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THE CONTRIBUTION OF CALLOUS AND UNEMOTIONAL TRAITS AND PARENTING
PRACTICES TO AGGRESSIVE AND RULE-BREAKING BEHAVIORS

by

MARIYA V. MALIKINA

Under the Direction of Robert D. Latzman, PhD

ABSTRACT

Individual differences, particularly callous and unemotional (C&U) traits, and parenting practices are some of the strongest predictors of externalizing behavior in adolescents. However, findings on the associations between C&U traits, parenting, and externalizing behaviors have been mixed, with studies often utilizing single scores to represent these multidimensional constructs. The current study used a developmental-contextual framework to examine how dimensions of C&U traits predict aggressive and non-aggressive rule-breaking behaviors through positive and negative parenting practices. The study used archival data from 174 pairs of adolescent males, ages 11-16 years old, and their mothers. Results showed that C&U traits influenced externalizing behaviors through parenting practices. Findings also showed

specificities among these relationships. Particularly, the associations between Uncaring and aggressive, as well as non-aggressive rule-breaking, behaviors was mediated by negative parenting, whereas the association between Unemotional and rule-breaking behaviors was mediated by positive parenting practices. Research and clinical implications are discussed.

INDEX WORDS: Callous-unemotional traits, C&U traits, Externalizing behaviors, Parenting, Antisocial behaviors, Aggression

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by

MARIYA V. MALIKINA

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2015

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PRACTICES TO AGGRESSIVE AND RULE-BREAKING BEHAVIORS

by

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DEDICATION

I would like to dedicate this work to my friends and family, especially my mother, for their continued encouragement and support.

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I would like to thank my thesis committee chair, Dr. Robert D. Lutzman, for his guidance on this project. I would also like to thank the rest of my thesis committee members, Dr. Christopher C. Henrich, Dr. Lisa Armistead, and Dr. Natasha E. Lutzman for their thoughtful feedback and suggestions which helped to make this project a true contribution to the field.

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1 INTRODUCTION

Externalizing behaviors refer to an array of behaviors and attitudes directed outward that demonstrate a lack of consideration for others, violate the rights of others, and deviate from societal norms and laws, including behaviors such as aggression, violence and substance use (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998; Achenbach & Rescola, 2001). Externalizing behaviors are a particular problem for adolescent youth, especially adolescent boys (Moffitt, 1993, 2003; Broidy et al., 2003; Schaeffer et al., 2006), with long-term consequences ranging from problems with relationships, professional attainment, and substance abuse to more extreme outcomes such as violence and incarceration (Moffitt, 2003; Loeber & Stouthamer-Loeber, 1986). Furthermore, externalizing behaviors affect families, communities, and are costly to society (Scott, Knapp, Henderson, & Maughan, 2001), and as a result much research has focused on investigating factors that contribute to and protect against the development of these behaviors. For many years the focus and conclusions of empirical work suggested that negative outcomes in youth such as engaging in externalizing behaviors, are largely the result of parenting, with markedly less attention given to investigating the role youth play (Ambert, 2001). However, with continued empirical and theoretical work with regard to the development of externalizing behaviors, particularly the emergence of transactional models (Bell, 1968; Lerner, 1982; Sameroff, 1975; Patterson, Reid & Dishion, 1992), which take into consideration individual youth characteristics, family environment and interactions, and larger social contexts (Bronfenbrenner, 1979), the literature on youth development has been extended and developmental models have been refined. This extensive literature suggests that among these multiple factors, youth individual characteristics (e.g. personality characteristics) and parenting practices, are two of the strongest predictors and have been repeatedly found to directly and

indirectly contribute to the development of externalizing behaviors (Loeber & Stouthamer-Loeber, 1986; Patterson, Reid & Dishion, 1992; Patterson, 1982, 1997).

One common perspective, and piece, of these developmental-contextual theories is that youth are co-producers of their own development, by having an effect on parenting practices and behaviors, and are in turn affected by the environment in which they participate (Bell, 1968; Lerner, 1982; Sameroff, 1975; Magnusson, 1995; Scarr & McCartney, 1983), suggesting that youth characteristics are of high importance. Recently, a substantial body of research has focused on individual-level variation in callous and unemotional (C&U) traits as one of the strongest predictors of future problematic behavior, which thus have been included in the *DSM-5* as a severity specifier for Conduct Disorder (Frick & White, 2008; Pardini, Frick & Moffitt, 2010). However, research on how C&U traits fit within developmental models of externalizing behavior is still in its nascent stages. Findings on the relationship between C&U traits and parenting practices and how they jointly predict externalizing behaviors have been mixed. Indeed, some studies suggest that externalizing behavior in youth with increased C&U traits develops independently of parenting (Oxford, Cavell, & Hughes, 2003; Edens, Skopp, & Cahill, 2008) whereas others suggest that parenting practices influence the development of C&U traits (Hawes & Dadds, 2007; Pardini, Lochman, & Powell, 2007; Kimonis, Cross, Howard, & Donoghue, 2013). These studies, however, considered only interaction effects. A more appropriate method to model the relationship between C&U traits, parenting practices, and externalizing behaviors may be through a developmental-contextual framework, particularly focusing on youth driven effects, whereby C&U traits disrupt parenting practices, thus contributing to externalizing behaviors (Hawes, Dadds, Frost, & Hasking, 2011). This model is also consistent with findings on other traits and diagnoses with similar underlying temperamental mechanisms showing youth-

driven effects (e.g., aggression, boldness, insensitivity to punishment, CD, ADHD; Anderson, Lytton, & Romney, 1986; Olweus, 1980; Ambert, 2001; Pardini, Fite & Burke, 2008; Gross, Shaw & Moilanen, 2008; Patterson et al, 1992; Patterson, DeGarmo & Knutson, 2000; Barker, Oliver, Viding, Salekin, & Maughan, 2011; Kaiser, McBurnett, & Pfiffner, 2012). Furthermore, research shows that youth to parent effects increase during periods of familial stress such as the transition into adolescence (Pardini et al., 2008; Gross et al., 2008), which is a particularly stressful time for parents (Gecas & Seff, 1990) and youth (Arnett, 2012; Ambert, 2001).

In addition to the analytic approach, other limitations of previous studies on C&U traits, parenting practices, and externalizing behaviors are also of note. Previous studies have typically examined one aspect of parenting, most commonly negative parenting practices, and have investigated C&U traits, a multidimensional construct with differential external correlates (e.g., Berg et al., 2013; Litzman, Lilienfeld, Litzman, & Clark, 2013), using a single score. Further, investigations into C&U traits, parenting practices and externalizing behaviors have failed to differentiate between aggressive and non-aggressive rule-breaking behaviors, distinguishable dimensions of externalizing behaviors reliably found to have differential predictors and correlates (Frick, 1993; Loeber & Schmaling, 1985; Quay, 1986; Burt, 2012a). The proposed study aims to address these limitations using structural equation modeling to fit a mediation model using adolescent self-report of parenting and externalizing behaviors and parent report of C&U traits. Importantly, the path model will include both positive and negative parenting practices and individual aspects of C&U traits to predicting aggressive and non-aggressive rule breaking behaviors.

1.1 Externalizing Behaviors

Externalizing behaviors in childhood and adolescence vary greatly across individuals, from more normative behaviors such as lying and underage drinking to more severe such as violence and vandalism (Loeber & Stouthamer-Loeber, 1998). Although often assessed as a singular construct in research, multiple factor- and meta-analytic studies have emphasized that the broad dimension of externalizing behaviors consists of two lower-order dimensions: aggressive and non-aggressive rule breaking behaviors (Loeber & Schmalting, 1985; Quay, 1986; Frick et al., 1993; Burt, 2012a; Achenbach & Rescola, 2001; Niv, Tuvblad, Raine, & Baker, 2013). Although moderately correlated, these two dimensions significantly diverge with regard to developmental pattern, etiology, severity of outcomes, and underlying temperament (Tackett et al., 2010a; Moffitt, 2003; Tremblay, 2010; Burt, 2012b; Niv et al., 2013; Klahr & Burt, 2014). Aggressive behaviors consist of physically aggressive actions such as fighting and bullying while non-aggressive rule-breaking behaviors include lying, stealing and substance use (Tremblay, 2010). A recent review by Burt (2012a) warns against collapsing aggressive and non-aggressive rule-breaking behaviors, which may lead to possibly obscuring and/or misrepresenting important findings.

During typical development, aggressive behavior increases and peaks in early childhood and decreases from childhood through adolescence (Tremblay, 2010; Niv et al., 2013). However, aggressive behaviors demonstrate high rank-order stability pattern, meaning that individuals who were most aggressive in childhood tend to be more aggressive adults (Moffitt, 2003; Tremblay, 2003; Broidy et al., 2003). Conversely, non-aggressive rule-breaking behaviors are rare in childhood; rather they increase in adolescence, potentially due to stymied cognitive development and less adult supervision, and taper off in adulthood also showing significantly less rank-order

stability over time than aggressive behaviors (Tremblay, 2003, 2010; Niv et al., 2013). Notably, youth who begin to exhibit increased externalizing behaviors early, specifically aggressive behaviors, tend to have a more persistent antisocial trajectory into adulthood (Moffitt, 1993, 2003).

Further underscoring the importance of this distinction, findings from recent meta-analytic studies indicate that etiological factors also differentiate these dimensions of externalizing behaviors. Specifically, in a meta-analysis of 103 twin and adoption studies, Burt (2009) found that aggressive behaviors were highly heritable, with genetic influences accounting for 65% of the variance in aggressive behaviors and little to no contribution of shared environment influences (e.g. family influences such as parenting). In contrast, genetic influences accounted for significantly less variance (48%) in non-aggressive rule-breaking behaviors, with shared environmental influences contributing a significant 18% of the variance (Burt, 2009). Furthermore, Burt (2012b) conducted a meta-analysis of thirteen twin and sibling studies on the overlap of etiological influences in aggressive and non-aggressive rule-breaking behaviors and found that these two dimensions are partially genetically and environmentally distinct, with only 38.4% of genetic influences and 10.2% of shared environmental influences overlapping in these two dimensions (Burt, 2012a). Taken together these findings suggest that aggressive behaviors are largely heritable, whereas non-aggressive rule-breaking behaviors develop from a combination of shared environmental factors and heritability, although to a lesser degree than aggressive behaviors, and that the genetic and environmental influences on aggressive behaviors differ from genetic and environmental influences on non-aggressive rule breaking behaviors, further underlying their distinction.

Another area of divergence between aggressive and non-aggressive rule breaking behaviors is with regard to underlying temperament. Specifically, higher levels of negative emotionality, the tendency to experience adverse affect such as anxiety and anger, and lower levels of constraint, or lack of behavioral inhibition, have been shown to be associated with externalizing behaviors in children (Tackett, 2006; Nigg, 2006). Moreover, temperament dimensions differentiate between aggressive and non-aggressive rule breaking behaviors in youth (Burt & Donnellan, 2008; Burt, Mikolajewski, & Larson, 2009; Tackett, 2010a; Burt, 2012a). After accounting for the shared variance in these dimensions of externalizing behaviors, aggressive behaviors, but not rule breaking, have been found to be uniquely associated with higher trait levels of negative emotionality (Moffitt, 2003; Burt & Larson, 2007; Tackett, 2010a; Klahr & Burt, 2014). Furthermore, Burt and Larson (2007) found that following completion of an aversive task, aggressive behaviors, but not rule breaking, were associated with negative emotionality, suggesting that state levels of negative emotionality are largely specific to aggressive behavior as well. With regard to non-aggressive rule-breaking behaviors, on the other hand, once the shared variance has been removed between the two externalizing dimensions, non-aggressive rule breaking behaviors have been found to be uniquely associated with trait levels of low constraint (Burt & Donnellan, 2008; Moffitt, 2003; Klahr & Burt, 2014). Similar patterns have emerged in independent child, adolescent, college, adjudicated, and clinical samples (Tackett, 2010a; DeMarte, 2008; Burt, Donnellan, & Tackett, 2012; Hopwood et al., 2009) further confirming the distinct temperamental correlates between these dimensions of externalizing behaviors. Given the differential etiological, developmental, and external correlates of aggressive and non-aggressive rule breaking behaviors, examining these behaviors as one dimension may lead to misrepresentation of findings and masked specificity (Burt, 2012a).

Furthermore, as the existing literature is unequivocal with regard to the differential temperamental associations between aggressive and non-aggressive rule breaking behaviors, it is crucial to investigate them separately in examinations of associations with more specific maladaptive personality traits, such as C&U traits, which have been linked to more severe externalizing behaviors (Frick, Ray, Thornton, & Kahn, 2014).

1.2 Callous & Unemotional (C&U) Traits

Callous and Unemotional (C&U) traits are an attempt to downwardly extend the psychopathy construct to children and adolescents in an effort to identify a subgroup of youth who may be at risk for a more severe, violent and aggressive pattern of behavior persisting into adulthood (Frick, O'Brien, Wootton, & McBurnett, 1994; Frick & Dickens, 2006; Salekin & Frick, 2005; Frick & White, 2008; Kahn et al. 2012). Specifically, C&U traits are a multidimensional construct comprised of the affective and interpersonal features of psychopathy including lack of empathy and guilt, a shallow or constricted affect, and manipulation of others, and are considered to be the hallmark, or cornerstone, of the psychopathy construct as conceptualized in adults (Cleckley 1976; Frick & Hare, 2001; Hare, 1993; Lykken, 1995). More recently and to address previous limitations with measuring C&U traits, Frick and colleagues (2003) have developed a conceptualization, as well as a companion assessment instrument, in which these traits are conceptualized through a bifactor model, which represents multidimensionality by specifying a general factor that captures the shared variance from all items, and at the same time models specific variance of individual dimensions. Specifically, the ICU can be conceptualized as a 3-factor bifactor model, with three correlated, yet distinct, sub-factors: Callousness, Uncaring, and Unemotional, and one general C&U trait factor. Callousness refers to lack of empathy, guilt and remorse, Uncaring is the lack of caring about own

performance and the feelings of others, and Unemotional is the absence of emotional expression. It is important to note that C&U traits are typically reported as a single score, and the utility of doing so has been questioned with the three components showing different associations with external correlates (Kimonis et al., 2008; Decuyper, De Bolle, De Fruyt, & De Clercq, 2011; Litzman et al., 2013; Berg et al., 2013). Specifically, the Unemotional component has been shown to be less related to externalizing traits than Callousness and Uncaring, and more related to internalizing traits, a distinction that is obscured when the factors are incorporated into a single score (Litzman et al., 2013). Given these differences, recent empirical and theoretical research suggests that it may be more appropriate to use the acronym C&U than the more commonly used CU (Litzman et al., 2013; Berg et al., 2013). Regardless of how one conceptualizes C&U traits, however, it is irrefutable that these traits are associated with a host of negative outcomes including a range of externalizing behaviors (Frick & White, 2008), and do distinguish a group of youth who are at higher risk for severe and persistent antisocial outcomes (Frick et al., 2013).

Individuals with elevated C&U traits are at a greater likelihood to commit more diverse and violent crimes, more likely to recidivate, less likely to respond to intervention (Cooke & Michie, 1997) and more likely to show patterns of antisocial behavior in childhood (Frick & White, 2008). Furthermore, C&U traits have shown high predictive utility in predicting future externalizing behaviors. For example, in a mixed-gender sample of 754 adolescents followed from 7th grade through 2 years post high-school, McMahon, Witkiewitz, and Kotler (2010) found that C&U traits strongly predicted juvenile and adult criminal behavior and arrests and antisocial personality disorder in adulthood, even after accounting for childhood disruptive behavior symptoms. Similarly, in an ethnically diverse community sample of three cohorts from the

Pittsburgh Youth Study, Kahn, Byrd and Pardini (2013) found C&U traits to be a robust incremental predictor of future criminal offending. This finding held true even when other well-documented risk factors including demographic variables, prior criminal history, impulsivity, ADHD symptoms, substance use problems, low socioeconomic status, peer delinquency, marital status, and employment status, were controlled for in the analysis (Kahn, Byrd, & Pardini, 2013). Notably, in their analysis Kahn et al. (2013) found that the Uncaring component uniquely predicted future criminal charges, suggesting specificity within C&U traits and lending more support for investigating C&U trait factors separately.

Regarding the externalizing dimensions, findings demonstrate that C&U traits overall are related to both aggressive (Dadds, Whiting, & Hawes, 2006; Dolan & Rennie, 2006; Skeem & Cauffman, 2003; Vitacco, Neumann, Caldwell, Leistici, Van Rybroek, 2006) and non-aggressive rule-breaking behaviors (Dolan & Rennie, 2006; Loeber et al., 2005; Poythress, Skeem, & Lilienfeld, 2006), and appear to be equally correlated with both aggressive and non-aggressive rule breaking behaviors (Kimonis et al., 2008), although, extant theoretical and empirical work has demonstrated that the worst and most volatile outcome is seen in children who exhibit higher levels of C&U traits as well as aggressive behaviors early in childhood (Barry et al., 2000; Moffitt, 2003; Frick et al., 2014). In fact, as a result of these repeated findings, both cross-sectionally and prospectively, C&U traits, termed “limited prosocial emotions” have recently been included in the new edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013)*, as a specifier for Conduct Disorder (CD). This addition was done in service of denoting a subgroup of youth with a more severe form of the disorder who also have a different treatment response compared to those without the specifier (Kahn et al., 2012). Given the clinical and research implications of including C&U traits in the

official diagnostic system, there is great need in understanding the underlying mechanism in the development of C&U traits and how C&U traits fit within developmental models of externalizing behaviors.

Kochanska and colleagues' (1993, 1995, 1997) research on early development, particularly fearless temperament (represented by low anxiety) and conscience development, can shed light on the underlying mechanisms of C&U traits. They proposed that, upon being confronted or punished by a parent for wrongdoing, children typically experience an elevated state of anxiety leading to feelings of guilt, thus learning behavioral control and regulation and promoting conscience formation, empathy and prosocial values (Kochanska, 1993; 1995; 1997). Conversely, children high on fearlessness respond with a lower degree of arousal and insufficient anxiety to induce guilt, contributing to deficits in passive avoidance learning, not learning to abstain from a behavior in order to avoid punishment (Kochanska, 1997). For fearless, under-aroused children, the path to socialization is through a mutually positive child-parent relationship involving parenting behaviors such as positive affect, cooperation, and parental warmth and responsiveness, rather than punishment (Kochanska, 1997; Kochanska & Murray, 2000). Given that temperamentally fearless children are less responsive to punishment and physiological reactivity, and consequently failing to achieve appropriate levels of guilt, leading them to experience disruptions in conscience formation and socialization (Kochanska, 1993; 1995), which can serve as an early precursor to the development of C&U traits and externalizing behaviors (Frick & White, 2008; Dadds & Salmon, 2003). In fact, longitudinal studies have shown that temperamental fearlessness in early childhood was prospectively associated with higher levels of C&U traits in adolescence (Barker et al., 2011; Pardini, Stepp, Hipwell, Southamer-Loeber, & Loeber, 2012).

However, perhaps the most notable finding concerning fearless temperament in the context of the current study is that having a fearless temperament does not necessarily preclude a child from developing prosocial values. Rather, there appear to be different pathways to prosocial values that are highly dependent on parenting practices. Furthermore, although previous studies have shown C&U traits to be relatively stable, they are not immutable. Indeed, even with high reports of stability observed, Frick et al., (2003) found that a significant number of youth decreased in their level of C&U traits over the course of the study, and similar to findings on fearless temperament, this trend was due to the quality of parenting the youth received (see Obradovic', Pardini, Long, & Loeber, 2007 for a similar pattern of results), suggesting that C&U traits have some level of plasticity. Additionally, recent findings have shown that C&U traits, and some C&U trait factors, are not always associated with behavior problems for all youth (Waschbusch, Carrey, Willoughby, King, & Andrade, 2007; Kahn et al., 2012). Thus, although C&U traits generally appear to be a risk factor in developing externalizing behaviors, parenting, especially positive parenting (Frick et al, 2003; Kochanska, Kim, Boldt, Yoon, 2013), may play an important mediating role in the development of externalizing behaviors. Indeed, it is likely that individual C&U trait factors may differentially predict positive or negative parenting which in turn may differentially predict aggressive or non-aggressive rule breaking behaviors.

1.3 Parenting

Longitudinal studies on the contributors of antisocial behavior, spanning from early childhood to adolescence, have consistently shown that parenting practices play a central role in the development of externalizing behaviors (Cairns & Cairns, 1994; Loeber & Stouthamer-Loeber, 1986; Loeber et al., 1998; Patterson et al., 1992; Aunola & Nurmi, 2005; Luyckx et al.,

2011). Parenting practices refer to the behaviors and techniques that have a direct effect on youth developing specific externalizing behaviors (Locke & Prinz, 2002). Furthermore, researchers have identified that parenting practices can serve as *both* risk and protective factors in the development of externalizing behaviors (Loeber & Stouthamer-Loeber, 1986; Patterson et al., 1992). A breadth of empirical and theoretical work has shown that parenting practices can be split into two distinct negative and positive dimensions (Petite, Bates & Dodge, 1997; Locke & Prinz, 2002), although studies commonly use a single parenting score or look at either negative or positive parenting practices. Positive parenting practices include parental warmth, involvement and communication while negative parenting practices include poor supervision and monitoring, and inconsistent or ineffective discipline. It should be noted that typically corporal punishment is included in negative parenting practices (Shelton et al., 1996; Loeber & Stouthamer-Loeber, 1986), however, it continues to be a controversial topic with meta-analytic studies showing mixed findings on whether it leads to negative outcomes or not (Straus, 2010; Gershoff, 2002; Paolucci & Violata, 2004). Methodological issues surrounding operationalization and interpretation further complicate research on corporal punishment, as it is often confounded with abusive behaviors (Baumrind, Larzelere, & Cowan, 2002; Larzelere, 2000), and is much less frequently used with adolescents (Frick et al., 1999; Wauchope & Straus, 1990; Straus & Steward, 1999). Regardless of how specific parenting behaviors are categorized, it is important to understand that positive and negative parenting practices are not mutually exclusive (Barnes, 1990; Maccoby & Martin, 1983), meaning that higher positive parenting does not necessarily mean a lack of negative parenting practices. For example, parents may engage in poor monitoring and at the same time engage in high levels of parental involvement.

Further support for examining positive and negative parenting practices separately is that

they predict different outcomes (Locke & Prinz, 2002). For example, negative parenting practices increase externalizing behaviors (Loeber & Stouthamer-Loeber, 1986), while positive parenting practices decrease externalizing behaviors (Wasserman, Miller, Pinner, & Jaramillo, 1996) and are a strong predictor of prosocial behaviors in youth (Patterson et al., 1992). In a meta-analysis of over 300 concurrent and longitudinal studies of family factors and externalizing behaviors, Loeber and Stouthamer-Loeber (1986) found that parental monitoring and supervision were some of the strongest predictors of externalizing behaviors. Additionally, parental discipline, specifically inconsistent discipline and poor monitoring and supervision strongly predicted an increase in child conduct problems (Loeber & Stouthamer-Loeber, 1986; Patterson et al., 1992). Furthermore, negative parenting appears to have a cumulative risk for externalizing behaviors over time (Wasserman et al., 1996). These findings have been supported in subsequent studies (Snyder & Patterson, 1987; Frick et al., 1992; Bailey, Hill, Oesterle, & Hawkins, 2009; Beyers, Bates, Pettit & Dodge, 2003; Leve, Kim, & Pears, 2005). As noted above, whereas negative parenting practices have been reliably found to connote risk, more positive parenting practices have a negative relationship with externalizing behaviors (Wasserman et al., 1996). For example, parental involvement has been found to predict lower levels of externalizing behaviors (Loeber & Stouthamer-Loeber, 1986) and is a significant individual contributor to prospective externalizing behaviors, after controlling for other significant factors and previous externalizing behaviors (Wasserman et al., 1996). Additionally, the degree of communication between parents and children is the aspect of parental involvement that has been found to most strongly predict lower levels of future externalizing behaviors (Wasserman et al., 1996). Similarly, parental monitoring, a practice within the larger positive parenting domain, has been shown to protect adolescents against the development of externalizing behaviors (Lahey et al., 2008; Laird, Criss,

Pettit, Dodge, & Bates, 2008; Patterson et al., 1992). Furthermore, positive parenting practices such as positive reinforcement and parental involvement not only act as a buffer against externalizing behaviors but have been observed as strong predictors of prosocial behavior in youth (Patterson et al., 1992).

Regarding the individual dimensions of externalizing behaviors, a longitudinal study by Loeber, Farrington, Stouthamer-Loeber and Van Kammen (1998) on the explanatory factors of aggressive and delinquent behavior in youth, following three cohorts starting in 1st, 4th, and 7th grades, found that negative parenting practices were one of the strongest explanations for these behaviors. Specifically, poor parental supervision and physical punishment explained delinquent behavior in all three cohorts and poor parental communication explained delinquent behavior in 2 cohorts. Moreover, poor parental supervision and physical punishment predicted future delinquent behavior. Similarly, poor parental supervision and physical punishment explained physical aggression in all three cohorts and poor parental communication explained physical aggression in 2 cohorts. Additionally, low reinforcement of positive behaviors also explained aggressive behavior. However, only poor parental communication predicted future aggressive behavior in the sample. Given that parenting practices can serve as a risk as well as a protective factor and may differentially predict various dimensions of externalizing behaviors, it is important to include both positive and negative parenting in models of externalizing behavior (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wilkstrom, 2002; Locke & Prinz, 2002) in addition to investigating externalizing dimensions individually (Burt, 2012a).

Although parenting practices appear to be a strong predictor of externalizing behavior, they do not occur in a vacuum; rather, as mentioned earlier, the development of these behaviors results from a repeated interplay between youth characteristics, responses from parents and

larger contexts, and how this co-produced environment facilitates the emergence and persistence of externalizing behaviors over time (Thomas & Chess, 1977; Patterson, 1982; Lerner, 1982; 1997; Belsky, 1984; Kochanska, 1997; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Scarr, & McCartney, 1983; Magnusson, 1995). An important, and often understudied, aspect of this widely accepted developmental-contextual framework for development of externalizing behavior is youth driven effects (Ambert, 2001), where youth produce their own development and have an effect on their environment, by having an effect on parenting practices and behaviors (Bell, 1968; Lerner, 1982). Youth driven effects are evident and highlighted in Bell's (1968) control systems' theory, Sameroff's (1975) transactional model of development, Lerner's (1982) person-context goodness-of-fit model, Patterson's (1982) coercion model, as well as others, as an important piece of a larger more complicated developmental process. These theories suggest that youth are both the products and producers of their environment, by promoting differential reactions from others (e.g. parents) in the process of socialization, which may then feedback to the youth and provide a basis for further development (Lerner, 1982; Lytton, 1990). Specifically, individual child characteristics affect parenting practices by disrupting parenting practices and behaviors, and this continued cyclical and escalating relationship contributes to development of externalizing behaviors (Patterson, 1982). Empirical findings show support for this complex youth driven model. For example, a study by Anderson, Lytton and Romney (1986) investigated this hypothesis in non-related child and early adolescent boys and mothers. They paired boys with CD and those with no problem behaviors with unrelated mothers as well as biologically related mothers and observed their behavior during play and structured tasks. Findings demonstrated that mothers of CD boys did not differ significantly from mothers of non-CD boys in their positive and negative behaviors and

commands. However, all mothers displayed more negative responses and commands towards CD boys than non-CD boys. As a result, the CD boys also complied less than non-CD boys with both, their own and non-related mothers, suggesting that maladaptive exchanges between boys and mothers are driven by the youth (Anderson et al., 1986). Similarly, in a longitudinal study using path analysis with two samples of adolescent boys, 12-14 year olds and 15-17 year olds, and their mothers, Olweus (1980) showed that mothers of boys who demonstrated a “hot-headed, strong-willed” temperament in infancy later became more permissive of aggression, which in turn lead to greater aggressive behavior over time, further suggesting that externalizing behaviors are child driven. This developmental-contextual framework is likely also useful in understanding the relationship between C&U traits, parenting practices and externalizing behaviors, especially in adolescence as it is a time when youth become more independent and show an increase in externalizing behaviors (Arnett, 2012).

1.4 Age and Gender

Studies show that adolescence, and early adolescence, is a particularly important time to study externalizing behavior (Hill, 1980; Arnett, 2012). This is a transitional period when developmental and biological shifts occur, such as gains in physical size and strength associated with puberty, as well as increase in autonomy and peer interactions and decrease in parental supervision. The individuation process occurs increasingly during adolescence, thus making it an exceptionally appropriate time to investigate the relationship between the changing individual and the changing environment (Lerner, 1982; Arnett, 2000; 2004). It should be noted that increased externalizing behaviors and certain externalizing behaviors are considered normative during adolescence (e.g. drinking, lying), and only become problematic when they increase in frequency and/or cause harm to others (Loeber, Farrington, Stouthamer-Loeber, & Van

Kammen, 1998). Furthermore, associations between positive parenting (e.g. parental involvement) and negative parenting (e.g. inconsistent discipline) and externalizing behaviors are strongest among adolescents (Frick et al., 1999), and parent-child conflict also typically increases during this developmental period (Hill, 1987; Smetana, 1989; Siegal, 1985). Similarly, C&U traits have shown to be significantly associated with adolescence and have shown to predict juvenile and adult criminal behavior and arrests and later antisocial personality disorder for adolescent youth (McMahon et al., 2010). With adolescence being a time of increased autonomy when youth are becoming more integrated as individuals (Blasi, 1995; Bergman, 2002), it is an important time to examine links between individual characteristics and behavior, particularly externalizing behavior. Taken together, biological and social changes as well as increasing autonomy, further underscore the significance of studying the relationships between individual differences, parenting practices and externalizing behaviors in adolescence.

Furthermore, adolescent boys appear to be at a greater risk for negative outcomes as a result of engaging in externalizing behaviors (Moffitt, 1993, 2003; Broidy et al., 2003; Schaeffer et al., 2006). Additionally, males show higher rates of engaging in externalizing behaviors than females (Cairns & Cairns, 1984; Moffitt, 1993, 2003; Broidy et al., 2003) and exhibit significantly higher C&U traits than females (Viding, Fontaine, Oliver, & Plomin, 2009). Lastly, a study of 5,770 children and adolescents, ages 5-16 years old, found a significant interaction between C&U traits and gender, with C&U traits being more strongly associated with Hyperactivity, Conduct Problems, Emotional Symptoms, Peer Problems in boys, as compared to girls (Moran, Ford, Butler, & Goodman, 2008). Given that externalizing behaviors are more normative and frequent among adolescent males, who also show higher rates of C&U traits, and that adolescence is an important transitional period (e.g. increased autonomy, decreased parental

supervisions), using community adolescent samples allows for investigating how C&U traits and parenting practices fit within the developmental-contextual model of the development of externalizing behaviors.

1.5 C&U Traits and Parenting

Given the strength of the relationship between C&U traits and externalizing outcomes, researchers have begun to focus on how these traits are related to parenting practices (see Waller et al., 2013 for review). However, again, the vast majority of previous studies have examined C&U traits as a moderator in the relationship between parenting practices and externalizing behaviors. Initial studies found that negative parenting practices, specifically ineffective parenting, were associated with increased externalizing behaviors but only for those youth demonstrating low levels of C&U traits (Wootton, Frick, Shelton, & Silverthorn, 1997; Oxford et al., 2003). In contrast, for youth with elevated C&U traits parenting practices were not related to externalizing behaviors (Oxford et al., 2003; Edens et al., 2008), suggesting that development of externalizing behaviors in youth with increased C&U traits was independent of parenting quality (Wootton et al., 1997, Oxford et al., 2003). Similar findings have emerged for low parental warmth and parental coercion, showing that for youth with elevated C&U traits, parenting practices were not related to externalizing behaviors (Hipwell et al., 2007; Pasalich, Dadds, Hawes, & Brennan, 2011). However, initial studies, investigated only negative parenting practices. This is a significant limitation as positive parenting has been shown to be particularly important for youth with a fearless temperament (Kochanska, 1993; 1995; 1997), which is considered to be the underlying temperament in youth with increased C&U traits.

More recently, studies have looked at positive parenting and found that C&U traits interacted significantly with aspects of positive parenting in predicting lower levels of

externalizing behaviors (Pasalich et al., 2011; Kroneman, Hipwell, Loeber, Koot, & Pardini, 2011; Kochanska et al., 2013). For example, Kroneman and colleagues (2011) followed a sample of 1,223 youth from childhood to adolescence and found that parental warmth predicted a decrease in conduct disorder and oppositional defiant disorder symptoms for those high on C&U traits; this effect was less pronounced for those youth with low C&U traits. Similarly, Pasalich and colleagues (2011) found that for youth with increased C&U traits, maternal warmth was more strongly associated with fewer externalizing behaviors than for youth with low C&U traits and, moreover, suggesting that maternal warmth acted as a buffer against the development of externalizing behavior in those with high C&U traits. Most recently, Kochanska and colleagues (2013) found that for youth with elevated C&U traits, a close, warm, and mutually cooperative parent-child relationship significantly predicted decreased future CD and ODD symptom severity, but this association was not significant for youth with low C&U traits (Kochanska et al., 2013). Although these studies have added significantly to our understanding of associations between C&U traits, parenting and externalizing behaviors, they have also largely examined interaction effects, with C&U traits as a moderator.

However, there have been several studies that have shown that C&U traits may have an effect on parenting practices, which may lend support for examining C&U traits, as the youth driven effects aspect, within a developmental-contextual framework for development of externalizing behaviors. Several studies have shown that youth characteristics significantly contribute to the prediction of both positive and negative parenting practices (Latzman, Elkovitch, & Clark, 2009), and C&U traits specifically, have been found to uniquely account for changes in parenting practices over time (Hawes et al., 2011; Muñoz, Pakalniskiene, & Frick, 2011). In a mixed-gender sample of 100 children and adolescents assessed twice over the course

of one year, Muñoz and colleagues (2011) found that youth with high C&U traits had parents who reduced their monitoring behaviors and tended to be less stable in their surveillance efforts over time. Similarly, using a mixed-gender sample of 1,008 youth, Hawes and colleagues (2011) investigated the effect of C&U traits on various dimensions of parenting and found that C&U traits influenced changes in parenting practices such that parental involvement decreased and inconsistent discipline. Furthermore, Kimonis, Frick, and Barry (2004) found that negative parenting partially mediated the relationship between C&U traits and deviant peer affiliation. However, given the recent findings that various aspects of C&U traits have differential associations with external correlates (Latzman et al., 2013; Berg et al., 2013), it is also crucial to examine C&U traits individually in relation to parenting practices and externalizing behaviors.

To date, only one study has looked at parenting and individual C&U trait components. In a sample of 227 adjudicated male juvenile offenders, Kimonis and colleagues (2013) found a negative association between low maternal care and the Uncaring and Callousness components, but not Unemotional, even after controlling for childhood abuse and neglect. Specifically, youth who reported their mothers to be less warm, affectionate and involved in their lives, showed increases in lack of care about own performance and others' feelings and lack of empathy, guilt and remorse. Moreover, the Uncaring component accounted for the greatest amount of variance in the explanation of maternal care. Additionally, a significant interaction was found between maternal care and Callousness in predicting reactive aggression (provoked response to actual or perceived threat) such that aggression was highest among youth with high levels of C&U traits who were exposed to low levels of maternal care (Kimonis et al., 2013).

Although previous studies have added greatly to our understanding of C&U traits, some limitations should be noted. First, these studies have examined either, but not both, negative or

positive parenting practices. Nonetheless, *both* have been shown to influence externalizing behaviors (Loeber & Stouthamer-Loeber, 1986; Wasserman et al., 1996; Locke & Prinz, 2002), with positive parenting practices emerging as especially relevant for youth with increased C&U traits (Pardini et al., 2007; Hawes et al., 2011), suggesting the need to examine both simultaneously. Second, past studies have used a total score of externalizing or a DSM total symptom count, failing to distinguish between aggressive and non-aggressive rule breaking behaviors, which are empirically and theoretically distinct, thus possibly misrepresenting or obscuring and masking specificity in the findings (Burt, 2012a). Third, previous studies examined and/or reported C&U traits as a single unitary score rather than examining the various subcomponents, which has been repeatedly called into question for a number of reasons including that the use of a single score could obscure the specificity of C&U trait components' differential associations with external correlates (Kimonis et al., 2008; Decuyper et al., 2011; Litzman et al., 2013; Berg et al., 2013).

As reviewed earlier, child characteristics and parenting practices are both strong predictors of externalizing behaviors both of which are involved in a repeated complex interplay leading to the emergence and persistence of externalizing behaviors. With C&U traits now included in the *DSM-5* as a severity specifier of Conduct Disorder (APA, 2013), there is increased need and interest in understanding how they relate to parenting practices in the development of externalizing behaviors. As reviewed above, initial studies on C&U traits and parenting practices, specifically negative parenting, suggested that for youth with increased C&U traits, externalizing behaviors developed independent of parenting quality. Nonetheless, recent findings have shown that positive parenting may be particularly important for youth with increased C&U traits. Furthermore, although previous studies on C&U traits, parenting and

externalizing behaviors have looked at moderation effects, given the wealth of theoretical models supporting youth driven effects along with prior findings that parenting practices explain the association between temperamental fearlessness, which is considered to be the underlying mechanism for C&U traits, and externalizing behaviors, and recent findings on how C&U traits may influence parenting practices, it is likely that a mediation model may be more appropriate. The proposed study aims to contribute to and extend past research and address previous limitations.

1.6 Current Study

The current study leveraged an existing dataset of 174 mother-son dyads to fit a path model, from components of C&U traits and negative and positive parenting practices to aggressive and non-aggressive rule breaking behaviors. Furthermore, given that adolescence is a particularly crucial time period for investigating individual differences and contextual factors (Hill, 1980; Lerner, 1982; Arnett, 2000; 2004; 2012) and being a time of increased youth to parent effects (Pardini et al., 2008; Gross et al., 2008; Siegal, 1985), the current study investigated C&U traits, parenting and externalizing among adolescents. Using multiple informant data (parent and youth report), the current study contributes to the literature by addressing previous limitations, specifically, examining theoretically and empirically distinct dimensions of constructs that have previously been combined or excluded. Externalizing behaviors were examined as two correlated yet separate variables, aggressive and non-aggressive rule breaking behaviors, which decreases the possibility of obscuring or misinterpreting the results (Burt, 2012a). Data on parenting practices included both positive and negative practices as they have been demonstrated to have a differential direct effect on the development of externalizing behaviors (Petite et al., 1997; Locke & Prinz, 2002). In the current study, negative

parenting practices excluded corporal punishment because of reduced frequency of using corporal punishment with adolescents and reduced predictive utility (Frick et al., 1999; Wauchope & Strause, 1990; Straus & Steward, 1999; Straus, 2010), mixed and inconclusive meta-analytic findings on outcomes (Gershoff, 2002; Paolucci & Violata, 2004), and well-documented methodological issues assessing corporal punishment (Baumrind et al., 2002; Larzelere, 2000). Lastly, the current study examined C&U traits at the factor level to minimize the possibility of obscuring or missing the specificity of C&U traits to external correlates, as shown in previous studies (Latzman et al., 2013; Berg et al., 2013).

The current study used a developmental-contextual framework of externalizing behaviors to examine youth driven effects, which suggest that adolescents produce their own development by affecting parenting practices and behaviors in a negative way, which then provides the platform for the development of externalizing behaviors (Bell, 1968; Lerner, 1982). Additionally, drawing on recent findings showing how C&U traits influence changes in parenting practices over time (Muñoz et al. 2011; Hawes et al., 2011), the current study fit a hypothesized path model, whereby the relationship between C&U traits and externalizing behaviors is mediated by parenting practices. The current study puts forth several hypotheses regarding directionality and magnitude of the paths. Previous findings have shown that Callousness and Uncaring, but not Unemotional, predict decreases in positive parenting and increased negative parenting both concurrently and prospectively, with Uncaring showing a stronger association (Hawes et al., 2011; Muñoz et al., 2011; Kimonis et al., 2013). Furthermore, negative parenting has been found to evidence a strong positive association with aggressive behavior and low positive parenting has been found to be positively associated with non-aggressive rule breaking behaviors (Loeber et al., 1998; Wasserman et al., 1996; Locke & Prinz,

2002; Snyder & Patterson, 1987; Frick et al., 1992; Bailey et al., 2009; Beyers et al., 2003; Leve et al., 2005). It is therefore expected that Callousness and Uncaring would disrupt parenting practices by decreasing positive parenting and increasing negative parenting, which would in turn predict increased aggressive and non-aggressive rule breaking behaviors. This is consistent with previous findings showing that in samples of adolescent males and their mothers, greater externalizing behaviors over time were the result of youth-driven effects, which affected parenting practices and, in turn, lead to increased externalizing behaviors (Anderson et al., 1986; Olweus, 1980). Previous studies have also shown that Callousness, Uncaring and Unemotional are positively associated with non-aggressive rule breaking behaviors, with Uncaring showing the strongest association and Unemotional showing the weakest (Berg et al., 2013). Furthermore, Callousness and Uncaring were positively associated with aggressive behavior and Unemotional showing a negative association, with Uncaring being strongest (Berg et al., 2013). Based on these findings, it is hypothesized that the path from Uncaring to positive parenting and non-aggressive rule breaking behaviors would be stronger than the path from Callousness. It is expected that the path from Uncaring to negative parenting and aggressive behavior would be stronger than Callousness. Given that previous studies have found the Unemotional dimension to be negatively related to the temperament dimensions marked by negative emotionality (Essau, Sasagawa, & Frick, 2006; Decuyper et al., 2011), which is uniquely and positively associated with aggressive behaviors (Moffitt, 2003; Burt & Larson, 2007; Tackett, 2010a; Klahr & Burt, 2014), the current study hypothesized that Unemotional would negatively predict positive parenting and positively predict negative parenting, which would predict non-aggressive rule breaking behaviors, but not aggressive behaviors. The path from Unemotional would show the weakest magnitude compared to Uncaring and Callousness (Kimonis et al., 2013; Lutzman et al.,

2013). Results were expected to show mediation between aspects of C&U traits and aggressive and non-aggressive rule-breaking behaviors, explained by positive and negative parenting practices. That is, aspects of C&U traits would negatively affect parenting practices, which would in turn predict aggressive and non-aggressive rule breaking behaviors (See Figure 1 for complete hypothesized model).

The model included both youth- and parent-reported variables. Studies have shown that adolescents can reliably and validly report on parenting practices and their own function and behavior (Kamphaus & Frick, 2005). Youth-reported parenting practices were found to be more strongly associated with delinquency and conduct problems than parent-reported parenting practices. Specifically, youth reported low positive parenting such as positive reinforcement and parental involvement, was tied to youth report of aggressive and non-aggressive rule breaking behaviors, both concurrently and three years later (Barry, Frick, & Grafeman, 2008). Consistent with youth driven effects of the developmental-contextual framework stating that adolescents play an active role in their own development, the *perception* of their contextual environment, such as the parenting they receive, was more important as a predictor of outcomes than the actual parenting behaviors (Lerner, 1982; Siegal, 1985). Furthermore, due to the increased autonomy and decreased parental involvement in adolescence, youth know more about the behaviors they engage in and parents may not be as aware of the frequency or extent of their externalizing behaviors (Barry et al., 2008). However, unlike parenting practices and externalizing behaviors, C&U traits were measured by parent report, due to previous concerns that questioned the motivation of youth to underreport socially undesirable traits (e.g., Piacentini, Cohen, and Cohen, 1992). In addition to concerns with social-desirability effects, it has been suggested that individuals high on C&U traits may be deceitful in self-reports of these traits (Cleckley,

1941/1988), especially when possible consequences may be expected such as increased discipline. Thus, in the current study parenting practices and externalizing behaviors were measured using youth self-report, while C&U traits were measured using parent report.

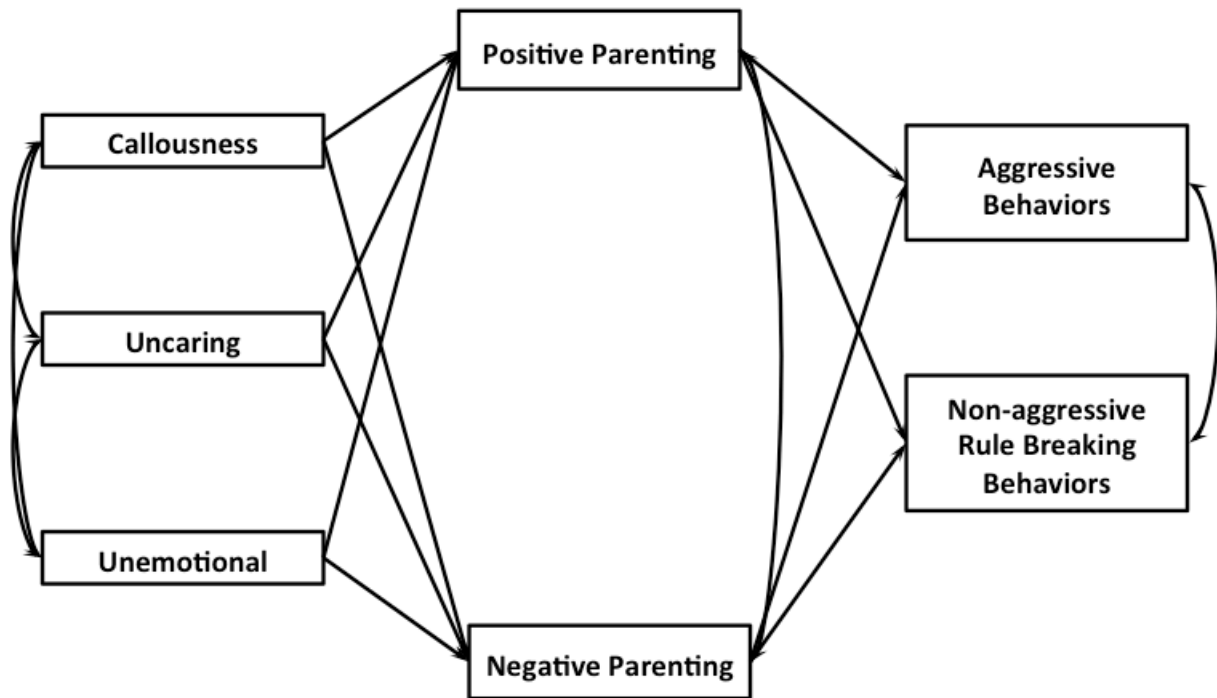


Figure 1: Hypothesized mediation model

Note. Hypothesized model includes paths where Positive and Negative parenting practices mediate the association between aspects of C&U traits (Callousness, Uncaring, and Unemotional) and Aggressive and Non-Aggressive Rule Breaking behaviors.

2 METHOD

2.1 Participants

The current study used secondary data from a sample of 174 pairs of adolescent males, ages 11-16 years old ($M_{age} = 13.64$, $SD = 1.35$), and their mothers, ages 30-59 years old ($M_{age} = 44.20$, $SD = 5.33$), who participated in the Iowa Youth Development Project (I-YDP), a larger study of predictive and protective developmental factors of adolescent psychopathology. Adolescent males were used for this study because they show higher rates of externalizing behavior, overall, than females (Cairns & Cairns, 1984; See Broidy et al., 2003 for review). Of the adolescents, 86.9% self identified as white, 4.5% as black, 2.8% as Hispanic, 2.3% as Asian, and 4.5% as other. On average, the families were in the upper middle class in education and income with 71.9% of the mothers having attained a 4-year degree or higher and 56.6% of the sample reporting over \$81,000 in annual household income. Approximately 81% of the mothers were still married to the father of the adolescent and 95.4% of the sample listed English as their native language. Overall, externalizing behaviors in the current sample were skewed, as it is a community sample, with only 3.4% of the sample reporting aggressive behaviors at the clinical level (T scores ≥ 70), and 3.0% of the sample reporting non-aggressive rule breaking behaviors at the clinical level (T scores ≥ 70). T-scores were computed using United States normative data for appropriate age and gender (Achenbach & Rescorla, 2001) and previously described methods (Achenbach & Rescorla, 2001; Ma, Han, Grogan-Kaylor, Delva & Castillo, 2012). The most frequently endorsed aggressive behaviors within the current sample were *arguing*, with 79.3% of adolescents reporting sometimes true or often true, and *being stubborn*, with 65.5% of adolescents reporting sometimes true or often true. The most frequently endorsed non-aggressive rule breaking behaviors within the current sample were *swearing or using dirty language*, with

59.7% of adolescents reporting sometimes true or often true, and *breaking rules at home, school, or elsewhere*, with 42.4% of adolescents reporting sometimes true or often true. Over 90% of participants responded not true to aggressive behaviors including *destroying own things and others' things, screaming a lot, threatening to hurt others* and *physically attacking others*. Similarly, over 95% of participants responded not true to rule breaking behaviors including *using drugs, using tobacco, running away from home, and cutting classes/skipping school*. The sample was representative of the regional population. Data were collected in 2007-2008.

2.1.1 Participant Recruitment

This study used varied recruitment techniques including fliers in the community, advertisements placed in the daily newsletter of the university hospital, and from the University Psychology Department child participant pool. To obtain a typically developing sample, exclusion criteria included mental retardation, autism spectrum disorder, neurological disorder, past head injuries requiring hospitalization, life-threatening medical illness, diagnosis of a reading disorder and/or having been held back a grade in school. Inclusion criterion included English proficiency. Exclusion/inclusion criteria were assessed via mother report during a telephone pre-screen interview.

2.2 Procedure

The University of Iowa's Institutional Review Board approved all study procedures and materials. Adolescents and their mothers came into the laboratory for a 3-hour data collection session. Prior to beginning the study procedures, informed consent and parent permission was obtained from the mothers and assent was obtained from the adolescents. All participants were informed of potential risks due to participation and were provided with local referral information. Participants agreed to be contacted for participation in a follow-up study. The adolescent boys

and their mothers were tested in separate rooms. A trained research assistant was available to answer questions during the administration. Participants were compensated monetarily.

2.3 Measures

2.3.1 *Callous & Unemotional Traits*

Mothers reported on their adolescent sons' levels of C&U traits using *The Inventory of Callous Unemotional Traits* (ICU; Frick, 2003). The ICU is a 24-item questionnaire designed to provide a comprehensive assessment of C&U traits. The ICU was derived from four of the original 6-item callousness subscale of the Antisocial Process Screening Device (ASPD; Frick & Hare, 2001), which has emerged as a distinct predictor of antisocial behavior in clinical and community samples of preadolescent and adolescent boys and girls (Frick, 2000; Pardini, Lochman & Frick, 2003). Participants rate how true a statement is for them on a 4-point Likert-type scale, ranging from 0=*Not at all true* to 3=*Definitely true*. The ICU has an equal number of positively and negatively worded items to reduce the possibility of response bias and consists of three factor analytically derived scales: Callousness (e.g. "Does not care who he/she hurts to get what he/she wants."), Uncaring (e.g. "Always tries his/her best," *reverse coded*), and Unemotional (e.g. "Does not show emotions to others."). The three scales can be combined to form a total C&U score. However, recent and growing evidence is demonstrating that using the total ICU score may obscure findings because the individual C&U trait components are differentially associated with external correlates (Kimonis et al., 2013; Latzman et al., 2013) and that some components, namely Unemotional, are shown to be less related to externalizing traits and more related to internalizing traits such as depression and anxiety (Latzman et al., 2013; Berg et al., 2013). The ICU has been validated for use with adolescents in community (Essau, Sasagawa & Frick, 2006) as well as adjudicated samples (Kimonis et al., 2008). The ICU has

shown good content, predictive and construct validity (Essau, Sasagawa & Frick, 2006) as well as good convergent validity with other measures of similar constructs (ASPD; YLS/CMI; Kimonis et al., 2008). In the current study this sample showed good internal consistency for mother report of C&U traits, with Cronbach's alphas of .73, .83, and .88 for Callousness, Unemotional an Uncaring, respectively (Latzman et al., 2013).

2.3.2 Parenting Practices

Adolescents reported on parenting behaviors using the Alabama Parenting Questionnaire Global Report Version (APQ; Frick, 1991, Shelton, Frick & Wootton, 1996). The APQ is a 42-item questionnaire assessing five dimensions of both positive and negative parenting practices and asked to rate how often each behavior occurs in the home on a 5-point Likert-type scale ranging from *1 = Never* to *5 = Always*. The five parenting domains assessed by the APQ are: Involvement (e.g., “You have a friendly talk with your mom”), Positive Parenting (e.g., “Your parents tell you that you are doing a good job”), Poor Monitoring/Supervision (e.g., “You stay out in the evening past the time you are supposed to be home”), Inconsistent Discipline (e.g., “Your parents threaten to punish you and then don't do it”), and Corporal Punishment (e.g., “Your parents hit you with a belt, switch, or other object when you have done something wrong”). However, for the current study, the Corporal Punishment scale was excluded from analysis. The corporal punishment scale has shown poor internal consistency in previous studies (Shelton et al., 1996; Frick et al., 1999), which is likely due to the scale consisting of only 3 items. Another issue with assessing corporal punishment is that parents, who use corporal punishment, tend to use one method (e.g. spanking with a hand), leading to poor inter-item correlation (Shelton et al., 1996). Furthermore, corporal punishment is mostly used with young children and significantly decreases in adolescence (Shelton et al., 1996; Frick et al., 1999;

Wauchope & Strause, 1990). Using a nationally representative sample of 991 parents, Straus and Steward (1999) found that 90% of parents of young children reported using corporal punishment as compared to 30% of parents of adolescents. In fact, it is so infrequent in adolescence, average of about 6 times per year (Straus & Stewart, 1999), that it's predictive utility decreases due to the restricted range (Frick et al., 1999). For example, in the current study, the ranges of total scores for the Involvement, Positive Parenting, Poor Monitoring/supervision, and Inconsistent Discipline APQ scales were between 17 and 32, whereas for the Corporal Punishment scale, the range was 6, thus providing additional support for excluding the Corporal Punishment scale from the model. Previous research has demonstrated that the five scales can be combined to form two overarching positive and negative scales by converting the subscales to z-scores and summing them (Frick et al., 1999; Frick et al., 2003; Shelton et al., 1996).

The APQ has been validated for use with adolescent community samples (Frick et al., 1999; Essau et al., 2006; Barry et al., 2008). The APQ scales have demonstrated good predictive validity in prediction of later conduct and delinquent behavior (Barry et al., 2008) as well differentiating between youth who were diagnosed with a disruptive behavior disorder and those who weren't (Shelton et al., 1996). Furthermore, it has shown good internal consistency, test re-test reliability and convergent validity with observations of parenting (Hawes & Dadds, 2006). Lastly, scores on the APQ were not related to scores of social desirability (Shelton et al., 1996). The APQ demonstrated good internal consistency previously with the current sample (Latzman et al., 2009). This measure was chosen because it was specifically designed to assess both positive and negative parenting behaviors that have been empirically linked to conduct problems (Loeber & Stouthamer-Loeber, 1986; Shelton et al., 1996). The current study had good internal

consistency for the overarching positive and negative parenting dimensions, with Cronbach's alphas of .84 for positive parenting and .81 for negative parenting.

2.3.3 Externalizing Behaviors

Adolescents reported on their level of externalizing behavior via the widely used *Youth Self Report* (YSR; Achenbach, 1991, 2001). The YSR is a 112-item questionnaire measuring various emotional and behavioral problems and has been validated for use with 11-18 year old community samples (Achenbach & Rescorla, 2001). The YSR has two syndrome dimensions, Externalizing and Internalizing. For the purposes of this study, only the dimensions of the Externalizing syndrome will be used in the analysis. The Externalizing dimension is comprised of two scales, Aggressive Behavior (AGG) and Rule-Breaking Behavior (RBB). Participants respond using a 3-point Likert-type scale ranging from 0=*Not true* to 2=*Very true or Often true*. Multiple psychometric studies of the YSR have demonstrated strong internal consistency, test-retest reliability, content and criterion validity (See Berube & Achenbach, 2002 for review) as well as discriminant and construct validity. The YSR demonstrated good internal consistency in the current sample, with Cronbach's alphas of .81 for Aggressive behaviors and .72 for Rule-Breaking behaviors.

2.4 Analysis

Descriptive statistics and zero-order correlations were conducted on all variables of interest. Variables were tested for assumptions of multivariate normality. Using path analysis, in Mplus (Muthén & Muthén, 2007) statistical package, the current study fit one hypothesized model controlling for significant covariates, where the path from C&U components to aggressive and non-aggressive rule breaking behaviors is mediated by positive and negative parenting. The model included three exogenous variables: Callousness, Uncaring, Unemotional, and four

endogenous variables: positive and negative parenting, aggressive and non-aggressive rule breaking behaviors (See Figure 1). Model fit was examined using multiple fit statistics including chi-square, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). If the model did not fit the data well, it was respecified using a theory driven approach, and by removing non-significant paths. The chi square difference test for MLR, which takes the scaling factor into consideration, was used to test whether the respecified model was significantly different in fit from the hypothesized model, and model fit was re-examined using multiple fit statistics. Significance of indirect paths was examined using the MODEL INDIRECT command in Mplus.

3 RESULTS

3.1 Preliminary Analyses

Descriptive statistics (see Table 1) and zero order correlations (see Table 2) were conducted on all variables, and were also used to identify covariates to be statistically controlled for in the model. When investigating potential demographic covariates, youth age was significantly correlated with non-aggressive rule breaking behaviors ($r = .31, p < .001$) and was included in the path model (see Table 2). All other possible covariates did not show significant correlations with any of the externalizing behaviors, thus youth race, mother's education, and household income were excluded from subsequent analyses, with correlations for AGG and RBB not being significant, $ps > .28, ps > .38$, respectfully. Regarding within construct associations, significant positive correlations emerged among all three C&U trait dimensions ($r = .27$ for Callousness-Unemotional, $r = .27$ for Uncaring-Unemotional, $ps < .001$), with the association between Callousness and Uncaring showing the strongest magnitude ($r = .72, p < .001$). Within the externalizing behaviors construct, AGG and RBB evidenced a moderate positive association ($r = .51, p < .001$). Positive parenting practices were significantly negatively correlated with negative parenting practices ($r = -.25, p < .01$).

Regarding between construct associations, significant positive associations emerged between all C&U trait dimensions and RBB ($rs = .21$ to $.35, ps < .01$) and AGG ($rs = .22$ to $.27, ps < .01$), with the exception of Unemotional and AGG ($r = .09, p = .22$). Furthermore, all three C&U trait dimensions were significantly negatively associated with positive parenting (Callousness: $r = -.29$, Uncaring: $r = -.33$, and Unemotional: $r = -.23, ps < .01$), and significantly positively associated with negative parenting (Callousness: $r = .21$, Uncaring: $r = .31$, and Unemotional: $r = .16, ps < .001$ to $< .05$). Moreover, positive parenting practices were significantly

negatively associated with RBB and AGG, with the strongest association being evident for positive parenting and RBB ($r = -.42$) with a weaker association for AGG ($r = -.27$), whereas negative parenting practices were significantly positively and moderately associated with both RBB and AGG, $r_s = .46, .43$, respectively.

To further examine the unique associations of individual C&U traits with externalizing behaviors and see the possible confounding effect of substantial overlap between Callousness and Uncaring ($r = .72, p < .001$), partial correlations were performed on the C&U trait dimensions. Individual partial correlational analyses were examined for the three C&U trait dimensions and AGG and RBB, while statistically controlling for the other two C&U dimensions (see Table 3). Results indicate that Callousness was uniquely associated with RBB ($r = .24, p < .01$), Uncaring was uniquely associated with AGG ($r = .16, p < .05$), and Unemotional was not significantly associated with either AGG or RBB ($r_s = .02-.12, p_s > .13$).

3.2 Path Model Predicting Externalizing Behaviors from C&U Traits and Parenting Practices

Prior to fitting the path model, variables were tested for multivariate normality using plots, histograms and descriptive statistics. Findings indicate that AGG, RBB, Callousness, and Unemotional were not normally distributed, with Callousness showing the largest skew (2.06) and kurtosis (7.10). Thus, maximum likelihood with robust standard errors (MLR) estimation was used for path analysis, as it is robust against, and the preferred technique for dealing with, non-normally distributed data, by applying correction to fit indices and standard errors, and taking into account skew and kurtosis.

Using path analysis, in Mplus (Muthén & Muthén, 2007), a hypothesized model was fit whereby the paths from Callousness, Uncaring, and Unemotional to AGG and RBB are mediated

by positive and negative parenting practices, while statistically controlling for youth age. Specifically, AGG and RBB were regressed on positive and negative parenting, the three C&U trait dimensions, and youth age. Positive and negative parenting practices were also regressed on the three C&U trait dimensions and youth age. Dimensions within each construct were set to correlate with each other. As noted earlier, indirect paths were examined using the MODEL INDIRECT command, specifying paths from each of the C&U trait dimensions to AGG and RBB, via positive and negative parenting practice. Fit indices indicated a good to adequate model fit, $\chi^2_M(3) = 6.13, p = .11$; RMSEA = .08 (CI: .00-.16); CFI = .99; SRMR = .03. The hypothesized model was respecified into a nested model using model trimming which removed non-significant paths of AGG on youth age and positive parenting on youth age in order to increase parsimony and sustain model fit. The chi square difference test for MLR indicated that there was not a significant change in fit between the two models ($\chi^2_D = 1.22, p > .10$), showing that the difference did not exceed the critical value of 5.99 for two degrees of freedom. Furthermore, the fit indices for the nested model demonstrated good model fit, $\chi^2_M(5) = 5.28, p = .38$; RMSEA = .02 (CI: .00-.11); CFI = 1.00; SRMR = .03. The respecified model was chosen as the final model because it was more parsimonious (after deletion of the non-significant paths), with similar or better fit as compared to the hypothesized model.

3.2.1 Direct effects of C&U traits and parenting on AGG and RBB

As shown in Figure 2, after controlling for variance accounted by the rest of the model, negative parenting practices significantly positively predicted AGG ($\beta = .32, t = 5.20, p < .001$), and positive parenting significantly and negatively predicted AGG ($\beta = -.16, t = -2.03, p < .05$). Similarly, after controlling for variance accounted by the rest of the model, negative parenting practices significantly positively predicted RBB ($\beta = .34, t = 6.20, p < .001$), and positive

parenting significantly and negatively predicted RBB ($\beta = -.26, t = -4.46, p < .001$). Furthermore, after accounting for youth age and the rest of the model Callousness significantly and positively predicted RBB ($\beta = .34, t = 3.14, p < .001$). In the explanation of parenting practices, after accounting for youth age and the rest of the model, only Uncaring significantly and positively predicted negative parenting practices ($\beta = .26, t = 2.51, p < .05$), whereas only Unemotional significantly and negatively predicted positive parenting practices ($\beta = -.19, t = -2.19.28, p < .05$).

3.2.2 Indirect effects of C&U traits on AGG and RBB through parenting practices

Upon examination of indirect effects and after controlling for variance accounted for the rest of the model, a significant indirect path emerged from Uncaring to AGG through negative parenting practices ($\beta = .08, t = 2.24, p < .05$). Similarly, a significant indirect path emerged from Uncaring to RBB through negative parenting practices ($\beta = .09, t = 2.34, p < .05$). Specifically, results demonstrate that negative parenting practices mediated the association between Uncaring and AGG and RBB, suggesting that increased Uncaring predicted a unique association in negative parenting, which in turn explained unique variance in AGG and RBB. Furthermore, after controlling for variance accounted by the rest of the model, a significant indirect path emerged from Unemotional to RBB through positive parenting practices ($\beta = .05, t = 2.09, p < .05$), showing that positive parenting practices mediated the association between Unemotional and RBB, suggesting that increased Unemotional predicted a unique association in positive parenting, which in turn explained unique variance in RBB. See Figure 2 for complete final model. The complete model accounted for 19% of variance in RBB and 39% of variance in AGG.

Table 1: Descriptive Statistics

	Mean	SD	Min/Max	Skew	Kurtosis.
Youth Age	13.64	1.35	11/16	-.02	-.72
Callousness	5.03	3.57	0/25	2.06	7.10
Uncaring	11.38	5.00	0/24	.16	-.47
Unemotional	5.87	2.98	0/15	.07	-.09
Pos. Par	3.58	.60	1.5/4.9	-.36	.24
Neg. Par	2.48	.60	.90/4	-.10	-.46
RBB	3.63	4.20	0/21	1.06	.98
AGG	5.82	3.22	0/20	1.70	5.05

Note. $N = 174$. SD=Standard Deviation; RBB=Non-aggressive rule breaking behaviors; AGG=Aggressive behaviors; Pos. Par=Positive Parenting; Neg. Par=Negative Parenting.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2: Bivariate correlations among C&U traits, parenting, and externalizing behaviors

	Youth Age	Callousness	Uncaring	Unemotional	Pos. Par	Neg. Par	RBB	Cronbach's α
Youth Age	-							
Callousness	0.03	-						.73
Uncaring	0.06	.72***	-					.88
Unemotional	.22**	.27***	.27***	-				.83
Pos. Par	-.011	-.29***	-.33***	-.23**	-			.84
Neg. Par	.32***	.21**	.31***	.16*	-.25**	-		.81
RBB	.32***	.35***	.24**	.21**	-.42***	.46***	-	.72
AGG	0.12	.22**	.27***	.09	-.27***	.43***	.51***	.81

Note. $N = 174$. RBB=Non-aggressive rule breaking behaviors; AGG=Aggressive behaviors; Pos. Par=Positive Parenting; Neg. Par=Negative Parenting.

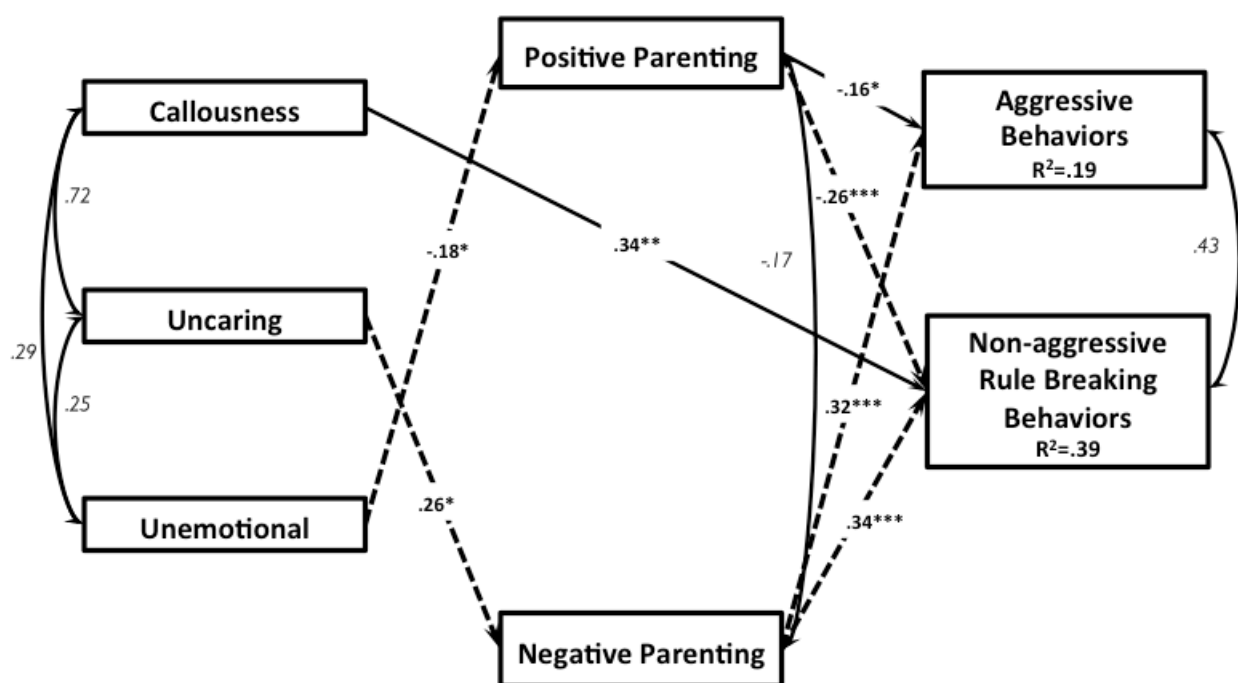
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3: Partial correlations among C&U traits and externalizing behaviors

	Callousness	Uncaring	Unemotional
RBB	.24**	-.01	.12
AGG	.03	.16*	.02

Note. $N = 174$. RBB=Non-aggressive rule breaking behaviors;
AGG=Aggressive behaviors.

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

**Figure 2: Complete final model**

Note. $N = 174$. Solid straight lines=significant direct paths; dashed lines=significant indirect paths; italicized=correlations. $X^2 = 5.28$ ($p = .38$); RMSEA = .02; CFI = 1.00; SRMR = .03

* $p < .05$, ** $p < .01$, *** $p < .001$.

4 DISCUSSION

Using a multiple informant sample of mother-son dyads, the current study aimed to address previous limitations by examining youth driven effect using a developmental-contextual framework to examine a mediation model where individual dimensions of C&U traits (Callousness, Uncaring, and Unemotional) and aggressive and non-aggressive rule breaking behaviors, are linked through positive and negative parenting practices. The findings of the current study extend previous work on C&U traits, parenting, and externalizing by investigating parenting practices as a mechanism for C&U traits and externalizing behaviors, demonstrate how C&U traits can fit within the developmental-contextual framework of development of externalizing behaviors, and have implications for clinical diagnosis, assessment, and treatment.

4.1 Bivariate Associations

The findings from the current study on within and between construct associations support previous research. Consistent with previous findings, all C&U trait dimensions were significantly correlated with each other (Berg et al., 2013; Roose, Bijttebier, Decoene, Claes, & Frick, 2010; Latzman et al., 2013), with Callousness-Uncaring showing the strongest magnitude and Uncaring-Unemotional showing the weakest magnitude (Latzman et al., 2013). Similarly, positive and negative parenting practices were negatively correlated, and AGG and RBB were moderately positively correlated, showing that direction and magnitude of inter construct correlations for the current study were consistent with previous findings and theory (Lovejoy and Weis, 1999; Bae, Hopkins, Gouze, & Lavigne, 2014; Moffitt, 2003; Tremblay, 2010; Burt, 2012a; Hyde, Burt, Shaw, Donnellan, & Forbes, 2015). Out of all potential demographic variables that could be included as covariates in the analyses, only youth age was significantly associated with externalizing behaviors, specifically, older adolescents reported increased

engagement in RBB. This finding is consistent with previous studies and conceptualizations of RBB (Loeber et al., 1998; Tremblay, 2003, 2010; Niv et al., 2013), which state that RBB increases in adolescence and is partly due to less adult supervision.

Results of between-construct associations, looking at individual dimensions as opposed to single scores, were also consistent with past findings and support breaking down multidimensional constructs into their related yet distinct dimensions. The current results indicated that all three C&U trait dimensions (Callousness, Uncaring, and Unemotional) were positively associated with RBB, and all but Unemotional were also positively associated with AGG. These findings are consistent with previous research, which found parent-reported Callousness and Uncaring to have strong positive associations with AGG and RBB (Berg et al., 2013; Kimonis et al., 2013), and also support the use of C&U traits to predict increased externalizing behaviors. These findings are also consistent with recent investigations into the structure and associated constructs of the ICU, which have repeatedly found that dimensions of the ICU C&U traits, which are supposed to be separate but correlated with a general callous-unemotional higher-order factor, are differentially associated with external correlates (Berg et al., 2013; Kimonis et al., 2013; Litzman et al., 2013). The primary example is that while dimensions of Callousness and Uncaring show positive associations with externalizing behaviors, Unemotional tends to be less or not associated with externalizing, but rather is related more to internalizing constructs (Litzman et al., 2013; Essau et al., 2006; Decuyper et al., 2011; Kimonis et al., 2013). Because of the high correlation between Callousness and Uncaring, partial correlation analyses were conducted to examine the unique associations between the individual C&U trait dimensions and externalizing behavior, while eliminating the variance from the other

dimensions, as all three are regarded as distinct parts of a single higher order dimension (Frick et al., 2003).

Results of partial correlations demonstrate that although Callousness and Uncaring were highly correlated, they show specificity in their relation to externalizing behaviors. A significant unique association emerged between Callousness, defined as a lack of empathy and guilt, and RBB, as well as between Uncaring, defined as lack of care about others' feelings, and AGG. This specificity is supported by previous work showing that although Callousness and Uncaring are correlated, Callousness is more strongly associated with behavior problems, while Uncaring is more strongly associated with low prosocial behaviors (Hawes et al., 2014). Partial correlation analyses also demonstrated that Unemotional was not associated with either AGG or RBB, which offers further support to examining C&U traits as individual dimensions rather than a single score (Latzman et al., 2013). Furthermore, results of the partial correlation analyses also contribute additional evidence showing that the Unemotional dimension is less or unrelated with externalizing behaviors (Berg et al., 2013), and may be a construct that is distinct from other C&U trait dimensions (Kimonis et al., 2013; Hawes et al., 2014). In fact, a recent study by Hawes and colleagues (2014) found that parent reported C&U traits are modeled better using a two-factor solution, with the two factors representing the Callousness and Uncaring dimensions. The two-factor solution was also replicated in another study examining parent reported C&U traits (Waller et al., 2014), as well as youth self-report of C&U traits (Houghton, Hunter, & Crow, 2013), providing further evidence for examining C&U traits separately and that Unemotional may be a distinct construct. Indeed, Unemotional items tend to measure the lack of expressed or overt emotion (e.g. *"I do not show my emotions to others"*), rather than the internal *experience* of emotion, which is conceptualized as a central feature of C&U traits (Frick &

White, 2008; Frick et al., 2014). Using the Unemotional dimension to assess C&U traits may be problematic with adolescents who have a trauma history and tend to conceal their emotions (Berg et al., 2013; Kerig & Becker, 2010; Lutzman, Malikina, Hecht, Lilienfeld, & Chan, 2015).

In regards to associations between dimensions of C&U traits and parenting practices, results of the current study support and extend previous work. Prior research has shown that total C&U traits are positively related to negative parenting (Hawes et al., 2011; Muñoz et al., 2011; Fanti & Centifanti, 2014) and negatively related to positive parenting practices (Pardini et al., 2007; Pasalich et al., 2011; Fanti & Centifanti, 2014). However, as stated above, given that individual C&U trait dimensions show differential associations with external correlates, they should also be investigated individually along with parenting practices. To date, only one study has examined individual dimensions of C&U traits and parenting practices. Kimonis and colleagues (2013) found that positive parenting, specifically maternal warmth and affection, was negatively associated with Uncaring and Callousness, with the strongest magnitude emerging for Uncaring. Similarly, the current study found that all three C&U trait dimensions were significantly and negatively associated with positive parenting and positively associated with negative parenting, with Uncaring showing the strongest and Unemotional showing the weakest magnitude for both dimensions of parenting practices.

4.2 Path Model Predicting Externalizing Behaviors from C&U Traits and Parenting Practices

Overall, the model demonstrated that the association between C&U traits and externalizing behaviors is explained through parenting practices, with the full model explaining 19% of variance in RBB and 39% of variance in AGG. The findings also showed specificities in this association. The results indicate that negative parenting partially mediated the relationship

between uncaring and RBB and AGG, after controlling for variance accounted for by the rest of the model. These findings suggest that increased parent ratings of lack of caring for the feelings of others in adolescents explained unique variance in increased youth report of negative parenting practices, which then explained unique variance in increased self reported AGG and RBB by youth. These findings are consistent with previous research showing C&U traits predicted increases in negative parenting practices (Hawes et al., 2011; Muñoz et al., 2011), and that negative parenting practices predicted an increase in AGG and RBB (Locke & Prinz, 2002), although previous studies have not examined these in a single model. These results fit within the developmental-contextual framework and are consistent with previous work in youth driven effects with traits and diagnoses that have similar underlying temperament as C&U traits (e.g. aggression, CD, ADHD; Anderson et al., 1986; Olweus, 1980; Ambert, 2001; Barker et al., 2011; Kaiser et al., 2012), showing that youth characteristics, particularly C&U traits, disrupt parenting practices by increasing negative parenting, which then predicts an increase in AGG and RBB. It is possible that increased negative and decreased positive parenting practices are the result of increased parenting-associated stress relating to feelings of decreased attachment (Fite, Greening & Stoppelbein, 2008) and increases in negative parent-to-child affect over time, which has been reported by parents of youth with high C&U traits (Tuvblad, Bezdjian, Raine, & Baker, 2013). Surprisingly, the current study did not find that positive parenting mediated the association between Uncaring and externalizing behavior, which is inconsistent with the only previous study that looked at individual C&U trait dimensions and parenting and found that Uncaring uniquely predicted decreases in positive parenting practices (Kimonis et al., 2013). However, Kimonis and colleagues (2013) measured positive parenting practices and accounted for a history of various childhood maltreatment, not examining specific negative parenting

practices, which when included in the model along with positive parenting, may show that the increased negative feelings that parents have about their attachment and negative affect toward their children are truly responsible for the association between Uncaring and externalizing behaviors.

Results of the current study showed that positive parenting partially mediated the relationship between Unemotional and RBB. Specifically, parental ratings of adolescents' constricted affect, or lack of emotional expression, explained unique variance in youth ratings of decreased positive parenting, which in turn explained unique variance in increased youth reported RBB, but not AGG. These findings are consistent with previous work on overall C&U traits, which showed that parents of youth with high C&U traits tended to withdraw parental involvement (Hawes et al., 2011), and that low positive parenting has been found to be positively associated with RBB (Loeber et al., 1998; Wasserman et al., 1996; Locke & Prinz, 2002; Snyder & Patterson, 1987; Frick et al., 1992; Bailey et al., 2009; Beyers et al., 2003; Leve et al., 2005). This could be explained by the fact that youth who are high on Unemotionality display fewer emotions, and if parents observe that their children are not showing positive emotions, parents may reduce their efforts in using positive parenting behaviors as their efforts are not being reciprocated. Results of the current study are also consistent with previous work on Unemotional and AGG, showing that Unemotional evidenced a negative association (Berg, et al., 2013) or was not at all associated (Essau et al., 2006; Decuyper et al., 2011; Kimonis et al., 2013) with AGG. Furthermore, previous research on AGG has found that AGG is uniquely and positively associated with negative emotionality (Burt & Larson, 2007; Tackett, 2010a; Moffit, 2003) and affect dysregulation (Verona, Patrick, & Lang, 2002; Burt, 2012a), whereas previous findings on C&U traits found that Unemotional was not or negatively associated with negative emotionality

and emotional dysregulation (Essau et al., 2006; Decuyper et al., 2011). Thus, because AGG is related to negative emotions, and because Unemotional is characterized by constricted affect, meaning that youth who are high on Unemotional tend to not experience and/or display low lows, high highs, or drastic affective changes, it would not be expected to be associated with AGG. Furthermore, previous research on C&U traits has shown that youth with increased C&U traits who engage in aggressive behaviors often use these behaviors in instrumental ways rather than reacting emotionally (Frick & White, 2008), which supports the lack of significant findings between increased lack of emotional expression and AGG. Results of the partial correlations for the current study also support the lack of a significant finding between Unemotional and AGG, showing that once the shared variance of Callousness and Uncaring was removed, Unemotional was not significantly associated with AGG ($r = .02$), a finding that may have been masked in studies using a single C&U trait score. However, there may be other potential explanations for the partial mediation by positive parenting on the association between Unemotional and RBB, as well as the lack of a uniquely significant association between Unemotional and externalizing behaviors in the partial correlation analysis.

As described earlier, unlike Callousness and Uncaring, the ICU Unemotional dimension has been shown to be less related to externalizing behavior and more to constructs representative of internalizing behaviors (Latzman et al., 2013; Berg et al., 2013). Indeed, previous findings have found adolescent internalizing behaviors, such as depression, to be negatively associated with positive parenting practices (Finkenauer, Engels & Baumeister, 2005). Recent studies examining the ICU factor structure have shown that Unemotional may be a distinct construct from the rest of the C&U dimensions (Kimonis et al., 2013; Hawes et al., 2014), as they tend to measure a lack of emotional expression rather than lack of experienced emotion, and that a two-

factor model seems to fit the data better, with items mapping onto the Callousness and Uncaring factors (Hawes et al., 2014; Waller et al., 2014).

Contradictory to predictions, Callousness was the only C&U trait dimension that had a direct effect on externalizing behaviors, specifically RBB, and was not mediated by either positive or negative parenting practices. This is surprising given that in previous research Callousness was strongly associated with AGG and RBB (Berg et al., 2013; Kimonis et al., 2013), and that C&U traits were associated with negative parenting practices (Hawes et al. 2011, Muñoz et al., 2011), with Callousness, specifically, showing a unique association with low positive parenting practices (Kimonis et al., 2013). There are several potential reasons why the current study did not find a significant effect of parenting practices on association between C&U traits and externalizing behaviors. First, previous studies looked at C&U traits using a single score (Hawes et al. 2011, Muñoz et al., 2011), possibly obscuring specific contributions of individual C&U traits. Second, Callousness and Uncaring were highly correlated ($r = .72$), and may be tapping into shared variance. However, previous studies also found Callousness and Uncaring to be highly correlated ($r = .66$; Roose et al., 2012), and similarly, despite the high correlation showed unique associations with external correlates for Callousness and Uncaring. Third, once the overlap between Callousness and Uncaring was accounted for, Callousness showed a unique, strong, association with conduct problems, while Uncaring was uniquely associated with low prosocial behaviors (Hawes et al., 2014), which may explain Callousness having a direct effect on externalizing in the current study. Fourth, IRT analyses of the parent version of the ICU showed that items from the Callousness factor discriminated at the higher end of the C&U construct continuum, while items from the Uncaring factor discriminated at the lower end of the C&U continuum (Hawes et al., 2014; Kimonis et al., 2013), suggesting that if

this study was replicated using a clinical or adjudicated sample, results may be more in line with expected hypotheses. Lastly, Callousness is characterized by lack of guilt and remorse and parents may not change their parenting practices once they see that youth are not responding to discipline and/or punishment efforts, as youth with increased C&U traits have shown to be non responsive to punishment cues (Dadds & Salmon, 2003). Taken together, the existing literature and theory, and the results of the current study, suggest that parenting practices explain unique variance in the association between aspects of C&U traits and externalizing behaviors and demonstrate specificities within these associations.

4.3 Limitations and Future Directions

The findings of the current study should be considered carefully in light of several limitations. The first limitation of the current study is the cross-sectional design. Although the current investigation examined a mediation model, findings should not be interpreted as causal because cross-sectional design does not allow for autoregressive effects of the independent variables (Gollob & Reichardt, 1987). Additionally, cross-sectional data does not allow for establishing a temporal sequence. There are some recent studies on C&U traits that suggest a bidirectional relationship between C&U traits and parenting in the development of externalizing behavior (Hawes & Dadds, 2011; Tuvblad et al., 2013; Waller et al., 2014). For example, using a longitudinal cross-lag design, Tuvblad and colleagues (2013) found that psychopathic personality traits in youth ages 9-10 evoked negative parenting practices at age 14-15, and that parenting practices at age 9-10 contributed to increased C&U traits at age 14-15. Moreover, similar bidirectional effects were shown in youth with a fearless temperament (Barker et al., 2011), which can serve as a precursor to the development of C&U traits. Future studies using a longitudinal and cross-lag design could potentially address questions surrounding temporal

sequence, bidirectional effects, and see how C&U traits affect changes in parenting practices and externalizing behaviors over time.

The second limitation of the current study is the use of a homogeneous sample of mothers and their adolescent sons, with the majority of participants coming from a similar background, socioeconomic level, and education. More research is needed to investigate if the current findings generalize to other populations (e.g. females, various ethnic or cultural groups). For example, boys tend to score higher on C&U traits than girls (Viding et al., 2009), especially as they relate to externalizing behaviors (Moran et al., 2008), engage in more externalizing behaviors than girls (Moffitt, 1993, 2003; Broidy et al., 2003), and girls are more likely to use relational aggression than overt forms of externalizing behaviors such as AGG and RBB (Bjorkqvist, Lagerspatz, & Kaukainen, 1992). Moreover, including fathers' data in the model, may affect the pattern of findings, as previous studies have shown that youth tend to be closer to and have more conflict with mothers than fathers (Patterson et al., 1992).

The third limitation of the current study is the inability to assess harsh discipline as negative parenting practices. The limitation of the parenting measure used in the study is that it only assesses corporal punishment, not harsh verbal discipline. However, because the use of physical punishment was very low in the current sample, physical punishment decreases significantly in adolescence (Straus & Steward, 1999; Gershoff, 2002; Frick et al., 1999; Wauchope & Straus, 1990), and as it is often confounded with abusive behaviors (Baumrind, Larzelere, & Cowan, 2002; Larzelere, 2000), it was excluded from analyses, leaving the question of harsh punishment not addressed. Future studies should select parenting measures that are age appropriate and also measure all forms of negative parenting practices.

4.4 Implications and Conclusions

The findings of the current study bear several important implications, including extending the literature on externalizing behavior, fitting C&U traits within a developmental-contextual framework, contributing to further revisions of the *DSM*, as well as use in clinical conceptualization and treatment. First, the findings are consistent with previous work on youth driven effects of the developmental-contextual framework for the development of externalizing behaviors, which states that youth affect their own development by disrupting parenting practices and behaviors that then create a platform for the development of externalizing behaviors (Bell, 1968; Lerner, 1982). Results from the current study extend previous work on the developmental-contextual framework by demonstrating how C&U traits can fit within the framework to predict externalizing behaviors, such that youth with increased C&U traits affect changes in both positive and negative parenting practices, which in turn predict increases in externalizing behaviors. However, current findings should be interpreted within the full context of the developmental-contextual framework, which includes transactional relationships between youth characteristics, parent characteristics and practices, and other environmental variables that affect development (Patterson, 1982; Lerner, 1982; 1997; Belsky, 1984; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Scarr, & McCartney, 1983; Magnusson, 1995), meaning that there are other variables that contribute to changes in parenting practices and the development of externalizing behaviors, in addition to youth driven effects. For example, youth's association with deviant peer groups may also contribute to the development of externalizing behaviors (Patterson et al., 1992). Furthermore, studies have shown that youth's peers also have an effect on parenting behaviors (Amber, 2001). Overall, the development of externalizing behavior can be conceptualized from the *combination* of multiple risk factors including, individual

characteristics of youth and parents, deviant peers, poverty, unstable neighborhoods and unsafe communities, and abuse (Farrington, 1995).

Another contribution of the current study is addressing previous limitations by investigating the multidimensional constructs of C&U traits, parenting, and externalizing behaviors separately, which have been, more often than not, examined unitarily (Burt 2012a), and is a strength of the current study. The current study demonstrated that although dimensions within constructs were correlated with each other, they had differential associations with external constructs and demonstrated specificity within the model. For example, in the current study Callousness and Uncaring were highly correlated, however, after accounting for shared variance, as seen in the partial correlation analyses and mediation model, Callousness and Uncaring uniquely contributed to AGG and RBB, providing more evidence for studying C&U traits individually (Berg et al., 2013; Latzman et al., 2013; Kimonis et al., 2008; Decuyper et al., 2011), and more support for distinguishing between Callousness and Uncaring. Furthermore, the current study supports previous evidence that the Unemotional dimension may be distinct from other C&U traits (Berg et al., 2013; Latzman et al., 2013; Kimonis et al., 2013; Hawes et al., 2014; Waller et al., 2014), as it tends to measure a lack of expressed emotion rather than the experience of emotion, tends to be less correlated with externalizing behaviors, and more correlated with internalizing constructs (Berg et al., 2013).

The findings also raise important questions regarding clinical diagnoses and treatment. Callous and unemotional traits are now included in the newly revised *DSM-5* as a severity specifier for CD. However, it may not help the heterogeneity problem it was meant to address, because youth with increased C&U traits do not all have the same presentation and may differentially engage in various externalizing behaviors. In contrast, youth may present with

similar C&U presentation, but have different underlying etiology, engage in different behaviors, and have different responses to treatment. For example, evidence has emerged showing that youth who are exposed to chronic trauma or stress, may numb their emotional response as a way of coping, which when extended over time, may develop into a callous interpersonal style and engagement in externalizing behaviors (Kerig & Becker, 2010; Kimonis et al., 2013; Lutzman et al., 2015), and may benefit from interventions that integrate trauma-focused components into treatment planning (Kerig, 2012; Kerig & Becker, 2010). Furthermore, assessing C&U traits separately, as well as parenting practices, may suggest an increased risk for potential development of AGG or RBB, and inform prevention planning. Similarly, assessing individual youth C&U traits and externalizing behaviors, clinicians may target specific parenting behaviors in parent/family training multicomponent treatments. These specific distinctions are important for developing solid case conceptualizations and appropriate treatment. Further revisions to the *DSM* may want to consider the specific C&U trait presentation, and based on current findings, the C&U trait presentation may have different potential risks associated with them, and help to select more effective treatments.

The most effective interventions for reducing conduct problems in youth tend to be less effective (and in some cases harmful) to youth with increased C&U traits (Frick, 2001) and have begun to incorporate various parent training techniques into treatment, however, the most effective interventions for youth with high C&U traits appear to be those that focus on personalized treatment accounting for individual processes (Waller et al., 2013). Current findings may aid in identifying specific behaviors that need to be addressed or types of parenting interventions that would be most effective, concordant with the type of C&U trait presentation youth are exhibiting. Although research on effective treatment of youth high on C&U traits and

externalizing behavior is scarce, there have been some promising studies showing that positive parenting practices incorporated into treatment can be effective in decreasing externalizing problems (Frick et al., 2003; Pardini et al., 2007), as well as utilizing multicomponent treatment approaches (Hawes & Dadds, 2005). See Waller and colleagues (2013) for review of treatment studies examining C&U traits, parenting practices, and externalizing behaviors. Although more research is needed to identify how C&U traits and parenting practices contribute to the development of externalizing behaviors, it is the hope that the current study can aid in beginning to disentangle these multidimensional constructs.

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