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Callous-Unemotional Traits and Empathy Deficits: Mediating Effects of Affective Perspective-Taking and Facial Emotion Recognition

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CALLOUS-UNEMOTIONAL TRAITS AND EMPATHY DEFICITS: MEDIATING EFFECTS OF AFFECTIVE PERSPECTIVE-TAKING AND FACIAL EMOTION RECOGNITION

by

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ABSTRACT

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Callous-unemotional (CU) traits are core features of psychopathy that indicate severe and pervasive disruptions in behavioral and emotional functioning in youths (Frick, Ray, Thornton, & Kahn, 2014). Research on how CU traits are associated with cognitive and affective empathy (which includes an aspect of emotional responsiveness), are equivocal. Furthermore, little is known about what specific abilities may underlie these purported empathy deficits. Affective perspective-taking (APT) and facial emotion recognition are two abilities that may be implicated, given their associations with empathy, and to some degree, with CU traits (Anastassiou-Hadjicharalambous & Warden, 2008a; Carr & Lutjemeier, 2005; Chambers & Davis, 2012; Marsh & Blair, 2008). The current study examined how CU traits relate to cognitive and affective empathy and whether APT and facial emotion recognition mediate these relations. Results indicated that CU traits were negatively associated with cognitive and affective empathy to a similar degree. The association between CU traits and cognitive empathy was partially mediated by facial emotion recognition. Specifically, higher levels of CU traits were associated with a relative deficit in facial emotion recognition, which in turn, was associated with a relative deficit in cognitive empathy. CU traits were not correlated with emotional responsiveness at a bivariate level; however, APT partially mediated the

association between CU traits and emotional responsiveness. Specifically, higher levels of CU traits were associated with a relative deficit in APT, which in turn, was associated with less emotional responsiveness. Implications for informing intervention to increase empathy among youth with CU traits are discussed.

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CHAPTER I

INTRODUCTION

Callous-unemotional (CU) traits are a constellation of affective and interpersonal characteristics that include a lack of guilt and emotionality, as well as callous use of others for personal gain (Frick, Bodin, & Barry, 2000). Youths with CU traits demonstrate distinct behavioral impairments such as more severe, chronic, and earlier onset of delinquency, aggression, and conduct problems relative to those without elevated CU traits (for a review, see Frick et al., 2014). Furthermore, youths with CU traits also show significant emotional impairments, such as abnormalities in processing emotional stimuli (Kimonis, Frick, Fazekas, & Loney, 2006; Marsh & Blair, 2008) and empathic deficits (Dadds et al., 2009; Jones, Happe, Gilbert, Burnett, & Viding, 2010).

CU traits tend to be moderately stable from adolescence to adulthood (Blonigen, Hicks, Kruger, Patrick, & Iacono, 2006; Burke, Loeber, & Lahey, 2007; Frick, Kimonis, Dandreaux, & Farell, 2003; Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007). However, there is also evidence of change in CU traits during adolescence (Frick et al., 2003; Hawes & Dadds, 2007; Pardini, Lochman, & Powell, 2007), suggesting some malleability during this developmental period and highlighting the importance of early intervention. Viding and McCrory (2012) posit that understanding CU traits can not only inform subtypes of youth conduct disorder, but they suggest that CU traits also serve as a useful clinical indicator for a range of psychosocial vulnerability and maladjustment, even in the absence of antisocial behavior or conduct problems. In light of the inclusion of CU traits as a specifier for Conduct Disorder in the DSM-5 (i.e. “With Limited Prosocial Emotions:” lack of remorse or guilt callous lack of empathy, unconcerned

about performance and shallow or deficient affect; American Psychiatric Association, 2013), research examining individual differences in CU traits and impairments associated with these traits should help inform the next wave of research in, and interventions for, youth conduct problems in general and Conduct Disorder specifically.

Empathy and CU traits

Empathy is a multidimensional construct that includes the ability to *understand* and *identify with* another's affective state, or to know the "'how' and 'why' of other people's feelings" (i.e., cognitive empathy; Dadds et al., 2009, p. 599), and to *feel* emotions that are concordant with that affective state (i.e., affective empathy; Dadds et al., 2009; de Wied, Gispen-de Wied, & van Boxtel, 2010; Jolliffe & Farrington, 2006). These two dimensions of empathy are considered to be interrelated but distinct (Cox et al., 2012; Davis, 1983; Duan & Hill, 1996; Levenson & Ruef, 1992). Previous studies have found some distinction between cognitive and affective empathy (e.g., moderate correlations in the range of .40s; Cox et al., 2012; Jolliffe & Farrington, 2006), with different brain regions implicated for each dimension (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009). Specifically, one can imagine, appreciate, and identify with another's emotional state (i.e., cognitive empathy) without having an emotional reaction to it, and conversely, one can experience an emotional response to another's emotional state (i.e., affective empathy) but not clearly understand why the person is feeling that way. Developmentally, affective empathy is thought to emerge in the early years of life, and cognitive empathy continues to develop throughout childhood and into adolescence (Decety, 2011; Hoffman, 1987). Empathy plays a role in the development of social competence, as well as in facilitating and maintaining successful interpersonal

relationships during adolescence, and it has been positively associated with prosocial behaviors such as helping (Barnett & Thompson, 1985; Eisenberg & Miller, 1987). Furthermore, empathy is thought to attenuate aggressive tendencies, and a lack of empathy may contribute to the display of aggressive/antisocial behaviors (Feshbach & Feshbach, 1982; Miller & Eisenberg, 1988). Therefore, understanding processes related to empathy development can help inform intervention to reduce aggressive and antisocial behaviors, particularly for individuals at-risk for such behaviors, such as youths with CU traits.

Although CU traits are the affective component of psychopathy, and a lack of empathy is critical to its conceptualization (Frick et al., 2014), there is limited research concerning different dimensions of empathy in relation to CU traits in children and adolescents. Only recently have researchers begun to investigate psychopathic traits in relation to both cognitive and affective empathy, and they typically do not differentiate components of psychopathy. Instead, in this research, psychopathy is often regarded as a unitary construct with affective, interpersonal, and behavioral traits (e.g. Blair, 2005; Jones et al., 2010; for exceptions, see Muñoz, Qualter, & Padgett, 2011; Pardini, Lochman, & Frick, 2003).

Existing studies consistently report a negative relation between psychopathic traits and affective empathy (Anastassiou-Hadjicharalambous & Warden, 2008b; de Wied, van Boxtel, Matthys, & Meeus, 2012; Jones et al., 2010; Mullins-Nelson, Salekin, & Leistico, 2006; Muñoz et al., 2011; Pardini et al., 2003; Seara-Cardoso, Neumann, Roiser, McCrory, & Viding, 2012). For example, Muñoz and colleagues (2011) found that adolescents with the highest levels of CU traits had the lowest affective empathy

compared with adolescents with moderately high, moderately low, or low CU traits (η^2 = .18). Similarly, Seara-Cardosa and colleagues (2012) found the affective/interpersonal component of psychopathy to be associated with weaker affective empathy in young adolescents as indicated by responses to emotion-eliciting faces and vignettes. In addition, Pardini et al. (2003) found CU traits to be uniquely associated with deficits in affective empathy among adolescents while controlling for delinquency and conduct problems.

Findings on CU traits and cognitive empathy are more equivocal, as some studies report either no relation (Blair, 2005; Dadds et al., 2009; Mullins-Nelson et al., 2006) or a negative relation (Dadds et al., 2009; Muñoz et al., 2011; Pardini et al., 2003). Dadds and colleagues (2009) found that psychopathic traits were negatively correlated with cognitive empathy (r = -.41 for males, r = -.39 for females). Furthermore, they found significant differences in cognitive empathy across psychopathy groups (i.e., zero, low, moderate, and high), and a significant interaction between psychopathy group, age, and gender, such that both males and females with high psychopathic traits demonstrated deficits in cognitive empathy in childhood, but males with high levels of psychopathic traits showed no such deficits in early adolescence, whereas females with high levels of psychopathic traits continued to show this pattern. Pardini et al. (2003) also found adolescent CU traits to be associated with lower cognitive empathy while controlling for delinquency and conduct problems. Different definitions of cognitive empathy may contribute to these inconsistent findings. For example, some researchers equate cognitive empathy with perspective-taking and Theory of Mind (e.g., Baron-Cohen & Wheelwright, 2004; Blair, 2005; Davis, 1983; Mullins-Nelson et al., 2006). However, it

is also possible that CU traits are associated with a differential pattern of deficits across the affective and cognitive dimensions of empathy such that impairment in cognitive empathy may be more subtle or nonexistent. Even if cognitive empathy deficits do exist, individuals with CU traits may be able to engage in compensatory strategies that precluded the detection of such deficits in past research designs. For example, tasks that are more complex or ambiguous, which are arguably more reflective of everyday situations, may be more sensitive in detecting deficits among individuals with psychopathy (Sadeh & Verona, 2012), but past research designs have typically involved simplified, prototypic, or intense emotional stimuli that may be easier for respondents to identify.

Perspective-taking, Facial Emotion Recognition, and CU Traits

Even though it is widely believed that CU traits are associated with lower empathy, there is a lack of literature on how and why these empathic deficits develop. Similarly, there is little attention devoted to what specific abilities may underlie the purported empathy deficits among youths with CU traits. Affective-perspective taking (APT) and facial emotion recognition may be two important abilities to examine. Because CU traits are a collection of affective characteristics, underlying impairments in processing and recognizing emotions may be responsible for their associated deficits in empathy. Indeed, some studies have found relations between both APT and facial emotion recognition and CU traits (Anastassiou-Hadjicharalambous & Warden, 2008a; Marsh & Blair, 2008). Furthermore, in separate bodies of research, there is also evidence that these abilities are positively related to empathy (e.g., Carr & Lutjemeier, 2005; Chambers & Davis, 2012).

Affective Perspective-taking

As mentioned previously, some researchers use the terms Theory of Mind, perspective-taking, and cognitive empathy interchangeably (e.g., Baron-Cohen & Wheelwright, 2004; Blair, 2005; Davis, 1983; Mullins-Nelson et al., 2006). However, Theory of Mind appears to be a broader construct that involves the ability to represent and to attribute the mental states of others that is not limited to emotional states. As with empathy, perspective-taking can be cognitive (CPT) or affective (APT). CPT refers to the ability to infer the thoughts of others, whereas APT refers to the ability to infer the *emotional* state of others, based on their situation (Batson, Early, & Salvarani, 1997; Batson, Eklund, Chermok, Hoyt, & Ortiz, 2007). Perspective-taking is distinct from cognitive empathy in that perspective-taking does not require identification *with* another. Instead, it involves simply recognizing another's thoughts or emotions based on a situation which does not necessarily require personal identification with another's emotions. For example, suppose one is waiting in a long line at a coffee shop and sees a staff member looking unhappy. The onlooker may assess the situation and infer that this staff member is unhappy because he/she is stressed from being busy and the long line of customers (APT). The onlooker may also infer some thoughts that the busy staff member is having in that situation, such as the staff member thinking he/she needs a raise (CPT). Cognitive empathy may or may not follow. The onlooker may then think to him/herself, "This person needs to get over it" (lack of cognitive empathy) or think, "I understand that; if I were in that position, I would be unhappy, too" (cognitive empathy). APT does not require this identification component.

CPT and APT show differential correlates with empathy-related behaviors such that APT in particular is thought to help elicit stronger empathic concern, empathic responding, and more helping (Chambers & Davis, 2012; Hinnant & O'Brien, 2007; Lamm, Batson, & Decety, 2007; Oswald, 1996). For example, Oswald (1996) found that individuals who engaged in APT reported greater empathic arousal and offered more help than those who engaged in CPT or no perspective-taking. Only one known study to date has examined the relation between CU traits and APT specifically. Anastassiou-Hadjicharalambous and Warden (2008a) found that disruptive children with high levels of CU traits demonstrated a relative deficit in APT but not CPT. However, Woodworth and Waschbusch (2008) found that CU traits were not related to accuracy in identifying emotions from vignettes. Whereas the first study asked children to both describe and *explain* the emotion depicted, the latter study only asked children to identify the emotion. It may be that Woodworth and Waschbusch's design was not sensitive in detecting deficits among children with CU traits. Apart from these two studies, little is known about CU traits and APT in youths, pointing to the need for more research in this area.

Facial Emotion Recognition

The ability to recognize facial expressions emerges early in life and is well-developed by middle childhood (Durand, Gallay, Seigneuric, Robichon, & Baudouin, 2007). Some evidence exists that individuals with psychopathic traits demonstrate impairments in recognizing facial expressions, which may impede empathic responses. However, the findings in this area of research are somewhat inconsistent. In particular, findings of impairments are generally robust for negative emotions, particularly for fear (Blair & Coles, 2000; Blair et al., 2004; Dadds, El Masry, Wimalaweera, & Guastella,

2008; Dadds et al., 2006; Leist & Dadds, 2009; Montagne et al., 2005; Muñoz, 2009) and sadness (Blair, Colledge, Murray, & Mitchell, 2001; Dolan & Fullam, 2006; Hastings, Tangney, & Stuewig, 2008; Stevens, Charman, & Blair, 2001; Woodworth & Waschbusch, 2008) and to a lesser extent, for anger and disgust (Blair & Coles, 2000; Kosson, Suchy, Mayer, & Libby, 2002). Dadds and colleagues, in two studies with adolescent boys (with community and at-risk samples), found CU traits to be uniquely associated with impairment in recognizing fear, even when controlling for engagement in antisocial behaviors (Dadds et al., 2006; Leist & Dadds, 2009). Similarly, Muñoz (2009) found that, after controlling for antisocial behavior and violence, CU traits were associated with deficits in recognizing many expressions, particularly fear and anger, among a sample of at-risk adolescent males. Hastings et al. (2008) also found psychopathic traits to be related to deficits in recognizing happy faces.

Other researchers do not find deficits in facial emotion recognition as a function of psychopathy (Glass & Newman, 2006; Seara-Cardoso et al., 2012), whereas some researchers find *better* recognition among individuals with psychopathic traits (Del Gaizo & Falkenbach, 2008; Habel, Kühn, Salloum, Devos, & Schneider, 2002; Woodworth & Waschbusch, 2008). Similar to research on CU traits and empathy, many studies on facial emotion recognition do not differentiate components of psychopathy but combine both affective/interpersonal and behavioral traits without accounting for the unique contributions of each (for exceptions, see Leist & Dadds, 2009; Muñoz, 2009). These differences in the operationalization of psychopathic traits, along with the use of different samples across studies (i.e., ranging from young children to older adolescents to adults and from community to referred to forensic samples), may contribute to the inconsistent

findings. It remains unclear whether CU traits are uniquely associated with deficits in facial emotion recognition or whether it is some combination of CU traits, antisocial behavior, and other psychopathy-linked tendencies that are connected to such deficits.

Theoretically, it is reasonable to expect an association between facial emotion recognition and empathy in that one needs to be able to recognize emotions accurately to be able to respond empathically. Accurate facial emotion recognition could be viewed as an initial step in the empathy process (Besel & Yuille, 2010), and deficits in emotion recognition, particularly of distress emotions (e.g., fear, anger), may influence empathy. Some previous evidence seems to support such a connection, as Carr and Lutjemeier (2005) found a positive relation between the ability to recognize fearful facial expressions and empathy. Empathy has also been related to facial recognition accuracy across the six basic emotions (i.e., happy, sad, anger, disgust, surprise, and fear; Besel & Yuille, 2010) and to lower thresholds of being able to accurately identify facial expressions (Martin, Berry, Dobranski, & Horne, 1996). Given the association between facial emotion recognition and empathy, it is important to clarify whether youths with CU traits do indeed demonstrate impairments in processing facial expressions and whether this deficit can help explain their purported relative deficits in empathy.

Summary

More research is needed to understand the emotional deficits that are associated with CU traits in youths. Researchers have begun to examine the specific empathy deficits (cognitive vs. affective) related to psychopathic traits, and findings are somewhat equivocal. Furthermore, little is known about the precise abilities underlying the presumed empathy deficits and how these abilities relate to CU traits specifically. Across

empirical research on empathy, APT, and facial emotion recognition, there is a need to focus on CU traits that is not confounded by other dimensions of psychopathy. Such an approach will clarify the unique association of CU traits with these capacities and may reconcile the different findings of past studies.

The Current Study

This study aimed to address whether CU traits in adolescents are associated with deficits in cognitive and/or affective empathy and how abilities such as affective perspective-taking (APT) and facial emotion recognition may be associated with such deficit(s). It was expected that CU traits would be related to a differential pattern of deficit across the two dimensions of empathy and that APT and facial emotion recognition would mediate these relations. By understanding individual differences in CU traits and identifying the precise associated empathy deficits and emotion processing impairments, we can ultimately inform ways to alleviate these deficits early in development. Pinpointing the specific emotional abilities underlying the relation between CU traits and empathy deficits can inform the appropriate targets of intervention to possibly increase empathy with the hopes of also increasing prosocial behaviors and mitigating the development of negative consequences often associated with CU traits (i.e., aggression, delinquency).

Hypotheses

Consistent with some previous research reporting a negative association between CU traits and empathy, it was hypothesized that CU traits would be negatively correlated with both affective and cognitive empathy (Hypothesis 1a). The correlation was expected to be stronger for CU traits and affective empathy than for cognitive empathy, given

robust findings for lower affective empathy and more equivocal findings for cognitive empathy in previous research (Hypothesis 1b). APT and facial emotion recognition were expected to positively correlate with affective and cognitive empathy (Hypothesis 2). CU traits were hypothesized to be negatively correlated with APT and facial emotion recognition (Hypothesis 3a). The correlation was predicted to be stronger for APT than for facial emotion recognition because APT is more nuanced and complex and thus may be more sensitive in detecting deficits among individuals with CU traits than facial emotion recognition, which is a more simple task (Hypothesis 3b). Deficits in APT and facial emotion recognition were hypothesized to mediate the relations between CU traits and affective and cognitive empathy deficits (Hypothesis 4). Gender was explored as a covariate, given the robust finding that females have higher levels of empathy and are more accurate in processing facial emotions (Jolliffe & Farrington, 2006; McClure, 2000). Gender was also explored as a potential moderator in the hypothesized models to determine if the pattern of associations differs for males and females, although there was no *a priori* hypothesis regarding this association.

CHAPTER II

METHOD

Participants

Participants were 103 adolescents (70 males, 33 females) aged 16 to 18 years (M = 16.93, SD = .72). With an estimated moderate effect size (R^2 = .15), alpha of .05, and 3 predictors, power was .91. Participants were recruited from a residential program for adolescents who have dropped out of school. Individuals attending this program are not involved in the legal system at the time of their enrollment. The sample was predominantly Caucasian (57.3%), 33% of participants were African-American, and 9.7% were of other ethnicities. This sample was considered appropriate, as it was expected that participants would exhibit greater variability on CU traits than community or detained samples of adolescents.

Materials

Callous-unemotional Traits

Inventory of Callous-Unemotional Traits (ICU; Essau, Sasagawa, & Frick, 2006). Participants self-reported their levels of CU traits using the ICU. This measure has 24 items, and respondents rate each item on a 4-point Likert scale, ranging from 0 (*not at all true*) to 3 (*definitely true*). The ICU assesses three dimensions of CU traits: Callousness, Uncaring, and Unemotional. The ICU total score was used for analyses to indicate overall levels of CU traits. Previous studies with adolescent samples have reported internal consistencies ranging from α = .74 to .85 for the composite score (Kimonis et al., 2008; Lau & Marsee, 2012). The ICU has been found to correlate positively with aggression, delinquency, and sensation seeking and negatively with conscientiousness and

agreeableness, supporting its criterion-related validity (Essau et al., 2006; Kimonis et al., 2008). Cronbach's alpha for the current sample was .76.

Affective Perspective-taking (APT)

Participants were given vignettes describing a target matched on gender and approximate age to the participant. They were asked to identify the emotional response (i.e., *what* is the target feeling in the situation?) and to justify the emotional response (i.e., *why* is the target feeling that way in the situation?) for each vignette. The vignettes were adapted from those used in previous studies of perspective-taking and emotion recognition with children and adolescents (Anastassiou-Hadjicharalambous & Warden, 2008a; Ribordy, Camras, Stefani, & Spaccarelli, 1988; Strayer, 1993). Some of the content of the vignettes was adapted to be more relevant for the current adolescent sample (e.g., "toy" was changed to "phone," "children" was changed to "teens," "play" was changed to "hang out with"). A pilot study was conducted to ensure that emotions were clearly depicted in each vignette and that the modified content was appropriate for adolescents (see Appendix A for vignettes). Twenty-two vignettes covering the six basic emotions (i.e., happy, sad, anger, fear, disgust, and surprise) were administered to adolescents from the same program from which participants for the present study were recruited. The goal was to choose two vignettes for each emotion category. Vignettes that were correctly identified by the primary emotion by 50% to 75% of the participants were retained. This approach resulted in three vignettes for the anger and happy categories, four vignettes for the sad category, one for the disgust and fear categories, and zero for the surprise category. To further refine the happy, anger, and sad categories, the two vignettes with the lower percentages of correct identification were retained to ensure

variability. For the disgust and fear categories, the vignettes with the next highest percentage correctly identified were chosen. For the surprise category, the two vignettes with the highest percentage correctly identified were chosen. This procedure resulted in two vignettes for each emotion category. Two vignettes (depicting fear and surprise) were further revised to reduce ambiguity. See Appendix B for the vignettes and modifications.

From the pilot study, 12 vignettes were chosen for the current study (see Appendix B). Each depicted a single emotion, with two vignettes for each of the six basic emotions (i.e., happiness, sadness, surprise, anger, fear, and disgust). Responses were coded for correct identification (1 point) and correct justification (1 point), for a total possible score of 24. Responses for emotion identification that were compatible with the correct emotion were scored 0.5 point (e.g., if the primary emotion depicted was sadness, and a possible secondary emotion was anger, sadness = 1 point, anger = 0.5 point). This scoring was adapted from Knafo, Steinberg, and Goldner (2011), who used this scoring system for a facial recognition task. A coding scheme was developed, and a random sample of 35% of cases was double-coded by an independent rater. After initial coding, the intraclass correlation for emotion identification was .87, and the intraclass correlation for justification was .68. The coding scheme was revised (i.e., a new guideline was added to the justification coding scheme such that participants' responses must contain the key element for eliciting the primary emotion in order to receive credit), and the resulting intraclass correlation for emotion identification was .90, and the intraclass correlation for justification was .86. Only scores from the primary rater were used. Emotion identification and justification scores were positively correlated, $r = .59$, $p < .001$. The

average of identification and justification across vignettes formed a composite to indicate overall APT. Previous studies using these vignettes reported inter-rater agreement ranging from .73 to .86 (Anastassiou-Hadjicharalambous & Warden, 2008a; Knafo et al., 2011; Strayer, 1993).

Facial Emotion Recognition

University of New South Wales Facial Emotion Task (UNSW Task; Dadds, Hawes, & Merz, 2004). Participants viewed a set of photographed faces and were asked to identify the emotions expressed (see Appendix C for samples). Thirty-six child, teen, and adult faces were used, with each depicting happiness, sadness, anger, disgust, fear, or neutral. Faces were presented in a random order for two seconds on a computer. Participants were asked to identify the expressed emotion from a list of six response choices. Only one option was coded as correct for each photograph. A composite of correct identification across emotions was used for analyses. Consistency of emotion identification for each emotion type on the UNSW Task has been found to be above 50% within the same administration and ranges from 71.7% to 98.9% across administrations of one week apart (Merz, 2008). Percent of accurate identification was found to range from 85.8% to 98.0% across emotion types (Merz, 2008). The UNSW Task has been used with children and adolescents with CU tendencies and has been shown to detect facial recognition deficits among these youths (Dadds et al., 2008; Dadds et al., 2006). Recognition of different types of emotions has also been correlated with emotional problems and maltreatment (i.e., better recognition of anger and sadness associated with emotional problems; better recognition of fear and sadness associated with maltreatment history; Leist & Dadds, 2009). For the current study, percent of accurate identification

ranged from 47.6% to 98.1% across emotion types, with all but one photograph with a correct identification rate greater than 60%. Cronbach's alpha was .61 in the current study.

Empathy

Griffith Empathy Measure (GEM; Dadds et al., 2008). The GEM is a 23-item parent-report measure of child dispositional empathy and assesses both cognitive and affective dimensions (see Appendix D). For the current study, the GEM was adapted to be in the first-person format (e.g., "My child can't understand why other people get upset" was changed to "I can't understand why other people get upset"). Questions were also reworded to be more relevant for the adolescent sample (e.g., reference to "children" was replaced with "teens"). Participants self-reported on their empathy by rating each item on a 9-point Likert scale, ranging from -4 (*strongly disagree*) to +4 (*strongly agree*). The GEM has two subscales: Cognitive Empathy and Affective Empathy. Previous studies with parents reporting on their adolescents have demonstrated acceptable internal consistencies ($\alpha = .62$ for the Cognitive subscale; $\alpha = .77$-$.83$ for the Affective subscale; Dadds et al., 2008; Dadds, Jambrak, Pasalich, Hawes, & Brennan, 2011). Both factors of the GEM, as would be expected, have demonstrated positive correlations with prosocial behaviors and negative correlations with behavioral and emotional problems (Dadds et al., 2008).

Procedure

This study was approved by the Institutional Review Board at The University of Southern Mississippi. Informed consent was first obtained from participants' parents upon their enrollment in the residential program. Participation was completely voluntary

and did not affect an individual's status in the residential program. The study was explained to participants, and assent was obtained if they wished to participate. Participants completed, in order, the UNSW Task, the ICU, the adapted GEM, and the vignettes in a classroom setting for approximately 45-60 minutes. All measures were administered on individual computers in a group setting of approximately 30 adolescents.

CHAPTER III

RESULTS

Factor Analyses

An exploratory factor analysis was conducted on the adapted GEM to examine its internal structure. An initial principal axis factoring with Direct Oblimin rotation extracted eight factors based on eigenvalues greater than one, accounting for 69.67% of total variance. However, given the likelihood of overextraction using this method (Costello & Osborne, 2005), a scree plot, Parallel Analysis (PA), and Minimum Average Partial (MAP) analysis were examined to determine the appropriate number of factors to extract. Both the scree plot and PA suggested three factors, and the MAP analysis suggested two or three factors. The scree plot is a graphical representation of the eigenvalues in descending order. The point at which the line levels off corresponds to the point that differentiates meaningful factors from trivial factors (O'Connor, 2000). A PA compares eigenvalues generated from random data with eigenvalues observed from the actual data. A factor is considered significant and should be retained if its eigenvalue is greater than the corresponding eigenvalue at the 95th percentile for the random data distribution. In MAP analysis, factors are retained as long as systematic variance is greater than unsystematic variance in the correlation matrix (O'Connor, 2000). Thus, principal axis factoring with Direct Oblimin rotation was conducted specifying two and three factors for comparison.

When examining the two-factor model, the pattern was generally consistent with an affective and a cognitive empathy dimension, with some item content overlap. After removing three items, the solution had a simple structure and was conceptually consistent

(i.e., each item loaded onto a single factor and item content did not overlap across factors). Similarly, for the three-factor model, there was an affective and a cognitive empathy component, as well as a third component reflecting emotional responsiveness, with some item content overlap. After removing the overlapping items (six total), the solution had simple structure and was conceptually consistent.

Because both models were theoretically viable, a confirmatory analysis was conducted to further explore which model to retain. Fit indices suggested the three-factor model was a better fit for the current sample (CFI = .90, GFI = .86, RMSEA = .07) than the two-factor model (CFI = .78; GFI = .80; RMSEA = .10). Thus, the three-factor model was retained, and composite scores for each factor were used for subsequent analyses (see Table 1 for pattern matrix). The affective empathy factor reflects feeling *for* another's situation (e. g., "I feel sad when I see a teen with no one to hang out with"). The cognitive empathy factor reflects an understanding *for* another's emotional response (e.g., "I can't understand why other people get upset" – reversed scored). The emotional responsiveness factor reflects a self-focused affective reaction *to* another's emotional state akin to emotion contagion (e.g., "I become nervous when other teens around me are nervous"). Cronbach's alphas were .78, .62, and .73 for affective empathy, cognitive empathy, and emotional responsiveness, respectively.

Correlations

Descriptive statistics for study variables are provided in Table 2, and correlations among variables are provided in Table 3. Cognitive empathy was not significantly correlated with affective empathy, $r = .08$, $p = .42$, or emotional responsiveness, $r = .01$,

Table 1

Pattern Matrix for Griffith Empathy Measure- Adapted

	Factors		
	Cognitive Empathy	Affective Empathy	Emotional Responsive
10. I can't understand why other people get upset *	**.50**	-.10	.11
11. I rarely understand why other people cry *	**.68**	.04	-.03
14. I don't understand why other people cry out of happiness *	**.50**	.21	.17
15. I don't notice when others get sad *	**.47**	.01	-.18
16. I get sad when I see a teen with no one to hang out with	-.07	**.69**	.24
18. I feel sorry for another teen who is upset	-.03	**.63**	.27
20. I get upset when seeing another teen being hurt	-.07	**.57**	.12
23. I feel sad for people who are physically disabled	.03	**.65**	-.23
1. I become sad when other teens are sad	-.16	.33	**.58**
3. I react to the moods of people around me	-.17	-.20	**.65**

Table 1 (continued).

4. I get upset when another person is acting upset	.04	.12	**.63**
5. I cry or get upset when seeing another teen cry	.07	.25	**.67**
6. I get sad when watching sad movies or TV	.19	.30	**.46**
7. I become nervous when other teens around me are nervous	-.11	.10	**.56**
13. I react badly when I see people kiss and hug in public*	.15	-.14	**.46**

*reversed scored items

p = .94. Affective empathy was significantly correlated with emotional responsiveness, r = .46, p < .001. CU traits were negatively correlated with cognitive empathy, r = -.26, p = .01, and affective empathy, r = -.36, p < .001, in support of Hypothesis 1a. The difference in magnitude between these correlations was not significant, Fisher's t = -.79, p = .92. Thus, Hypothesis 1b was not supported, as CU traits appeared to be similarly associated with cognitive and affective empathy. APT was not correlated with cognitive, r = .04, p = .70, or affective empathy, r = .17, p = .08. Facial emotion recognition was positively correlated with cognitive empathy, r = .21, p = .04, but was not correlated with affective empathy, r = .09, p = .36. Thus, Hypothesis 2 was partially supported. CU traits were also negatively correlated with APT, r = -.21, p =.04, and there was a trend toward a negative

Table 2

Descriptive Statistics for Variables of Interest

Variable	*M*	*SD*	*Range*	*Skew*
CU traits (ICU)	25.74	7.95	10-59	1.08
Facial Emotion Recognition (UNSW)	31.25	4.07	5.14-36	-3.14
Affective Perspective-Taking	.76	.13	.17-1	.09
Cognitive Empathy (GEM)	5.49	6.46	-16-16	-.22
Affective Empathy (GEM)	3.04	7.26	-16-16	-.24
Emotional Responsiveness (GEM)	-9.20	11.68	-28-24	.45

Note: ICU = Inventory of Callous-Unemotional Traits; UNSW = University of New South Wales Facial Emotion Task; GEM = Griffith Empathy Measure

correlation between CU traits and facial emotion recognition, r = -.19, p = .06. Thus, Hypothesis 3a was partially supported. The difference in magnitude between these correlations was not significant, Fisher's t = .18, p = 43. Thus, Hypothesis 3b was not supported in that CU traits were similarly associated with facial emotion recognition and APT. Emotional responsiveness was significantly correlated with APT, r = .26, p = .01, but it was not correlated with CU traits, r = -.15, p = .14, or facial emotion recognition, r = .05, p = .59.

There were significant gender differences in affective empathy, $t(100)$ = -2.30, p = .02, and emotional responsiveness, $t(100)$ = -3.80, p < .001, such that females reported higher levels of both. Thus, gender was examined as a covariate in analyses where affective empathy and emotional responsiveness were the dependent variables. The negative correlation between CU traits and affective empathy remained significant when

controlling for gender, $r = -.34$, $p < .001$ (Hypothesis 1a). APT remained correlated with emotional responsiveness when controlling for gender, $r = .21$, $p = .04$ (Hypothesis 2).

Table 3

Correlations between Variables of Interest

	1. CU traits	2. Facial Recogn	3. APT	4. Cognitive Empathy	5. Affective Empathy
1. CU traits	-	-	-	-	-
2. Facial Recognition	-.19 (-.19)	-	-	-	-
3. APT	-.21* (-.20)	.38*** (.37***)	-	-	-
4. Cognitive Empathy	-.26** (-.26)*	.21* (.21)*	.04 (.04)	-	-
5. Affective Empathy	-.36*** (-.33)**	.09 (.08)	.17 (.15)	.08 (.08)	-
6. Emotional Responsiveness	-.15 (-.12)	.05 (.03)	.26** (.22)*	.01 (.01)	.46*** (.42)***

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

Note: APT = affective-perspective taking; parentheses represent partial correlations controlling for gender

Table 4

Indirect Effects of CU Traits on Dimensions of Empathy through Affective Perspective-Taking and Facial Emotion Recognition

Mediator: Affective Perspective-Taking				
	b	*SE*	Lower CI	Upper CI
Dependent Variable: Cognitive Empathy	.003	.02	-.03	.06
Dependent Variable: Affective Empathy	-.02	.02	-.08	.01
Dependent Variable: Emotional Responsiveness	**-.08**	**.06**	**-.23**	**-.005**
Mediator: Facial Emotion Recognition				
	b	*SE*	Lower CI	Upper CI
Dependent Variable: Cognitive Empathy	**-.03**	**.02**	**-.08**	**-.002**
Dependent Variable: Affective Empathy	-.004	.02	-.04	.04
Dependent Variable: Emotional Responsiveness	-.01	.02	-.06	.04

Note. Boldface represents significant results. Results are shown for models with affective perspective-taking and facial emotion recognition as the mediators and cognitive empathy, affective empathy, and emotional responsiveness as the dependent variables. Unstandardized regression coefficients are reported for the indirect effects. Bootstrap analyses with 5000 resamples with replacement were used. CI = 95% Confidence Interval.

Mediation Models

Separate mediation models were examined for each dimension of empathy as the dependent variable, CU traits as the predictor, and APT and facial emotion recognition as the mediators. A total of six mediation models were analyzed: a) APT as a mediator between CU traits and cognitive empathy, b) APT as a mediator between CU traits and affective empathy, c) APT as a mediator between CU traits and emotional responsiveness, d) facial emotion recognition as a mediator between CU traits and cognitive empathy, e) facial emotion recognition as a mediator between CU traits and affective empathy, and f) facial emotion recognition as a mediator between CU traits and emotional responsiveness. The analyses yielded a total effect on empathy for the variables in the model (i.e., CU traits and APT or facial emotion recognition on each index of empathy), a direct effect for the relation between CU traits and each index of empathy, and an indirect effect for CU traits on empathy through APT or facial emotion recognition. Indirect effects were examined via bootstrapping method with 5000 resamples using PROCESS for SPSS (Hayes, 2012). Bias-corrected confidence intervals (CI) were estimated for each indirect effect, and CIs exclusive of zero indicated significant mediation (Preacher & Hayes, 2008). The bootstrap method is appropriate because it makes fewer assumptions about the shape of the sampling distribution. That is, the sampling distribution of indirect effects is often not normal, and the bootstrap method does not assume normality.

APT as the Mediator

Results of analyses with APT as a mediator are presented in Table 4. Using CU traits to predict cognitive empathy, the overall model was significant, R^2 = .07, p = .04. The total effect, b = -.21, SE = .08, p = .01, and the direct effect, b = -.22, SE = .08, p = .01, of CU traits on cognitive empathy were significant. APT did not significantly predict cognitive empathy, b = -.80, SE = 5.15, p = .88. The indirect effect of CU traits on cognitive empathy through APT was, b = .003, SE = .02, 95% CI [-.03, .06], suggesting no mediation (Figure 1A).

For the model predicting affective empathy, the overall model was significant, R^2 = .13, p = .001. The total effect, b = -.32, SE = .09, p < .001, and the direct effect, b = -.30, SE = .09, p = .002, of CU traits on affective empathy were significant. APT did not significantly predict affective empathy, b = 6.14, SE = 5.58, p = .27. The indirect effect of CU traits on affective empathy through APT was b = -.02, SE = .02, 95% CI [-.08, .01], suggesting no mediation (Figure 1B).

For the model predicting emotional responsiveness, the overall model was significant, R^2 = .08, p = .02. The total effect, b = -.23, SE = .15, p < .13, and the direct effect, b = -.15, SE = .15, p = .32, of CU traits on emotional responsiveness were not significant. APT did significantly predict emotional responsiveness, b = 22.18, SE = 9.26, p = .02. The indirect effect of CU traits on emotional responsiveness through APT was b = -.08, SE = .06, 95% CI [-.23, -.005], suggesting partial mediation (Figure 1C).

Facial Emotion Recognition as the Mediator

Results of analyses with facial emotion recognition as a mediator are presented in Table 4. Using CU traits to predict cognitive empathy, the overall model was significant,

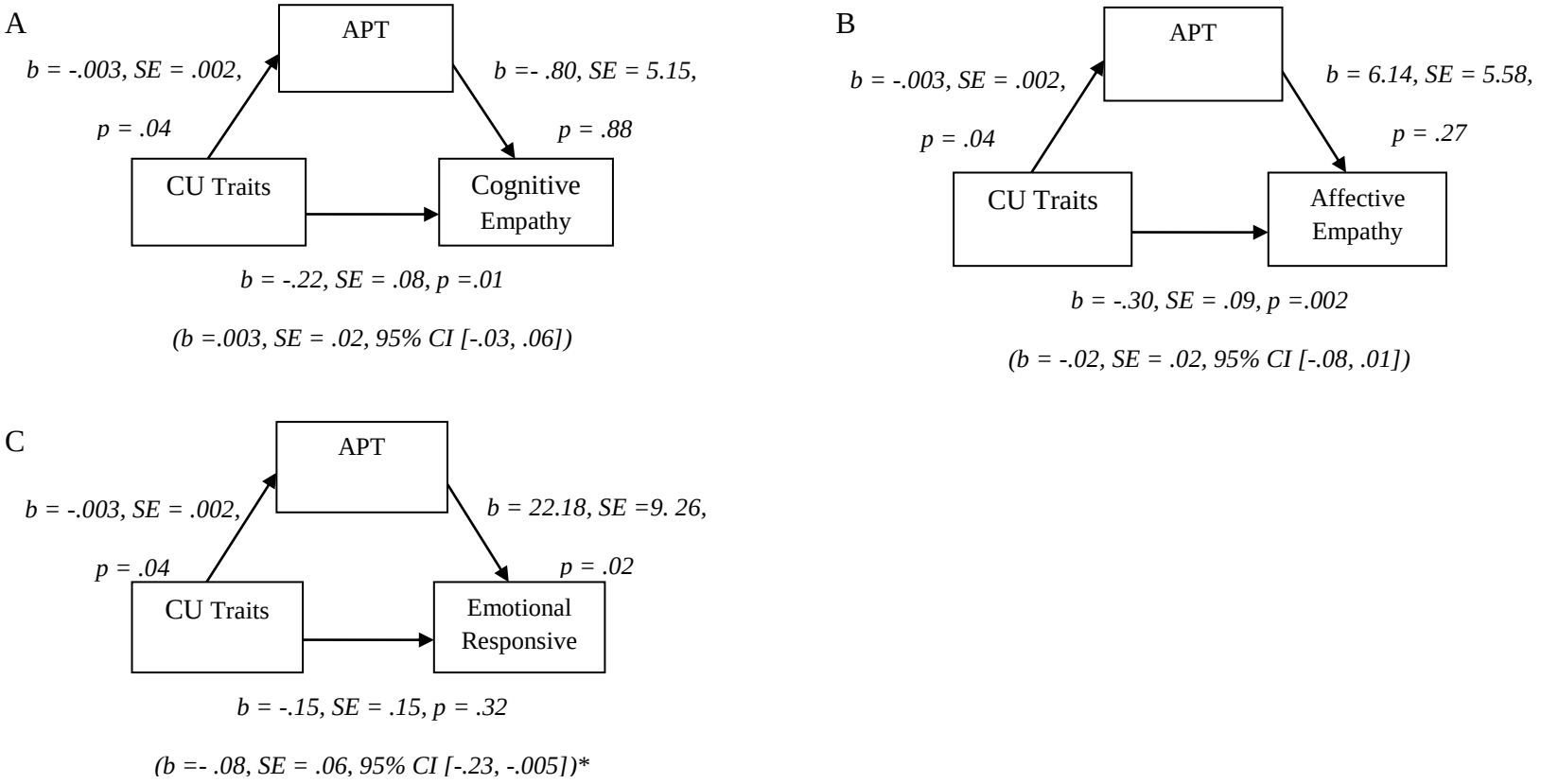

Figure 1. Mediated Outcomes on Dimensions of Empathy Showing Indirect Effects of CU Traits through Affective Perspective-Taking. Note: CU traits = callous-unemotional traits; APT = affective perspective-taking; emotional responsive = emotional responsiveness. The statistics in parentheses show the indirect effect of the predictor on the outcome.

R^2 = .09, p = .01. The total effect, b = -.21, SE = .08, p = .01, and the direct effect, b = -.19, SE = .08, p = .02, of CU traits on cognitive empathy were significant. Facial emotion recognition did not significantly predict cognitive empathy, b = .26, SE = .15, p = .09. The indirect effect of CU traits on cognitive empathy through facial emotion recognition was b = -.03, SE = .02, 95% CI [-.08, -.002], suggesting partial mediation (Figure 2A).

For the model predicting affective empathy, the overall model was significant, R^2 = .13, p = .001. The total effect, b = -.32, SE = .09, p < .001, and the direct effect, b = -.32, SE = .09, p < .001, of CU traits on affective empathy were significant. Facial emotion recognition did not significantly predict affective empathy, b = .05, SE = .17, p = .79. The indirect effect of CU traits on affective empathy through facial emotion recognition was b = -.004, SE = .02, 95% CI [-.04, .04], suggesting no mediation (Figure 2B).

Lastly, for the model predicting emotional responsiveness, the overall model was not significant, R^2 = .02, p = 32. The total effect, b = -.22, SE = .15, p < .14, and the direct effect, b = -.21, SE = .15, p = .16, of CU traits on emotional responsiveness were not significant. Facial emotion recognition did not significantly predict emotional responsiveness, b = .08, SE = .29, p = .79. The indirect effect of CU traits on emotional responsiveness through facial emotion recognition was b = -.01, SE = .02, 95% CI [-.06, .04], suggesting no mediation (Figure 2C).[1]

[1] Because there were significant gender differences in affective empathy and emotional responsiveness, and significant positive correlations between facial emotion recognition and APT, as well as between affective empathy and emotional responsiveness, mediation analyses were also conducted controlling for these covariates in their respective models (i.e., in models predicting affective empathy, gender and emotional responsiveness were entered as covariates, and in models involving APT, facial-emotional recognition was entered as a covariate, and vice versa). Results indicated that none of the models in these analyses demonstrated mediation. In addition, gender was explored as a simultaneous moderator at each path (i.e., from predictor to mediator; from mediator to outcome; and from predictor to outcome) in all six mediation

Parallel mediation models were also examined with facial emotion recognition and APT entered simultaneously as mediators to predict cognitive empathy, affective empathy, and emotional responsiveness, respectively. Results were similar to the models discussed above: facial emotion recognition partially mediated the association between .09, -.002], and APT partially mediated the association between CU traits and emotional responsiveness. In that model, the indirect effect was, *b* = -.08, *SE* = .06, 95% CI [-.26, -.004].

Additionally, sequential mediation models were examined with CU traits as the predictor, facial emotion recognition as the first mediator, APT as the second mediator, and the dimensions of empathy as the outcome. Of the two mediators, facial emotion recognition was considered as the first mediator because it is a relatively basic ability, and literature suggests that this ability is well-developed by middle childhood, with signs of accurate recognition as early as five years of age (Durand et al., 2007). Results indicated a significant indirect effect of CU traits on facial emotion recognition, then APT, on emotional responsiveness, *b* = -.03, *SE* = .02, 95% CI [-.10, -.002]. In addition, because emotional responsiveness (akin to affective sharing) could be conceptualized as a precursor to affective empathy (Decety & Moriguchi, 2007) , a final sequential mediation model was examined with CU traits as the predictor, facial emotion recognition as the first mediator, APT as the second mediator, and emotional responsiveness as the third mediator to predict affective empathy. Results indicated a significant indirect effect, *b* = -.01, *SE* = .01, 95% CI [-.03, -.001] (see Figure 3).

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models to determine if the pattern of association differs for males and females. None of those models showed significant moderated mediation.

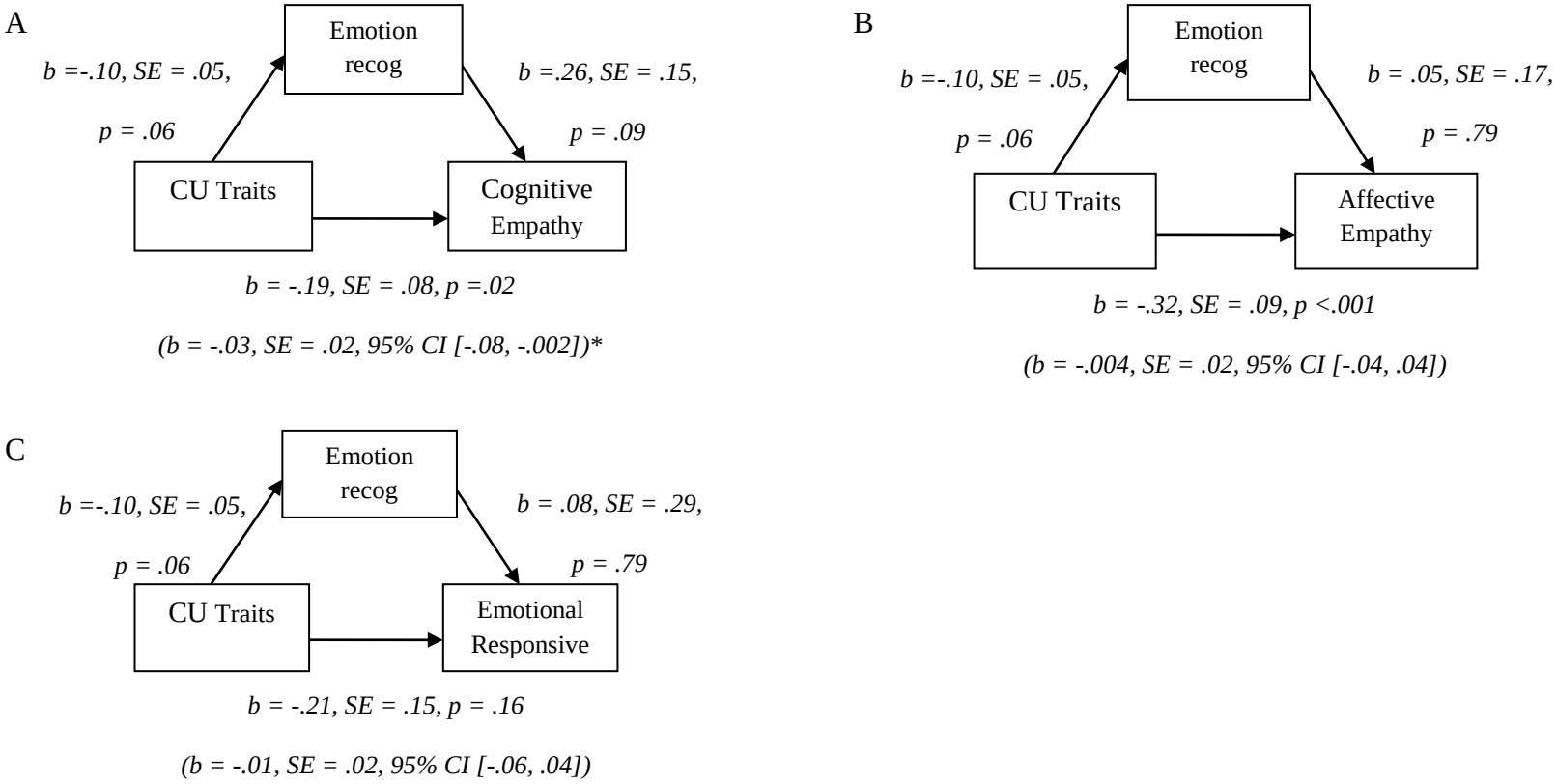
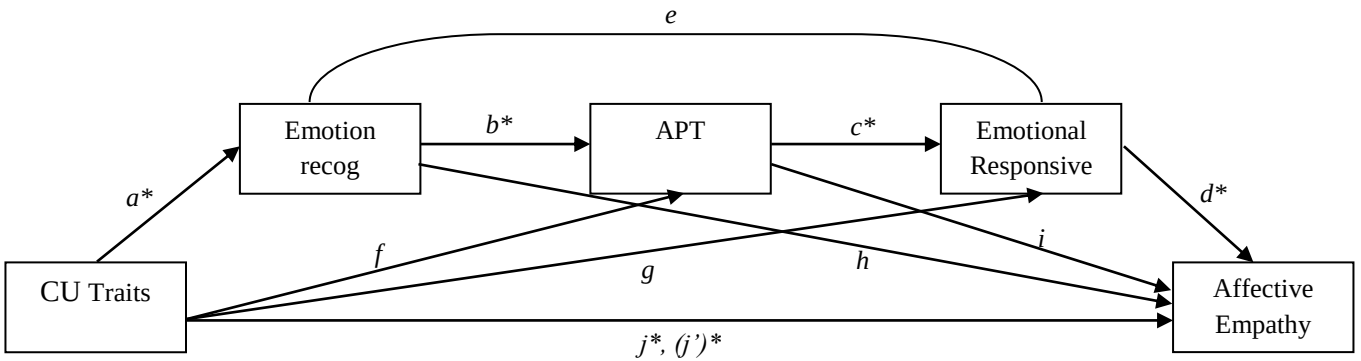


Figure 2. Mediated Outcomes on Dimensions of Empathy Showing Indirect Effects of CU Traits through Facial Emotion Recognition. Note: CU traits = callous-unemotional traits; emotion recog = facial emotion recognition; emotional responsive= emotional responsiveness. The statistics in parentheses show the indirect effect of the predictor on the outcome.



[a] b = -.10, SE = .05, p = .05

[b] b = .01, SE = .003, p < .001

[c] b = 23.84, SE = 9.92, p = .02

[d] b = .26, SE = .06, p < .001

[e] b = -.15, SE = .31, p = .63

[f] b = -.003, SE = .002, p = .14

[g] b = -.16, SE = .15, p = .29

[h] b = .04, SE = .17, p = .81

[i] b = -.09, SE = 5.59, p = .99

[j] b = -.25, SE = .08, p = .003

[(j')] b = -.01, SE = .01, 95% CI [-.03, -.001]

Figure 3. Mediated Outcome on Affective Empathy Showing Indirect Effects of CU Traits through Facial Emotion Recognition, Affective Perspective-Taking, and Emotional Responsiveness. Note: CU traits = callous-unemotional traits; emotion recog = facial emotion recognition; APT = affective perspective-taking; emotional responsive = emotional responsiveness. The statistics in parentheses show the indirect effect of the predictor on the outcome.

CHAPTER IV

DISCUSSION

This study aimed to address whether CU traits are associated with deficits in cognitive and/or affective empathy and how affective perspective-taking (APT) and facial emotion recognition may be associated with such deficit(s). Results indicated that CU traits were negatively associated with both cognitive and affective empathy to a similar degree. This finding is consistent with some previous research (e.g., Jones et al., 2010; Muñoz et al., 2011; Pardini et al., 2003), although it contradicts others in regards to cognitive empathy (e.g., Blair, 2005; Dadds et al., 2009 for adolescents; Mullins-Nelson et al., 2006). However, many previous studies do not disentangle cognitive empathy from perspective-taking or Theory of Mind (in fact, most studies use these terms interchangeably; e.g., Blair, 2005; Mullins-Nelson et al., 2006), which may be contributing to the equivocal findings in the literature. In contrast, the current study specifically examined cognitive empathy that is distinct from perspective-taking and found that CU traits were associated with a relative deficit in this dimension. CU traits were not singificantly associated with emotional responsiveness. Thus, it appears that adolescents with higher levels of CU traits do not report being more or less emotionally reactive or responsive to the emotions of others, in contrast to previous research demonstrating less emotional responsiveness using physiological measures (e.g., Anastassiou-Hadjicharalambous & Warden, 2008b; Blair 1999; Stadler et al., 2011). Instead, such individuals appear to show a relative deficit in affective and cognitive empathy.

There was partial support for the hypothesis that facial emotion recognition and APT are related to empathy. Facial emotion recognition was positively correlated with cognitive empathy, whereas APT was positively correlated with affective empathy and emotional responsiveness. Thus, accurately recognizing facial expressions appears to help one understand the emotional state of others, but it does not necessarily mean that one will feel *for* another person. Engaging in APT, on the other hand, appears to be associated with feeling *for* another person, feeling *with* another person, or both, but not with the ability to *identify with* another's emotional experience.

There was also partial support for the notion that CU traits are negatively related to facial emotion recognition and APT. Specifically, CU traits were negatively related to APT, and there was a trend suggesting a negative association with facial emotion recognition. These associations appeared to be of similar magnitude. Thus, individuals with CU traits seem to demonstrate a relative deficit in facial emotion recognition and with taking the perspective of another's emotional state, consistent with previous research (e.g., Anastassiou-Hadjicharalambous & Warden, 2008a; Dadds et al., 2006; Leist & Dadds, 2009; Muñoz, 2009).

The association between CU traits and cognitive empathy was partially mediated by facial emotion recognition. In particular, higher levels of CU traits were connected to a relative deficit in facial emotion recognition ability, which in turn, was associated with a relative deficit in cognitive empathy. This finding is consistent with past research suggesting a link between accuracy of recognizing facial expressions and empathy (Besel & Yuille, 2010; Carr & Lutjemeier; 2005) and suggests that this may be an important association for cognitive empathy in particular. Accurately recognizing facial expressions

could be an important precursor to being able to effectively identify with another's affective state. The mediation effect of facial emotion recognition on CU traits and cognitive empathy was still present when simultaneously considering APT as a mediator. This finding suggests that intervention that targets accurate recognition of facial expressions could help improve cognitive empathy for individuals with CU traits, independent of APT. This implication may be particularly relevant for facial expressions that signal distress (i.e., fear and sadness), as these deficits have been most consistently implicated in the literature to be associated with psychopathic traits in general and CU traits in particular (see Frick et al., 2014).

Although CU traits were not significantly related to emotional responsiveness at a bivariate level, these personality characteristics appear to be associated with emotional responsiveness via affective perspective-taking. That is, higher levels of CU traits appeared to be associated with a relative deficit in affective perspective-taking, which in turn, was associated with less likelihood of experiencing emotional responsiveness. The mediation effect of APT on CU traits and emotional responsiveness was present when simultaneously considering facial emotion recognition as a mediator. However, results also suggest that facial emotion recognition and APT sequentially mediate the relation between CU traits and emotional responsiveness. That is, higher levels of CU traits appeared to be associated with a relative deficit in recognizing facial expressions, which in turn, was associated with a relative deficit in APT, which was associated with less likelihood of experiencing emotional responsiveness. Thus, targeting affective perspective-taking skills alone may promote empathic emotional responsiveness among youth with high levels of CU traits, but improving facial emotion recognition abilities

may serve to improve affective perspective-taking as well. Being able to accurately infer the emotional state of another person based on the current situation may be a necessary first step to trigger some type of affective response, which could then potentially promote empathy and also reduce a likelihood of aggressive or antagonistic behavior toward others (Feshbach & Feshbach, 1982; Jolliffe & Farrington, 2004; Lovett & Sheffield, 2007; Miller & Eisenberg, 1988). Similarly, being able to accurately recognize another's facial expression may trigger the subsequent need to engage in perspective-taking.

The association between CU traits and affective empathy was not mediated by either APT or facial emotion recognition alone in the present study. Therefore, future research should explore other processes that may underlie this relative deficit, such as emotion regulation or self-awareness. It is possible that these factors may be more proximal to affective empathy than APT or facial emotion recognition, such that the ability to recognize expressions and engage in perspective-taking may promote cognitive empathy or emotional responsiveness. However, emotion regulation and self-awareness may also be required to fully experience affective empathy. For example, individuals who are able regulate their arousal and are able to maintain some minimal differentiation between self and other may be more likely to experience affective empathy compared to those who are dysregulated and unable to differentiate between self and other and experience overarousal or total identification as a result (Decety & Moriguchi, 2007). Being overly aroused may prevent the experience of empathy, as empathy is necessarily an other-person focused experience. In other words, overarousal may be more likely to generate personal distress than empathic concern and correspondingly translate to different behavioral responses (Decety, 2011). Findings from the current study seem to

suggest that affective empathy is a rather distal factor in relation to CU traits, as their relation involves multiple mediators, including facial emotion recognition, APT, and emotional responsiveness. It appears that individuals with CU traits have difficulty recognizing facial expressions, which could contribute to a relative deficit in engaging in perspective-taking and a related poverty of emotions (or a lack of emotional responsiveness), which interferes with experiencing or expressing affective empathy.

The present study had several limitations that should be considered. Participants were predominantly Caucasian male adolescents attending a residential program. Thus, findings may not generalize to females or individuals from other ethnicities, age groups, or settings. The small number of females in our sample may have also precluded the detection of moderations by gender. In addition, due to the cross-sectional nature of this study, alternative developmental models (e.g., deficits in facial emotion recognition leading to the development of CU traits, which in turn, lead to deficits in empathy; or deficits in perspective-taking leading to empathy deficits, which in turn lead to CU traits) could not be examined. Although it is difficult to argue conceptually that empathy is a precursor to APT or facial emotion recognition, the temporal sequence of the variables of interest could not be fully addressed in this study. APT and facial emotion recognition were conceptualized as underlying deficits that may explain the relation between CU traits and empathy deficits given findings suggesting strong genetic underpinnings for CU traits (see Frick et al., 2014) and the association of CU traits with an early uninhibited and fearless temperament style that emerges early in life (Barker, Oliver, Viding, Salekin, & Maughan, 2011; Glenn, Raine, Venables, & Mednick, 2007). Nonetheless, future

studies with a longitudinal design to track the development of these processes would better inform the association between these variables.

The current study represents a step in further understanding specific mechanisms that underlie empathy deficits associated with CU traits. Variables such as facial emotion recognition and APT could be targets of intervention. There is now increasing recognition that interventions for youth with CU traits require adaptations to fit their cognitive, emotional, and motivational style (Frick et al., 2014). Indeed, some recent work has begun to explore such approaches, including interventions that tailor to a reward-dominant response style, or adding an emotion-recognition adjunct to traditional interventions with promising results (e.g., Dadds, Cauchi, Wimalaweera, Hawes, & Brennan, 2012; Kimonis & Armstrong., 2012). For example, Dadds and colleagues (2012) found that an emotion-recognition component involving training in emotional literacy and emotion recognition led to significant improvements in affective empathy and reduction in conduct problems in children with high CU traits, compared to traditional parent-training-based intervention. The present findings suggest that developing accurate facial recognition abilities may not only help improve cognitive empathy among youth with CU traits, it may also increase the likelihood of engaging in affective perspective-taking, which could help increase the likelihood of experiencing empathic emotional responsiveness, as well as affective empathy. However, alternative approaches, such as improving emotion regulation, may be required to improve affective empathy. Overall, the results of this study speak to the importance of exploring specific mechanisms that underlie different dimensions of empathy deficits associated with CU

traits, as they have the potential to inform prevention and intervention programs for youth at-risk for severe and varied behavioral problems.

APPENDIX A

AFFECTIVE PERSPECTIVE-TAKING VIGNETTES FOR PILOT STUDY

For each of the following scenarios, you will be asked to identify a) what emotion the person is feeling, and b) why the person is feeling that way.

1. Johnny/Susie and his/her little sister have a pet dog. The dog is sick and is going to die. [Sad]
2. Johnny/Susie was the only one in class not to get any Valentines on Valentine's Day. [Sad]
3. Johnny's/Susie's favourite sweater that he/she liked a lot was very old and worn out. He/she had to throw it away and gave it to his/her mom to get rid of it. [Sad]
4. Johnny's/Susie's friend, who he/she really liked to hang out with, moved away. Johnny/Susie couldn't hang out with his/her friend anymore. [Sad]
5. Johnny's/Susie's little brother broke his/her phone on purpose. [Anger]
6. Johnny/Susie was trying to tell his/her best friend about something exciting, but someone kept interrupting. [Anger]
7. Johnny/Susie let his/her best friend use his/her new game. The friend wasn't careful and lost the game and wouldn't give Johnny/Susie another one. [Anger]
8. A girl and boy argue over her new skates. The father is called in to mediate. The boy lies; the girl is unjustly punished and her skates given away to the boy. [Anger]
9. Three teens sneak into a yard at night to investigate an old house. The stairs creak, a looming shadow appears, and the teens run away. [Fear]

10. Today is Johnny's/Susie's first day at a new school. Before s/he left, his/her friend told him/her that kids at the new school might not like him/her and it's hard to make new friends. [Fear]
11. Johnny/Susie and his/her little sister were in their room at night. It was dark, and they saw a tree outside that looked like a person with his hand about to come in the window.[Fear]
12. It is Johnny/Susie's birthday. He/She is given a party with all his/her favourite people and everything on his/her wish list. [Happy]
13. Johnny/Susie scored the winning goal of the game that made his/her team qualify for the semi-finals. [Happy]
14. Johnny/Susie wanted to ask someone very special to go to a party with him/her. S/He asked, and she/he agreed. [Happy]
15. When Johnny/Susie went to bed, s/he was in his/her own bed, and when s/he woke up, s/he was on the couch. [Surprise]
16. Johnny/Susie had a dog named Bowser who always barked at him/her when s/he came from school. One day when Johnny/Susie came home, s/he said "Hi Bowser!" and Bowser said "Hi Johnny/Susie!" [Surprise]
17. Johnny/Susie was very upset after s/he finished an exam. S/He was sure s/he did badly and would be lucky to pass. The next day when the teacher handed back the exam, s/he saw the grade was an A. [Surprise]
18. Louise has asked her sister Mary to give her a CD of her favorite band for her birthday. The day before her birthday, Louise accidentally knocks Mary's bag on the kitchen floor. Some red wrapping paper and a CD fall out. The CD is a group Louise

hates. Louise puts them back in Mary's bag and goes to her room. Next day, Mary gives Louise her birthday present, wrapped in red paper. Mary finds a CD of her favorite band inside. [Surprise]

19. Someone threw up on Johnny/Susie during lunch at school. [Disgust]
20. A friend gave Johnny/Susie an apple. S/He bit into the apple and found a smelly, squashed, dead worm. [Disgust]
21. Johnny's/Susie's friend brought their dog over to Johnny's/Susie's house. The dog made a mess on the carpet and Johnny/Susie stepped in it. [Disgust]
22. Johnny/Susie ordered his/her favorite soup at a restaurant he goes to regularly. After s/he took a first sip and looked down, s/he found a strand of hair in his/her soup. [Disgust]

APPENDIX B

AFFECTIVE PERSPECTIVE-TAKING VIGNETTES CHOSEN FOR THE STUDY

1. Johnny's/Susie's favourite sweater that he/she liked a lot was very old and worn out. He/she had to throw it away and gave it to his/her mom to get rid of it. [Sad]
2. Johnny's/Susie's friend, who he/she really liked to hang out with, moved away. Johnny/Susie couldn't hang out with his/her friend anymore. [Sad]
3. Johnny's/Susie's little brother broke his/her phone on purpose. [Anger]
4. A girl and boy argue over her new skates. The father is called in to mediate. The boy lies; the girl is unjustly punished and her skates given away to the boy. [Anger]
5. Today is Johnny's/Susie's first day at a new school in a new town and s/he doesn't know anyone. Johnny/Susie was told it will be hard to make new friends. [Fear]
6. Johnny/Susie and his/her little sister were in their room at night. It was dark, and they saw a tree outside that looked like a person with his hand about to come in the window. [Fear]
7. It is Johnny/Susie's birthday. He/She is given a party with all his/her favourite people and everything on his/her wish list. [Happy]
8. Johnny/Susie scored the winning goal of the game that made his/her team qualify for the semi-finals. [Happy]
9. When Johnny/Susie went to bed, s/he was in his/her own bed, and when s/he woke up, s/he was on the couch. [Surprise]
10. Johnny's/Susie's dog named Bowser always barked at him/her when s/he came from school. One day when Johnny/Susie came home, s/he said "Hi Bowser!" and Bowser said "Hi Johnny/Susie!" in words. [Surprise]

11. Someone threw up on Johnny/Susie during lunch at school. [Disgust]
12. A friend gave Johnny/Susie an apple. S/He bit into the apple and found a smelly, squashed, dead worm. [Disgust]

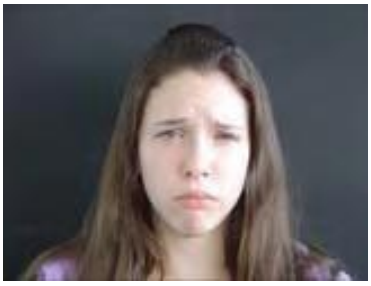
Note: Underline denotes changes

APPENDIX C

SAMPLES OF UNIVERSITY OF NEW SOUTH ALES FACIAL EMOTION TASK

Happy

Sadness



Anger

Disgust

Fear

Neutral

APPENDIX D

GRIFFITH EMPATHY MEASURE (GEM) ADAPTED

Please read each statement below and indicate the extent to which you agree or disagree. Mark your answers by circling the appropriate point. Do not leave any statement unrated.

Example: If you somewhat agree with the statement, you would circle as indicated below.

Strongly disagree				Neutral				Strongly agree
-4	-3	-2	-1	0	(1)	2	3	4

1. I become sad when other teens are sad
2. I get upset seeing another teen being punished for misbehaving
3. I react to the moods of people around me
4. I get upset when another person is acting upset
5. I cry or get upset when seeing another teen cry
6. I get sad when watching sad movies or TV
7. I become nervous when other teens around me are nervous
8. I am happy when another person is happy
9. I can continue to feel okay even if people around are upset
10. I can’t understand why other people get upset
11. I rarely understand why other people cry
12. I would eat the last cookie, even when I know someone else wants it
13. I react badly when I see people kiss and hug in public
14. I don’t understand why other people cry out of happiness
15. I don’t notice when others get sad

16. I get sad when I see a teen with no one to hang out with

17. I treat cats and dogs like they have feelings

18. I feel sorry for another teen who is upset

19. I like to watch people open presents even when I don't get one

20. I get upset when seeing another teen being hurt

21. I laugh when seeing another teen laugh

22. I get upset when seeing an animal being hurt

23. I feel sad for people who are physically disabled

APPENDIX E

IRB APPROVAL LETTER

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI.

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **13071701**
PROJECT TITLE: **Callous-unemotional Traits and Empathy Deficits: Mediating Effects of Affective Perspective-taking and Facial Emotion Recognition**
PROJECT TYPE: **Thesis**
RESEARCHER(S): **Joyce Lui**
COLLEGE/DIVISION: **College of Education and Psychology**
DEPARTMENT: **Psychology**
FUNDING AGENCY/SPONSOR: **N/A**
IRB COMMITTEE ACTION: **Expedited Review Approval**
PERIOD OF APPROVAL: **07/23/2013 to 07/22/2014**

Lawrence A. Hosman, Ph.D.
Institutional Review Board

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