

INVESTIGATING THE ROLE OF FEARLESS TEMPERAMENT AND PARENTING
PRACTICES IN CALLOUS-UNEMOTIONAL TRAITS IN MIDDLE CHILDHOOD

by

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A THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Arts
in the Department of Psychology
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2019

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ABSTRACT

Callous unemotional traits (CU traits) are a risk factor for youth misconduct, yet, questions remain regarding their etiology, as well as other dimensions of psychopathy, namely impulsivity/sensation-seeking (INS) and grandiosity/deceitfulness (GD). Fearless temperament and problematic parenting have each been proposed as risk factors for CU traits, but few studies have investigated their simultaneous influence, particularly in middle childhood or by considering specific aspects of parenting. The current study thus aimed to investigate in a community sample of young children (N = 50, 56% female, ages 6-9) how fearlessness and particular parenting factors uniquely, and in combination, concurrently predict CU, INS, and GD traits. Given the small sample, effect sizes were considered in addition to significance tests. Fearlessness and parenting dimensions tended to show small- to medium-sized correlations with CU, INS, and GD. Regression analyses revealed unique associations between inconsistent discipline and both GD ($\beta = .103, p = .003$) and INS ($\beta = .073, p = .037$), and between fearlessness and INS ($\beta = .108, p = .001$). A unique interaction was also found between fearlessness and monitoring on CU ($\beta = -.090, p = .014$). Post-hoc probing revealed that at above-average levels of monitoring, fearlessness was positively related to CU traits ($\beta = .07, p = .02$). However, at relatively low monitoring, there was an inverse relationship between CU traits and fearlessness ($\beta = -.09, p = .04$). Findings suggest that child fearlessness and specific parenting behaviors may play important roles in predicting risk for specific psychopathic traits. However, study limitations constrained inferences that could be drawn. If replicated, these findings may help inform early intervention efforts for youth at risk for psychopathy.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Cronbach's index of internal consistency
B	Beta coefficients: the estimates resulting from a regression analysis
f^2	Cohen's f^2 : standardized measure of effect size
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
N	Total sample size
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
r	Pearson product-moment correlation: a measure of the strength of the linear relationship between two variables
SD	Standard Deviation: the amount of variation or dispersion of a set of data values
$<$	Less than
$=$	Equal to

ACKNOWLEDGEMENTS

I would like to thank the committee members, Dr. Bradley White, Dr. Randall Salekin and Dr. Robert Laird for their support, guidance and input on this project. I would especially like to thank Dr. Bradley White for his encouragement, expertise and patience throughout the duration of this project and the many question-filled meetings that accompanied it. I would like to thank the children and families who participated in this study and lent their time to help me and others answer important questions about child development. Lastly, this project would not have been possible without the support of my family, friends and fellow graduate students who never fail to offer encouragement, motivation or coffee when it is most needed.

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CHAPTER 1

Introduction

Youth antisocial behavior and Psychopathy

Notable heterogeneity characterizes youth disruptive behavior problems, which are among the most prevalent health conditions of childhood, detrimentally affect various life domains (e.g., school performance, family dynamics, and socioemotional development; Scott, Knapp, Henderson, & Maughan, 2001), and frequently serve as a precursor to later antisocial patterns and adult psychiatric disorders (Moffitt, 1993; Pardini & Frick, 2013). Researchers have attempted to understand this variance by identifying and studying distinct developmental pathways that may define subgroups of disruptive youth (e.g., Pardini & Frick, 2013). These groups have been distinguished by onset of symptoms (childhood vs. adolescence; Moffitt, 2006), by the presence versus absence of internalizing symptoms and emotion dysregulation, and by the presence or absence of psychopathic features.

Foundational studies on psychopathy tended to refer to it as a unitary construct and used assessment measures that focused on a total psychopathy score (Patrick, Fowles, and Krueger, 2009). However, recent work has highlighted the multidimensional nature of psychopathic traits in both adults and youth, with most models considering distinguishable affective, interpersonal, and behavioral dimensions (e.g., Patrick 2010; Salekin, Andershed, Batky, & Bontemps, 2018), and emphasizing the fact that these different psychopathy dimensions exhibit different external correlates (Lilienfeld, 2018). Nevertheless, research on psychopathy in youth over the past two decades has witnessed an almost exclusive emphasis on the affective dimension of psychopathy,

via a focus on callous unemotional (CU) traits (Frick & Ellis, 1999; Salekin et al., 2018).

Callous Unemotional Traits

CU traits, identified in the early 1990s as a key risk factor for early and particularly severe and persistent youth misconduct, are characterized by a pattern of reduced concern for others or behavioral consequences, low emotional sensitivity, and impaired empathy (Moffitt 1993; Frick & Ellis, 1999). Children with elevated CU traits display more instrumental and premeditated aggression compared to other children and adolescents with severe conduct problems (Kruh, Frick, & Clements, 2005; Lawing, Frick, & Cruise, 2010; Marsee & Frick, 2007). The literature has also shown that individuals with CU traits demonstrate atypical neurophysiological responses, such as deficits in executive functioning and cortical underarousal (Lynam, 1996). Recognition of CU traits as a key early risk factor and potential treatment barrier has led to a Conduct Disorder specifier, With Limited Prosocial Emotions, in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Center, 2013). Although much of the research on CU traits involves older children and adolescents, recent investigations support the existence of CU tendencies in younger children, sometimes referred to as CU “behaviors” to denote their potential malleability at an early age (Waller et al., 2015).

Fearlessness and CU Traits

Unique etiological processes have been proposed to lead to the development of CU traits, with constitutional factors potentially playing a key role, in particular, temperamental fearlessness. Temperamental fearlessness, which is conceptually distinct from CU traits, reflects a tendency toward lower physiological arousal in response to negatively valenced stimuli and to unfamiliar situations, people, and circumstances (Fowles & Dindo, 2006; Frick & White, 2008). Lykken (1957; 1995) was among the first to propose low temperamental fear as a hallmark

feature of psychopathic personality. Lykken's (1957) influential fearlessness hypothesis posits that fearless temperament is one of the precursors or "primary source traits" (Cattell, 1957) to the development of psychopathic traits in adulthood. Accordingly, this fearless disposition manifests in insensitivity to or diminished learning from punishment, deficits in recognizing fearful faces and stimuli, and a diminished fear-potentiated startle response (Lykken 1995).

A contemporary triarchic conceptualization of adult psychopathy (Patrick, Fowles, & Krueger, 2009) connects temperamental fearlessness to phenotypic expressions of *boldness* as one of the proposed three main dimensions of psychopathy, along with *disinhibition*, and *meanness* (which captures CU traits), with boldness mapping onto the fearless dominance construct of the Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996). Boldness is viewed as potentially socially adaptive, as it is characterized by interpersonal effectiveness, comfort with novel and threatening stimuli, and an ability to remain calm when distressed. However, it is also believed to contribute to pathological manifestations of psychopathy when combined with other psychopathic traits, such as disinhibition (Patrick & Drislane, 2015).

Additional empirical evidence supports the role of fearless temperament in psychopathic traits in youth (Marsh & Blair, 2008, Blair, 2003), and temperamental fearlessness has been proposed to contribute to CU traits (Frick & Morris, 2004; Frick & Viding, 2009). Fearless temperament has been demonstrated to be both positively correlated with (Pardini, 2006), and predictive (Barker et al., 2011) of CU traits. Furthermore, high levels of fearless temperament are associated with high and stable CU traits and conduct problems over the course of early childhood among children with severe conduct problems, but not among disruptive children without elevated CU, suggesting particular relevance of fearlessness in the pathway to CU traits (Klingzell et al., 2016). Bolstering a potential link to fearlessness, CU traits have been found to

be associated with a deficit in concern for punishment or negative consequences (Barry et al., 2000), and increased reward sensitivity (Pardini, Lochman, & Frick, 2003). CU traits are also associated with deficits in recognizing others' emotional distress (e.g., fear, sadness) and experiencing affective empathy (e.g., Dadds, Jambrak, Pasalich, Hawes, & Brennan, 2011). At least one recent investigation suggests that this association between fearlessness and CU traits is not accounted for by the presence of disruptive behavior in some high-CU youth. Specifically, Fanti and colleagues (2016) found that in a community sample of children in middle childhood (M age= 11), CU traits corresponded to low fear responses and low physiological reactivity to fear, regardless of levels of conduct problems.

The observed associations between fearlessness and CU traits in youth raises questions regarding the manner in which fearlessness may contribute to children's development of CU traits over time. Etiological theories of the development of both psychopathic traits and antisocial tendencies have proposed that fearlessness may stunt the normal development of guilt and empathy, since the low arousal and punishment insensitivity associated with fearlessness may disturb normal socialization processes (Kochanska, 1991, Frick & Morris, 2004). Deficits in conscious development inhibit proper empathic concern and may promote subsequent antisocial behavior by interfering with violence inhibition mechanisms that suppress one's aggression in response to others' distress signals (Blair, 1995). This theory posits that typically developing children view signs of distress, such as sad emotions, and tend to regress in aggressive behavior, while children with fearless temperaments do not possess the same inhibitory response to distress cues from others. Proper socialization requires children to link the aversive reinforcement of another child's distress cues and the representation of the antisocial actions that induced this distress, but children with fearless temperaments demonstrate a deficit in this regard (Blair,

1995). Supporting this view, Pardini (2006) found that in an adjudicated juvenile sample, low sensitivity to punishment mediated the association between temperamental fearlessness and CU traits. Longitudinal studies on conscience-related emotions, such as guilt and empathy suggest that children with fearless temperaments may be at risk for developing disruptive behavior disorders (Kochanska, 1995, Young, Fox, & Zahn-Waxler, 1999), which others have further extended to include the development of CU traits specifically (Klingzell et al., 2016).

Parenting and CU Traits

In addition to fearless temperament, parenting practices have been proposed as important etiological factors in the development of CU traits (e.g., Kochanska, 1997). A particularly important variable may be parental warmth (or lack thereof). Some studies broadly focus on “positive parenting,” which is often characterized as reflecting high levels of positive reinforcement as well as supportive and affectionate parenting practices (Waller et al., 2016), with “harsh parenting” being characterized by not only lack of positivity, but also harsh forms of punishment, and parental overreaction (Barker et al., 2011). Inconsistent disciplinary practices have also been cited as particularly relevant for children with CU traits and disruptive behavior problems more broadly (e.g., McDonald et al., 2011). Inconsistent discipline is characterized by a lack of follow through for previously established disciplinary actions and a tendency to fluctuate unpredictably in disciplinary action.

Although there is a clear relationship between parenting and the development of antisocial behavior in children, evidence for associations between parenting and CU traits is less widely studied. Retrospectively, there has been empirical support for the hypothesis that adults who as children experienced suboptimal parenting, characterized by harshness, inconsistent disciplinary practices, and/or inadequate parental monitoring, are more prone to developing

psychopathic traits (Gao et al., 2010; Kimbrel, Nelson-Gray, & Mitchell, 2007). Longitudinal analysis has also supported the importance of parenting factors in CU trait development. For example, Waller et al. (2012) found that harsh parenting, but not positive parenting, was predictive of the development of deceitful CU behavior in preschoolers, suggesting that some domains of parenting may be more pertinent to CU trait development than others. Additionally, the efficacy of a parenting intervention for children ages 4 to 9 with conduct problems in reducing their psychopathic traits was mediated by decreases in harsh and inconsistent parenting practices (McDonald et al., 2011). Changes in psychopathy were maintained after controlling for changes in conduct problems. Corporal punishment has also been implicated as influencing CU traits. Pardini, Lochman, and Powell (2007) found that exposure to lower levels of corporal punishment were related to decreases in CU traits and that higher levels of corporal punishment were related to increases in CU traits over the same developmental period, in a sample of moderate to highly aggressive fifth graders in a community setting. Longitudinal research also shows that young children exposed to harsh practices of discipline, including physical punishment, display less guilt following transgressions than youth without such exposure (Kochanska et al., 2002).

In addition to warmth and discipline variables, parental monitoring and supervision may be pertinent to CU trait development. Parental monitoring has been defined in terms of what parents know about their children and their whereabouts (e.g., Kerr & Stattin, 2000). This research has focused on adolescent populations and has found that low levels of parental supervision is linked to injury and safety issues, substance use, and antisocial behavior (Dishion and McMahon, 1998). Research in younger populations has found that poor parental monitoring in middle childhood is a significant factor in children's affiliation with deviant peer networks in

early adolescence, even when considering the effect of prior levels of peer rejection and antisocial behavior (Dishion, Patterson, Stoolmiller, & Skinner, 1991).

Although the literature generally agrees that low levels of parental monitoring, both in terms of knowledge and actions taken to find out about their children's behavior, are a risk factor for a host of maladaptive behaviors, research on the contribution of parental monitoring in children with CU traits is limited, and studies are varied in methodology and outcome foci. Hawes et al. (2011) concluded that parental supervision/monitoring was important in decreasing CU traits in a community sample of children ages 3-10. They also indicated a bidirectional nature, as they found that for children ages 3 to 10 years old, poor monitoring uniquely predicted CU traits, and that CU traits uniquely accounted for changes in parental involvement and supervision. The variability in findings suggests that additional investigation of parental monitoring in young children could broaden our understanding of this complex relationship.

In contrast to these findings for CU traits, others have suggested that parenting practices may be more closely associated with behavioral components of psychopathy, such as risky behaviors and antisociality, than affective components like CU traits (e.g., Kimbrel et al., 2007). This perspective has been supported in an undergraduate community sample, in which low parental warmth was associated with high secondary psychopathy (characterized by higher levels of anxiety) but not primary psychopathy (Kimbrel et al., 2007). Whether this pattern holds true in childhood, however, remains unresolved.

Parenting x Fearlessness in the Development of CU Traits

While the aforementioned studies suggest that parenting practices can be influential in the development or exacerbation of CU traits, parenting behaviors in isolation may not lead to the development of CU traits (e.g., Cornell & Frick, 2007, Barker et al., 2011). Furthermore, while

several studies have looked at parenting practices individually, few have looked at relationships between parenting and CU traits across multiple domains of parenting concurrently or in and younger children. Waller, Gardner, and Hyde's (2013) review of parenting, CU traits, and antisocial behavior suggest that there is a gap in the literature when considering what individual child characteristics influence the effectiveness of parenting interventions on the decrease of CU traits. Although some have considered the role of fearlessness (e.g., Fanti et al., 2016) or parenting (e.g., Waller et al., 2012) on CU traits as independent influences, temperamental predispositions such as fearlessness may interact with parenting behaviors to influence manifestation of CU traits. Parenting practices do not exist in a vacuum, so considering the influence of temperament on the development of CU traits can provide a more comprehensive understanding of precursors to psychopathic behaviors.

As not all fearless youth present problems with conscious development and subsequent CU traits, fearless disposition can follow different developmental trajectories and also become either "bold" or "mean", depending upon the presence of other temperamental traits and socialization environments (Patrick et al., 2009). Several studies suggest that there is an interactive effect, in which fearlessness in combination with other environmental conditions leads to the development of CU traits. Researchers have posited that environmental variables such as parenting practices (e.g., Cornell & Frick, 2007) interact with fearlessness to predict CU traits, whereas others have proposed that fearlessness may be directly related to CU trait development, as it predisposes a child to be resistant to environmental protective factors, such as typical parenting punishment practices (Lykken, 2006).

Fearless temperament and parenting factors are frequently discussed in the context of reciprocal feelings in the parent-child relationship and the impact of parenting factors on

conscious development. Kochanska's model of multiple pathways to conscience hypothesizes that for children differing in temperament, different parenting styles variably affect conscious development (Kochanska, 1993). This body of literature proposed that, for relatively fearful children, positive parenting and low levels of parental discipline typically leads to appropriate levels of anxiety. However, for relatively fearless children, gentle discipline does not produce sufficient anxiety, and fails to draw attention to parental requests or result in meaningful changes in behavior, or reduction in CU traits (Goffin, Boldt, Kim, & Kochanska, 2018). This suggests that the muted level of arousal experienced by fearless children may require parenting practices that emphasize increased effective parenting to lead to proper levels of conscience development. This conceptual model proposes that for relatively fearless children, an alternative pathway emphasizing positive child emotional experiences rooted in a reciprocal, positive parent-child relationship, leads to an internalized conscience and less CU tendencies (Waller et al., 2016).

While this conceptual model is compelling, empirical studies considering potential interactions between parenting practices and fearlessness on CU tendencies is rather scarce and has resulted in mixed findings. Longitudinally, fearless temperament at age 2 has been prospectively linked to higher subsequent conduct problems and CU traits above and beyond low parental warmth (Barker et al., 2011), suggesting that parenting alone may not be as influential as temperamental dispositions. Contrarily, in preschool at-risk boys, Waller, Shaw, and Hyde (2017) found that observed child fearlessness at age 2 predicted elevated CU traits at 3.5 years, but only when parents practiced low levels of observed positive parenting behaviors. Additionally, they found that high fearlessness and low positive parenting at age 2 indirectly predicted CU behaviors at ages 10-12 through CU behaviors at age 3.5.

Notably, these studies focus mainly on positive parenting and harsh parenting, and do not consider the possible effects of parental monitoring on the relationship between fearless temperament and CU traits. Low parental monitoring has been demonstrated as a predictor of various forms of conduct problems and antisocial behaviors (Laird et al., 2003), and has been associated with the presence of CU traits (Larsson, Viding, & Plomin, 2008).

Studies investigating the links between these variables have largely focused on at-risk and forensic populations (e.g., Waller, Shaw, & Hyde, 2017) and have not looked at these relationships in community samples. Community samples are of particular relevance due to the idea that CU traits exist on a continuum in the general population. Even at subclinical levels, CU traits may influence behavior. Additionally, community samples are often understudied in regard to youth psychopathy. A core tenet of the developmental psychopathology paradigm is that research on typical development in low-risk children and research on atypical development in high-risk children are complementary and inform each other (Goffin et al., 2018). Therefore, research on typically developing children will bolster the understanding of CU trait development.

Though research testing the theoretical pathways to CU trait development is ongoing, it remains unclear if these proposed etiological factors contribute independently, in a potentially additive fashion, or whether they may interact to influence CU trait development. As Bufferd and colleagues (2016) suggest, the prediction of CU traits is dynamic and multifaceted, and involves looking at both dispositional and environmental influences.

Recent work has also looked at the effect of not only parenting practices on child CU traits, but also parental fearless disposition. Waller et al (2016) found that in a sample of adopted children ages 9 to 27 months, positive parenting practices of the adoptive mother moderated the

pathway from inherited fearless temperament to CU behaviors. This suggests that both heritable and environmental factors play a role in the relationship between fearlessness and CU traits.

Looking Beyond CU Traits

Despite the emphasis placed on them, CU traits reflect just one dimension of the multifaceted construct of psychopathic personality features in youth and adults. Psychopathic traits in youth encompass three correlated yet distinguishable dimensions that reflect deficits in affective (CU traits), behavioral (impulsivity, stimulation-seeking; INS), and interpersonal (grandiosity, deceitfulness; GD) functioning (Colins, Andershed, Salekin, & Fanti, 2018). These dimensions predict a variety of psychosocial outcomes including disruptive behavior problems, aggression, and delinquency (e.g., Hare and Neumann, 2008). However, relative contributions of each of these domains to behavioral outcomes has been scarcely studied in community youth samples. Recent decades have witnessed a narrowing emphasis on CU traits alone, neglecting the other dimensions of psychopathy, in part because some studies have shown relatively strong relationships between CU traits and disruptive behavior (e.g., Frick & Ellis, 1999). Yet, evidence from preadolescent and adolescent samples suggests interpersonal and behavioral psychopathy domains may be more predictive of conduct problems than CU traits (Ridder & Kosson, 2018). Additional attempts to extend the study of psychopathic traits to children have found that these three dimensions can be reliably and validly measured in children as young as three years old (Colins, Fanti, Larsson, & Andershed, 2017), allowing for early assessment and potential intervention. No study to date has looked at the relationship between INS traits and parenting.

Few studies have investigated the relationship between fearlessness and the various domains of psychopathy in youth. However, fearlessness is conceptualized as the underlying temperamental trait contributing to phenotypic expressions of risk-taking (Patrick & Bernat,

2009), suggesting fearlessness manifests as or contributes to boldness. Klingzell et al (2016) found that longitudinally, children exhibiting consistently high levels of conduct problems and CU traits had elevated levels of fearlessness, and high levels of other psychopathic traits including grandiose-deceitfulness, and impulsivity/need for stimulation. Previous findings have demonstrated the increased risk factor for conduct problems and fearlessness when children possess psychopathic traits in addition to CU traits alone (Frogner et al., 2016).

Research on the role of parenting in the development of childhood psychopathy beyond CU traits is sparse. However, studies of these relationships in adults may shed some light on earlier developmental processes. For instance, Horton and Tritch (2013) found that parental monitoring was negatively associated with grandiosity in a sample of undergraduates. An additional line of research has also investigated the relationship between grandiose narcissism and parental warmth, as some have found that there is a positive link between the two variables (Horton, Bleau, & Drwecki, 2006), while others have found a positive link between parental coldness and grandiosity (Otway & Vignoles, 2006). Parental stress has also been linked to higher levels of grandiosity in youth. Fite, Greening, and Stoppelbein (2008) found that stress resulting from low attachment and feelings of role constrictions were related to higher ratings of grandiosity in school-aged children. Kochanska (1993) also speculates that children with high fearlessness who have parents that create chaotic and unpredictable environments may develop serious deficits in their ability to observe standards of behavior related to punishments and censure, and that these parents may use increasingly salient pressure to socialize their children's transgressions and demonstrate less positive parenting, resulting in ineffectiveness due to anger.

Though negative parenting appears to confer risk, other studies have shown that parenting behaviors typically considered positive or protective may increase risk for

development of certain psychopathic traits. For instance, Molinuevo and colleagues (2014) found that elevated grandiosity and deceitfulness traits were associated with higher levels of paternal involvement and higher levels of positive parenting. To our knowledge, no published studies have simultaneously examined the role of both temperamental fearlessness and particular parenting practices as risk factors for each of the psychopathic trait dimensions. A comprehensive review of the literature surrounding parenting practices and psychopathic trait development (Salekin, 2017) suggests that it is important to consider parenting practices in terms of protective factors and detrimental influences on various dimensions of psychopathic traits.

Current Study

The gaps in the currently existing literature suggest that further investigation is needed to understand the roles of temperament and parenting in the development of psychopathic traits in childhood, including the role of fearless temperament and parenting practices, as well as how the pathway from fearless temperament to psychopathic traits might be modified in the context of specific parental influences. One study to date that simultaneously considers child fearlessness and parenting in early manifestations of psychopathic traits (Waller, Shaw, & Hyde, 2017). Waller and colleagues (2017) considers parenting practices in a dichotomous fashion, broadly examining positive and harsh parenting, rather than specific parenting domains. Additionally, this study focused on CU traits and only considered boys ages 2 to 12. Research aiming to answer these research questions has also focused on late childhood and adolescence or justice-involved populations (e.g., Kimonis, Cross, Howard, and Donoghue, 2013), and seldom examining community populations, particularly during the middle childhood phase.

The current study aimed to address some of these gaps by examining temperamental fearlessness and parenting practices as predictors of callous-unemotional traits in a community

sample of children in middle childhood. We derived two general aims and several hypotheses based on existing theory and evidence:

Aim 1 of the current study sought to investigate the relationship between fearlessness and parenting practices in the concurrent prediction of CU traits. The following hypotheses were considered in Aim 1:

(1) We hypothesized that fearlessness will concurrently predict CU traits, based on the theory that fearlessness serves as a precursor to CU trait development due to the lack of proper empathy development, insensitivity to punishment, and lower levels of recognition of threat cues in the environment (e.g., Goffin et al., 2018).

(2) We also hypothesized that high levels of inconsistent discipline, low levels of positive reinforcement high levels of corporal punishment, and low levels of parental monitoring will independently and uniquely predict higher levels of CU traits, as these parenting practices have been previously identified as risk factors for CU trait development (e.g., Hawes et al., 2011).

(3) Based on preliminary evidence that that it is the particular combination of temperament and parenting socialization that predicts development of CU traits (e.g., Waller, Shaw, & Hyde, 2017), we also examined how temperamental fearlessness and parenting practices interacted to concurrently predict CU traits. These analyses were considered preliminary, in light of the small sample size and thus power limitations. Specifically, we hypothesized that problematic parenting styles, specifically, inconsistent discipline, low parental monitoring, corporal punishment, low parental involvement, and low positive reinforcement, each exacerbate the influence of fearlessness on CU traits. Although the literature did not lead us to differential predictions for dimensions of problematic parenting, we wished to examine them separately to permit consideration of potentially nuanced patterns, particularly since these

dimensions have been supported as distinguishable in the literature (Frick, 1991, Hawes & Dadds, 2006).

Aim 2 considered the role of fearlessness and parenting in psychopathy beyond CU traits, in light of recent arguments and evidence supporting a multidimensional model of psychopathy in youth. Thus, our second aim focused on the roles of fearlessness and parenting in the concurrent prediction of GD and INS dimensions. We formulated directional hypotheses for Aim 2, but in a more tentative fashion, due to limited prior research on these dimensions of psychopathic traits in youth. Specifically:

(1) We hypothesized that the aforementioned problematic parenting styles (inconsistent discipline, low parental monitoring, corporal punishment, low parental involvement, and low positive reinforcement) will each exacerbate the influence of fearlessness on GD traits. We expected these interactions with inconsistent discipline and low monitoring based upon literature suggesting fearless children who do not receive sufficient supervision or often escape predetermined punishments may develop a belief that they are beyond punishing and will not be caught or punished. The literature on the relationship between positive parenting, more specifically characterized by warmth and positive reinforcement, and GD traits is mixed (Horton, Bleau, & Drwecki, 2006; Otway & Vignoles, 2006) but suggests that fearlessness may interact with positive reinforcement, such that relatively low positive reinforcement will exacerbate effects of fearlessness on GD traits.

(2) We also hypothesized that inconsistent discipline, low parental monitoring, corporal punishment, low parental involvement, and low positive reinforcement will exacerbate the influence of fearlessness on INS traits. As no studies to date have looked

at the relationship between INS traits and parenting practices, these hypotheses were more exploratory in nature.

CHAPTER 2

Methodology

Participants

Participants were recruited through advertisements posted to caregivers via the county school system and around the community including at daycares, doctors' offices, and child-friendly restaurants in the mid-Atlantic region of the southeastern United States. Fifty children and their caregivers (89% mothers) who had completed the relevant measures were included in the current study, which was based on existing data from a larger project. The current study sample ranged in age from 6 to 10 years old ($M=7.83$) and comprised 56% boys and 44% girls. 74% of participants in this sample identified as White, and 26% of participants identified as Black, Hispanic, or biracial. The average reported income for the sample was \$98,567 ($SD=73195.64$). 38.8 % of parents had completed graduate school, 38.8% had graduated college, 10% had attended college, 2% had graduated from trade or business school, and 1% of parents had attained a high school diploma as their highest degree. Child participants completed a self-report measure regarding fearlessness, and caregivers reported on parenting practices and child psychopathic traits as part of a larger study, which was approved by the Institutional Review Board. Parents gave informed consent and children gave assent to participate, and both were compensated for participating.

Measures

Alabama Parenting Questionnaire (APQ)

Parenting practices were operationalized by parent-reported scores on the Alabama Parenting Questionnaire (APQ; Frick, 1991). The original APQ includes 35 items assessing five parenting constructs: Ten items assess *parental involvement* (e.g., "How often do you play games or do other fun things with your child?"), with higher scores reflecting greater involvement; 6 items assess parental use of *positive reinforcement* (e.g., "How often do you compliment your child when he or she has done something well?"), with higher scores reflecting greater use of positive reinforcement; 10 items assess parental *monitoring and supervision* (e.g., "How often is your child at home without adult supervision?"), with higher scores reflecting poorer monitoring; 6 items assess *discipline consistency* (e.g., "How often do you threaten to punish your child and then do not actually punish him or her?"), with higher scores reflecting more inconsistency; and 3 items assess parental use of *corporal punishment* (e.g., "How often do you spank your child with your hand when he or she has done something wrong?"), with higher scores reflecting greater use of corporal punishment. Only the parent-report version of the APQ was used in this study, as the child-report report version of the APQ has been shown to be unreliable with children under the age of 9 years old (Shelton, Frick, and Wootton, 1996).

The APQ has been extensively validated and converges well with observational reports of parenting practices (Hawes & Dadds, 2006). Furthermore, there is a large body of evidence supporting the validity of the APQ is the association between problems in parenting, as documented by scales on the APQ, and conduct problems in clinic-referred children (e.g., Blader, 2004) and non-referred children (e.g., Frick, Kimonis, Dandreaux, & Farell, 2003). We adopted the scoring to follow the 15-item scoring methodology outlined in Scott, Briskman, and

Dadds (2011). The 15-item parent short form reliably captures the 5 above mentioned parenting domains. In the short form scoring, 3 items load on to each of the 5 parenting practices domains. The short form version of the APQ has demonstrated adequate convergent validity and excellent and robust model fit (Scott, Briskman, & Dadds, 2011). For the current study, we utilized the Inconsistent Discipline, Positive Reinforcement, Parental Monitoring/Supervision, and Corporal Punishment scales. Cronbach alphas for Positive Reinforcement ($\alpha = .80$) and Inconsistent Discipline: ($\alpha = .78$) demonstrated high internal consistency reliability of these scales in the current study. Reliability was marginal for Parental Involvement ($\alpha = .42$) and Corporal Punishment ($\alpha = .44$), and low for Monitoring and Supervision ($\alpha = .14$).

The Child Problematic Traits Inventory (CPTI)

The Child Problematic Traits Inventory (CPTI; Colins, Andershed, et al., 2014) was developed with the intent to provide a reliable assessment of interpersonal, CU, and behavioral/lifestyle psychopathic traits from early childhood onward. The CPTI was developed for use in 3- to 12-year-old children and contains both a parent-report form and a teacher-report form. Both forms have been validated in this age range and have demonstrated good internal consistency and convergent validity (Colins, Andershed, et al., 2014, Colins, Fanti, Larsson, and Andershed, 2017). The CPTI is unique in that it aims to assess psychopathic personality in (early) childhood in line with the three-factor model of psychopathic personality in that has been demonstrated in both adolescence (Andershed et al., 2002) and adulthood (Cooke & Michie, 2001), and is designed for use in community settings. The CPTI was also developed to be devoid of traits that are closely related to or overlapping conceptually with rule-breaking, conduct problems, and antisocial behavior, to avoid conceptual issues when using the CPTI as a measure of psychopathic personality traits to predict the development of conduct problems. In keeping

with a triarchic conceptualization of psychopathy in youth, there are separate scales capturing a grandiose/deceitful dimension (GD; 8 items), a callous unemotional dimension (CU; 10 items), and an impulsivity/need for stimulation dimension (INS; 10 items). Reliability values in the current study for these scales were high (GD: $\alpha = .86$ CU: $\alpha = .78$ INS: $\alpha = .90$).

Child Fearlessness Scale-Parent Version (CFS)

Fearlessness was operationalized using The Child Fearlessness Scale. The Child Fearlessness Scale (Colins et al., 2014, CFS) is a parent reported measure of fearlessness. The items on this scale are designed to tap temperamental manifestations of fearlessness. The Child Fearlessness scale is a six item measure that is rated on a 4-point scale ranging from “does not apply at all” to “applies very well.” The response scale is: 1 = *Does not apply at all*, 2 = *Applies poorly*, 3 = *Applies fairly well*, 4 = *Applies well*. Examples of items are: “He/she does not seem to be afraid of anything”, “He/she does not seem to be afraid when someone is trying to frighten him/her”, and “He/she never seems to get scared when someone is mad at him/her.” The values on the six items were summed to create the Fearlessness variable used in the present study, with higher scores reflecting greater fearlessness. This measure of fearlessness has been used in several studies related to psychopathic traits, conduct problems, and youth antisocial behavior (e.g., Klingzel et al., 2016). This measure has been used to assess fearlessness in children ranging from ages four to twelve (Frogner, Andershed, and Andershed, 2018). Reliability of this scale was high ($\alpha = .83$).

Child Behavior Checklist (CBCL)

Anxiety was operationalized using the DSM Anxiety Problems subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991). Given the literature related to primary and secondary CU traits, described below anxiety was considered as a possible covariate. The CBCL

is a 118-item measure assesses symptoms of psychopathology in children broadly. Higher scores on the CBCL anxiety subscale reflect higher instances of anxiety symptoms. The CBCL is widely used across studies looking at child psychopathology, and the anxiety problems subscale is commonly used in community samples and has been extensively validated (e.g., Achenbach, 1991).

Procedure

The larger project from which data for the current study derive was approved by the Institutional Review Board. All caregivers gave informed consent and children assented to participate. Parent-report questionnaire measures for the current study were completed via a confidential online survey. Regarding incentives, parents received cash reimbursement for their time and children earned small cash rewards and prizes as part of the larger study.

Analytic Plan

To account for potential sociodemographic confounding variables, we first examined the bivariate associations to determine if age, race, or gender correlated simultaneously with predictor (fearlessness or parenting) and outcome (CU, GD, INS) variables, and thus required statistical control in our regression models.

We similarly considered anxiety as a potential confound. Although temperamental fearlessness may suggest a relative absence of anxiety or fear, this is a question we wanted to address empirically. Crego and Widiger (2014) encouraged further investigation of this relationship, noting that low levels of anxiousness do not capture the more concerning aspects of fearlessness, such as lack of concern about dangerous situations or possible consequences. Frick and colleagues (1999) found that measures of trait anxiety and fearlessness were not very highly correlated ($r = -.11$), and differential correlates have been found between anxiety and

fearlessness in relation to psychopathy and antisociality (e.g., conduct problems, delinquent behavior). Furthermore, the literature has supported the existence of two distinct groups of children with elevated CU traits with distinct etiological pathways, with a “primary” CU variant characterized by low to normal anxiety, and “secondary” CU characterized by elevated anxiety and often trauma histories (e.g., Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012). The secondary CU variant more closely resembles youth who exhibit both externalizing and internalizing psychopathology (Fanti, 2018). In contrast, primary CU variants tend to be more temperamentally fearless. We therefore first explored the relationship of anxiety symptoms to CU traits and fearlessness in our sample via correlational analysis, to determine whether anxiety may be a potentially confounding variable to be controlled for in the predictive model.

Data were screened prior to analysis to examine distributions for each variable, identify outliers, and consider adherence to linear regression assumptions. In addition to considering bivariate correlations, we used hierarchical linear regression to investigate how fearlessness and parenting practices uniquely relate to CU traits as well as how fearlessness may interact with parenting variables. Step 1 of the hierarchical linear regression included any requisite covariates, followed by the fearlessness variable, and each of the parenting variables (inconsistent discipline, positive reinforcement, and parental monitoring). Step 2 of the hierarchical linear regression included all fearlessness x parenting variable two-way interaction terms. Post-hoc probing of simple slopes for significant interactions using $\pm 1SD$ values of the moderator (parenting variable) was conducted following Aiken, West, and Reno (1991).

In addition to examining bivariate associations, hierarchical linear regression was likewise used for Aim 2 of this study, investigating how fearlessness and parenting practices uniquely relate to the other dimensions of psychopathic traits (GD, INS) as well as how

fearlessness may interaction with parenting variables. Separate models were tested with each psychopathy domain as an outcome variable, with fearlessness and parenting variables entered at step 1. Two-way interaction terms were entered at step 2, and simple slopes of significant interactions were probed.

CHAPTER 3

Results

Descriptive statistics for the CPTI, CFS, and APQ subscales are presented in Table 1. CPTI dimension subscales mean scores for GD ($M = 1.38$, $SD = .44$) and INS ($M = 2.17$, $SD = .60$) followed similar patterns to prior studies using the parent-report form of the CPTI in community samples (e.g., Colins, Fanti, Larsson, & Andershed, 2017; Klingzell et al., 2015). However, values for CU traits ($M = 1.42$, $SD = .42$) were lower than those reported in studies with community samples (e.g., Colins, Fanti, Larsson, & Andershed). Values of parent report of child fearlessness ($M = 6.28$, $SD = 3.64$) were comparable to previous studies utilizing this measure in 3- to 8-year olds (Klingzell et al., 2016).

Scores for most parenting dimension variables (i.e., positive reinforcement, poor monitoring, corporal punishment, and parental involvement) were skewed, such that very few parents in the sample reported poor parenting practices. More specifically, Poor Monitoring ($z = 1.22$, $p < .05$) and Corporal Punishment displayed significant positive skew ($z = 2.427$, $p < .05$) with most parents in the sample endorsing no or low levels of poor monitoring and corporal punishment. Positive Reinforcement ($z = -1.70$, $p < .05$), Poor Monitoring ($z = 1.65$, $p < .05$), and Corporal Punishment ($z = 8.18$, $p < .05$) also displayed significant leptokurtosis. The inconsistent discipline scale demonstrated more variability (ranging from 3-13, $M = 6.60$, $SD = 1.98$) than the other parenting scales.

A single univariate outlier was observed in each of the CPTI dimension scores, and GD trait distribution indicated positive skew ($z = 1.11$, $p < .05$). To accommodate these anomalies, primary analyses were performed using bootstrapping, an approach that is robust to violations of distributional assumptions (Wright, London, & Field, 2011). Specifically, the bias-corrected

methodology of bootstrapped regression was used (Kim 2005), as it corrects for the fact that the bootstrap distribution and the sample may disagree systematically, which could negatively influence confidence interval analyses.

Following descriptive analyses, bootstrapped bivariate correlations were performed to examine associations between key study variables (Table 2). There was a large positive association between fearlessness and INS ($r = .69, p < .001$), and a moderate correlation between GD and fearlessness ($r = .31, p = .04$). The association between fearlessness and CU was small and not statistically significant ($r = .22, p = .14$), although similar in magnitude to prior studies (e.g., Kubak & Salekin, 2009). Regarding parenting variables, inconsistent discipline was positively related to CU ($r = .35, p = .02$), GD ($r = .45, p = .002$), and INS ($r = .47, p = .001$) at moderate magnitudes. Non-significant associations of small size were observed between other the parenting practices and the psychopathic trait dimensions (all ps between .07 and .99).

Regarding bivariate associations between key variables and select demographic variables, there was a moderate negative association between age and CU traits ($r = -.31, p = .03$) and a moderate negative relationship between age and INS traits ($r = -.44, p < .01$). There were no other significant associations between age and variables of interest (all $ps > .11$). There were small non-significant negative associations between gender and positive parenting ($r = -.26, p = .08$). There were no other significant associations between gender and variables of interest (all $ps > .18$). There were also no significant associations between anxiety and variables of interest (all $ps > .11$). Because neither demographic variables nor anxiety were significantly correlated simultaneously with predictor and outcome variables, they were excluded as covariates in our regression analyses, in order to preserve power.

Primary analyses (bootstrapped regressions) were considered next (Table 1), describing findings as they pertain to each aim and hypothesis.

Aim 1, Hypothesis 1: Our first hypothesis was that there would be a main effect of fearlessness and negative parenting styles on the prediction of CU traits. In addition to considering bivariate correlations, regression analyses were run to consider unique influences of particular parenting dimensions. For CU traits as the outcome variable, the main effect of fearlessness on CU traits was not significant after controlling for parenting variables ($\beta = .12, p = .54$).

Aim 1, Hypothesis 2: Regarding parenting variables, there was a positive non-significant unique trend for the association between inconsistent discipline and CU traits ($B = .32, p = .07$), whereas there were no significant unique main effects of positive reinforcement ($\beta = .17, p = .33$), poor monitoring ($\beta = -.08, p = .64$), corporal punishment ($\beta = .15, p = .42$), or involvement on CU traits ($\beta = -.14, p = .35$).

Aim 1, Hypothesis 3: In the second step of the model, there was a unique negative interaction between fearlessness and poor monitoring, when controlling for the effect of other parenting dimensions, ($\beta = -.09, p = .01$) on CU traits. Post-hoc probing of this interaction revealed that, at above-average levels of monitoring, fearlessness was positively related to CU traits ($\beta = .07, p = .02$). However, at relatively low monitoring, there was an inverse relationship between CU traits and fearlessness ($\beta = -.09, p = .04$).

Aim 2, Hypothesis 1: Bootstrapped regression analyses for the prediction of GD traits were considered next (Table 2). The main effect of fearlessness on GD traits was not significant ($\beta = .15, p = .19$). Regarding parenting variables, there was a significant positive main effect of inconsistent discipline ($\beta = .51, p < .01$) and a non-significant negative trend of involvement on

the prediction of GD traits ($\beta = -.27, p = .05$). No other parenting variables showed main effects on GD traits (positive reinforcement $\beta = -.05, p = .73$; poor monitoring $\beta = .02, p = .90$; corporal punishment $\beta = -.30, p = .10$). Also, there was no interaction between fearlessness and any parenting variable on GD traits (all $ps > .34$).

Aim 2, Hypothesis 2: INS traits were considered next (Table 3). Fearlessness was uniquely positively associated with INS traits ($B = .66, p = .001$). With respect to parenting, inconsistent discipline was uniquely positively associated with INS traits ($B = .26, p = .04$). No other parenting variables showed main effects of INS traits (positive reinforcement $\beta = .10, p = .43$; poor monitoring $\beta = -.15, p = .21$; corporal punishment $\beta = .03, p = .81$; involvement $\beta = -.02, p = .70$). Additionally, there was a non-significant trend for the interaction between fearlessness and poor monitoring ($\beta = -.32, p = .09$) on INS traits, and a non-significant trend for the interaction between fearlessness and corporal punishment ($\beta = .12, p = .09$) on INS traits. There was no interaction between fearlessness and any other parenting variable on INS traits (all $ps > .43$).

CHAPTER 4

Discussion

The primary goal of this study was to investigate the individual and interactive roles of fearless temperament and parenting styles in psychopathic traits in youth. Before interpreting the results of the current study, it is important to first consider how the characteristics of our sample compare to other studies that have investigated similar relationships in children. Regarding demographic variables such as age and gender, our sample was unique in its focus on middle childhood and more comprehensive regarding gender than some studies that have only looked at males in comparison to previously conducted studies examining similar relationships (e.g. Barker et al., 2011). The only study to date that investigated a wide range of parenting variables, fearlessness, and CU traits in a single investigation (Waller, Shaw, & Hyde, 2017) considered only males at ages 2-3 and followed up at ages 10-12, in contrast to the present study which considered boys and girls ages 6-9 in a cross-sectional manner. Our sample was also primarily Caucasian, and relatively high socioeconomic status, which likely influenced the observed range of scores on several primary study variables.

In the current study, the mean levels of CU, INS, and GD traits were similar to those presented in some community sample studies (e.g., Klingzell et al., 2015), although CU traits were reportedly lower than in prior studies. However, regarding parenting variables, mean levels of poor monitoring and corporal punishment were lower than reported in other studies that have used the same measure (APQ; Essau, Sasagawa, & Frick, 2006). It is also worth noting that reported SES in our sample was higher than reported means of previous samples using this

measure, which may have influenced reported levels of parenting practices, Mean levels of inconsistent discipline and involvement were similar to typical community samples reported in previously conducted investigations, whereas mean level of positive reinforcement was higher than other studies that have considered the relationship between parenting and CU traits (e.g., Essau, Sasagawa, & Frick, 2006).

Regarding the primary aims, first, we had hypothesized that fearlessness will concurrently predict CU traits, based on the theory that fearlessness serves as a precursor to CU trait development, due to the lack of proper empathy development, insensitivity to punishment, and lower levels of recognition of threat cues in the environment (e.g. Goffin et al., 2018). In the current study, the association between CU traits and fearlessness was positive ($r = .22$) but not statistically significant for the current sample. Nevertheless, this is a similar effect size as has been reported in prior studies, which have typically found an average correlation between measures of fearlessness and CU traits of $r = .27$ (Kubak & Salekin, 2009; Marini & Stickle, 2010; Roose et al., 2010).

Several reasons likely account for some variability in observed effect sizes across studies. First, variance between effect size magnitudes may reflect the use of different measures of fearlessness. The CFS used in the current study is a relatively new measure, and fearlessness is a variably defined concept. Many of the previously mentioned studies have operationalized fearlessness based on either observational methods (Waller, Shaw, & Hyde, 2017), or on children's reported preferences for or parent report of behavioral manifestations of fearlessness such as physical risk-taking or thrill-seeking (e.g., Behavioral Inhibition Scale (BIS), Kimonis et al., 2006). This is different from the CFS, as the CFS appears to be tapping more temperamental manifestations of fearlessness and relates more closely to shyness. It is possible that fearlessness

itself is a multidimensional construct. Additionally, because many parents reported very low levels of CU traits in our community sample of children, the range of variance in our sample was restricted, making it harder to detect associations. The sample size in the present study was also significantly lower than those reported in many investigations that have observed relationships between fearlessness and CU traits, limiting statistical power and potentially influencing precision of estimates. The observed significant relationships between fearlessness and the other psychopathic trait dimensions discussed later provide support for widening the focus of psychopathy studies to include the full triarchic conceptualization.

An intriguing related question regards the nature of the relationship between fearlessness and anxiety. We considered anxiety in the current study in light of its conceptual relationship to fearlessness (namely, fearfulness), as well as the fact that recent studies distinguish primary and secondary variants of CU based in part on anxiety. Though not significantly correlated, there was a positive association of rather large effect size between CU traits and anxiety ($r = .54$). This higher level of anxiety in combination with CU traits is consistent with secondary CU variant profiles, which are characterized by high anxiety, often proposed to be a result of adverse life experiences or trauma. Interestingly, when examining the relationship between anxiety and fearlessness, there was a small, non-significant yet positive association between anxiety and fearlessness ($r = .11$). Previous literature has suggested that fearlessness and anxiety are generally not related, and that fearless temperament taps a different construct than anxiety (Frick, Lillienfeld, Ellis, Loney, & Silverthorn, 1999), as we also found in the current study.

In addition to the main effect of fearlessness, we tested the hypothesis that CU traits could emerge directly from problematic parenting in the form of high levels of inconsistent discipline, low levels of positive reinforcement, high levels of corporal punishment, low levels of

parental involvement, and low levels of parental monitoring, as these parenting practices have been previously identified as risk factors for CU trait development (e.g., Hawes et al., 2011). Although when considered simultaneously in a regression model, the various parenting domains were not significantly related to CU traits, at the bivariate level, inconsistent discipline was positively associated with CU traits at a moderate level ($r = .35$), followed in magnitude (albeit as non-significant positive associations) by positive reinforcement, involvement, and corporal punishment. It is possible that insufficient variability in several of the parenting scales, along with this study's limited sample size and statistical power, prevented the ability to detect unique contributions when these parenting variables were considered simultaneously. It is also worth noting that the associations between positive reinforcement and involvement and CU traits, although non-significant, were not in the expected direction. Given the restricted range of CU traits in our sample, it may be that "high" CU traits in our sample may be still relatively low compared to the general population and the expected relationships may therefore have not been observed.

Beyond considering main effects of child temperament and parenting practices, we had hypothesized that problematic parenting would exacerbate the effect of temperamental fearlessness on CU traits, although we considered this an exploratory aim due to power limitations. The only significant interaction observed on CU traits was between fearlessness and monitoring. The significant interaction between poor monitoring and fearlessness was consistent with our original hypothesis that the fearlessness and insufficient monitoring would interact to predict CU traits in youth. For children receiving adequate monitoring in our sample, fearlessness was positively associated with CU traits. However, for children receiving relatively low levels of monitoring, fearlessness appears to act as a protective factor against CU trait

development. This interaction was not in the exact direction as predicted, as we did not hypothesize that fearlessness would act as a protective or attenuating influence against CU traits under any parenting conditions. No studies to date have found that fearlessness in combination with inconsistent discipline predicts fewer CU traits. While slightly puzzling, it is possible that the restricted range of our parenting and CU variables influenced these results. Above-average poor monitoring and above-average CU traits in our sample may reflect more normative levels of psychopathic traits and parenting behaviors as opposed to truly high poor monitoring or CU traits. The functional range of these parenting scores is higher than those reported in previous studies, indicating that we may not be capturing sub-optimal parenting in this investigation. Additionally, the poor reliability of the poor monitoring scale suggests that we may not have been measuring a unitary construct, which also may have influenced the results and accounted for puzzling associations. Previous investigations also have not controlled for the effects of other parenting practices in the models, which may have influenced that nature of the interaction.

In line with recent calls for and evidence supporting a multidimensional model of psychopathy in youth, an additional aim of the current study was to examine the other key dimensions of psychopathy, GD and INS. We hypothesized that suboptimal parenting practices would be linked to higher instances of GD traits. At the bivariate level, GD traits were positively associated with inconsistent discipline at ($r = .45$), followed in magnitude (albeit as non-significant associations) by corporal punishment and poor monitoring. The significant positive association between inconsistent discipline and poor monitoring and GD traits has also been found in previous studies, as the lack of consistent punishment has been linked to inflated senses of invincibility. Furthermore, in the regression models, there was a unique positive influence of inconsistent discipline on GD traits. This was consistent with some previous findings in older

samples, as others have found a positive link between feeling as though one will not be consistently punished and grandiosity (Otway & Vignoles, 2006). Fearlessness was also significantly positively correlated with GD traits, which we did not directly make a hypothesis for. This association suggests supports the rationale for broadening the scope of investigations beyond CU traits, as key temperamental factors may be more linked to other psychopathic domains than CU traits alone. We further hypothesized that high levels of fearless and high levels of inconsistent discipline, as well as low parental monitoring and high fearlessness will interact to predict higher levels of GD traits. The divided literature on the relationship between positive parenting and GD traits suggests most strongly that high fearlessness and low levels of positive reinforcement will interact to predict high levels of GD traits (Horton, Bleau, & Drwecki, 2006), though a few studies have suggested the relationship may behave in a contrary manner (Otway & Vignoles, 2006). In the current study, no significant interactions were found between fearlessness and parenting practices in association to GD traits. Previously mentioned limitations in variability of parenting practices and limited statistical power may have influenced these relationships.

We also investigated the relationship between fearlessness and parenting practices in relation to INS traits. At the bivariate level inconsistent discipline was positively associated with INS traits, along with a positive association between fearlessness and INS traits, both of moderate size. This suggests that inconsistent punishments and fearless temperaments may contribute to impulsivity and sensation seeking, more than they contribute to CU traits. These associations once again support the inclusion of all psychopathic trait domains in future studies considering parenting and temperamental correlates, as not much is known about these relationships beyond CU traits. A main effect for fearlessness on INS traits was also found in this

investigation. Notably, fearlessness is conceptualized as the underlying temperamental trait contributing to phenotypic expressions of risk-taking (Patrick & Bernat, 2009), and positive relationships have been observed between fearlessness and INS traits. Although more exploratory in nature, we also hypothesized that there would be significant positive main effects between sub-optimal parenting and INS traits. Our regression models suggested a unique influence of inconsistent discipline on INS trait development. Kochanska's (1993) work on conscious development and its relation to parenting and temperament allows us to hypothesize that high fearlessness and high inconsistent discipline would interact to predict higher INS traits. Additionally, we predicted that high levels of corporal punishment and high levels of fearlessness would interact to lead to higher INS traits, as well as low levels of positive reinforcement and high fearlessness interacting to predict higher INS traits. No significant interactions were found between fearless temperament and problematic parenting styles on INS traits, though there were non-significant trends for the interactions between fearlessness and poor monitoring, and the interaction between fearlessness and corporal punishment.

Limitations and Implications

There are several inherent limitations of the current study. The cross-sectional nature of our data only allowed for us to examine concurrent associations. Future studies should include longitudinal data or an experimental design that would more clearly infer causal directionality. Future extensions of this investigation could examine how fearlessness and parenting practices over time interact to predict the developmental course of CU traits in youth. Some evidence has already been found for the bidirectionality of some of these relationships, as recent evidence suggests that dimensions of psychopathic traits are of importance for children's levels of fearlessness over time (Frogner, Andershed, & Andershed 2018). More specifically, Frogner and

colleagues (2018) found that children with high levels of GD and INS traits, in combination with high levels of conduct problems, exhibited higher levels of fearlessness than CU trait only children.

When compared to previous investigations (e.g., Cornell and Frick, 2007), the variability in responses on the Alabama Parenting Questionnaire was more limited and reflected very few reports of “poor parenting”. Restricted variance of study variables of interest can reduce power and mask associations. Several of the parenting dimension subscales also did not demonstrate high reliability as ascertained by Cronbach alpha values, and some (e.g., Poor Monitoring, $\alpha = .14$) were quite low. This low reliability may indicate that the items used may not be capturing the targeted parenting behaviors cohesively, possibly distorting associations between parenting and psychopathic traits. The Poor Monitoring subscale, which had the lowest reliability, contained items that may be potentially outdated (e.g., asking parents about whether or not their children leave a note about where they are going when leaving the house). Such content issues may have influenced the seemingly absent uniformity of the subscale. Du. Reliability analyses however did not suggest that any one item was affecting the reliability more than other items. We computed an additional measure of reliability was also calculated: Guttman’s lower bounds, which provide lower boundaries of the true reliability of a measure, and can be used in smaller samples to get a better estimate of reliability (Chakraborty, 2017). The GLB reliability value for the Poor Monitoring subscale (.179) still suggested poor reliability.

The community sample used in this study was also recruited from a relatively affluent area, as the average reported annual income of families in our sample was over \$98,000. Many studies investigating CU trait development often consider at-risk, clinical (e.g., with disruptive behavior disorders), or low-socioeconomic status populations, that have higher reported levels of

CU traits on average than did our sample (e.g., Kimones et al. 2006, Pasalich, Dadds, Hawes, Brennan, 2011). Therefore, our results may be somewhat unique to our sample. Greater affluence and education are linked to increased access to resources, such as access to therapy or parenting classes, which may have attenuated range and magnitude of CU trait and parenting scores in our sample. Additionally, the sample size of the proposed study is relatively small, making it difficult to detect interaction effects, which tend to be small. In addition to lower power, smaller samples also result in lower precision of estimates. Thus, larger samples and replication attempts are required.

Notably, all variables were reported by the parents of the children in the study, yielding a single reporter for all of the measures. This leads to an issue of shared method variance. Most studies on child psychopathic traits tend to rely on parent or teacher report. Studies that have used child self-report of psychopathic traits are often conducted with older children ages 11-15 (e.g., Frick, 2003, Vittacco et al., 2003). Regarding parenting behaviors, there is evidence that it is important to consider both parent and child perception of parenting practices. Parent report of their own parenting behaviors are subject to threats to validity associated with self-report methods, including especially social desirability effects (Morsbach & Prinz, 2006). Direct observation of parenting is a strong alternative or addition to parent-reported parenting, when using relatively unbiased observers. Though the addition of multiple informants can be useful when investigating psychopathic trait development and parenting, Waller, Gardner, and Hyde's 2013 review reported that of the 30 critically peer reviewed studies looking at the relationship between CU traits and parenting practices, parent report was used solely to assess both variables. While shared method variance is a limitation associated with this study, using a single reporter is also beneficial in ensuring that produced results are not due to reporter differences.

Finally, we did not have a direct way of measuring parental harshness. Parental harshness has been cited in several studies as a developmental risk factor for CU traits (e.g., Barker et al., 2011). Although we do have a measure that addresses positive parenting (positive reinforcement scale) some argue that a lack of positive parenting is not the same as harsh parenting. For example, Chang, Schwartz, Dodge, & BcBride-Chang (2003) stated that harsh parenting comprises punitive behaviors and the negatively charged emotional reactions toward a child such as verbal, physical, and coercive behaviors. This suggests that harshness and warmth are two separate constructs. Though we aim to get at other negative aspects of parenting, such as corporal punishment and inconsistent discipline, we do not have an accurate and direct way to measure parental harshness in this sample.

It is also worth noting that the primary focus of the current study was to investigate the relationship between fearless temperament and parenting practices on the development of psychopathic traits. While we hypothesized that these relationships are important, there are also important child vulnerabilities that future investigations should consider. For example, Newman's response modulation hypothesis suggests that other child temperamental factors, such as attention vs inattention may be relevant for the development of psychopathy (Newman, 1980). The response modulation hypothesis posits that psychopathy is actually an attention disorder, and is based in an inability to shift attention from an original goal to social cues that are not related to their goal. The inability to recognize these cues is then often linked to antisocial behavior. Investigations that consider child characteristics, such as potential attention bottlenecks, and how they interact with parenting practices may also be informative in highlighting etiological pathways to psychopathic trait development.

Conclusions

This study has important implications in terms of elucidating relationships between fearlessness, several aspects of parenting, and distinguishable dimensions of psychopathic traits in young children. The significant interaction found between fearlessness and poor monitoring on CU traits, as well as the other non-significant trending interactions, support the importance of considering how temperamental and parenting factors operate in tandem on the development of psychopathic traits. Furthermore, the significant associations between fearless temperament and parenting practices on GD and INS traits lend further support to the multidimensional model of psychopathy, and the idea that there are distinct correlates with psychopathic traits beyond the most widely studied CU traits. Specifically, the significant associations between fearlessness and both GD and INS suggest that the fearlessness hypothesis, which suggests that fearlessness may be an early risk factor for CU trait development, may also apply to the other psychopathic trait domains.

Though several studies have demonstrated the link between parenting practices and CU trait development, and others have considered dispositional factors, such as fearlessness, and how it relates to CU trait development, few have examined the additive or interactive effects of both environment and temperamental influences. Our findings suggest that it may be helpful to view children with fearless temperaments as “at risk” for GD and INS trait development, as well as CU trait development, in interventions, and to also consider the added benefit of parenting interventions. Our findings, while necessarily tentative due to the aforementioned limitations, might be used to inform both the importance of assessment of certain aspects of child temperament and parenting behaviors, and facilitate development of targeted preventative

interventions to reduce the likelihood of psychopathic personality trait development in young children.

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TABLES AND FIGURES

Table 1

Descriptive Statistics

Variable	<i>N</i>	Minimum	<i>Maximum</i>	<i>Mean</i>	<i>Std. Dev.</i>
GD	50	1.00	2.50	1.38	.44
CU	50	1.00	2.40	1.43	.42
INS	50	1.20	4.00	2.17	.60
Positive Reinforcement	50	12.00	15.00	13.40	1.28
Inconsistent Discipline	50	3.00	13.00	6.48	2.14
Poor Monitoring	50	3.00	7.00	3.80	.93
Corporal Punishment	50	3.00	9.00	3.68	1.15
Involvement	50	10.00	15.00	13.06	1.27
Fearlessness	50	0	17.00	6.50	3.64

Table 2

Correlations Between Variables of Interest

Variable	<i>FLS</i>	<i>PR</i>	<i>ID</i>	<i>PM</i>	<i>CP</i>	<i>INV</i>	<i>GD</i>	<i>CU</i>	<i>INS</i>	<i>GEN</i>	<i>ANX</i>	<i>AGE</i>
<i>FLS</i>	1	0.02	0.27	0.23	0.07	0.09	.31*	0.22	.69**	0.11	0.11	-0.24
<i>PR</i>	0.02	1	.37*	-0.15	-0.07	.49**	-0.05	0.23	0.19	0.08	0.71	-0.21
<i>ID</i>	0.27	.37*	1	0.08	-0.1	0.28	.45**	.35*	.47**	0.18	0.41	-0.22
<i>PM</i>	0.23	-0.15	0.08	1	0.018	-0.29	0.18	0.02	-0.01	0.59	0.66	0.08
<i>CP</i>	0.07	-0.07	-0.1	0.02	1	0.08	0.27	0.1	0.05	0.55	0.67	-0.17
<i>INV</i>	0.09	.49**	0.28	-0.29	0.08	1	-0.12	0.11	0.18	0.34	0.37	-0.18
<i>GD</i>	.31*	-0.05	.45**	0.18	0.27	-0.12	1	.55**	.46**	0.97	0.78	-0.2
<i>CU</i>	0.22	0.23	.35*	0.02	0.1	0.11	.55**	1	.56**	0.53	0.54	-.31**
<i>INS</i>	.69**	0.19	.47**	-0.01	0.05	0.18	0.46	.56**	1	0.18	0.61	-.44**
<i>GEN</i>	0.11	0.08	0.18	0.59	0.55	0.34	0.97	0.53	0.18	1	0.07	0.84
<i>ANX</i>	0.11	0.71	0.41	0.66	0.67	0.37	0.78	0.54	0.61	0.07	1	0.37
<i>AGE</i>	-0.24	-0.21	-0.22	0.08	-0.17	-0.18	-0.2	-.31*	-.44**	0.84	0.37	1

Note: Gender was coded 0 = girls, 1 = boys. *FLS* = Fearlessness, *PR* = Positive Reinforcement, *ID* = Inconsistent Discipline, *PM* = Positive Monitoring, *CP* = Corporal Punishment, *INV* = Involvement, *GD* = *GD* Traits, *CU* = *CU* Traits, *INS* = *INS* Traits, *GEN* = Gender, *ANX* = Anxiety

* = $p < .05$, ** = $p < .01$

Table 3

Regression Analyses for the Associations between Fearlessness, Parenting Dimensions, and CU Traits

Variable	<i>B</i>	95% CI – Boot Strapped	β	<i>t</i>	<i>p</i>
Step 1					
Fearlessness	.014	[-.030, .044]	.119	.772	.540
Positive Reinforcement	.055	[-.056, .188]	.170	1.036	.334
Inconsistent Discipline	.061	[-.002, .127]	.316	2.018	.076
Poor Monitoring	-.037	[-.200, .124]	-.083	-.557	.640
Corporal Punishment	.054	[-.054, .335]	.150	1.067	.418
Involvement	-.047	[-.159, .067]	-.144	-.863	.352
Step 2					
Fearlessness X Positive Reinforcement	.008	[-.037, .054]	.096	.449	.721
Fearlessness X Inconsistent Discipline	.005	[-.028, .030]	.077	.349	.770
Fearlessness X Poor Monitoring	-.090	[-.165, -.007]	-.647	-2.660	.014
Fearlessness X Corporal Punishment	.051	[-.012, .097]	.391	2.173	.058
Fearlessness X Involvement	-.001	[-.034, .029]	-.016	-.077	.948

Table 4

Regression Analyses for the Associations between Fearlessness, Parenting Dimensions, and GD Traits

Variable	<i>B</i>	95% CI – Boot Strapped	β	<i>t</i>	<i>p</i>
Step 1					
Fearlessness	.018	[-.011, .043]	.15	1.155	.193
Positive Reinforcement	-.018	[-.125, .089]	-.053	-.383	.727
Inconsistent Discipline	.103	[.039, .165]	.507	3.828	.003
Poor Monitoring	.008	[-.088, .168]	.017	.133	.889
Corporal Punishment	.114	[.020, .411]	.302	2.543	.103
Involvement	-.092	[-.202, -.005]	-.269	-1.900	.054
Step 2					
Fearlessness X Positive Parenting	.009	[-.037, .061]	.100	.517	.713
Fearlessness X Inconsistent Discipline	-.006	[-.044, .030]	-.091	-.455	.687
Fearlessness X Poor Monitoring	-.030	[-.103, .047]	-.210	-.952	.406
Fearlessness X Corporal Punishment	.033	[-.045, .087]	.242	1.485	.396
Fearlessness X Involvement	-.014	[-.049, .015]	-.196	-1.062	.348

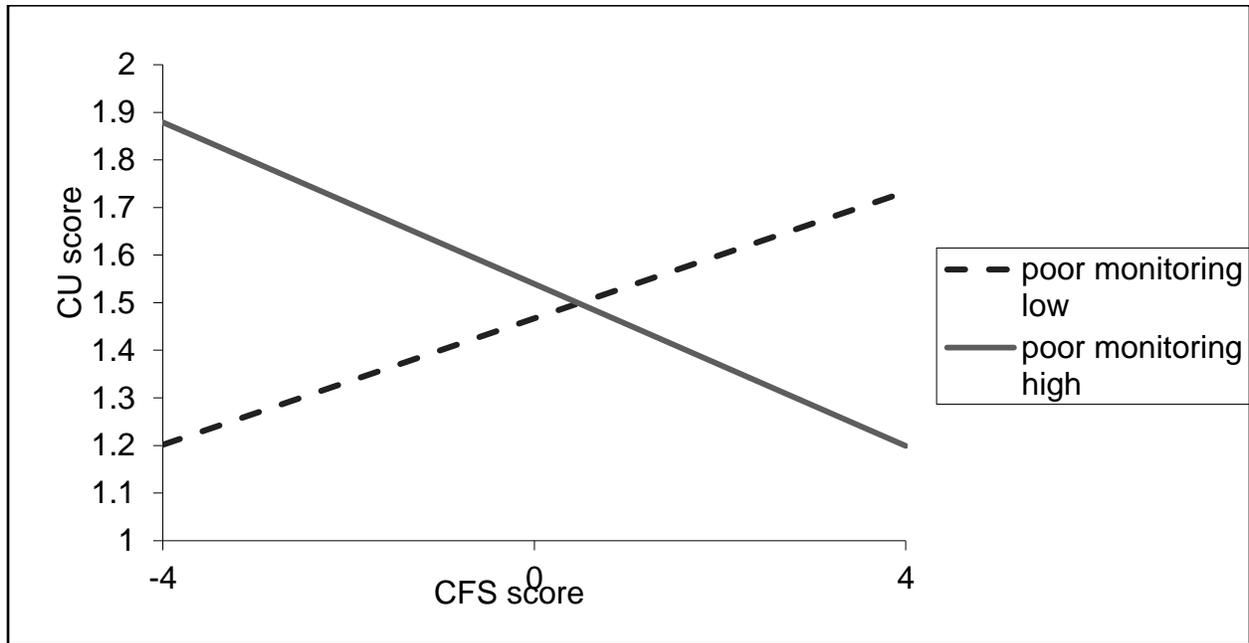
Table 5

Regression Analyses for the Associations between Fearlessness, Parenting Dimensions, and INS Traits

Variable	<i>B</i>	95% CI – Boot Strapped	β	<i>t</i>	<i>p</i>
Step 1					
Fearlessness	.108	[.069, .136]	.656	6.115	.001
Positive Parenting	.045	[-.056, .155]	.96	.839	.434
Inconsistent Discipline	.073	[.013, .137]	.258	2.360	.037
Poor Monitoring	-.098	[-.235, .080]	-.151	-1.449	.214
Corporal Punishment	.014	[-.077, .285]	.027	.277	.807
Involvement	-.011	[-.141, .109]	-.024	-.207	.872
Step 2					
Fearlessness X Positive Reinforcement	.007	[-.042, .069]	.055	.357	.745
Fearlessness X Inconsistent Discipline	.014	[-.023, .043]	.153	.972	.432
Fearlessness X Poor Monitoring	-.064	[-.141, .026]	-.317	-1.819	.091
Fearlessness X Corporal Punishment	.039	[-.018, .072]	.207	1.603	.094
Fearlessness X Involvement	.008	[-.027, .046]	.074	.508	.590

Figure 1

Interaction Between Fearlessness and Poor Monitoring on the Influence of CU Traits



APPENDIX

APQ Parent Report Short Form

Instructions: The following are a number of statements about your family. Please rate each item as to how often it TYPICALLY occurs in your home. The possible answers are Never (1), Almost Never (2), Sometimes (3), Often (4), Always (5).

	Never 1	Almost Never 2	Sometimes 3	Often 4	Always 5
1. You let your child know when he/she is doing a good job with something	1	2	3	4	5
2. You threaten to punish your child and then do not actually punish him/her	1	2	3	4	5
3. Your child fails to leave a note or to let you know where he/she is going	1	2	3	4	5
4. You play games or do other fun things with your child	1	2	3	4	5
5. Your child talks you out of punishing him/her after doing something wrong	1	2	3	4	5
6. You ask your child about his/her day in school	1	2	3	4	5
7. Your child stays out in the evening past the time he/she is supposed to be home	1	2	3	4	5
8. You help your child with his/her homework	1	2	3	4	5
9. You compliment your child when he/she does something well	1	2	3	4	5
10. You praise your child if he/she behaves well	1	2	3	4	5
11. Your child is out with friends you don't know	1	2	3	4	5
12. You let your child out of a punishment early (like lift restrictions earlier than you originally said)	1	2	3	4	5
13. You spank your child with your hand when he/she has done something wrong	1	2	3	4	5
14. You slap your child when he/she has done something wrong	1	2	3	4	5
15. You hit your child with a belt or other object when he/she has done something wrong	1	2	3	4	5

Child Fearlessness Scale

	Does not apply at all	Applies poorly	Applies fairly well	Applies very well.
1. He/she falls over and hurts him-/herself every now and then, as a consequence of his/her fearlessness				
2. He/she does not appear to be afraid of anything				
3. He/she is very fearless as a person and exposes him-/herself willingly to dangerous things				
4. He/she is never afraid when someone tries to scare him/her				
5. He/she never seems to become afraid when someone is angry with him/her				
6. He/she seems completely fearless in many various ways, compared to other children of the same age.				

Child Fearlessness Scale

Child's Name: _____

Parent's Name: _____

ID #: _____

Date Completed: _____

Mother Father Other
(Please circle one)

Directions: For each set of statements, decide which answer is most applicable to your child. Mark the box in the corresponding column when you have made your decision. PLEASE ANSWER ALL THE QUESTIONS.

CPTI

Who answers this questionnaire?

This questionnaire should be answered by a preschool- or school teacher (or parent) that knows the specific child well. If the child has several teachers, this questionnaire should be answered by the teacher that has the most experience of the child.

Instructions

This questionnaire consists of a number of statements that deal with how a child can think and behave. Read each statement carefully and decide how well the particular statement applies to the child. Put a mark in the box that corresponds to how well you think the statement applies to the child. You can choose between four different alternatives on each statement. **Answer each statement based on how the child usually and typically behaves, rather than based on how he/she behaves for the moment or for the day.**

Example:

He/she likes to paint.

Does not apply at all	Does not apply well	Applies fairly well	Applies very well
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Answer ALL statements.**
- **Do not put a mark between the alternatives.**
- **Only one answer per statement.**

Important!!!

Answer each statement based on how the child usually and typically behaves, rather than based on how he/she behaves for the moment or for the day.

	Does not apply at all	Does not apply well	Applies fairly well	Applies very well
1. Likes change and that things happen all the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Seldom expresses sympathy for others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Often has difficulties with awaiting his/her turn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Usually does not seem to share others' joy and sorrow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Lies often to avoid problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Seems to do certain things just for the thrill of it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Seems to see himself/herself as superior compared to others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Never seems to have bad conscience for things that he/she has done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Often lies to get what he/she wants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Provides himself/herself with different things very fast and eagerly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Often seems to be completely indifferent when other children are upset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Often does things without thinking ahead	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Does not become upset when others are being hurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Often consumes things immediately rather than saving them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Seems to lie more than other children in the same age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Seems to have a great need for change and excitement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Is seldom remorseful when he/she has done				

something not allowed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Is often superior and arrogant toward others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>				
19. Does not like waiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Often does not seem to care about what other people feel and think	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. To get people to do what he/she wants, he/she often find it efficient to con them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Sometimes seems to completely lack the capability to feel guilt and remorse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Seems to get bored quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Thinks that he/she is better than everyone on almost everything	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Never expresses feelings of guilt when he/she has done something not allowed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. To frequently lie seems to be completely normal for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Does not express guilt and remorse to the same extent as other children of the same age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Quickly gets tired of things and wants new things to happen all the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>