety*; were assessed using the multi-informant measures described on pp. 52 – 54. Children's *attachment representations* were captured by the MCAST; outcome variables included attachment classifications (i.e., secure, ambivalent, avoidant, and disorganised) and continuous disorganisation scores (see pp. 73 – 75 for a description of the MCAST and codes). Children's *verbal ability* was examined using the various age appropriate assessments outlined on p. 55.

Family Functioning Measures

Mothers' symptoms of *depression* and *stress* were measured using self-reports on the Depression Anxiety Stress Scale 21 Item Short Form (DASS – 21; Lovibond and Lovibond, 1995). The DASS-21 has demonstrated reliability and validity in the assessment of adult mood (e.g., Antony et al., 1998). Cronbach alphas were satisfactory for the depression (.74) and stress (.79) scales. Clinicians rated the *quality of family environment* (QFE; Rey et al., 1997) based on their impressions of families' overall functioning and the stability and safety of the home environment as mediated by the parents. QFE scores—as rated from 1 (very disturbed) to 90 (adequate)—reflect the poorest quality of family living which the child was exposed to over a substantial period of time (at least 1 year). QFE ratings have good reliability (test-retest and interrater) and validity in clinic samples (Rey et al., 1997).

<div align="center">Results</div>

<div align="center">Preliminary Analyses</div>

Table 16 shows descriptive statistics for demographics, CU traits, and child behavioural and emotional symptoms. 49% of children were rated as having insecure attachment representations (Table 17). Only avoidant and disorganised styles of insecure attachment representations were observed; with a higher percentage of the latter. The majority of disorganised children (70%) received a forced-choice secondary rating of secure attachment. Children's continuous disorganisation scores ranged from 1 to 9, with $M = 3.78$, and $SD = 2.57$. To test for potential covariates, it was examined whether attachment classification groups differed on the child and family variables shown in Table 16, as well as on single parent status and child diagnostic comorbidity. There were only group differences on children's age and mothers' education, therefore these variables were controlled for in the following analyses. Moreover, in contrast to prior studies using the MCAST (Futh et al., 2008; Green et al., 2007), there were no significant associations between attachment representations and conduct problem symptoms. For the following analyses, directional a priori hypotheses (i.e., predicted associations) were examined using one-tailed tests, and two-tailed significance levels are reported for all other results.

Relationship between CU Traits and Children's Attachment Representations

First, the prediction of attachment classifications (binary coded) from age, mothers' education, and CU traits was examined in logistic regressions. The overall model for insecure attachment was significant, $\chi^2(3) = 8.64$, $p < .05$; accounting for between 15% and 19% of the variance in this criterion variable (Table 18). As hypothesised, children with higher levels of CU traits had a greater likelihood of an insecure attachment representation. Age and mothers' education were not significant predictors in this model. For avoidant attachment, the overall model was non-significant, $\chi^2(3) = 5.67$, $p > .10$; although there was a trend (at $p = .06$) towards older children having a higher likelihood of an avoidant attachment representation. Finally, the overall model for disorganised attachment was significant, $\chi^2(3) = 16.70$, $p < .01$;

Table 16.

Descriptive Statistics for Demographics, Callous-Unemotional Traits, and Child Behavioural and Emotional Problems

	M	*SD*	Minimum	Maximum
Age (years)	6.31	1.80	3.75	9.33
Mother education	3.33	.86	1.00	4.00
Number of siblings	1.24	1.03	.00	4.00
Quality of family environment	72.76	16.21	10.00	90.00
Mother depression	4.64	4.21	.00	15.75
Mother stress	10.65	7.00	.00	32.00
Verbal ability[a]	-.05	.95	-2.05	1.85
CU traits	35.76	35.92	.00	100.00
Clinician severity ratings				
DBD	3.96	.84	3.00	6.00
ADHD	1.40	1.94	.00	5.00
Mood Disorder	.58	1.29	.00	4.00
Parent reports[a]				
Conduct problems	.02	.87	-1.64	2.13
Hyperactive	.03	.88	-2.06	1.49
Anxiety	.02	.91	-1.08	1.83

Note. CU = callous-unemotional; DBD = disruptive behaviour disorder; ADHD = attention-deficit-hyperactivity disorder; [a] *z* score.

Table 17.
Distribution of Attachment Classifications

Attachment style	Frequency (% of sample)
Secure	28 (51%)
Insecure	27 (49%)
Avoidant	7 (13%)
Disorganised	20 (36%)
Disorganised-secure	14 (25%)
Disorganised-avoidant	4 (7%)
Disorganised-ambivalent	2 (4%)

accounting for between 26% and 36% of variance. In line with hypotheses, children with higher levels of CU traits were more likely rated as disorganised in their attachment representations. Moreover, younger children, as well as a trend (at $p = .05$) towards the children of mothers with lower levels of education, had a higher likelihood of disorganised attachment.

Next, using multiple regression, it was examined whether CU traits were associated with continuous attachment disorganisation scores over and above the effects of age and mothers' education. The overall model was significant, $F(3,51) = 6.18$, $p < .01$; and accounted for 22% of variance in disorganisation (Table 19). Consistent with the previous analysis, there was a positive association between higher levels of CU traits and continuous disorganisation scores. Furthermore, age was significantly negatively associated with disorganisation scores.

Table 18.

Logistic Regression Predicting Attachment Classifications from Age, Mothers' Education, and Callous-Unemotional Traits

	Insecure attachment			Avoidant attachment			Disorganised attachment		
Variable	B	Wald χ^2	Exp B	B	Wald χ^2	Exp B	B	Wald χ^2	Exp B
Age	-.23	1.85	.80	.54	3.60	1.72^a	-.58	7.81	.56**
Mo education	-.44	1.34	.64	.66	1.13	1.93	-.84	3.70	$.43^a$
CU traits	.02	5.03	1.02†	.01	.21	1.01	.02	4.65	1.02†

Note. Mo = mother.
† $p < .05$. One-tailed. $^a p < .06$. ** $p < .01$. Two-tailed.

Table 19.

Linear Regression Predicting Disorganisation (Continuous Scores) from Age, Mothers' Education, and Callous-Unemotional Traits

	Disorganisation		
Variable	r	β	R^2
Age	-.42**	-.45**	
Mo education	-.17	-.16	
CU traits	.22	.24†	.22**

Note. Mo = mother.
† $p < .05$. One-tailed. ** $p < .01$. Two-tailed.

Lastly, to follow-up on these significant findings, an examination was made of the proportion of high CU (as rated by the majority of reporters; $N = 16$) versus low CU ($N = 39$) children with insecure attachment representations. For children with high CU traits: 75% had an insecure attachment (56% with disorganised representations and 19% with avoidant representations). For children with low CU traits: 38% had an insecure attachment (28% with disorganised representations and 10% with avoidant representations).

Discussion

This study examined the relationship between CU traits and attachment representations in children with early-onset conduct problems. A hallmark of adult psychopathy is an inability to form genuine attachments to others; literature searches were unable to locate however, any research on attachment in young antisocial children with psychopathic-like features. The results provide the first evidence of an association between CU traits and insecure attachment in boys clinic-referred for their antisocial behaviour. It was hypothesised that CU traits would be related to both avoidant and disorganised attachment styles; contrary to expectations, this study did not find an association between levels of CU traits and avoidant attachment representations. Those with higher levels of CU traits were more likely to have disorganised representations of parent-child attachment relationships; independent of the effects of age and caregivers' level of education. It appears that it is the lack of organisation and coherence in attachment schemas that is most significant for higher levels of CU traits in antisocial children.

These results are consistent with previous studies demonstrating a link between poorer quality of parent-child relationships and higher levels of CU traits (e.g., Fite et al., 2008; Pardini et al., 2007; Schneider et al., 2003), and extends on this work by examining the emotional epicentre of the parent-child bond—the attachment relationship—through the "eyes" of the children themselves. Moreover, these findings are consistent with the reported association

between early attachment experiences/behaviours and CU traits in youth with a history of severe institutional deprivation (Sonuga-Barke et al., 2010). The results here show that high CU/conduct-problem children raised in relatively typical family environments also exhibit disturbed attachment relationships. The finding that children higher on CU traits construct less meaningful representations of emotional interactions with their caregivers, is consistent with previous demonstrations of their impairments in attending to, recognising, and responding to other people's emotions – including emotional stimuli conveyed by their attachment figures (Blair, 1999; Dadds et al., 2011; Kimonos et al., 2006).

Unlike two prior MCAST studies (Futh et al., 2008; Green et al., 2007), the present study did not find an association between disorganised attachment representations and severity of conduct problems (when testing for potential covariates). The association observed here between disorganised representations and higher levels of CU traits was independent of conduct problem severity. This is most likely due to a truncated range of conduct problem severity in this clinic referred sample, but is consistent with the concept of attachment representations as operating primarily in terms of affective-interpersonal traits rather than enacted behaviour (Bowlby, 1982, 1986).

There are bi-directional influences between parent-child processes and CU traits (Hawes et al., 2011), as well as genetic effects on the development of childhood CU traits (Viding et al., 2005). It is likely that there are reciprocal forces operating between attachment (and its correlates) and CU traits across critical stages of child development. For instance, it is possible, as suggested by the abovementioned findings from the ERA sample (Sonuga-Barke et al., 2010), that early attachment disturbances may impair children's ability to reflect on and appropriately respond to other people's emotional states (Fonagy, 2003; van Ijzendoorn, 1997), increasing the risk for CU traits. It is also possible that neurocognitive impairments associated with CU traits, such as deficits in emotional learning (Blair, 2005) and eye contact (Dadds et al., 2011), could interfere

with attachment processes at the dyadic (e.g., by disrupting emotional reciprocity between children and their caregivers), and representational levels (e.g., by influencing children's processing of attachment-related information). Given the broad nature of risk and outcome factors associated with disorganised attachment (Green & Goldwyn, 2002), and the paucity of attachment research with high CU children; it is difficult to be more precise about the developmental mechanisms that might contribute to disorganised patterns of attachment in these children. A priority for research should be a longitudinal study of CU traits and attachment relationships across childhood.

It is also important to note that 25% of the conduct-problem children in this study rated "high CU traits" by multiple informants showed secure representations of attachment relationships. Thus it appears that for this relatively small subgroup of antisocial children, a secure state of mind regarding attachment relationships does not necessarily protect against the development of more severe levels of CU traits. In contrast, it is also possible that the high levels of CU traits in this group of children are more strongly under the influence of more recent difficulties in the parent-child relationship; which are yet to impact on children's internalised attachment representations.

There are some important limitations of this study. First, in line with previous research using the MCAST (Green et al., 2007), only a small group of children with insecure attachment representations were classified as avoidant, which restricts this study's ability to make firm conclusions regarding the association between CU traits and avoidant representations. Second, this study only examined children's representation of the mother-child attachment relationship. The overlap between classifications of mother-child and father-child attachment representations is modest (Verschueren & Marcoen, 1999); therefore it is possible that children's representation of the father-child attachment relationship might relate differently to levels of CU traits. Third, the mothers in this study were relatively well-educated, and it is unclear whether this had an influence

on the prevalence of insecure attachment. The frequency of children with disorganised representations in this study was somewhat lower than in a previous study using the MCAST with conduct-problem children (36% versus 58% respectively) (Green et al., 2007), and there was a trend towards lower maternal education equating to a greater likelihood of disorganised representations. Finally, this study gathered clinician's reports of the overall quality of the family environment; but did not have more specific measures of familial risk factors, such as parents' own attachment narratives and child maltreatment, to include as potential confounds.

In summary, consistent with Study 1 and 2, the present study found evidence suggesting that antisocial children with elevated CU traits experience disrupted emotional bonds with their caregivers. That is, children with high CU traits are at increased risk for attachment disturbances, specifically disorganised representations. The findings here are particularly important because data on the quality of the parent-child emotional bond was gathered from children's narratives, and they provide the first evidence linking attachment insecurity to CU traits in young children with conduct problems. Among a range of empirically identified risk factors, disruptions in parents' emotional communication with their child have been linked to disorganised attachment (Zeanah, Berlin, & Boris, 2011). Recall that Study 2 showed that parents of high CU children are more dismissing of child emotion. Thus, there is reason to suspect that high CU children might be internalising disrupted patterns of emotional communication with their caregivers, as manifested by a lack of coherence and organisation in their relationship narratives. What effect might attachment difficulties have on developmental outcomes in these children? As previously discussed, the parent-child attachment relationship has been implicated in the development of conscience in children with CU temperament characteristics; that is, low levels of arousal/fear (Fowles & Kochanska, 2000; Kochanska, 1997). In this light, a failure of emotional reciprocity associated with disrupted attachment might underlie deficits in moral development in children elevated on CU traits.

GENERAL DISCUSSION

A growing body of research suggests that the presence or absence of CU traits marks divergent subtypes of childhood antisocial behaviour, with distinct correlates and etiologies. In comparison to their low CU traits counterparts, antisocial children elevated on CU traits display a more chronic and severe trajectory of conduct problems. Of priority to clinical practice are emerging findings that the development of conduct problems in children with high CU traits implicates causal mechanisms that may be largely independent of parental socialisation. This line of research, however, suffers from several significant limitations; notably, the lack of observational assessments of parent-child interaction, a narrow focus on operant-based models of parenting, and the exclusion of fathers. This thesis was designed to address these limitations. The overall aim of the present research was to examine parent-child processes in the families of conduct-problem children with high compared to low CU traits. The main focus was on relational processes—i.e., those involved in defining the affective quality of parent-child relationships—in families of antisocial children elevated on CU traits. This topic has been relatively neglected in prior research, yet theoretically, holds the most importance for determining developmental outcomes in this subgroup of disruptive youth. To this end, three observational studies investigated unique dimensions of parent-child processes in relation to child conduct problems and CU traits; the main findings of these studies as a whole will be briefly summarised.

Principle Findings

Study 1 and 2 included an investigation of the moderating effect of CU traits on relationships between coercive and relational parent-child processes and child conduct problems. In Study 1, as predicted, coercive parenting was more strongly positively associated with antisocial behaviour in children low rather than high on CU traits. In contrast,

relative to their low CU peers, parental warmth shared a stronger negative relationship with conduct problems in children high on CU traits. CU traits moderated these dimensions of parenting in the same way for mothers and fathers. Moreover, in Study 2, higher levels of maternal focus on negative emotions were found to be associated with lower conduct problems in children with high CU traits; but related to higher conduct problems in children low on CU traits. These findings consolidate previous studies showing that conduct problems in children with low CU traits are strongly associated with ineffective parenting practices, such as harsh and inconsistent discipline (Edens et al., 2008; Hipwell et al., 2007; Oxford et al., 2003; Wootton et al., 1997). The studies also provide the first evidence suggesting that relational processes; namely warmth and emotional communication, are more strongly related to antisocial behaviour in high CU boys.

Findings from each of the studies in this thesis also contribute uniquely to the existing literature on associations between CU traits and relational processes. First, as found in Study 1, fathers' warmth showed a negative relationship with scores on CU traits. This is the first finding linking CU traits to the quality of the father-child relationship. Second, in terms of the emotion-focused family dynamics examined in Study 2, surprisingly, children higher on CU traits tended to be more expressive of negative emotions in conversation with their caregivers – specifically for sadness and fear. More generally, families of higher CU children did not demonstrate deficits in emotional expression. However, as predicted, mothers of higher CU children were more dismissing of child emotion. Thus, the findings in Study 2 indicate a lack of emotional reciprocity between high CU children and their caregivers; that is, these children are more willing to discuss emotions, yet their caregivers are more likely to dismiss their affect. Third, the results from Study 3 provide further evidence for disrupted parent-child emotional interactions, this time from the perspective of the children. Higher levels of CU traits demonstrated associations with children's representations of disorganised attachment

relationships. Overall, the findings across the studies dovetail to suggest that antisocial children higher on CU traits may experience a poorer quality of parent-child relationship, and encounter more difficulties in emotionally connecting to their caregivers. The theoretical and clinical implications of the abovementioned findings will now be discussed.

Implications for Developmental Pathways to Child Outcomes

The results across the studies in this thesis provide strong support for the model outlined in the literature review. As a whole, the present findings suggest that coercive processes appear to influence antisocial behaviour in children low on CU traits; whereas relational processes—i.e., warmth, emotional communication, and attachment—may hold the most value for the socialisation of children high on CU traits. Arguably, the distinct temperament and emotion correlates of antisocial children with and without elevated CU traits, provide some clue as to the mechanisms by which coercive and relational processes may influence developmental outcomes in these conduct-problem subtypes.

Emotional Reactivity and Coercive Processes

As discussed earlier, children with different temperament characteristics appear to be differentially susceptible to the effects of parents' discipline. Gentle discipline which de-emphasises power, has been linked to emerging conscience in children with emotionally reactive characteristics (Fowles & Kochanska, 2000; Kochanska, 1997). This style of discipline purportedly capitalises on the child's elevated arousal to foster internalisation of parental morals and values. On the other end of the continuum of discipline, children high on emotionality also appear to be susceptible to the influences of harsh discipline. That is, coercive parenting appears to be a strong risk factor for conduct problems in highly reactive children (e.g., Colder et al., 1997; Lengua, 2008; van Zeijl et al., 2007); and in the present research was only found to be significantly associated with antisocial behaviour in the

absence of CU traits. Early patterns of coercive parent-child interaction are thought to result from reciprocal influences between harsh parenting and dysregulated affect in overaroused children (Scaramella & Leve, 2004). Compared to their high CU counterparts, antisocial children low on CU traits have higher levels of emotional arousal and exhibit predominantly a reactive style of aggression (Frick & Morris, 2004). Consequently, these children may be particularly susceptible to experiencing escalating levels of negative affect during "heated" exchanges with parents, which over time contribute to increasing deficits in emotion regulation and provoke future aversive responding from parents (Scaramella & Leve, 2004).

An unanticipated, albeit understandable, finding in Study 2, provides further evidence for negative affect as a potential mechanism by which coercive parenting may influence conduct problems in the absence of CU traits. Antisocial behaviour in children low on CU traits demonstrated a positive relationship with mothers' focus on negative emotions during parent-child emotional reminiscing; although not with focus on positive emotions. At the very least, this finding suggests that conduct problems in these children are particularly responsive to negative affect expressed by their parents. Moreover, as argued by Scaramella and Leve (2004), chronic trajectories of coercive family interactions involve bi-directional influences between children's reactivity and parents' hostility. For instance, a prior study showed that parents are more likely to respond aversively to their child's misbehaviour, after been exposed to high levels of child negative affect (Arnold & O'Leary, 1995). Parents whose emotions are more contingent on their child's negative affect during disciplinary encounters, however, appear to be most at risk of responding harshly to child misbehaviour (Lorber & Slep, 2005). Thus, reciprocated negative affect between children and their caregivers potentially underpins a hostile pattern of parent-child interaction, that provides a fertile training ground for oppositional and aggressive behaviour in children. Overall, the results in the current research are consistent with the idea that coercive processes; marked by

dysregulated negative affect and harsh parenting, may be implicated in the trajectories of

conduct problems in children low on CU traits.

CU Traits and Relational Processes

Consistent with previous studies (e.g., Oxford et al., 2003; Wootton et al., 1997), the

current research found a negligible association between directly observed coercive parenting

and conduct problems in children with high levels of CU traits. This finding corresponds with

these children's unique temperament characteristics; namely, lower levels of fearful arousal

and related deficits in responding to punishment stimuli while seeking rewards (Frick &

Morris, 2004; O'Brien & Frick, 1996). Moreover, on a cognitive level, children high on CU

traits hold strong beliefs that parents are inept and less persistent in limit-setting (Schneider et

al., 2003). In contrast, the main findings in this thesis support the claim that relational

processes may be important for developmental outcomes in children elevated on CU traits.

As delineated earlier, here relational processes included dimensions of parent-child

interactions that are considered important in defining the quality and emotional tone of

parent-child relationships. The present research shows that warmth, emotional

communication, and attachment; share associations with CU traits and conduct problems at

high levels of CU traits. These are likely complementary, yet distinct dimensions of relational

processes. As such, there may be both common and unique mechanisms mediating the

socialisation influences of each relationship process in high CU children.

Socialisation theorists have given considerable attention to the roles of warmth and

attachment in determining developmental outcomes. Parents' warmth in family relationships

has been conceptualised to constitute a reward system; wherein children experience close,

intimate relations with parents as pleasurable, and emotional cues of warmth as appetitive

stimuli (MacDonald, 1992). In this context, children are more willing, and motivated, to act

in accordance with a warm caregiver, in order to maintain an emotionally positive parent-

child relationship (Maccoby & Martin, 1983; MacDonald, 1992). Attachment is considered to be implicated in a similar socialisation process. Richters and Waters (1991) posited that children with secure attachments are more motivated to proactively participate in co-operative and reciprocally positive interactions with their caregivers, which facilitates children's investment in parents' values and beliefs. This line of reasoning has received strong support from longitudinal research. For instance, Kochanska et al. (2010) demonstrated that securely attached children manifest a willingness to comply with their caregivers, which in turn promotes internalisation of parents' rules and protects from disruptive behaviour. This developmental trajectory involving mutually positive parent-child interactions, however, does not appear to be evident in children with insecure attachments (Kochanska et al., 2010). Overall, compliance with, and internalisation of, caregiver rule-based values; may represent compatible mechanisms by which warmth and attachment potentially determine developmental outcomes—such as antisocial behaviour and conscience—in children elevated on CU traits.

The current results also suggest that the dynamics of parent-child emotional communication may be particularly important for the socialisation of children with high CU traits. Children elevated on CU traits exhibit deficits in attending and responding to other people's negative affect (Blair, 1999; Blair et al., 2001; Dadds et al., 2008). Study 2 showed that these children's conduct problems are less severe in families with higher levels of maternal focus on negative emotions. As previously discussed, this style of parenting may orient children's attention to others' emotions, and in turn serve as a catalyst for empathic concern. Study 2 also revealed that high CU children are more communicative about negative emotions, although their caregivers are more dismissive of their emotions; thus indicating a failure in parent-child emotional reciprocity. Similarly, the reciprocal exchange of emotions forms the moment-by-moment processes implicated in warm parent-child relations and

secure attachment (Isabella & Belsky, 1991). Children first learn to appreciate other people's feelings in the context of early emotional interactions with caregivers. However, if children's own emotional needs are not met by their parents, as in the case of insecure attachment, they are less likely to share in, and respond to, others' emotions (Kestenbaum, Farber, & Sroufe, 1989). Overall, emotional reciprocity between children and their caregivers—as captured by dynamics of emotional communication, attachment, and warmth—might be a key mechanism in promoting empathic concern in children elevated on CU traits.

It is also important to note that the present findings, suggesting stronger influences of relational processes on conduct problems in children high on CU traits, do not necessarily imply that similar processes do not matter for antisocial behaviour in children without these traits. For instance, relational processes, such as warmth and attachment, may have indirect effects on conduct problems in children low on CU traits. Shaw and colleagues (2000) have proposed a model that incorporates influences of both coercive and attachment processes on the development of conduct problems in young children. They suggest that insecurely-attached infants are more susceptible to developing a pattern of coercive and conflictual interactions with their caregivers, which is involved in the emergence of conduct problems by preschool age. This model is supported by recent longitudinal findings in a sample of typically developing children. Coercion was only found to be predictive of later behaviour problems in children with insecure attachments (Kochanska, Barry, Stellern, & O'Bleness, 2009). This was despite the researchers finding no direct link between attachment and behaviour problems. As such, a secure attachment and the warm/sensitive parenting that fosters this process, may develop in overaroused children the emotion regulation skills they need to assist in dampening their negative affect during instances of mild coercive interaction; thus acting as a buffer against the development of antisocial behaviour. In this light, attachment security might operate as a protective mechanism against the escalation of

coercive exchanges and subsequent development of conduct problems in children with emotionally reactive characteristics (Shaw et al., 2000).

Implications for Clinical Practice

Intervention and Prevention

The present findings as a whole, suggest that parenting interventions for antisocial behaviour may benefit from being tailored to children's levels of CU traits. As discussed earlier, there are mixed findings regarding the impact of CU traits on treatment outcomes across studies that have incorporated different types of interventions for conduct problems (Hawes & Dadds, 2005; Kolko & Pardini, 2010; Waschbusch, Carrey, Willoughby, King, & Andrade, 2007). There is some evidence, however, that CU traits can be modified by parenting interventions (Hawes & Dadds, 2007; Kolko et al., 2009; McDonald et al., in press). Notwithstanding this, results from prior studies suggest that CU traits might interfere with the effectiveness of treatment processes – particularly discipline (Haas et al., 2011; Hawes & Dadds, 2005). In this context, the current findings can help inform the design of future family-based interventions for conduct problems in children with and without elevated CU traits.

Broadly speaking, the findings in this thesis point towards the importance of targeting the affective quality of the parent-child relationship during family-focused treatments for antisocial behaviour in children high on CU traits. Longstanding parent training programs based on principles of operant conditioning, have been criticised for predominantly focusing on parents' management of child behaviour, without consideration of the broader context in which parents interact with their child; that is, the quality of the parent-child relationship (Cavell & Strand, 2003). Positive parenting practices, such as praise and child-directed play, that are already incorporated into well-established parenting interventions (e.g., "Incredible

Years"; Webster-Stratton & Hancock, 1998; "Parent-Child Interaction Therapy"; Eyberg & Robinson, 1982); potentially operate as building blocks for positive parent-child relationships. These parenting behaviours, however, do not appear to tap into the "emotional core" of parent-child relations. The current findings show that antisocial children high on CU traits have pronounced difficulties in managing intense emotional encounters with their caregivers; who also appear to be more dismissing of their emotion. In this light, it could be suggested that parents of such children need to be skilled in warm, sensitive, and well-timed responding to child emotion. Providing parents with feedback while viewing carefully edited video footage of parent-child interactions, is proving to be a useful and effective technique in assisting parents in developing these skills (e.g., see meta-analysis by Fukkink, 2008). Moreover, there is some evidence that including a focus on parent-child emotional communication can enhance effect sizes in parenting interventions for child disruptive behaviour (Kaminski, Valle, Filene, & Boyle, 2008). In addition, a recent study suggests that it is feasible to train parents to communicate about emotions more effectively with children while they are concurrently participating in parent training (Salmon, Dadds, Allen, & Hawes, 2009). Thus, this style of "emotion infused" parenting intervention for conduct problems; focused on improving emotional dynamics in parent-child relationships while retaining basic behavioural principles of positive reinforcement, deserves scientific attention for the treatment of antisocial behaviour in children high on CU traits.

While the present findings suggest that developing rewarding and emotionally positive parent-child relationships should form the central focus of treatments for families with high CU children; it would be unrealistic, and potentially counterproductive, to disregard parents' disciplinary strategies in these interventions. During disciplinary interactions with children elevated on CU traits, caregivers are at risk of escalating levels of punishment, which might paradoxically serve to strengthen these children's punishment

insensitivity (Dadds & Salmon, 2003). For instance, recent studies conducted at a psychiatric hospital with child inpatients, reported that young children high on CU traits more frequently experience the most restrictive and severe forms of behaviour management (e.g., solitary confinement and physical restraints) (Stellwagen & Kerig, 2010b); as well as the longest admissions (Stellwagen & Kerig, 2010a). Time-out is considered to be a mild, non-punitive form of discipline (Morawska & Sanders, 2011); however appears to be less effective for children elevated on CU traits (Haas et al., 2011; Hawes & Dadds, 2005). As such, alternative styles of limit-setting and parental responding to child defiance, such as removal of privileges and planned ignoring of pre-determined behaviours, may prove to be more effective, while also protective of the quality of the parent-child relationship. Considering that high versus low CU children tend to use aggression in a more goal-directed fashion, it would seem to be particularly important to remove any potential reinforcers—including both tangible (e.g., toys) and emotional (e.g., parents' reactions) stimuli—for these children's proactive aggression (Dodge et al., 1997). Moreover, in the context of their reward dominant response style (O'Brien & Frick, 1996), children elevated on CU traits may be relatively more motivated to inhibit aggression if such behaviour results in losing a privilege, as opposed to gaining a punishment.

Lastly, as the present findings suggest that conduct problems in children elevated on CU traits may be responsive to parents' communication about emotions; drawing these children's attention to the impact of their behaviour on their victim's feelings during disciplinary encounters—i.e., inductive reasoning (Hoffman, 1994)—may be an effective mechanism for the development of empathic concern (cf. Blair, Jones, Clark, & Smith, 1997). Prior research shows that children high on CU traits are better able to inhibit aggression when their victim's distress is made suitably salient (van Baardewijk et al., 2009).

With regards to interventions for conduct-problem children without elevated CU traits, the present results confirm the importance of training parents of such children in non-coercive forms of discipline. In this subgroup of antisocial children, the purpose of implementing time-out for aggressive or oppositional/tantruming behaviour may be two-fold. First, time-out might cut short escalations of conflict between children and their parents; thereby putting children's antisocial behaviour on extinction. Second, time-out may provide children with opportunities to grow and implement important developmental skills; such as affect-regulation and delay of gratification (i.e., self-control). This latter purpose, however, might also apply to parents. Parents of highly reactive children are seemingly given the chance to self-regulate during this brief separation period as well. As discussed previously, reciprocated negative affect between children and their parents might underpin coercion in families of antisocial children low on CU traits. Thus, it may be important to focus on emotion regulation strategies for both children and parents in interventions for such families. Moreover, children's developing emotion regulation skills will need to be scaffolded by an emotionally supportive parent-child relationship; which provides ample opportunities for "time-in".

The current findings may also inform the design of future programs that aim to prevent the development of CU traits and antisocial sequelae. The present data suggest that attachment is disrupted in young antisocial children with high CU traits and as such may represent an important target for prevention efforts for CU traits. Moreover, the formation and internalisation of attachment relationships within the first few years of children's development (Bowlby, 1982), highlights the need for *early* prevention efforts for CU traits in young at-risk children (e.g., siblings of juvenile offenders living in low SES families). The current results also suggest that it might be important to target parents' warmth in such prevention programs. A recent prevention study with children at familial risk for antisocial

behaviour found that in lower warmth families, improvements in maternal warmth co-occurred with *increases* in children's cortisol levels; which in turn protected from aggression (O'Neal et al., 2010). Extrapolating from these findings, warmth might play a key role in normalising levels of emotional reactivity in children at-risk of developing CU traits and conduct problems as a result of interactions between low temperamental arousal and psychosocial risk factors.

Assessment

Finally, the findings in this thesis have implications for the assessment of childhood CU traits in clinic settings. As outlined earlier, Frick and Moffitt (2010) are proposing that DSM-V include a CU-specifier to the diagnosis of CD; although they do not mention any amendment to the diagnosis of ODD. The clear majority of children that participated in the current research received a diagnosis of ODD; with smaller numbers with CD. The results here suggest that distinct parent-child processes may be associated with conduct-problem trajectories in ODD/CD children with high compared to low CU traits. Thus, there might be clinical utility in assessing CU traits in all children with disruptive behaviour disorders; particularly if effect sizes for interventions for antisocial behaviour can be strengthened by tailoring treatments to levels of CU traits – as discussed above. As mentioned previously, however, careful consideration will need to be given to the potential stigma and negative connotations associated with labelling a young child with ODD as "high on CU traits" (Kotler & McMahon, 2010).

Researchers have also expressed concern about the validity of borrowing features of psychopathy in adults to use in assessments of CU traits in children (Johnstone & Cooke, 2004; Seagrave & Grisso, 2002). Modeled on the hallmark of adult psychopathy, one of the core conceptual characteristics of CU traits in children is "Shallow or deficient affect"; that is, lack of expression or showing of emotions to others, except in a superficial way or for

personal gain (Frick & Moffitt, 2010). The present research found that children high on CU

traits appear to be more communicative about emotions; however it was unable to examine

the intent and sincerity of these children's emotional expression. Moreover, in a large

community study of school-aged children, the APSD items, "Does not show feelings" and

"Shallow emotions", did not load onto an empirically derived CU traits scale made up of

items from parent reports on both the APSD and SDQ (Dadds et al., 2005). Together, these

findings suggest that deficient and shallow emotional expression may be less pronounced

features of CU traits during early to middle childhood. Furthermore, from a developmental

perspective, it is questionable to what extent younger school-aged children have the cognitive

capacity to proactively manipulate other people via their emotional expression. Therefore,

caution may need to be exercised when assessing these CU characteristics in young antisocial

children.

<div align="center">Limitations and Strengths</div>

There are several common limitations across the studies in this thesis that are

deserving of discussion. First, for reasons outlined earlier (see p. 76), the current research did

not investigate the independent effects of the different dimensions of parent-child processes

on CU traits and conduct problems in concurrent multivariate analyses. An exception to this,

however, was the examination of warmth and coercion in Study 1. As expected, the findings

demonstrate that different socialisation mechanisms are related to conduct problems in

children as a function of levels of CU traits. Importantly, these findings speak to the

significance of relational versus coercive processes for antisocial behaviour in children

elevated on CU traits. The present research is limited, however, in that it cannot shed light on

whether the relational processes have unique or shared effects on conduct problems in these

children.

Second, the cross-sectional nature of the present data precludes making any firm causal inferences regarding the associations reported. There is an increasing body of work demonstrating the complex interplay between parents and children over time. For instance, studies have demonstrated reciprocal effects between children's conduct problems and parents' negative feelings and behaviour (e.g., harsh discipline) towards their child (Burke, Pardini, & Loeber, 2008; Lansford et al., 2011; Larsson, Viding, Rijsdijk, & Plomin, 2008). Considering that CU traits and conduct problems at high levels of CU traits, are purportedly under strong genetic influences (Viding et al., 2005); one cannot rule out the possibility that child-driven effects on parents' behaviour might best account for the associations observed in the current research. However, prior studies provide evidence suggesting that parenting processes predict change in CU traits (Pardini et al., 2007), as well as evidence for bi-directional influences between parenting practices and CU traits across early and middle childhood (Hawes et al., 2011). To shed additional light on this topic, future research will need to examine transactional relations among children's conduct problems and CU traits, and parents' behaviour over time, to provide longitudinal evidence of the findings in this thesis.

Third, the inclusion of only male participants across the studies in this thesis, may restrict the generalisation of the present results to clinical samples of females. As discussed previously, there is some suggestion that there may be distinct emotional correlates of CU traits in girls compared to boys. That is, in contrast to their male counterparts, girls high on CU traits appear to have intact affective empathy and higher levels of internalising symptoms (Dadds et al., 2009; Essau et al., 2006). Moreover, prior studies provide conflicting findings regarding the relationship between parental warmth and conduct problems in high CU girls (Hipwell et al., 2007; Kroneman et al., 2011). Thus, it is not clear whether the parent-child relational processes examined in this research may also share relationships with CU traits and

concurrent conduct problems in girls specifically. This should represent an important topic for prospective investigation, considering that chronic and severe trajectories of CU traits in girls across childhood and adolescence are under strong environmental influences (Fontaine et al., 2010).

Finally, it is important to consider the ecological validity of the observational assessments of family interaction conducted in the current research. There is debate in the literature concerning the extent to which family observations in clinic settings capture the pattern and style of naturally, or typically, occurring family interactions (Aspland & Gardner, 2003; Gardner, 2000). While observations in the clinic are a more feasible and standardised alternative to observations conducted in families' homes (Hawes, Dadds, & Pasalich, in press), the latter has the principal advantage of being able to capture slices of parent-child interactions in authentic family environments. The semi-structured observational procedures in the present research appeared to be successful in provoking the parent and child behaviours under investigation in the studies; however future research should observe families across different settings (e.g., clinic and home) to gather a broader picture of family interaction. Unfortunately, such an approach to observational research is highly taxing on resources and time. The brief observational measure of parents' relational schemas examined in this research—i.e., the FAARS—represents an attempt towards identifying more feasible observational measures that can be used in "real world" settings.

Alongside these limitations, the results reported here should also be viewed in the context of the strengths of the current research. First and foremost, data on parent-child dynamics was gathered using a comprehensive system of direct observations. Across the studies, four unique domains of parent-child processes were captured by direct observations of family interactions and parents' and children's narratives, using five different tasks that were specifically designed to tap into each process. The studies in this thesis, according to

recent literature searches, are all first attempts at delineating associations between observed parent-child dynamics and CU traits and co-occurring conduct problems. Second, the multi-method, multi-informant nature of the assessments in the present research, overcomes problems with shared method variance that are common in many studies in the existing literature. Along with the observational assessments, questionnaire reports captured dimensions of parents' and children's behaviour and personality, and were rated by multiple informants; namely mothers, fathers, children, and teachers. Moreover, the observational data were also gathered from multiple informants; i.e., parents and children, and procedures; i.e., speech samples, family interaction tasks, and story-stem completion task. In addition, an effort was made to train different teams of coders on scoring each of the observational measures; thereby further minimising shared method variance. Lastly, the current research included all members of the family in observational assessments when possible and appropriate to the task. Most notably, the inclusion of fathers in this research is timely, considering the dearth of previous studies investigating father-child interaction in families of antisocial children high on CU traits, amid growing evidence showing that fathers' behaviour has a particularly strong influence on conduct problems in boys (Hoeve et al., 2009).

Future Directions

Further research is needed to address the aforementioned limitations across the studies in this thesis, based on the suggestions made above. Moreover, from a conceptual standpoint, there are several important directions prospective research can take to further understanding on family processes associated with CU traits and conduct problems in children. First, it should be highlighted that the current research examined parents' negative discipline (in the context of their coercive behaviour), but not their positive disciplinary behaviour. It was suggested earlier, that for antisocial children low on fear, i.e., those arguably high on CU

traits, gentle discipline de-emphasising power may not produce sufficient levels of arousal in these children to facilitate internalisation of parental values and rules (Kochanska, 1995, 1997). It is yet to be investigated, however, whether high CU children are more responsive to stricter, albeit non-coercive, forms of discipline. A previous study found that in children low on behavioural inhibition (i.e., low fear), those that experienced consistent and firm (e.g., rule-oriented) parenting were rated higher on levels of guilt and empathy (Cornell & Frick, 2007). Extrapolating from this finding, it could be the case that for children high on CU traits, parents might need to use more stringent discipline techniques to activate optimal levels of arousal in these children for internalisation of parents' socialisation messages. Furthermore, drawing on the results in the present research, it would be interesting to examine whether consistent and firm parental discipline in the context of an emotionally positive parent-child relationship, has a positive influence on reducing conduct problems in children elevated on CU traits.

Second, it will be important for future research to examine mechanisms of change during family-centred interventions for conduct-problem children high compared to low on CU traits. The results of the current research suggest that there may be distinct parent-child processes—i.e., coercion versus relational—associated with conduct problems in each antisocial subtype. Thus, the trajectories of these family processes could be mapped across the course of treatment and again at follow-up points, to test whether they are linked to changes in children's levels of CU traits and antisocial behaviour. This data would aid in the process of developing and refining parenting interventions for antisocial children with and without elevated CU traits. The recent application of dynamic systems (DS) theory to family processes (Granic & Patterson, 2006), may serve as a valuable heuristic for this line of investigation. The DS approach to investigating family dynamics involves modelling moment-to-moment changes in parent-child interactions across time, which enables the

investigator to examine the pattern and structural characteristics of change in the parent-child system (e.g., from rigidity to flexibility in parent-child interactions), as opposed to just the content of this change (e.g., from negative to positive affect in parent-child interactions) (Granic, O'Hara, Pepler, & Lewis, 2007; Hollenstein, Granic, Stoolmiller, & Snyder, 2004). For instance, in the families of antisocial children high on CU traits, it would be interesting to map the dynamics of parent-child emotional reciprocity across different stages of a parenting intervention, and examine whether changes in the structure of emotional interactions in the parent-child system (e.g., increased variability in shared emotional experiences), are predictive of treatment outcomes.

Lastly, it will be important for prospective research to move beyond parent-child interactions, and examine the broader functioning of families with antisocial children high on CU traits. For instance, poor quality of marital relationships, parental psychopathology, and chaotic family environments; have all been implicated in the development of conduct problems in children (Deater-Deckard et al., 2009; Ingoldsby, Shaw, Owens, & Winslow, 1999; Shaw, Lacourse, & Nagin, 2005). There is limited understanding, however, on whether these family factors may have similar effects on antisocial behaviour in children with high CU traits. Results from a prior study suggests that household chaos (e.g., noise, disorganisation) might be a risk factor for a chronic trajectory of elevated conduct problems and CU traits throughout middle childhood (Fontaine, McCrory, Boivin, Moffitt, & Viding, 2011). Moreover, considering that CU traits are purportedly under strong genetic influences (Viding et al., 2005), parents of children elevated on CU traits might share similar personality characteristics, which may interfere with the quality of their parenting (Loney, Huntenburg, Counts-Allan, & Schmeelk, 2007). For instance, low levels of empathy in parents have been linked to rejecting parenting (e.g., hostility and lack of warmth) (Trentacosta & Shaw, 2008). Such research potentially has important implications for the treatment of CU traits and co-

occurring antisocial behaviour. There is considerable evidence showing that parent training programs are compromised by parental dysfunction, including parental psychopathology and marital conflict (Beauchaine, Webster-Stratton, & Reid, 2005; Dadds, Schwartz, & Sanders, 1987; Shaw, Connell, Dishion, Wilson, & Gardner, 2009). Therefore, if future research uncovers broader family-level factors associated with conduct problems in high CU children, then these factors may need to be targeted alongside parent-child processes in family-focused interventions for this subgroup of antisocial children.

Conclusions

It has been widely recognised by researchers that children with conduct problems form a heterogeneous group. CU traits appear to mark a subset of antisocial children with a particularly chronic and severe trajectory of antisocial behaviour. There have been limited attempts by previous research, however, at investigating domains of parent-child dynamics that may hold the most value for the socialisation of conduct-problem children high on CU traits. The overall goal of this thesis was to examine parent-child processes in the families of antisocial children with and without elevated CU traits. To this end, three separate studies examined relationships between different dimensions of parent-child processes, as captured by direct observations, and CU traits and conduct problems. Taken together, the results of these studies provide converging evidence to suggest that distinct parent-child processes may characterise the developmental trajectories of antisocial behaviour in children with high compared to low CU traits. That is, relational processes—warmth, emotional communication, and attachment—appear to influence CU traits and conduct problems in children high on CU traits. In contrast, coercive processes may have stronger effects on conduct problems in children with low CU traits.

It is hypothesised that a failure of emotional reciprocity and mutual co-operation associated with disrupted attachment and a lack of warmth/emotional expression in parent-child relations (Isabella & Belsky, 1991; Kochanska, 1997); may, in part, underlie impairments in empathic and moral development, and magnify antisocial behaviour, in children elevated on CU traits. Different mechanisms within the family are hypothesised to be more strongly involved in the development of conduct problems in children without elevated CU traits. That is, reciprocal interactions between children's dysregulated negative affect and harsh parenting (Scaramella & Leve, 2004), potentially underlie coercive exchanges implicated in the antisocial behaviour in these children.

Ultimately it is hoped that the science presented in this thesis will aid in the betterment of treatments for children with conduct problems. It would appear to be timely for future studies to begin developing and refining family-focused interventions for antisocial children, that are tailored to their level of CU traits. Put simply, the results of the present research suggest that antisocial children high on CU traits may be particularly responsive to affective qualities of the parent-child relationship – such as a positive emotional bond and reciprocated emotional communication; whereas those without elevated CU traits might benefit from parenting interventions that focus on reducing parent-child coercion and setting-up more effective systems of "emotionally-neutral" discipline. Moreover, it is also hoped that the present research will provide additional impetus for researchers and clinicians to begin planning early prevention efforts for CU traits and conduct problems in at-risk children. The initial stages of attachment formation in children may prove to be a critical period for the prevention of CU traits and antisocial sequelae.

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Appendix A: Protocol for Family Observation

Observation Requirements

- All family members are to attend for a one hour observation
- Book Child Observation Lab Room

Materials.
Toy box
Paper and pencils
1 video camera & voice recorder

Make sure:
a. Parents/children don't do the questionnaires while doing the task
b. Hoods or any clothing item obstructing a participant's face is removed prior to the start of the task
c. The camera is left on at all times – even when giving family new instructions
d. *Each activity lasts for the specified period of time* (unless a parent or child leaves the room and refuses to complete a task)

Procedures for Family Observation Tasks

1. Room Set-Up

a. One video camera

b. Chairs should be placed around the desk - facing towards the cameras (i.e., no chairs with backs facing the camera or on angles where backs are to the cameras).

c. Place toy box on the ground next to the table.

2. State the Participant's ID Number

After the camera is turned on, face the camera and clearly say; the site (i.e., UNSW/RFW), the child's ID number, and the treatment stage (i.e., PRE/6-MTHS/12-MTHS).

3. Greeting the Family

Explain to the family: "*Today I'm going to observe your family doing a number of tasks; it should take about 45minutes. I'm going to be giving you guys instructions for each task and then stepping out of the room and returning when it's time to finish and move onto the next task.*"

Tell the family:

a. *Please leave the chairs in their positions, however you can move around the chairs and table as you feel necessary*
b. *Please play with the toys on top of the table (rather than on the floor), and once you have decided on which toys you would like to play with, could you please put the toy box back on the floor*

4. Free Play Instructions (10 minutes)

Note: The free play task is not required for the families of <u>referred children</u> 13 years or over

"There are a range of toys and stuff here, just as a family have a play for a bit and I'll be back soon"

Return after 10 minutes

5. Parenting Instructions (2 minutes)

Knock on the door before entering the room.

"Okay, we need to move onto the next activity, (look at parents) *can you guys please instruct your child(ren) to pack up all the toys as quickly as they can."*

Go out of the room – and get the paper and pencils – leaving the family to pack up the toys. Shut the door behind you and come back in 2 minutes.

6. Family Evaluation Activity Instructions (10 minutes)

Once the toys are packed-up, take the toy box away – place the paper and pencils on the desk (nothing else should be on the desk at this stage).

"Now as a family we would like you to do a drawing together. We would like you to draw each of your family members and then come up with ONE word that best describes each person in the family. You can only choose ONE word and everybody has to agree on what that word should be. You also need to agree on the colours that you want to use while drawing the picture.

Remember everybody has to agree on the words before they can be put down on the paper."

Return after 10 minutes.

7. Stress Inducing Instructions (2 minutes)

Knock on the door on your return.

"Okay, we're going to move onto a new task, if I can get you to finish your picture and words now. I'll be back in a couple of minutes" (Note: this instruction should be stated using a slightly stressed tone of voice)

Return after 2 minutes. You <u>must</u> stop the family from continuing their activity at this point.

Procedures for Emotion Tasks

1. Parent-Child Emotion Talk (10 minutes)

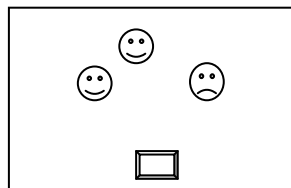Remember: CAMERA STAYS ON FOR THIS TASK

Chair set-up:

* Remove the box of toys and the table out of the view of the camera *

The parents' chairs should be facing the child's chair (so no backs are to the camera). Angle the parents' chairs so that the parent sitting closest to the camera is not obstructing the camera's view of the other parent.

☐   = camera

☺   = parent(s)

☹   = referred child

Remove any siblings from the room – this task should only involve the parent(s) and referred child.

"What I'd like you all to do now is to try and remember a <u>happy</u> time that you have all shared together and a <u>sad</u> time that you have all shared together. I'd like you to each try to remember as much as you can about those two times that you've shared together and have a discussion about them as if you were at home. Just spend a few minutes talking about each event. Do you have any questions before we start?"

Leave the room – return after 10 minutes (Note: the experimenter should encourage the family to continue talking for a few more minutes, in the event that one participant leaves the room early and notifies the experimenter that they have finished).

2. Parent Speech Sample (5 minutes)

* Place the voice recorder on a chair next to the parent. Turn the recorder on, and clearly say; the clinic site (i.e., UNSW or RFW), child's ID number, mother or father, and treatment stage *

Parents complete this task individually (i.e., the parents should do this task one at a time).

"What I'm going to do is start this voice recorder and then step out of the room for about 5 minutes. In that time, I'd like you to give us your thoughts and feelings about (child's name). If you could speak about <u>what sort of a person they are</u> and <u>how the two of you get on together</u>, that would be great. Do you have any questions?"

"I'm just going to take [child] & siblings – to get a sticker and certificate for being so great."
(Note: Alternatively, you can have one parent sit with the child, while the other completes the task)

Return after **5 minutes** and switch the recorder off (Note: parents should not switch the recorder on or off at any stage in this task).

Appendix B: FOS–VI Manual

Behavioural Coding System for Observation of Family Interaction

Family Observation Schedule – 6th Edition

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March 2009

Summary of Behaviour Codes

Parent Behaviour

<u>Interval:</u>

1. *Criticism* – direct negative 'put-downs', sarcastic comments or jokes, and non-verbal gestures of disapproval to identified child (IC) and siblings.

2. *Harsh Parenting* – commands and threats delivered with a harsh tone of voice and angry affect, overly-strict and hostile responding to child misbehaviour, physical aggression.

3. *Lax Parenting* – a failure to respond to any instance of child misbehaviour (within a 5-second period), not enforcing rules set by other adults (e.g., the experimenter), a lack of supervision.

4. *Praise* – verbal expressions of a global nature which reflect a parent's satisfaction with their child's behaviour (e.g., "Good boy"), or statements which describe a specific aspect of a child's behaviour that is positive.

<u>Global:</u>

5. *Social Attention* – overall amount of attention and interest parents invest in the behaviour of IC and siblings.

6. *Talk* – amount of speech directed to IC and siblings.

7. *Warmth* – positive affect, physical affection, verbal statements indicative of a positive relationship, direct eye gaze, and a warm tone of voice to IC and siblings.

8. *Responsiveness* – responsive behaviour to IC and sibling's questions, non-verbal positive bids for attention, and emotional needs.

9. *Parental Discord* – conflict between parents as expressed by verbal and non-verbal signs of disapproval, overt aggression, and passive aggression; that is, ignoring a partner or overriding a partner's parenting.

Child Behaviour

<u>Interval:</u>

1. *Criticism* – direct negative 'put-downs', sarcastic comments or jokes, non-verbal gestures of disapproval to parents.

2. *Non-compliance* – non-compliance to specific parental instructions within 5-seconds.

3. *Proactive Oppositionality* – instructions or demands made to parents with a harsh tone of voice, instrumental aggression, deliberate and unprovoked antagonism, teasing or humiliating comments made to parents.

4. *Complaint* – whining, crying, screaming, shouting, grizzling, intelligible vocal protests or displays of temper (e.g., temper tantrum).

5. *Withdrawal* – any behavior that is not directed toward another person or task; the child has withdrawn into him or herself and is not engaged in any task or social interaction; any repetitive, non-goal directed behavior.

<u>Global:</u>

6. *Social Attention* – overall amount of attention and interest a child exhibits towards the behaviour of his/her parents.

7. *Talk* – amount of speech made during interaction with parents.

8. *Warmth* – positive affect, physical affection, verbal statements indicative of a positive relationship, direct eye gaze, and a warm tone of voice.

9. *Responsiveness* – responsive behaviour to parents' verbal (e.g., questions) and non-verbal (e.g., direct eye contact) requests for engagement.

10. *Sibling Aggression* – angry non-verbal behaviour, hostile threats, and physical force directed at siblings or their property.

Overview of Scoring

The FOS-VI codes for both *consistency* and *intensity* of behaviour and affect. Consistency relates to the proportion of the time sampled (e.g., a 1-minute interval) in which the targeted behaviour occurred. Behaviour with a high level of consistency will be displayed over the majority of the interval. By contrast, intensity is a qualitative measure of behaviour. For behaviours to be considered very high in intensity, they must be accompanied by high levels of expressed emotion (e.g., as displayed by facial affect, body language, and tone of voice). Behaviours of a more intense quality may not necessarily be repeated throughout the sampled time period (i.e., might be discrete or inconsistent), but are of a severe enough quality to warrant a higher score. Refer to the individual code descriptions for examples of discrete behaviours which are considered to be of higher and lower intensities. Note: it is imperative that only observable behaviour/affect is coded; not a coder's 'intuitive impression'.

The following provides a guideline for scoring the FOS-VI codes[1]:

0 *No* occurrence of the behaviour

1 Behaviour occurred *a little bit of the time* and/or was of *low intensity*

2 Behaviour occurred *a moderate amount of the time* and/or was of *moderate intensity*

3 Behaviour occurred *a fair bit of the time* and/or was of *high intensity*

4 Behaviour occurred *a lot of the time* and/or was of *very high intensity*

Additional score (9): Applied in instances where there was an external obtrusion which prevented the family from interacting for at least half of the interval. A common obtrusion can occur when the experimenter delivers his/her instructions to the family at the beginning of the observation session. Very occasionally a family member may leave the room; which also warrants a score of 9 for the interrupted coding intervals.

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[1] This scoring system is used for all codes described in this manual, with the exceptions of warmth and responsiveness (parent codes); and non-compliance, warmth, and responsiveness (child codes). Scores for these specific codes are outlined separately below.

<u>**Description of Categories of Parent Behaviour**</u>

Interval Codes

1. Criticism

This code is scored according to the frequency and intensity of a parent's level of criticism towards the IC and siblings. A parent can be critical of a child's stable attributes (both physical and mental) or something they did 'within the moment' (e.g., a poor effort during a task or a comment they made). Criticism can involve any of the following: a sarcastic remark or joke, a direct negative 'put-down', or a non-verbal gesture.

Examples of Low-Moderate Intensity Criticism:
- Criticism of an aspect of the child's behaviour which occurred within the moment (e.g., "You really can't sit still, can you?").
- Sarcastic remarks.
- Rolling of the eyes, shake of the head, and other non-verbal signs of disapproval.

Examples of High-Very High Intensity Criticism:
- Criticism of a core attribute or part of a child's personality (e.g., "You're a lazy slob").
- Critical remarks about an aspect of the child's behaviour which is perceived to be stable (e.g., "You *never* share, I'm sick of telling you this").
- Comments that undermine the child's strengths or capabilities (e.g., "Don't even bother trying to set that game up, you don't have the brains to do it").

2. Harsh Parenting

This code assesses the frequency and severity of parents' coercive behaviour when managing their child's behaviour. It can include the following behaviours: the use of bullying tactics (i.e., being overly controlling of a child's behaviour in a manipulative way), angry and hostile responses to child misbehaviour (e.g., yelling and getting into the child's face), and threats—or actual instances—of corporal punishment.

Examples of Low-Moderate Intensity Harshness:

- Mildly coercive threats (e.g., "You will never play the playstation again if you don't give that texta to your sister").
- Manipulative statements (e.g., "If you don't pick that card up, I will make sure that you get all the bad cards when I draw").

Examples of High-Very High Intensity Harshness:

- Severely coercive threats (e.g., "Pack the toys up otherwise Dad will smack you when we get back!").
- Physical aggression (e.g., a slap, smack, pinch, *forcefully* grabbing a child's arm) or any behaviour inflicted on the child with the intent to cause pain.
- Yelling at the child.

3. Lax Parenting: (*Contingent on child misbehaviour*)

This code factors in both the frequency and severity of parents' display of laxness in their management of their child's behaviour. Lax parenting refers to parenting behaviour that is permissive and unstructured. It can include the following: not backing-up a parental instruction when a child is oppositional, or simply 'giving-in' to an inappropriate child request; not enforcing specific rules that the experimenter has issued to the family or the child (e.g., to refrain from touching the video-camera); ignoring instances of obvious child disobedience (e.g., stealing a toy or hitting a sibling); and a lack of supervision.

Examples of Low-Moderate Intensity Laxness:

- 'Giving-up' on following through on a parental request or instruction.
- 'Giving-in' to the child's inappropriate request (within a 10-second period).

Examples of High-Very High Intensity Laxness:

- Not attending to the child's overt displays of misbehaviour.
- Not attending to a child who leaves the observation room.

4. Praise

This code assesses the frequency and the quality of parents' use of child praise. Parents can either issue global praise (e.g., "Good boy" and "Well done"), or descriptive praise; that is, verbal statements specifically describing a positive aspect of child behaviour. For example, if a child is efficient in packing-up toys, a parent may comment; "You did a great job at cleaning up the toys so quick".

Examples of Low-Moderate Intensity Praise:

- Global praise.
- Non-verbal gesture of approval (e.g., parent gives the child the 'thumbs-up')

Examples of High-Very High Intensity Praise:

- Global praise delivered with an explicit gesture of positive affect (e.g., a wink, a smile, a 'high-5').
- Descriptive praise.

Global Codes

5. Social Attention

This code reflects the amount of time parents spend engaged with the IC and siblings. When a parent is socially engaged with a child, they can be listening to them, sharing in an activity, actively watching their child doing an activity, or otherwise paying attention to the child's behaviour. A parent who is not engaged with the target child, may be engaged with another family member (e.g., a different child or their partner) or doing a solitary activity (e.g., reading a book, looking at their mobile phone) which is clearly different to the activity their child is doing at that time; or they may be exhibiting withdrawn behaviour (e.g., staring blankly at the wall). Scores *do not* reflect the quality of parent's social engagement (cf. warmth and responsiveness codes).

Note: This code does not factor in intensity. Only score parents on consistency of social attention.

6. Talk

This code rates the amount of talk parents engage in with the IC and siblings. When the child is talking during a conversation, it is not expected, nor is it generally appropriate that the parent be talking simultaneously. Accordingly, more emphasis in scoring is placed on the parental talk that does occur and could potentially occur, when a child is not speaking.

Note: This code does not factor in intensity. Only score parents on consistency of talk.

7. Warmth

This code captures the consistency and intensity of parents' warm behaviour during their interactions with the IC and siblings. Parents' warmth can be expressed verbally; that is, via statements which appear to be positively reassuring to the child and/or indicate a positive relationship (e.g., "I love playing this game with you" and "You are so gorgeous when you do that"), and non-verbally; that is, positive affect directed toward a child (e.g., smiling, laughing, and winking), body language which is open and inviting to the child, direct eye contact, a tone of voice which is 'warm' and age-appropriate, and any instances of positive physical contact (e.g., hugs, kisses, strokes, and petting). Note: higher scores are given to parents who are both expressive (e.g., use physical affection) and consistent in their displays of warmth during parent-child interactions.

Note: This code considers the *interaction* between consistency and intensity of warm behaviour.

0) No display of warmth. The parent is mainly rejecting of the child and expresses this verbally (e.g., "I don't care about what you have to say") and/or non-verbally (e.g., closed body language, harshness in speech, deliberately withdrawing attention).

1) Displays warmth intermittently (e.g., an occasional smile).

2) Displays warmth for half of the time, of a moderate quality and intensity (e.g., a warm tone of voice, direct eye contact, and open body language). The parent has a generally warm disposition towards the child.

3) Displays a warm disposition towards the child for a fair bit of the time, with some instances of more expressive and obvious warm behaviours (e.g., parent smiles at the child and makes a positive comment about their interaction).

4) Displays a very warm disposition towards the child for a lot of the time, with several clear instances of explicitly warm behaviour (e.g., physical affection or physical approach - moving in close towards the child). The parent *initiates warmth and affection* on occasions.

8. Responsiveness

This code assesses the consistency and quality of parents' responsive behaviour towards the IC and siblings. A parent can respond to children's non-verbal bids for attention or assistance (e.g., if a child directs their gaze to a parent whilst they are having difficulty on a task), verbal requests, or emotional needs (e.g., providing a child with comfort if they appear to be distressed). The quality of a parent's responsive action can vary according to how much they elaborate on the child's request. For instance, if an irritated child is looking to their parent for assistance with a difficult task, one parent might help the child negotiate the challenging aspect of the task (thereby responding on a practical level), whereas another parent might respond to both the task's demands and the child's disappointment with not being able to complete the task independently (e.g., making the comment: "You gave it a good try, but sometimes we all need a helping hand"). Clearly the latter example of responsive parenting takes into account both the child's need for practical and emotional assistance; sensitively elaborating on the level of support required by the child. The amount of time between the child's request and the parent's response (i.e., the delay period), should also be considered when scoring. Notes: (i) parents who score high on this code, sensitively respond to their child's physical and emotional needs without delay; (ii) this code considers the *interaction* between consistency and quality of responsiveness at each score level.

0) Does not respond to any child requests (e.g., actively ignores questions).
1) Occasionally responsive, but responses lack depth and quality and/or are delayed.
2) Responds to approximately half of the child's bids without much delay, sometimes elaborating on the child's comments.
3) Responsive a fair bit of the time without delay. Parent generally elaborates on the child's comments, and shows some sensitivity to their emotional state when necessary.
4) Responsive a lot of the time without delay. The parent responds behaviourally and/or verbally to the child's questions, non-verbal bids for attention, and emotional needs, and *sensitively elaborates* on the child's requests where appropriate.

9. Parental Discord

This code reflects the consistency and intensity of mutual conflict between parents. Parents can exhibit disagreement and disapproval of one another's behaviour and attitude verbally (e.g., voicing one's disapproval over the behaviour of another) and non-verbally (e.g., via the communication of shared and reciprocated negative affect or a harsh tone of voice in speech). During displays of parental conflict, a parent may exhibit aggressive behaviour toward their partner which is overtly harsh (e.g., grabbing at a partner's hand or ordering a partner to do something), or passively aggressive (e.g., deliberately ignoring a partner's request, overriding a partner's parenting, or manipulating the behaviour of a partner by using subtle threats). A score of 4 is assigned to any instances where a parent is physically aggressive towards their partner or otherwise touches them with the intent to inflict pain.

Examples of Low-Moderate Intensity Discord:
- Minor disagreements (e.g., parents initially disagree over whether their child should be allowed to take his shoes off).
- Low level reciprocated negative affect or non-verbal expressions of disapproval (e.g., rolling of the eyes).
- Passive aggression (e.g., ignoring a partner's question)

Examples of High-Very High Intensity Discord:
- Serious disagreements (e.g., a parent raises their voice while instructing their partner to discipline their child).
- Verbal threats towards a partner
- Physical aggression or threatening gestures towards a partner

<u>**Description of Categories of Child Behaviour**</u>

Interval Codes

1. Criticism

This code scores the frequency and intensity of IC's level of criticism towards his/her parents. A child can be critical of a parent's stable attributes (both physical and mental) or something they did 'within the moment' (e.g., a messy drawing). Criticism can involve any of the following: a sarcastic remark or joke, a direct negative 'put-down', or a non-verbal gesture.

<u>Examples of Low-Moderate Intensity Criticism:</u>

- Criticism of an aspect of the parent's behaviour which occurred within the moment (e.g., "You don't even know how to play this game properly!").
- Sarcastic remarks.
- Rolling of the eyes, shake of the head, and other non-verbal signs of disapproval.

<u>Examples of High-Very High Intensity Criticism:</u>

- Criticism of a core attribute or part of the parent's personality (e.g., "You're a mean witch").
- Critical remarks about an aspect of the parent's behaviour which is perceived to be stable (e.g., "You *always* lie to me").

2. Non-compliance: (*Contingent on specific parental instructions*)

This code reflects the frequency and intensity of the IC's non-compliance to parents' instructions. Non-compliance refers to any instances when the child deliberately does not follow a specific parental instruction for a lapse of 5 seconds after the parent has finished delivering the instruction. Note: This code considers the *interaction* between frequency and intensity of non-compliance.

0) Immediate compliance to every parental instruction.

1) One instance of mild non-compliance (e.g., a cheeky response), followed by compliance.

2) One or two instances of more obvious non-compliance, but child complies with some parental instructions.

3) A few or more instances of non-compliance; the child rarely complies with parental instructions.

4) Non-compliance to *every* parental instruction. The child clearly *makes no attempt to comply* with parental instructions.

3. Proactive Oppositionality

This code assesses the frequency and intensity of the IC's proactive oppositionality (PO) towards his/her parents. PO refers to the following behaviours: instrumental aggression (e.g., pushing a parent off a chair so they can sit on it), instructions or demands delivered with a harsh tone of voice (e.g., "Pick that pencil up now Dad!"), deliberately irritating parents (e.g., making annoying sounds), teasing or humiliating parents (e.g., disclosing seemingly private information about a parent, without their consent, which appears to be embarrassing to them), and any forms of antagonism towards parents which are judged to be unprovoked (e.g., if a child scribbles over a parent's picture). Note: unlike non-compliance, *PO is not an immediate reaction to parental instructions*, but can follow-on from previously observed non-compliance.

Examples of Low-Moderate Intensity PO:

- Deliberately making annoying sounds or gestures
- Low-level demands (e.g., "Don't touch that pencil, I'm about to use it")
- Deliberately ignoring parents' questions

Examples of High-Very High Intensity PO:

- Instrumental aggression (i.e., using aggression to achieve a goal)
- Harsh demands
- Deliberate humiliation

4. Complaint

This code is rated according to the consistency and intensity of the IC's level of complaining. Complaints can include the following: whining, crying, screaming, shouting, grizzling, intelligible vocal protests, and displays of temper (e.g., temper tantrum). Complaining can occur as a result of the child's frustration (e.g., a child cannot draw what their sibling is drawing), boredom, follow-on from non-compliance, or a reaction to another person's behavior (e.g., a child whines when their parent suggests that their block building is going to fall down if they continue to build). Note: this code excludes aversive demands made by a child to their parent (which is coded under PO).

Examples of Low-Moderate Intensity Complaining:

- Whining, sobbing, grizzling.
- Low-level vocal protests (e.g., the child complains about having to pack-up the toys, using a conversational tone of voice).

Examples of High-Very High Intensity Complaining:

- Obvious temper tantrums (i.e., the child appears distressed/frustrated and is vocal about this distress in some form).
- High-level vocal protests (e.g., the child yells at the parents that he does not want to change activities).

5. Withdrawal

This code reflects the consistency and intensity of the IC's withdrawal behaviour. Withdrawal can include any behaviour that is not directed toward another person or task; the child has withdrawn into him or herself and is not engaged in any task or social interaction (e.g., the child hides under a table). *The child must demonstrate the behaviour for at least 5 seconds to be considered withdrawal behaviour*. It is also scored for any repetitive, non-goal directed behaviour such as biting fingernails, twirling objects, hand-flapping and rocking his or her body. Note: there is often overlap between the coding of social attention and withdrawal, however there may be instances where the child predominantly exhibits one or the other type of behaviour. For example, a child who sits alone under a desk for 20 seconds might score low on social attention and high on withdrawal, whereas a child who is completely absorbed in a solitary activity (e.g., playing a game) might score low on social attention but not high on withdrawal.

Examples of Low-Moderate Intensity Withdrawal:

- Minor repetitive/self-stimulatory behaviour (e.g., biting fingernails, twirling an object).

Examples of High-Very High Intensity Withdrawal:

- Significant repetitive/self-stimulatory behaviour (e.g., hand flapping, rocking his/her body).
- Hiding (e.g., the child hides under a table or chair).

Global Codes

6. Social Attention

This code reflects the amount of time the IC spends engaged with his/her parents. When the child is socially engaged with a parent, he/she can be listening to them, sharing in an activity, actively watching the parent doing an activity, or otherwise paying attention to the parent's behaviour. A child who is not engaged with the target parent, may be engaged with another member of their family (e.g., a sibling or another parent), or completely absorbed in a solitary activity (e.g., doing a drawing, making a play dough figure) which is clearly different to the activity his/her parent is doing at that time. It is important to observe whether the IC is attending to the parent non-verbally (e.g., social referencing) whilst he/she is doing a solitary activity; as this behaviour indicates that the child is still engaged or seeking engagement with this parent – albeit on a weaker level. Note: Scores *do not* reflect the quality of the IC's social engagment (cf. warmth and responsiveness codes).

Note: This code does not factor in intensity. Only score the IC on consistency of social attention.

7. Talk

This code scores the amount of talk that the IC engages in with his/her parents. When the parent is talking during a conversation, it is not expected nor is it generally appropriate that the child be talking simultaneously. Accordingly, more emphasis in scoring is placed on the child talk that does occur and could potentially occur, when a parent is not speaking.

Note: This code does not factor in intensity. Only score the IC on consistency of talk.

8. Warmth

This code assesses the consistency and intensity of the IC's warm behaviour during interactions with his/her parents. Children's warmth can be expressed verbally; that is, statements which appear to be positive in content and indicate a positive relationship (e.g., "I love playing with you"), and non-verbally; that is, positive affect directed towards parents (e.g., smiling and laughing), body language which is open and inviting to the parent, direct eye gaze, a tone of voice which is 'warm', and any instances of positive physical contact (e.g., hugs, kisses, and sitting on a parent's lap). Note: higher scores are given to children who are both expressive (e.g., use physical affection) and consistent in their displays of warmth during parent-child interactions.

Note: This code considers the *interaction* between consistency and intensity of warm behaviour at each score level.

0) No display of warmth. The child is mainly rejecting of the parent and expresses this verbally (e.g., "I don't care about you") and/or non-verbally (e.g., closed body language, harshness in speech, ignoring parent).

1) Displays warmth intermittently (e.g., an occasional smile).

2) Displays warmth for half of the time, of a moderate quality and intensity (e.g., a warm tone of voice, direct eye contact, open body language). The child has a generally warm disposition towards the parent.

3) Displays a warm disposition towards the parent for a fair bit of the time, with some instances of more expressive and obvious warm behaviours (e.g., child smiles at the parent and makes a positive comment about their interaction).

4) Displays a very warm disposition towards the parent for a lot of the time, with several clear instances of explicitly warm behaviour (e.g., physical affection or physical approach - moving in close towards the parent). The child *initiates warmth and affection* on occasions.

9. Responsiveness

This code assesses the consistency and quality of the IC's responsive behaviour towards his/her parents. A child can respond to parents' verbal requests (e.g., questions) and non-verbal bids for engagement (e.g., a parent directs their gaze toward their child and pauses, or a parent holds their hands out signalling a hug). The quality of a child's responsive action can vary according to how much they expand on their parents' request, and the amount of delay in responding. It should be noted that this code is not a direct measure of the frequency of a child's instances of misbehaviour (e.g., non-compliance to specific parental instructions).

Note: This code considers the *interaction* between consistency and quality of responsiveness at each score level.

0) Does not respond to any parent requests (e.g., actively ignores questions).

1) Occasionally responsive, but responses lack depth and quality (e.g., "Yes" / "no" responses) and/or are delayed.

2) Responds to approximately half of the parents' bids without much delay, sometimes elaborating on parents' comments.

3) Responsive a fair bit of the time without delay. The child generally elaborates on parents' comments.

4) Responsive a lot of the time without delay. The child responds behaviourally and/or verbally to parents' questions, non-verbal bids for attention, and *elaborates* on parents' comments where appropriate.

10. Sibling Aggression

This code reflects the consistency and severity of the IC's angry affect and aggressive behaviour directed towards his/her siblings. Aggression is identified by angry facial affect, angry tone of voice (i.e., loud and harsh), angry gestures (e.g., displaying the 'rude finger'), harsh commands, verbal threats, negative physical contact (e.g., a slap, grabbing onto a sibling's arm, biting) and the damaging of a sibling's property.

Examples of Low-Moderate Intensity Aggression:

- Angry non-verbal behaviour (e.g., giving the sibling an angry look, or displaying a rude gesture).
- Harsh commands (e.g., "Give me that texta now!").

Examples of High-Very High Intensity Aggression:

- Physical aggression (e.g., hitting, slapping, throwing objects at a sibling).
- Verbal threats of aggression (e.g., "I'll thump you if you do that again!").
- Unprovoked antagonism (e.g., snatching a sibling's toy).

Codes for Global Schedule

	Mother	Father	Identified Child	Siblings
Mother towards →		• Marital Discord (*Mutual*)	• Social Attention • Talk • Warmth • Responsiveness	• Social Attention • Talk • Warmth • Responsiveness
Father towards →	• Marital Discord (*Mutual*)		• Social Attention • Talk • Warmth • Responsiveness	• Social Attention • Talk • Warmth • Responsiveness
Identified Child towards →	• Social Attention • Talk • Warmth • Responsiveness	• Social Attention • Talk • Warmth • Responsiveness		• Sibling Aggression

Codes for Interval Schedule

	Mother	Father	Identified Child	Siblings	Family
Mother towards →			• Criticism • Harsh Parenting • Lax Parenting • Praise	• Criticism • Harsh Parenting • Lax Parenting • Praise	
Father towards →			• Criticism • Harsh Parenting • Lax Parenting • Praise	• Criticism • Harsh Parenting • Lax Parenting • Praise	
Identified Child towards →	• Criticism • Non-Compliance • Proactive Oppositionality	• Criticism • Non-Compliance • Proactive Oppositionality			• Complaint • Withdrawal

Appendix C: Example Transcript of a Family's Emotion Talk

M = mother speech; F = father speech; IC = "identified child" speech (aged 7 years)

(0 minute)

M: Ok happy time. What's a happy time

IC: oh oh oh I know.

M: Ok go. What's your happiest time?

IC: Probably when I

F: Just pick one Maxie it's ok.

M: You know lots of them. Pick anything.

IC: When I went to the Royal Easter show

F: Ok that was nice, you were talking about that in the car weren't you

IC: Yeah

M: How you want to go again next year

IC: Yeah

M: We'll see. We might go every couple of years to the Royal Easter show

IC: And my sad thing when

M: Why was that happy first of all

IC: Oh. Yeah. That was happy cause we did, cause we did very fun stuff

M: Like what

IC: Like when daddy took us to that ginormous slide

26.0 (1 minute)

F: Oh that's right

M: What slide, I didn't even know

F: Where were you. Oh the big one on the sacks

IC: I don't, remember it was night time and we went down that slide

F: Mm. Yeah we went down on those big sacks

IC: Yeah

F: We had to sit on them yeah

IC: Yeah

M: At night time,

F: Mm

M: Did you

IC: Yeah

F: When you were over at, watching the

M: Show. Ok

F: Showground things

M: What else did you like about the Easter show

IC: I also liked, I got the magic word thing

M: Oh yeah

F: What magic word thing

M: Well he broke it, straight away

F: Is that your sad time

M: But he took it back. And then they got us a different one that worked didn't they. Do

you remember?

F: What did they swap it?

M: Yeah they swapped it

F: Oh ok. That was pretty good

M: I don't think it was supposed to be

F: The big Ferris wheel was good. Did you like the big Ferris wheel

M: Oh that's right you went on the big Ferris wheel

IC: Yep. Oh yeah I love that

F: A huge one. Really really high.

IC: Yep that was really

F: Even those kids were on their own in the next carriage and they were really scared.

27.0 (2 minute)

IC: Yeah that was so funny because remember when, well

F: That was ridiculous. Little Asian kids in the next carriage, the parents put them on

their own. They were so scared they were lying on the floor

M: Oh, that's horrible. So you could see them going, Oh. Ok

IC: When, when, when they were going up, and the next when we were going up. It was

like, me and daddy were like "how did they get in front of us"?

M: Alright. Is that enough happy talk?

IC: Yeah

F: Enough of this happy talk

M: What's your sad memory.

IC: Ok

M: Have you got a sad time?

IC: Yeah

M: What was that.

IC: Last night, when daddy sent me to bed early. No

M: That was sad, you cried for a long time

F: And why did you get sent to bed early?

IC: Cause I didn't do the wrong thing

F: Cause you what?

M: Do you think it's fair enough that you went to bed early?

F: You did the wrong thing repeatedly

<div align="center">28.0 (3 minute)</div>

IC: I was being cheeky

F: Oh that's right. You do that all the time

IC: Yeah we were hitting each other

F: So who started the hitting

IC: Zoey

F: And did you do anything wrong

IC: No

F: Not a thing

IC: No

M: You know Aunty Jackie told me you started the hitting.

IC: I did not

M: Anyway you both got sent to bed early

IC: At least Zoey did, that's a good thing

F: That's not very nice

IC: Anyway now let's get on. Ok now daddy what's your happy and sad time?

M: Do we ask or is it just Max, I think it's just you

F: We're talking about you here

M: It's all about you. So happy was Easter show, and sad was going to bed early last night

IC: Yeah

F: Well that's sad

M: It was sad and he cried for ages didn't he

F: It was like it because it was unusual

M: Have you got any sad things

F: What about when Crabby died

IC: Ah

F: Remember when you're pet crab died

<div align="center">29.0 (4 minute)</div>

F: You cried for three days.

IC: Did I

M: Didn't effect you too much

F: Glad you're over it

M: Um

F: What's been sad lately, um

IC: Oh oh, I also liked it when I, when I, went to New Zealand and we were watching Jurassic Park together with daddy, and I jumped on top of daddy and I said "got you now", Spongebob

F: That's his, that's his favourite line

M: Oh ok

F: It's from Spongebob

IC: And also when daddy went back and Zac on the boat said "mummy I don't like it"

M: Fair enough

F: Ok what about sad, we've got to try and think about sad ones. What about when you

30.0 (5 minute)

F: broke your DS.

IC: Ah yeah that was sad

F: And now you can't find your DS once we've got it fixed

IC: Oh that's sad

F: Why is that sad, you don't seem too sad.

IC: Yeah

M: You don't seem too sad that you lost that

IC: I am sad

M: Yeah. We need to go look for that

F: I think you're not sad because you think you're going to use Zoey's all the time.

M: Zoey's got no card in hers

F: Oh yeah, because you lost the card as well. Oh

M: You didn't break it and hide it did you?

IC: No

F: No

M: Just checking

IC: I

F: He told us he broke it

M: Oh yeah. I guess so

F: Get it fixed straight away

M: I hope it hasn't been thrown in the bin

F: That would be sad. That would make me sad. That would be my sad time

M: Then I'll be sad too

IC: Why

M: Then you'll never see

F: I don't like wasting $200 toys being thrown in the bin by Mia

M: There's a chance she's thrown it in the bin you know, and it's gone out.

F: I know.

M: Oh god

IC: And you'll have to get me another one

<center>31.0 (6 minute)</center>

F: Not necessarily

M: That's not how it works. If you don't look after your things and let Mia pick it up. I know she's a messy girl, but you know what, have to put it somewhere safe

F: I'll tell you what, when you had that horrible girl at school bullying you, that would've been sad.

IC: Yep. I'll tell you a very sad moment that I thought of

M: Yep

IC: Probably, When I was crying just because I fell off the double bunk

F: Oh when you fall off your double bunk

M: Did he fall off his double bunk

IC: Remember

F: Ages ago, when you fell on your tooth.

IC: Ah

F: That was a long time ago

M: Oh yeah yeah. God yeah. That was when you were little

F: What about this year.

M: Something recent

IC: Oh recent. You mean when you're smacking me in the head with an energy sword on

X-box

M: What, when was that?

F: On X-box

<div align="center">32.0 (7 minute)</div>

IC: Yeah. In Halo

F: In the game

IC: In the game

F: It's not really sad is it

M: It's not that sad

F: Did that upset you Maxie

IC: Yes

M: You look upset

IC: Ok, who's turn next

M: It's still your turn, we had to talk about something happy for five minutes, and

something sad for five minutes

F: We haven't even got anything sad yet

IC: Ok sad

F: Or really sad

IC: The video camera's looking at me

F: Mm

M: It is too

IC: It's looking at me

F: Is that sad? You like being on camera, what are you talking about, you love being on camera

IC: Ok. Yes.

F: How about um. I'm trying to think of something of recent times that has been particularly sad for Max

M: For Max yes

IC: Sad, oh yeah, yeah

M: That is probably it

IC: Yeah. I know,

<div align="center">33.0 (8 minute)</div>

IC: When I have to go to two tones at school

F: You had to go what?

M: Two tones, it's singing class, he hates singing class. That's fair enough

F: Ah I used to hate singing class too

M: How long, it doesn't go very long and it's only once a week

IC: It goes for half an hour

M: Well that's nothing, it must fly

F: Why don't you like singing

IC: More like an hour, half an hour

F: Maxie, why don't you like singing

IC: Mm, just don't

F: Can you sing?

IC: No

F: Give us a song

M: Just smile and they'll think you're singing

IC: Ahh

M: What songs do you sing at two tones

F: I got the strap at school for miming.

M: Did you

F: Seriously

IC: Something that we don't need, from animal movies

F: From animal movies

M: Is the songs you're learning for the showcase?

IC: No

M: It's not. It's just practicing

F: Hold on, if you like singing in the showcase, how come you don't like doing two tone?

IC: I don't like singing when we get it wrong, it's like "hello"

<div align="center">34.0 (9 minute)</div>

IC: "Let's go to the library today"

F: What was that

IC: That was a line

F: And what role was that, who were you supposed to be

IC: I just made it up

F: Oh. Thank god for that. When are we going to showcase this year

M: You've got showcase this term. Is that something you're looking forward to?

IC: Yep, but

F: Did you get to be what you wanted to do?

IC: Oh yeah, camp, camp, camp, camp, camp, camp, camp (jumping up and down and clapping)

M: I think camp makes him happy

F: Camp's a happy time

IC: Camp, camp

F: Did you get the role you wanted in

M: Showcase

 F: Showcase. Did you get who you wanted to be?

IC: No, it was a role for four people in our class, and no I did not get the role

F: Did that make you sad

IC: Yeah

M: Who got the role

IC: It was just people with

<div align="center">35.0 (10 minute)</div>

IC: Powerful voices

M: Yeah. Fair enough

F: And you didn't have a power voice

IC: Ah

M: Who's got the loudest voices in your class

Appendix D: Coding System for Family Emotion Talk

Parent-Child Emotion Talk Coding System

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1. Overview

The Parent-Child Emotion Talk Coding System was designed for coding the content and style of family emotional communication. This coding system integrates modifications of previous methods and manuals for coding family emotion talk, that have been adapted to suit the triadic (i.e., mother, father, and child) familial interaction procedure and conceptual focus of the UNSW SURF Project. Where applicable, these original manuals should be consulted for more detailed explanations of the codes (see references).

Emotion talks are video-recorded and participants' utterances are transcribed verbatim. Utterances are defined as all of one speaker's comments bounded by another speaker's comments, and are coded using the transcript of the family conversation as well as considering participants' behaviour from the video-clip. This system also includes coder global impressions of the overall quality of participants' affective expression across the emotional conversations.

2. Observational Procedure

The parent-child emotion talk is the final family interaction activity in the UNSW SURF Project family observation procedure. Only the parent(s) and the identified child (IC) participate in this task.

Experimenter enters the room, escorts any siblings to the clinic waiting room, and gives the remaining family members the following instructions:

"What I'd like you all to do now is to try and remember a <u>happy</u> time that you have all shared together and a <u>sad</u> time that you have all shared together. I'd like you to each try to remember as much as you can about those two times that you've shared together and have a discussion about them as if you were at home. Just spend a few minutes talking about each event. Do you have any questions before we start?"

Experimenter leaves the room and returns after 10 minutes.

3. Coding Procedure

<u>Step 1:</u> Read the transcript while concurrently listening to / watching the video-recorded emotion talk using a media-player program (e.g., windows media-player) on a computer. Make sure that the media-player clearly displays a time dial. Mark the following on the hard-copy of the transcript:

- Any <u>corrections</u> in the text of the transcript (e.g., incorrect speaker recorded, inaccurate transcribing of speech). Corrections should be marked with the symbol; →
- <u>Repetitions</u>; mark with the symbol; **R**.
- Enter parental <u>dismissing behaviour</u> and <u>child avoidance</u>; mark with the symbol; *
- Mark all <u>disconnected</u> utterances. Pay particular attention to instances where there is a > 5s pause between utterances, as this represents disconnected conversation. Also, pay attention to head nods and head shakes, as these non-verbal gestures can indicate connected conversation.

<u>Step 2:</u> Code affect codes on the *Global Codes* excel score sheet. This may require watching the clip again in its entirety. To maintain a global impression of the affective climate of the family interaction, do not watch the clip more than twice. Note: separate score sheets (i.e., excel files) should be used for each family.

<u>Step 3:</u> Read the transcript to code utterances. Record scores on the *Utterance Codes* excel score sheet. Where necessary, refer to the video-clip to decipher context and emotional behaviour.

4. Description of Codes

Interrater

Indicate whether the coder is primary or secondary (i.e., the interrater coder).

(1) **Primary coder**

(2) **Secondary coder**

Subject Identification

Record the unique SID for each family. Site specific ID numbers should be supplied with each of the mpeg files. For SID's: Royal Far West (RFW) families retain their original site ID number; for UNSW families add 1000 to the original site number (e.g., 178 becomes 1178).

Utterance

An utterance is defined as all of one speaker's comments bounded by another speaker's comments, or a pause between a set of speaker's comments lasting longer than 5s. Each utterance should be numbered using the corresponding line number on the word document throughout the emotion talk.

Utterances can be sub-divided into *semantic units*. This can occur when an utterance is double-coded (e.g., contains a moral statement which also has an emotion word), when there are two or more statements in a single utterance that can receive unique codes, or when there is more than one emotion word in an utterance. Semantic units other than the first unit should be recorded sequentially as SU2, SU3 etc. in the utterance column on the score sheet.

Scores for *non-verbal behaviours*; parental dismissive behaviour and child (non-verbal) avoidance, are labelled as NV in the utterance column.

Speaker

Speaker is the person who verbalises or expresses the utterance or affective behaviour.

(1) **Mother**, i.e., the female caregiver

(2) **Father**, i.e., the male caregiver

(3) **Child**, i.e., the identified child

Topic

Families are instructed to talk about a happy time and a sad time that they have shared together in the past. However, some families may slightly deviate from these instructions and discuss e.g., a bad time or a scary time. Moreover, some families may steer off-topic over the course of the discussion. Be sure to distinguish between the emotion topic the family has explicitly agreed on discussing (i.e., sad or happy time), and the perceived or actual emotion topic the family ends up discussing. For instance, a family may begin discussing a happy time, however, the conversation turns into a disagreement with some conflict. In this case, the utterances spoken during the disagreement would still be coded under the "happy" emotion topic, regardless of the valence of the emotion words spoken in these utterances.

Topic is coded into one of the following categories:

(1) **Happy**

(2) **Sad**

(99) **Non-emotion talk**, i.e., utterances that do not contain an emotion word or an emotion theme, and are *off-topic* (e.g., "Mum, when we finish this can we go to the park?", "How was school today?"). When the focus of the conversation turns from past to present, then these present-day-focused utterances are to be coded as off-topic, with the exception of utterances that explicitly contain emotion words.

(100) **Request for child compliance**, i.e., statements made by parents that are an attempt to get the child to follow a direction (e.g., "Jason, can you come over here and sit on the chair").

(101) **Repetition/other**, i.e., (i) participant repeats verbatim an utterance made by another participant. (ii) One person confirms another person's utterance (e.g., "Oh yeah, that did happen"). (iii) Participant repeats the instructions of the task (e.g., "Johnny, can you think of a time when we have been happy?") or is 'fishing' for something to talk about (e.g., "What about when Simba died?", "I suppose another sad time was when you fell off your bike"). (iv) Parent to parent talk or parent to sibling talk. (v) One word statements (e.g., "yeah", "no", "what?").

Note: For codes (99), (100), and (101), only score utterance and speaker (as there will not be any applicable feeling-state codes for these utterances).

Conflict

Code utterances for the presence or absence of themes of parent-child conflict, parental discipline, sibling conflict, child defiance, or other child antisocial behaviour (e.g., stealing, vandalising).

(0) **No conflict theme**

(1) **Conflict theme**

Emotion Word/Theme [Method adapted from Adams et al. (1995)]

Spoken or referenced emotion terms (e.g., behaviours, emotion states) are coded into one of the following categories:

 (1) **Sadness** (e.g., cried, sad, depressed)

(2) **Fear** (e.g., scared, frightening)

(3) **Anger** (e.g., mad, furious, annoyed, irritated, grumpy, cranky, cross, temper tantrum)

(4) **Negative evaluation**, i.e., a negative evaluation of an external event or object (e.g., "You *didn't like* that baby-sitter")

(5) **Negative state**, i.e., an identification of a negative internal state or mood (e.g., "You were *moody* when we went for dinner".)

(6) **Positive evaluation**, i.e., a positive evaluation of an external event or object (e.g., "The merry-go-around was your *favourite* ride", "I *like* it when we go on holiday", "It was good when we went shopping afterwards")

(7) **Positive state**, i.e., an identification of a positive internal state or mood (e.g., "We were so *happy* when Josh was born")

(8) **Affection** (e.g., kiss; hug; love, as in "I *love* you", <u>not</u> "I love playing footy")

(9) **Deny negative**, i.e., speaker denies a negative feeling state (e.g., "I wasn't scared that time", "No, I didn't feel sad about it"). Note: Utterance must be in direct response to the other speaker's question or statement about the negative feeling state.

(10) **Deny positive**, i.e., speaker denies a positive feeling state (e.g., "I wasn't happy when Jack won the prize", "No, I didn't feel excited about it"). Note: Utterance must be in direct response to the other speaker's question or statement about the positive feeling state.

(11) **Negative emotion theme**, i.e., utterance pertains to a negative feeling-state theme that is carried forward from a previous utterance in which an emotion word was spoken.

(12) **Positive emotion theme**, i.e., utterance pertains to a positive feeling-state theme that is carried forward from a previous utterance in which an emotion word was spoken.

Notes: (i) Do not code the same emotion word more than once if it appears several times (i.e., is repeated verbatim) in an utterance. (ii) Semantically-related emotion words spoken within the same utterance are treated as discrete emotion words (e.g., "you were *sad* and *upset* when you fell over" – would be coded as two discrete "sadness" emotion words).

Context

Context refers to the function of the utterance (e.g., dismissing statement, child avoidance), with codes exclusive to parents or children.

See Family Emotion Communication Coding System (Shields, Lunkenheimer, & Reed-Twiss, 2002), for a more detailed description of codes 1, 2, and 3, listed below.

(1) **Dismissing statement** *(parent specific code)*, i.e., parental statements in response to child emotional utterances that criticise, minimise, or ignore child emotion (e.g., "You were silly to be upset about that" and "That's not how you felt").

(2) **Dismissing behaviour** *(parent specific code)*, i.e., parental behaviour in response to child emotional utterances that criticises or minimises child emotion (e.g., eye-rolling and sighing).

(3) **Confirmation** *(parent specific code)*, i.e., confirmation/validation of child emotion (e.g., "Yeah, I can see why you were upset").

(4) **Reflective listening** *(parent specific code)*, i.e., parental clarifications of child emotional utterances (e.g., "So you are saying that you were happy when we went to see Grandma?"). Tone of voice suggests that parent is clarifying child's emotional statement out of respect and interest in the child's speech, as opposed to because they misheard the child's utterance.

(5) **Avoidance** *(child specific code)*, i.e., words or actions in *direct response* to parents' bids for discussion about feeling-states, indicating that the child is actively or passively refusing to participate in the conversation about the specific emotion topic.

Examples of child avoidance include* (a) changing the topic (i.e., child actively tries to shift the conversational topic or focus of shared attention to something else), (b) explicit evasions or refusals (i.e., child verbally indicates refusal to continue the conversation in response to a maternal statement or question), (c) behavioral evasions (e.g., in response to a parental statement or question: child goes to the door and attempts to leave the room, child acts aggressively towards a parent, or child begins yelling loudly), and (d) passive avoidance, i.e., child withdrawal (e.g., child turns around in chair with back facing parent, child ignores parent's question).

* Adapted from Waters et al., (2010).

Connectedness [Method adapted from Ensor & Hughes (2008)]

Parent and child utterances are coded for whether they are semantically related (i.e., connected) or semantically unrelated/discontinued (i.e., disconnected) during the course of parent-child conversation. Only code for connectedness between parent and child. Connected utterances are determined using a forward coding rule, i.e., examine the next sequential child/parent utterance for semantic relatedness.

General rule in coding connectedness: *Connected trumps disconnected*

Contingency rule: Due to the triadic format (i.e., mother – father – child) of the emotion talk in some families, there is a *contingency rule*: If a parent speaks over the top of another parent during conversation (e.g., cuts the other parent's speech short, speaks before the child has a chance to respond to the first statement), and this parent's utterance is unrelated to the spoken over parent's utterance, then only the parent whose speech is responded to by the child is coded 'connected'. The parent's utterance that was 'cut-off' by the other parent is coded as 'spoken over'. *Exception to the contingency rule*: Where it is ambiguous whether a child has responded to either his/her mother or father, because both parents have made semantically related utterances (that are not repeated), then both parents receive a 'connected' code.

- Example of contingency rule:

Mo: Tell me about why you were sad when we had to leave Tilly's house. *(Spoken over)*

Fa: I remember that you were also sad when we couldn't watch Ben play soccer. *(Connected)*

Child: No, I didn't even care about Ben's game.

- Example of exception to the contingency rule:

Mo: Tell me about why you were sad when we had to leave Tilly's house. *(Connected)*

Fa: Yeah, I remember you were crying in the car on the way home. *(Connected)*

Child: Because Tilly said that she wasn't going to come to my house next time.

(1) **Connected**, i.e., speaker's utterance is semantically related to the other speaker's utterance.

(2) **Disconnected**, i.e., speaker's turn is directed to the other speaker but fails to elicit a semantically related response.

(99) **Spoken over**, i.e., a speaker's utterance cannot be coded for connectedness because another speaker interrupts his/her speech with a semantically unrelated utterance, which changes the topic of conversation. <u>OR</u> A parent responds to another parent's utterance (which was initially directed at the child), not affording the child the opportunity to respond to the parent who spoke the first utterance in the conversation.

(100) **Not applicable**, e.g., mother to father conversation.

<u>Note</u>: (i) Do not code connectedness for: mother to father conversational turns, and utterances that do not contain a feeling-state word or theme. (ii) An unambiguous non-verbal response (e.g., head nod) to a speaker's utterance can be used to score an utterance as 'connected'. These behaviours are often indicated in the transcripts.

Global Affect [Method adapted from Pasalich & Dadds (2009)]

Each participant is coded on the rate and intensity of their overall display of positive and negative affect across the emotion talk. Affect coding is based on *non-verbal displays of emotion* (i.e., emotion conveyed via facial affect, body language, and tone of voice). The content of speech should not be considered when scoring global affect.

Rate each participant on the following dimensions of affect:

(1) **Warmth**, i.e., displays of positive affect (e.g., smiling, laughing), direct eye contact, open body language, enthusiasm towards the other person, a warm tone of voice, and displays of physical affection (e.g., patting, sitting on lap).

(2) **Negative affect**, i.e., facial displays of negative affect (e.g., frowning, grimacing), and behaviour associated with distress and anger (e.g., crying, yelling, whining, frustrated tone of voice, withdrawal, hitting). The intensity of the behaviour associated with the negative affect will significantly influence a participant's overall score on this code.

Use the following likert scale for scoring the dimensions:

0 = *No* occurrence of the behaviour

1 = Behaviour occurred *a little bit of the time* and/or was of low *intensity*

2 = Behaviour occurred *a moderate amount of the time* and/or was of *moderate intensity*

3 = Behaviour occurred *a fair bit of the time* and/or was of *high intensity*

4 = Behaviour occurred *a lot of the time* and/or was of *very high intensity*

Emotion Talk Duration

Record the amount of 1-minute intervals observed, as indicated on the last page of the emotion talk transcript.

Disrupted

Some emotion talks may finish prematurely due to a disruption in the family system that was unable to be repaired. State why the emotion talk was disrupted (i.e., ended before the experimenter returned to close the task), clearly indicating the behaviour and affect of the participant(s) involved (e.g., child left the room prematurely because he did not want to complete the task, and mother did not contend this; child had a temper-tantrum and the task was finished early by the experimenter).

(0) **Not disrupted**

(1) **Disrupted**

General notes: The content, context, and connect codes should only be scored for utterances that pertain to a feeling-state. Feeling-state talk is defined as utterances that contain either an emotion word or have an emotion theme. Emotion themes are evident in utterances that carry forward the subject of the emotion word spoken in previous utterances. Non-emotion topic utterances are still noted on the score sheet, however, will not be coded in as much detail as utterances containing emotion references.

5. References

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Emotion Talk Coding Crib Sheet

Speaker

(1) Mother

(2) Father

(3) Child

Topic

(1) Happy

(2) Sad

(99) Non ET

(100) Request for Child Compl

(101) Repetition/other

Conflict

(0) No

(1) Yes

Emotion Word/Theme

(1) Sadness

(2) Fear

(3) Anger

(4) Neg evaluation

(5) Neg state

(6) Pos evaluation

(7) Pos state

(8) Affection

(9) Deny neg

(10) Deny pos

(11) Neg theme

(12) Pos theme

Context

(1) Dismissing statement

(2) Dismissing behaviour

(3) Confirmation

(4) Reflective listening

(5) Avoidance

Connectedness

(1) Connected

(2) Disconnected

(99) Parent/child spoken over

(100) N/A

Global Affect

Likert scale:

(0) *No* occurrence of the behaviour

(1) Behaviour occurred *a little bit of the time* and/or was of low *intensity*

(2) Behaviour occurred *a moderate amount of the time* and/or was of *moderate intensity*

(3) Behaviour occurred *a fair bit of the time* and/or was of *high intensity*

(4) Behaviour occurred *a lot of the time* and/or was of *very high intensity*

Appendix E: MCAST Score Sheet for Coding Vignettes

1A Engagement	
1B Arousal	

2A Proximity child	
2B Proximity mother	
2C Self care	
2D Reversal	
2E Conflicted behaviour	
2F Carer sensitivity	
2G Carer warmth	
2H Carer intrusive/control	
2I Carer disengagement	
2J Assuagement (child)	
2K Assuagement (observer)	
2L Affect	
PREDOMINANT STRATEGY	

3A Quality	
3B Quantity	
3C Relevance	
3D Manner	
COHERENCE OF NARRATIVE	
3E/F Mentalising	

4A Episodic D Score	
4B Bizarre themes	
TOTAL D SCORE	

VIGNETTE CLASSIFICATION	

Appendix F: Descriptive Statistics for Demographics and Quality of Family Interaction Variables in Study 2

Table 20.
Descriptive Statistics for Demographics and Quality of Family Interaction Variables in Study 2

	M	*SD*	Minimum	Maximum
Age (years)	5.85	1.83	3.00	9.00
Verbal ability[a]	-.03	.95	-1.88	2.22
Mother's education	3.29	.78	1.00	4.00
Father's education	2.95	.93	1.00	4.00
Mother warmth	2.80	.96	1.00	4.00
Mother neg affect	.19	.39	.00	1.00
Father warmth	2.37	.97	.00	4.00
Father neg affect	.20	.46	.00	2.00
Child warmth	2.56	.86	.00	4.00
Child neg affect	.73	1.01	.00	4.00
Mother total utterances	67.97	20.91	24.00	113.00
Father total utterances	60.76	21.72	15.00	112.00
Child total utterances	72.29	19.68	31.00	119.00
Family happy topic utterances	44.98	19.99	2.00	98.00
Family sad topic utterances	34.69	17.05	.00	79.00
Child avoidance pos emotion	.24	.68	.00	4.00
Child avoidance neg emotion	1.83	3.56	.00	21.00
Parental requests for child compliance	7.39	6.81	.00	30.00
Family conflict theme utterances	7.70	10.72	.00	41.00
Child to mother disconnected: happy topic	.09	.11	.00	.44
Child to mother disconnected: sad topic	.08	.13	.00	.75
Child to father disconnected: happy topic	.10	.15	.00	.67
Child to father disconnected: sad topic	.08	.11	.00	.33
Parent(s) to child disconnected: happy topic	.04	.09	.00	.50
Parent(s) to child disconnected: sad topic	.04	.07	.00	.24

Note. [a] z score; disconnected scores are proportions.