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Callous-Unemotional Traits and Empathy as Unique Contributors to Functioning in Maltreated Youth

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ABSTRACT OF THE THESIS

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Professor Jodi Quas, Chair

Callous-unemotional (CU) traits have consistently been linked to severe and persistent patterns of antisocial and aggressive behavior in adolescents. Though a lack of empathy has often defined CU traits, placing these constructs at opposing ends of the same continuum, there is reason to suspect that CU traits and empathy are not only unique constructs, but also relate to different outcomes. The present study sought to unpack CU traits and empathy in a more systematic manner, examining their unique contributions to externalizing behaviors, internalizing symptoms, and prosocial tendencies in a group of high-risk adolescents. We asked maltreated (n=92) and community-matched (n=75) 12 to 17 year-olds about their emotional and behavioral functioning. Maltreated youth reported higher levels of CU traits but did not differ from community youth on cognitive or affective empathy. Additionally, CU traits and empathy were related to unique forms of functioning – CU traits with externalizing behaviors, affective empathy with internalizing symptoms, and both with prosocial tendencies. Findings offer unique insight into the relations among CU traits, empathy, and adolescents' functioning. Implications for interventions and potential directions for future work are discussed.

INTRODUCTION

Over the past few decades, considerable attention has been devoted to the study of callous-unemotional (CU) traits, particularly in highly vulnerable populations of youth, such as those engaged in delinquent or other high-risk behaviors. Much of this attention derives from evidence that CU traits reflect core deficits in socio-emotional functioning, deficits that underlie severe and persistent patterns of antisocial behavior (Frick & White, 2008). Among the defining features of CU are a lack of guilt or remorse regarding one's own actions, an absence of concern for others' feelings and dampened responses to distress in others (Frick, 2009; Kimonis, Frick, Munoz, & Aucoin, 2008). These low levels of guilt and concern about others have often been labeled as a lack of empathy, leading to a potential assumption that CU and empathy reflect opposite ends of a singular continuum.

However, in largely separate literatures, empathy has been unpacked into different components or dimensions, each with their own constellations of defining features and behavioral correlates. While some work has considered the overlap of these components of empathy with CU traits (e.g., Anastassiou-Hadjicharalambous & Warden, 2008), how they each uniquely predict subsequent behaviors have rarely been the focus of direct empirical attention. Such was the purpose of the present study. Our specific goals were threefold. First, we sought to investigate whether CU traits were distinct from the two commonly identified dimensions of empathy: cognitive, or the capacity to *comprehend* the emotions of others (Hogan, 1969), and affective, or the capacity to *experience* the emotions of others (Bryant, 1982). And second, we tested whether CU traits and cognitive and affective empathy were differently related to behavioral outcomes. We

examined externalizing behaviors, internalizing symptoms and prosocial tendencies. Externalizing behaviors have been most frequently linked to high CU traits, making them of particular importance. Internalizing symptoms, though less frequently studied, often co-occur, making them also of interest. And finally, prosocial tendencies were included given strong theoretical evidence linking them to heightened empathic tendencies. We carried out this research in two groups of adolescents that vary in their likely levels of CU traits and empathy, focusing on this age group given that this period is marked by an increased importance of interpersonal relationships (Hill & Holmbeck, 1986). One group was comprised of adolescents at high risk for CU, namely those who have been exposed to maltreatment, and the other was a relatively lower risk community-matched comparison group of adolescents.

CHAPTER 1

CU Traits and Empathy

Definitions. Before turning to how CU traits and empathy may operate in higher- and lower- risk adolescents, and how they may be linked to functioning, we provide clear definitions and defining attributes as a foundation. CU traits tap into the affective features of psychopathy and are characterized by a lack of guilt or remorse, an absence of concern for others' feelings, superficial or shallow expression of emotions, and reduced reactivity to emotion (Frick, 2009; Kimonis et al., 2008). Individuals high in CU traits, from adolescence into adulthood, exhibit active disregard for others in distress, often showing dismissiveness or hostility (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000). Compared to those low on CU traits, these individuals report more deviant value structures, including the belief that aggression and revenge are acceptable tools to obtain goals (Pardini, 2011; Stickle, Kirkpatrick, & Brush, 2009). Most importantly, these characteristics appear in those who have CU traits in particular, not just those with conduct problems or antisocial behaviors, indicating their specificity to the construct of CU traits.

While often included as a defining feature of CU traits, empathy has its own unique features. Empathy has been distinguished into two components: cognitive empathy, the capacity to comprehend the emotions of others (Hogan, 1969), and affective empathy, the capacity to experience emotions congruent to others' (Bryant, 1982). The cognitive component is most commonly associated with perspective taking, emotion understanding, and empathic concern, while the affective component is more often associated sympathy and affect matching (Cuff, Brown, Taylor, & Howat, 2016). Both

have been linked to unique forms of functioning, and are only moderately correlated on self-report measures of empathy (Jolliffe & Farrington, 2006).

Maltreatment. While both CU traits and empathy have genetic components, experiences also shape their emergence. Most notable, especially for CU, are early experiences extreme adversity, particularly exposure to child maltreatment (Byrd, Hawes, Loeber, & Pardini, 2018; Kimonis, Fanti, Isoma, & Donoghue, 2013). That is, evidence consistently reveals that children (as well as adolescents and adults) with a history of maltreatment are at increased risk for the development of CU traits. Similar associations between maltreatment and low empathy have been reported at times, although less work has been devoted to this relation and their precise links have varied depending upon the dimension of empathy being considered.

There are multiple reasons why maltreatment puts youth at risk for increases in CU traits and concurrent decreases in both cognitive and affective. Maltreating parents, for instance, tend to use power-assertive parenting techniques or harsh punishment as discipline, which fail to help children learn appropriate ways of engaging with and responding to others. Maltreating parents also model aggression as a way of controlling children, leading to perceptions that aggression and power are appropriate ways of engaging in social interaction. As a result of these parenting practices, children may develop hostile attitudes or deviant value structures found in those with high CU traits (Pardini & Loeber, 2008). Furthermore, over time, youth likely learn to discount and ignore emotional cutes, given that they do not consistently signal useful information, and may eventually actively dismiss others' emotions. These parenting tactics may also contribute to the abnormal development of empathy – they do not provide any guidance

or support for inductive reasoning about emotions that would help promote sympathy and empathy (Carlo et al., 1999; Krevins & Gibbs, 1996). Maltreating parents also have poor communication with their children, especially regarding emotions. They often fail to label or discuss emotions with their children, and instead discount or ignore their children's emotional experiences (Rogosch, Cicchetti, Shields, & Toth, 1995). Children, therefore, have a reduced understanding of and ability to identify emotions in themselves or others (Pollak, Cicchetti, Hornung, & Reed, 2000). This foundational knowledge of emotions, however, is key to empathy, both cognitive and affective: that is, emotions in others need to be recognized in order to experience or comprehend another's emotion. Finally, maltreating parents are lower on empathy and higher on CU traits themselves, limiting the indirect modeling that supports positive development (Bavolek, 1989; MacKenzie, Kotch, & Lee, 2011).

Abnormal development of CU traits and empathy may also emerge from an inability to cope with the experience of maltreatment and the associated home environments. In response to trauma, violence, or abuse, especially that which is unpredictable, youth may utilize numbing or emotional detachment as methods of self-protection (Spiegel & Cardena, 1991; Milojevich, 2018). These tendencies, in turn, often present as callousness. Furthermore, because of the traumatic input youth receive in their homes, low affective empathy in particular may act as an adaptive difference for these youth, who would otherwise experience more negative and stressful emotions as a result of this affective component of empathy.

In summary, there is consistent evidence not only for maltreatment placing youth at high risk for CU, but also for lower levels of empathy. Whether high levels of CU

traits in maltreated youth account for differences in empathy, or whether the constructs operate separately, is not known. For instance, low empathy may develop into CU traits, such that, over time, CU consumes differences in empathy.

Impact on Functioning in Maltreated Youth

As mentioned, a primary reason why CU traits have received so much attention stems from evidence that youth high in CU engage in a range of maladaptive behaviors. Such is increasingly true when adolescents, as opposed to younger children, are considered and when externalizing behaviors are examined. Adolescents with high CU traits, for example, exhibit high levels of both instrumental and proactive aggression, and other forms of antisocial behavior, even when compared to youth with other types of conduct problems (e.g., Frick, Cornell et al., 2003). Moreover, these maladaptive behaviors are fairly stable over time, extending into adulthood (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Rowe et al., 2010). High CU traits place adolescents at risk for externalizing behaviors generally, and this risk might be particularly salient for maltreated youth specifically. Maltreated youth already display a range of maladaptive behaviors, receive little parental input about emotion, and have learned via modeling that these maladaptive behaviors are acceptable forms of engaging with others. Furthermore, maltreated youth do not have the coping skills that would support more adaptive development in the face of social and emotional challenges (Kim & Cicchetti, 2010)

CU traits also place youth at risk for internalizing symptoms, although the patterns are not as robust as for externalizing symptoms. Some studies, for example, have reported positive relations between CU traits and internalizing symptoms (Essau,

Sasagawa, & Frick, 2006) while others report no relation (Pardini & Loeber, 2008). Few, however, have assessed CU traits and internalizing symptoms in maltreated youth. Though not CU traits per se, some research on the global construct of psychopathic traits suggests the relation between CU traits and internalizing symptoms may differ in maltreated relative to other youth. However, among adolescents high in psychopathic traits, which includes components of CU traits, those with a history of child abuse have higher levels of depression, anxiety, and suicidal ideation than those with no such history (e.g., Kimonis, Skeem, Cauffman, & Dmitrieva, 2011). Maltreated youth, who likely develop high CU traits in response to their experiences of maltreatment, may retain some forms of emotional processing that may make them more susceptible to internalizing symptoms. Such youth, for instance, are more engaged by distress than non-maltreated youth with high CU traits (Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012).

Finally, CU traits not only place youth at risk for maladaptive behaviors but may also reduce youth's tendency to engage in prosocial behaviors (Barker, Oliver, Viding, Salekin, & Maughan, 2011; Meehan, Maughan, Cecil, & Barker, 2017; Moran et al., 2009). The lack of concern for others that is characteristic of those high in CU traits is in direct opposition to the helpfulness and caring associated with prosocial tendencies. In fact many conceptualize CU traits as being the opposite of prosocial behavior, with some indexes using low prosocial behavior as a proxy for callousness (e.g., Truedsson, Fawcett, Wesevich, Gredebäck, & Wåhlstedt, 2019). It is not clear whether the negative relations between CU traits and prosocial tendencies would be stronger or differ in maltreated compared to non-maltreated youth. Meehan and colleagues (2017) did not find that the magnitude of the relation between high CU traits and low prosocial behavior

varied as a function of exposure to early adversity, but, given maltreated adolescents' risk for high CU traits and low prosocial tendencies, addressing the association directly is warranted.

In summary, considerable evidence reveals youth high in CU traits should exhibit increases in externalizing and internalizing symptoms. This is especially likely when CU is combined with a history of maltreatment and examined in relation to internalizing symptoms. In addition, both CU and maltreatment likely predict lower prosocial tendencies, although whether these interact, such that high CU in maltreated youth places them at greatest risk for low prosocial tendencies, is not yet clear.

Like CU traits, empathy has also been studied in relation to maladaptive behaviors, with research often attempting to discern how cognitive versus affective empathy affect youth's tendencies toward externalizing behaviors (Miller & Eisenberg, 1988), internalizing symptoms (Schreiter, Pijnenborg, & aan het Rot, 2013) and prosocial tendencies (Eisenberg & Miller, 1987). However, very little of this work has considered maltreated youth as an important sample that varies in both empathy and behavioral tendencies.

Although early research found a negative relation between empathy, defined as the matching of emotions, and externalizing symptoms (e.g., Miller & Eisenberg, 1988), more recent research that has separated cognitive and affective components has produced inconsistent results. Theoretically, understanding or experiencing the emotions of others would discourage anti-social behaviors that cause harm to others. Some have reported no relation between either component of empathy and aggression (Vachon, Lynam, & Johnson, 2014). Other studies have found negative associations between cognitive or

affective empathy and externalizing behaviors (e.g., van Langen, Wissink, van Vugt, Van der Stouwe, & Stams, 2014; Jolliffe & Farrington, 2006; Pouw, Rieffe, Oosterveld, Huskens, & Stockmann, 2013). Moreover, very little research has considered the type of sample, such as maltreated youth, who are at particularly high risk for both low empathy and maladaptive functioning. Finally, CU traits have also not been considered. Insofar as CU traits are also linked, particularly strongly to externalizing symptoms, it is important to evaluate whether empathy is uniquely related once CU traits are considered.

Similar to evidence concerning how the components of empathy relate to externalizing behaviors, evidence concerning empathy and internalizing symptoms are also mixed. Some studies, for example, have reported relations between low cognitive empathy and depression (Schreiter et al., 2013), while others find no relation at all (Dinsdale et al., 2016). A lack of social connectedness, common in high risk samples like maltreated youth, combined with an inability to understand others' emotions, may predispose individuals to depression or similar internalizing symptoms.

High affective empathy, of note, has been more consistently linked to affective distress, and, in turn, symptoms of depression and anxiety in both adults and youth (e.g., Kazmierczak, Pastwa-Wojciechowska, & Błażek, 2013; Schreiter et al., 2013). These links may be particularly strong in maltreated youth. The negative input these youth receive in their homes, in combination with poor emotion regulation strategies, may reduce adolescents' ability to adaptively handle the emotions they experience as a result of this form of empathy. Of course, insofar as CU traits underlie the evident links between empathy and maladaptive behaviors, taking CU traits into consideration may eliminate any evident associations between both forms of empathy and such behaviors.

As a final note, given that empathy is believed to serve as a key motivator for prosocial behavior, it is perhaps unsurprising that their relations have been investigated. The "empathy-altruism" hypothesis (Batson, 1991, 2012) posits that the experience of empathy produces altruistic motivations underlying subsequent prosocial behavior. Cognitive empathy facilitates prosocial behavior through the ability to understand and therefore consider the feelings of others, whereas affective empathy facilitates prosocial behavior through the experience of distress in response to another's negative emotions, which motivates individuals to reduce their own distress through engaging in altruistic and helping behavior (Eisenberg, 2000). This model, moreover, is believed to apply to adolescents as well as adults (Eisenberg, Miller, Shell, McNalley, & Shea, 1991). Empathy may be particularly important for maltreated youth, who have lower socio-emotional functioning in general. These youth may not have the social skills that would assist in promoting positive social interactions in the absence of empathy. Thus, empathy may have a more direct and significant impact on prosocial behavior.

Present Study

The goals of the present study were to: (a) examine how callous-unemotional traits and empathy, two types of emotional functioning, operate in maltreated adolescents, and (b) determine how these constructs relate to functioning, directly and in conjunction with maltreatment. To pursue these goals, maltreated and demographically-similar comparison youth, ages 12 to 17 years, completed measures of callous-unemotional traits, empathic tendencies, and functioning as a part of a larger investigation of emotional competence in maltreated children and adolescents (see Milojevich et al., 2018). Hypotheses were as follows. First, when comparing maltreated and comparison

adolescents, we expected maltreated youth to report higher levels of CU traits and lower levels of cognitive and affective empathy. Second, when we examined behavioral outcomes, we expected higher CU traits, and low cognitive and low affective empathy to predict externalizing behaviors. Third, and in slight contrast, we expected higher CU traits and affective empathy, but low cognitive empathy, to predict internalizing symptoms. Fourth, we predicted low CU traits and high cognitive and affective empathy to be associated with increases in prosocial tendencies. Finally, we tentatively expected these relations to be stronger in maltreated than comparison adolescents, although we expected the links between these constructs and prosocial behavior to be consistent across groups.

CHAPTER 2:

Method

Participants

Participants included 92 12- to 17-year-old maltreated youth (M = 14.80 ± 1.73, 60 females) and 75 12- to 17-year-old comparison youth (M = 14.89 ± 1.70, 43 females). The sample was diverse: 49.7% identified as Hispanic, 24% as Caucasian, 21.6% as multiethnic, 1.2% as African American, 0.6% as Asian, and 3% reported ethnicity as 'other'. Five additional comparison adolescents were excluded due to parent-reported diagnosis of autism (n = 4) or identification as a foster child (n = 1).

The maltreated sample was recruited from a local temporary residential care facility for youth removed from caregivers' custody following substantiated abuse or neglect. Maltreated youth must have been residing at the facility for longer than three days to be eligible for the study. The number of days since first removal ranged from 4 to 4783 (M=455.70). For 33% of the youth, this was their first removal from their home in this case, though some may have had prior cases.

The comparison sample was recruited from communities demographically similar to those where the maltreated youth had resided in prior to removal (zip code matching was used to target communities). Flyers and advertisements were distributed at schools, parks, community centers, and other neighborhood locations. Interested parents were approached about the study and invited to participate. Comparison youth must have always been residing with at least one parent to be eligible. While this did not preclude experiences of maltreatment in the comparison youth, this did reduce the likelihood that the youth had experienced maltreatment sufficiently serious to warrant removal from

home. All youth participants were fluent in English and free from chronic medical conditions. Parents, however, were not required to be fluent in English to take part.

Materials and Procedure

Study procedures were approved by the University of California, Irvine Institutional Review Board. For maltreated youth, written permission via court order was secured from Juvenile Court and a Memorandum of Understanding with the county social service agency with specific guidelines regarding confidentiality, security of information, and how to approach youth. In addition, on each day of data collection, staff members responsible for each youth's unit were informed of our presence and confirmed that the identified children were eligible and appropriate to invite to participate on that day. These youth completed the study in a private location at the residential facility.

For comparison youth, the study was described to parents via phone or in person and a convenient time and location (e.g. home, park) was identified for those who wished to participate. Parents provided written consent and youth provided written assent.

Measure Administration. Instructions for all study measures were read aloud and cue cards containing response prompts were provided for scales. Measures of interest are described here. These began with a demographic questionnaire collecting information about sex, age, grade in school, family composition and ethnicity.

Callous-unemotional traits were measured via the CU subscale of the Antisocial Process Screening Device (APSD; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzan, 2000), a well-established measure of psychopathic and antisocial traits. Youth responded via a 3-point Likert-type scale how true each statement is of them (e.g., 'You

hide your feelings or emotions from others"). Items were averaged to obtain an overall score (α=0.63).

To assess cognitive and affective empathy, the Basic Empathy Scale (Jolliffe & Farrington, 2006a) was administered. On this widely used measure, youth respond to a series of items on a 5-point Likert-type scale, indicating how much each item reflects their feelings and perceptions. Separate items were averaged to index affective empathy (e.g. "I get caught up in other people's feelings easily"; α=0.63), that is emotional congruence with another person's emotions, and cognitive empathy (e.g. "I can often understand how people are feeling even before they tell me"; α=0.60), that is the ability to understand another person's emotions.

Two measures were included to assess externalizing behaviors and internalizing symptoms: the Reactive-Proactive Aggression Questionnaire (RPQ; Raine et al., 2006) and the Massachusetts Juveniles Screening Instrument-Version 2 (MAYSI-2; Grisso & Barnum, 2000). The RPQ is a well-established and validated measure of aggressive tendencies, that asks youth to indicate on a 3-point Likert scale how often they engage in the different aggressive behaviors. The measure contains two subscales: proactive aggression (e.g., "Taken things from other students"; α=0.86) and reactive aggression (e.g., "Yelled at others when they have annoyed you"; α=0.85), but these are often highly correlated (r=0.70 for the present sample). A single score, averaged across the items, was computed.

The MAYSI-2 is a standardized, behavioral health screening tool frequently used with high-risk populations (e.g. juvenile defendants). Youth answer yes or no to items about recent behaviors. Items are then averaged separately to create scores for several

behavior subscales. Those initially of interest here include substance use (e.g. “Have you been drunk or high at school?”; α=), anger-irritability (e.g. “Have you had too many bad moods?”; α=), depressed-anxious (e.g. “Have you felt lonely too much of the time?”; α=)[1], somatic complaints (e.g. “When you have felt nervous or anxious have you felt shaky?”; α=), and suicide ideation (e.g. “Have you wished you were dead?”; α=). Two subscales were excluded. The trauma subscale asks about past trauma experiences rather than behaviors, and the thought disturbance scale has only been validated in males.

Finally, to assess prosocial behavior, the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was administered. The SDQ is a simple index of behavioral adjustment used around the world. Youth rate how true statements are of them on 3-point Likert scales. Four subscales tap behavior problems: hyperactivity (e.g., I am restless, I cannot stay still for long; α=0.66), emotional symptoms (e.g. I am often unhappy, depressed or tearful; α=0.71), conduct problems (e.g., I get very angry and often lose my temper; α=0.69), and peer problems (e.g., I get along better with adults than with people my own age; α=0.51) that are combined into a total score. The items overlap with those on MAYSI subscales, and the total score was strongly correlated with the MAYSI subscales (*r*s>0.50). Thus, the total score is not considered further. The prosocial behavior subscale (e.g., I often offer help to others; α=0.53), averaging youth responses to the prosocial items, was of primary interest here.

One other measure was of interest here. The Vocabulary and Matrix Reasoning subscales of the Weschler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999), a nationally standardized measure that provides verbal, performance, and full IQ scores with high reliability and validity, was included. The two subscale scores, in combination,

provided a general estimate of cognitive ability. Age normed scores were calculated and were included as a covariate given that intelligence differs between maltreated and non-maltreated youth (Crozier & Barth, 2005) and could affect their responses to the study questions.

At the end of the session, youth were debriefed and thanked for their participation. Comparison youth received a small honorarium for their participation. Maltreated youth at the residential facility were not allowed compensation.

CHAPTER 3

Results

Our analyses proceeded in four steps. First, preliminary analyses were conducted to characterize the sample and test for potential confounds and covariates that needed to be included in subsequent analyses. Next, composite scores indexing externalizing behaviors, internalizing symptoms, and prosocial tendencies were created. Third, we established group differences in CU traits and both components of empathy. Finally, we utilized a series of hierarchical regressions to assess how these constructs relate to functioning, directly and in conjunction with maltreatment.

Preliminary Analyses

Descriptive information on the two samples is presented in Table 1. Analyses testing for potential confounds and covariates revealed relatively few differences, and those that emerged were expected. The maltreated and comparison samples were comparable in age [$t(165)=0.36$, $p=0.72$], sex [$\chi 2(1)=1.09$, $p=0.30$], and ethnicity [$\chi 2(5)=2.47$, $p=0.78$]. The groups did differ, however, on composite WASI IQ score (IQ), $t(157)=3.46$, $p<0.01$. Maltreated youth scored significantly lower, on average, than comparison youth.

Two outcome measures, the substance use and suicide ideation subscales of the MAYSI, were highly skewed and kurtotic (skew<4.23, kurtosis<17.92). The comparison samples' scores were near floor on both subscales (see Table 1). Thus, they are not considered in the main analyses. Bivariate correlations among the main predictors and outcomes, shown in Table 2, revealed several significant associations: the empathy subscales were significantly correlated with one another and were negatively related to

CU traits, as expected. None of these correlations was particularly large (*r*s<-0.26). Finally, the outcome measures that tapped both maladaptive functioning, including externalizing and internalizing tendencies, as well as prosocial behaviors, were all significantly related in meaningful and expected ways.

Creation of Composite Scales

Composite scores indexing externalizing and internalizing problems were created by standardizing and averaging subscales from the RPQ and MAYSI. The composite scale tapping into externalizing behaviors was comprised of the RPQ total aggression subscale and the MAYSI anger-irritability subscale (scales were strongly correlated; r =0.68, p<0.001), while the depressed-anxious and somatic complaints subscales of the MAYSI composed the internalizing symptoms composite scale (again, scales were strongly correlated; r = 0.53, p<0.001).

CU Traits and Empathy in Maltreated and Comparison Youth

We compared whether maltreated and comparison youth differed on CU traits and empathy. First, we expected maltreated youth to be higher on CU traits. To examine this hypothesis, a one-way ANCOVA was conducted with maltreatment status and sex as predictors, and age and IQ as covariates. As predicted, maltreated youth reported significantly higher levels of CU traits, $F(1, 153)=13.05$, p<0.01. There were, however, no sex effects or interactions (ps>0.27).

Second, we expected maltreated youth to report lower cognitive and affective empathy than comparison youth. A one-way MANCOVA was conducted, again with maltreatment status and sex as predictors, and age and IQ as covariates. Maltreated and non-maltreated youth did not differ significantly on cognitive or affective empathy,

V=0.01, F(2, 152)=0.69, p=0.50. However, there was a significant effect of sex, V=0.10, F(2, 152)=7.99, p=0.001. Follow up one-way ANCOVAs revealed that females (EMM=3.20) reported significantly higher levels of affective empathy than males (EMM=2.87), $F($1, 153)=16.00, p<0.001, but no differences were found for cognitive empathy. Estimated marginal means for all ANCOVAs are presented in Table 3.

Callous-Unemotional Traits, Empathy, and Behavior

Our main analyses assessed the potential role maltreatment played in the relation between CU traits, empathy and various aspects of functioning. First, we addressed the relation of these constructs to externalizing behaviors, followed by internalizing symptoms, and prosocial tendencies. For all analyses, hierarchical regressions were conducted with the covariates at the first step (sex, age and IQ), variables of interest at the second (maltreatment status, CU traits, affective empathy, and cognitive empathy), and interaction terms at the third. We predicted that maltreatment would moderate the majority of these relations, with the exception of CU traits and prosocial behavior.

Externalizing Behaviors. Hierarchical regressions, as described above, were conducted for externalizing behaviors. The overall model was significant, *Adj.* R^2 = 0.26, F(10, 148)=6.46, p<0.001. The third step in the model, testing moderation, explained a significant proportion of variation in externalizing behaviors, over and above that explained by the covariates and main effects, *Adj.* ΔR^2=0.04, ΔF(3, 148)=3.57, p=0.02. This effect was driven by the interaction between maltreatment status and callous-unemotional traits, b=1.60, β=0.37, t(158)=3.06, p = 0.003 (see Table 4). The relation between CU traits and externalizing behaviors varied as a function of maltreatment such that CU traits were positively associated with externalizing behaviors, but this relation

was only significant in maltreated youth (Figure 1). Cognitive and affective empathy did not uniquely contribute to externalizing behaviors in either maltreated or non-maltreated adolescents.

Internalizing Symptoms. We similarly examined the relation between CU traits, empathy and internalizing symptoms. In particular, we predicted that maltreatment would moderate the relation between internalizing symptoms, and both empathy and CU traits. Again, a three-stage hierarchical regression was conducted with covariates at the first step, variables of interest at the second, and interaction terms at the third.

The interaction terms did not significantly improve the model, *Adj.* ΔR^2=-0.001, $\Delta F(3, 147)=0.50$, $p=0.68$. Results for the model are therefore presented at the second step, which did significantly improve the model, *Adj.* ΔR^2=0.06, $\Delta F(4, 150)=3.74$, $p=0.006$ (See Table 5). As predicted, high affective empathy was positively associated with internalizing symptoms across both samples, $b=0.38$, $\beta=0.23$, $t(157)=2.83$, $p=0.005$. Additionally, maltreated youth reported significantly higher levels of internalizing symptoms than non-maltreated youth, $b=0.30$, $\beta=0.17$, $t(157)=2.23$, $p=0.03$.

Prosocial Behavior. The final model predicted prosocial behavior. As with internalizing symptoms, the interaction terms did not significantly improve the model, *Adj.* ΔR^2=0.001, $\Delta F(3, 148)=2.06$, $p=0.27$, so results are presented at the second step, which did provide significant improvement to the model, *Adj.* ΔR^2=0.13, $\Delta F(4, 151)=7.44$, $p=0.001$. Higher affective empathy, $b=0.11$, $\beta=0.19$, $t(158)=2.37$, $p=0.02$, and lower CU traits, $b=-0.30$, $\beta=-0.27$, $t(158)=-3.44$, $p=0.001$, predicted higher prosocial tendencies. There were not, however, any differences between maltreated and non-maltreated youth (Table 6).

CHAPTER 4

Discussion

The present study took an important step toward more comprehensively unpacking the relation between CU traits, empathy and functioning in a group of high-risk adolescents. CU traits have received significant attention over the past few decades, primarily due to their robust associations with severe and persistent patterns of antisocial behavior. And while some work has considered the interaction between CU traits and empathy, little has shown how these constructs may diverge. The present study examined the relations between callous-unemotional traits and empathy in maltreated and non-maltreated youth, and the links, in each sample, between these processes and maladaptive and prosocial functioning.

Of initial interest in the study concerned how CU traits and empathy differed between maltreated and non-maltreated adolescents. First, and consistent with our hypothesis, maltreated youth reported significantly higher levels of CU traits than their non-maltreated counterparts. Maltreated youth exhibit a range of deficits in emotional functioning (Cicchetti & Ng, 2014), and thus, high CU traits are unsurprising. Why, though, deserves some comment. Maltreated youth, for example, may develop CU traits in response to the significant trauma and adversity experienced via abuse and neglect. Coping strategies like disengagement and emotional numbing are particularly common in maltreated youth (Kim & Cicchetti, 2010; Milojevich et al., 2018), likely as a way of managing the unpredictability of their lives and the lack of support and guidance that they have received from caregivers about managing negative emotions. These coping strategies, though, also lead to a more cold and callous presentation when faced with

emotional situations (Bennett & Kerig, 2014), and lead adolescents to view themselves as not concerned with others' feelings or as hiding their emotions from others. As such, the maltreated adolescent's higher reported levels of CU would be expected. What would be of interest, and importance, for future research is first to disentangle, ideally via longitudinal designs, whether certain coping styles account for the appearance of higher CU traits in maltreated youth, or whether maltreated youth actually are more cold and emotionally detached.

Second, and in contrast to expectations, maltreated youth retained their capacity for both cognitive and affective empathy, that is, no differences in empathy emerged between the maltreated and comparison youth. Other research on emotion recognition and prosocial behavior in maltreated youth suggests that empathy would likely be lower in this population (Pollak et al., 2000; Prino & Peyrot, 1994). Very little work, however, has directly addressed how both cognitive and affective empathy may differ in maltreated versus non-maltreated youth. Previous work concerning empathy and maltreatment has shown differences when utilizing other measures, considering empathy as a single construct, or studying adults with a history of childhood maltreatment (e.g., Locher, Barenblatt, Fourie, Stein, & Gobodo-Madikizela, 2014; Luke & Banerjee, 2012). Further work is necessary to determine if these findings are robust across measurement methods and whether developmental differences are present.

The second goal of the study was to evaluate how CU traits and empathy relate to two types of functioning: the more commonly studied type, maladaptive symptoms, like externalizing tendencies, and internalizing problems, but also the less well studied domain of positive social behaviors, namely prosociality. With regard to maladaptive

behaviors, hypotheses were often supported. When externalizing problems were examined, for example, CU traits independently predicted increases in such problems, as has been observed in numerous other studies (Frick & White, 2008). However, this relation was only significant in maltreated youth. This suggests that environmental factors play an important role in the association between CU traits and externalizing behaviors. Although prior investigations of CU traits and behavioral outcomes have rarely considered maltreated youth specifically, the samples are often comprised of delinquent, antisocial, or other high-risk populations (e.g., Pardini, Lochman, & Frick, 2003), many of whom have been exposed to environmental stressors in their home and community (e.g., neighborhood disorganization, community violence, family dysfunction) and thus are similar to the maltreated youth in the present study. Environmental stressors or other deficits in functioning may be necessary for robust findings. In non-maltreated adolescents, externalizing behaviors may instead be due to factors such as anger dysregulation.

No other predictors of externalizing behaviors emerged, even though some were anticipated between empathy and such behaviors. It may be that CU traits are particularly important for tendencies of acting out and once these traits are considered, empathy itself does not really contribute to or guide these behaviors.

Different predictors emerged, however, when internalizing symptoms were considered. Maltreated youth and youth who reported higher levels of affective empathy had higher reported levels of internalizing symptoms than non-maltreated youth and those who reported lower levels of empathy. Maltreated youth's increased risk for internalizing symptoms is consistent with a host of other research. Indeed, childhood

maltreatment represents one of the strongest risk factors for developing anxiety, depression, and a host of other problems that, in combination, often fall under the broader category of internalizing symptoms (Anda et al., 2006; Gilbert et al., 2009; Norman et al., 2012). The associations between affective empathy and internalizing symptoms were also consistent with expectations, with these associations emerging similarly among both the maltreated and community youth. Heightened levels of affective empathy may lead to experiences of emotional pain or personal distress. These feelings may contribute to internalizing symptoms directly or indirectly by triggering the individual to withdraw from interpersonal situations. Recent work has explored the potential moderating role of emotion regulation in the relation between affective empathy and distress (Powell, 2018), but future work should continue to pursue this mechanism by considering developmental differences and internalizing symptoms as an ultimate outcome.

It is only somewhat surprising that neither CU traits nor cognitive empathy were related to internalizing symptoms. Previous work on the relations between these constructs and symptoms like depression and anxiety have been mixed (Essau et al., 2006; Pardini & Loeber, 2008; Schreiter et al., 2013). Concerning CU traits, it is possible that the elements unique from affective empathy, like the deviant value systems, are more strongly related to behavior than internally focused symptoms. Cognitive empathy may also not have a unique role in internalizing symptoms when affective empathy is concurrently considered. The theoretical link between internalizing symptoms and cognitive empathy – that the ability to understand others' emotions assists in social connectedness, which may reduce the likelihood of these problems – is not direct, and previous findings linking cognitive empathy to internalizing symptoms are likely due to

overlap with the affective empathy.

Finally, prosocial tendencies were considered. High CU traits were associated with reduced prosocial tendencies in both maltreated and non-maltreated youth, a pattern that was in contrast to CU traits links to externalizing behaviors, which emerged only among maltreated youth. It is important to also note the overall differences in the relations between CU traits and functioning in these populations of adolescents. While non-maltreated adolescents with high CU traits did not report greater externalizing symptoms, they did report reduced prosocial tendencies, indicating that CU traits are still associated with altered functioning in this group. Maltreated adolescents with high CU traits showed both greater externalizing problems and lower prosocial tendencies, suggesting a larger or more diffuse effect of CU on functioning.

Finally, affective empathy was also related to prosociality. Such a trend is particularly interesting in light of the evident associations—in the same direction—between affective empathy and internalizing symptoms, a subjectively negative form of functioning. The capacity for empathy is often viewed as a positive trait, leading to desirable outcomes like compassion or moral behavior (Singer & Klimecki, 2014). These results support this viewpoint, but also suggest a more multifaceted relation between affective empathy and functioning.

Limitations and Future Directions

Although the present study advances understanding of the links among maltreatment, CU traits, empathy and functioning, limitations must also be noted. First, though our screening of the comparison sample reduced the likelihood of maltreatment, we did not ask about maltreatment directly. However, any maltreatment in this group

would attenuate differences and make our findings more conservative. Second, although prior work and theoretical models suggest that such trait-like tendencies as CU and empathy motivate behavior, and thus, support our model and analytic approach, the cross-sectional nature of our design precludes the ability to make causal inferences about CU traits or empathy "causing" maladaptive or adaptive behaviors. Longitudinal investigations would permit more clear directional links as well as provide insights into possible developmental trends. Third, we relied exclusively on self-report measures for assessment. While youth reported a range of personal and sensitive information throughout the interviews, reliance on self-report measures includes the possibility of bias and social desirability. Multi-informant designs and designs that assess behavior directly would be important additions to the current work.

CHAPTER 5

Conclusion

The present study suggests that while CU traits and empathy may hold some similar characteristics, the constructs contribute to functioning in unique ways and likely do not represent simply two ends of the same continuum. Continued examination of these constructs is necessary to further understand not only their relations to each other, but also their relations to various forms of functioning. This knowledge would improve outcomes through more precise and directed interventions. While initial work concerning psychopathic symptoms, such as CU traits, viewed interventions as a waste of resources, more recent efforts have led to a change in viewpoints. These traits, particularly in adolescents, may be amenable to treatment interventions (e.g., Salekin, 2002), making comprehensive examination of these traits more pertinent. Further, interventions promoting empathy need to consider the potential challenges associated with affective empathy in particular, and possible avenues to support youth through this experience. Interventions targeting these constructs may be particularly important not only early in life as these characteristics are developed, but also when applied to those at particularly high risk for poor socio-emotional functioning and maladaptive behaviors.

Table 3.1. Descriptive statistics for maltreated and comparison youth on study measures.

	Comparison			Maltreated		
	N	Mean	SD	N	Mean	SD
Age	75	14.89	1.70	92	14.80	1.73
IQ**	71	91.39	12.59	88	84.40	12.73
CU Traits***	75	0.45	0.25	92	0.64	0.32
Empathy						
Cognitive Empathy	75	30.65	3.93	80	29.86	5.21
Affective Empathy	75	29.16	5.18	92	28.07	6.36
Outcome Measures						
Aggression***	75	0.30	0.19	92	0.48	0.31
Anger-irritability**	75	2.57	2.00	90	3.67	2.81
Depression-anxiety***	75	1.2	1.47	90	2.70	2.25
Somatic Complaints	74	2.73	1.83	91	2.81	1.97
Suicide***	74	0.09	0.38	90	1.23	1.77
Substance Use***	75	0.35	1.15	90	2.01	2.50
SDQ Total***	75	-0.46	0.55	92	0.20	1.08
Prosocial Tendencies	75	1.60	0.29	92	1.51	0.33
Externalizing Behaviors***	75	-0.21	0.64	92	0.26	1.04
Internalizing Symptoms**	75	-0.21	0.69	91	0.17	0.97

***p<0.001, **p<0.01, *p<0.05

Table 3.2. Correlations between study measures, collapsed across groups

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Cognitive Empathy	1									
2. Affective Empathy	.18*	1								
3. Callous-unemotional	-.25**	-.26**	1							
4. Aggression	.07	-.08	.43**	1						
5. Anger-irritability	.22**	.14	.16*	.68**	1					
6. Depression-anxiety	.04	.04	.20**	.43**	.64**	1				
7. Somatic Complaints	.13	.24**	-.06	.22**	.46**	.53**	1			
8. Suicide	.14	.03	.10	.39**	.50**	.68**	.35**	1		
9. Substance Use	.12	-.20*	.38**	.64**	.48**	.40**	.23**	.42**	1	
10. SDQ Total	.08	.11	.31**	.64**	.71**	.70**	.50**	.60**	.49**	1
11. Prosocial	-.26**	.30**	-.38**	-.25**	-.02	.02	.10	.07	-.12	-.10

**p<0.01, *p<0.05

Table 3.3. Estimated Marginal Means

	Adj. Mean (95% CI)	
	Maltreated	Non-maltreated
Callous-Unemotional**	0.62 (0.56, 0.68)	0.45 (0.39, 0.52)
Affective Empathy	27.80 (26.55, 29.04)	28.67 (27.33, 30.02)
Cognitive Empathy	29.98 (28.87, 31.09)	30.74 (29.64, 31.84)

Note. Adjusted for IQ
***p<0.01, *p<0.05*

Table 3.4. Results of the hierarchical regression with CU traits, empathy, and maltreatment predicting externalizing behaviors.

Step 3	***b***	***β***	***t*(136)**	***p***
(Constant)	-0.67		-0.91	0.36
Sex	0.07	0.04	0.49	0.62
IQ	-0.01	-0.12	-1.56	0.12
Maltreatment status	0.39	0.21	2.74	0.007**
Callous-unemotional	0.11	0.03	0.26	0.80
Cognitive Empathy	0.05	0.03	0.22	0.83
Affective Empathy	0.14	0.08	0.64	0.52
Group x CU	1.60	0.37	3.06	0.003
Group x Cognitive Empathy	0.51	0.23	1.78	0.08
Group x Affective Empathy	0.21	0.10	0.83	0.41

Note. Maltreated=1, comparison=0; females=1, males=0
***p*<0.01, **p*<0.05

Table 3.5. Results of the hierarchical regression with CU traits, empathy, and maltreatment predicting internalizing symptoms.

Step 2	***b***	***β***	***t*(135)**	***p***
(Constant)	-0.54		-0.75	0.46
Sex	0.50	0.28	3.64	<0.001**
IQ	-0.01	-0.17	-2.21	0.03*
Maltreatment status	0.30	0.17	2.23	0.03*
Callous-unemotional	0.17	0.06	0.79	0.49
Cognitive Empathy	0.16	0.09	1.20	0.23
Affective Empathy	0.38	0.23	2.83	0.005**

Note. Maltreated=1, comparison=0; females=1, males=0
***p*<0.01, **p*<0.05

Table 3.6. Results of the hierarchical regression with CU traits, empathy, and maltreatment predicting prosocial tendencies.

Step 2	***b***	***β***	***t*(137)**	***p***
(Constant)	1.06		4.24	<0.001
Sex	0.03	0.04	0.56	0.57
IQ	0.004	0.17	2.20	0.03*
Maltreatment status	0.01	0.02	0.25	0.80
Callous-unemotional	-0.30	-0.27	-3.44	<0.001**
Cognitive Empathy	0.08	0.13	1.70	0.09
Affective Empathy	0.11	0.19	2.37	0.02*

Note. Maltreated=1, comparison=0; females=1, males=0
***p<0.01, *p<0.05*

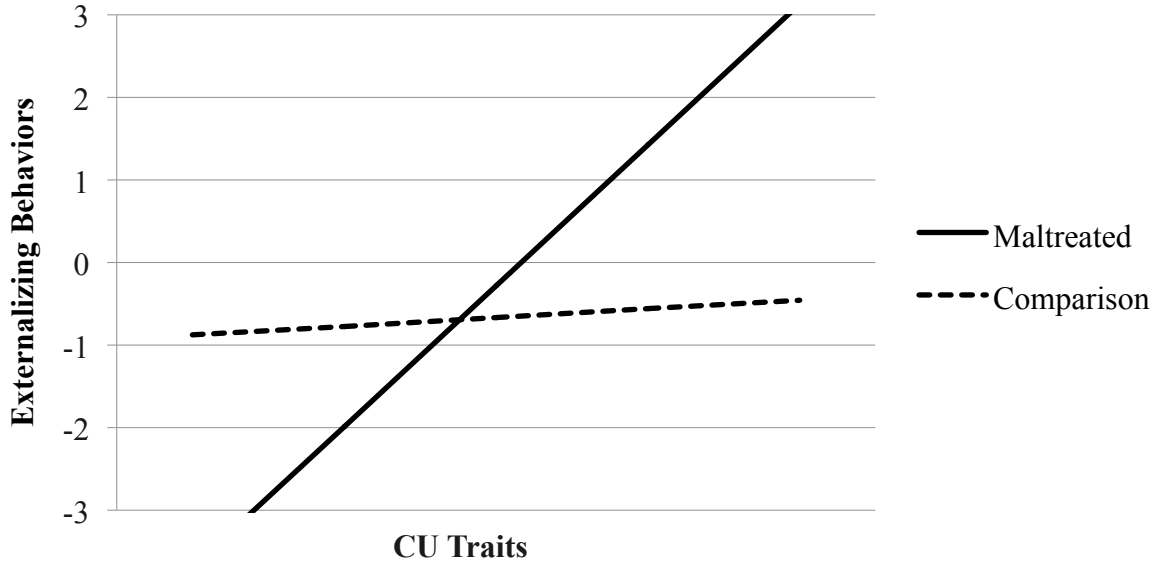

Figure 3.1. Callous-unemotional traits predicting externalizing behaviors in maltreated and comparison youth.

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