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Exploring the Relationship Between Personality Traits and Empathy in Individuals with Autism  
Spectrum Disorder (ASD)

A thesis submitted in partial satisfaction of the requirements for the degree Master of Arts  
in Education

by

Jolie Alison Straus

2022

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## ABSTRACT OF THE THESIS

Exploring the Relationship Between Personality Traits and Empathy in Individuals with Autism  
Spectrum Disorder (ASD)

by

Jolie Alison Straus

Master of Arts in Education

University of California, Los Angeles, 2022

Professor Jeffrey J. Wood, Chair

Empathy plays an important role in shaping developmental trajectories of daily interactions between children. When children exhibit appropriate responses to others in distress, this plays a positive role in their social functioning and helping behaviors. Individuals with autism spectrum disorder (ASD), however, often face challenges with the ability to discriminate between various emotional states and how to respond. The present study examined the relationship between two of the Big Five Personality Traits (i.e., Conscientiousness and Agreeableness) and empathy in school-age children (ages 7-13 years) with autism. Through quantitative secondary data analysis, this study utilized measures of Conscientiousness and Agreeableness, and of empathy to analyze the association between associations of emotion regulation-related personality traits and component-based domains of empathy. Results revealed that there was a positive association between Conscientiousness and Agreeableness and affective empathy, supporting the hypothesis of the study. Results further highlighted a significant association between the valence of an emotion (e.g., positive, or negative emotions) and levels of empathy. This work may inform

future studies on the impact of empathy as it is linked to two main personality domains for children with autism as they reach school age.

The thesis of Jolie Alison Straus is approved.

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2022

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## Introduction

Across multidisciplinary fields of education and developmental psychology, particularly in social-emotional learning, an understanding of how individuals meet the needs of others in distress is of keen importance. Early in their development, children in elementary school classrooms experience varied social-emotional encounters with their peers. When children exhibit appropriate responses to others in distress, this plays a positive role in their social functioning and helping behaviors. Empathic concern, therefore, is a reliable indicator for helping behavior (Eisenberg & Miller, 1987; Spinrad & Eisenberg, 2017). Not only can an individual's emotional state predispose them to react in a particular way, but also their behavior may impact the emotion that they exhibit. Specifically, individuals with autism spectrum disorder (ASD) often face challenges in the social, emotional, and behavioral domains of development. They may, therefore, face challenges with the ability to discriminate between various emotional states and how to respond both affectively and effectively.

Although previous research has defined empathy in numerous ways (Davis, 1996; Decety & Batson, 2009), for the purposes of this study, empathy will be defined as a complex process that comprises both cognitive empathy and affective empathy (Walter, 2012). Within this conceptualization, there is a clear distinction between these two components that involve the distinction between thinking and feeling (Walter, 2012). Cognitive empathy primarily involves perspective-taking, while affective empathy primarily involves an emotional response to an experience. Additionally, emotion regulation is defined as an individual's endeavors to influence which emotions they elicit, when they elicit these emotions, and how they experience and express these emotions (Gross, 1998; McRae & Gross, 2020). For school-age individuals emotional processes are required in decision making, whereby children must decide when and

how to apply their knowledge learned in school to everyday encounters that they experience (Immordino-Yang & Damasio, 2007). Given the primary components of empathy the question emerges: how is empathy associated with personality traits that are related to emotion regulation for school-age individuals with autism?

Typically developing individuals develop effective emotion regulation skills, that are a prerequisite to empathizing with others without being overwhelmed by simulating the emotions of others. Individuals who experience emotions within a tolerable range can modulate the intensity or the duration of that emotion to demonstrate successful empathy development (Eisenberg et al., 2009; Spinrad & Eisenberg, 2017). Emotion regulation skills assist in influencing which emotions individuals express during their everyday experiences. Importantly, learning to regulate emotions is one of the most critical aspects of development, although it is difficult to measure and has been a barrier to prior research within the field of emotion regulation (Hourigan et al., 2011; Mazefsky et al., 2013). Prior evidence, however, is scarce in supporting the connection between levels of empathy and emotion regulation in individuals with autism (Kasari et al., 2003).

Previous literature explains that emotion regulation can be examined at the trait-level through a personality perspective (Javaras, 2012; McAdams, 2015; Schriber et al., 2014). This study will examine two of the central tenets of the Big Five Personality Traits that are related to emotion regulation: Conscientiousness and Agreeableness (McCrae & Costa, 1987).

Conscientiousness is composed of characteristics that are associated with emotion regulation such as the ability to inhibit certain behaviors to accomplish goals, to persist in tasks, and to direct attention effortfully (Jensen-Campbell et al., 2007; Rothbart et al., 1994). Moreover, both positive and negative emotions can induce affective reactions in individuals via imitation and

observation of when to express their emotions (Morris et al., 2007). Individuals with autism may exhibit less agreeableness due to their reduced capacity to comprehend interpersonal cues, to engage in emotionally sensitive, social responses, or to empathize with others (Schriber et al., 2014). Agreeableness includes expressive qualities such as care, cooperation, and empathy (McAdams, 2015). Both Agreeableness and Conscientiousness are tied to the regulation of oneself, which in turn, is important for empathy. In order for individuals to live well, it is important to control their impulses and develop moral emotions (i.e., empathy; McAdams, 2015). The emotional aspects of empathy motivate a conscientious and agreeable individual through their actions and behaviors, which is further impact regulatory processes that are critical for every individual.

The purpose of this study is to examine the relationship between personality traits associated with emotion regulation and empathy in school-age children with autism. By examining this association within autism, the findings may provide a more evidenced-based rationale for interventions of emotion regulation for this population, as well as other individuals. Given the paucity of research in connecting personality traits related to emotion regulation and empathy for individuals with autism, this study aims to bridge the connection between these constructs. Understanding this relationship is crucial as it may contribute to autism symptomatology, that includes challenges in the development of empathy. If individuals are able to regulate and moderate their emotional reactions to everyday experiences, they can live more conscientiously. For example, given the current divided climate in the United States, becoming empathetic and learning to understand one another is crucial for overall survival. Additionally, individuals who are conscientious and agreeable can successfully manage their reactions to intense emotions and therefore demonstrate empathy towards the experiences of others. This is a

critical step in the survival of humankind as learning to understand one another promotes longevity.

## **Typical Development**

### **Personality Traits Related to Emotion Regulation in Typical Development**

In order to understand the constructs in this study, it is important to define emotion regulation thoroughly. Eisenberg and colleagues define emotion regulation as strategies that individuals use to adjust the intensity or duration of their emotional reactions to a comfortable level, as well as to change the state of the emotion internally to accomplish their goals (Eisenberg et al., 2009). Emotion regulation strategies are skills that individuals use to influence which emotions they have, when they have them, and how they express and experience these emotions (Eisenberg et al., 2010). Many studies have proven that effective emotion regulation is a prerequisite for successful adaptive functioning skills (e.g., social functioning) and a predictor of adjustment and well-being (Baron-Cohen & Wheelwright, 2004; Gross et al., 2006; Mazefsky & White, 2014).

Usually, individuals want to change their inner experience of an emotion, as they want to feel good, not bad. Emotion regulation is used to enhance, maintain, or reduce a positive or negative emotion (Gross, 1998; Gross & Thompson, 2006; McRae & Gross, 2020). When an individual begins to process an internal or external event, the brain signals the individual to attend to emotional cues which may trigger a coordinated set of responses involving affective behaviors. Individuals may, therefore, utilize specific adaptive techniques, such as blunting or dulling their emotions by restricting sensory input. Individuals may also cover their ears or eyes to block out unpleasant sights or sounds or change their goals (e.g., deciding that they do not want to play with their peer after being excluded from a game; Berk, 2009; Conner et al., 2018).

Once these affective tendencies arise, they may be modulated in various ways through voluntary effortful control (Ekman & Friesen, 1972; Eisenberg et al., 2011; Frijda, 2000; Gross & Thompson, 2006). Individuals who exhibit successful regulatory processes require effortful management of their emotions. For example, Estévez et al. (2019) found that participants who had greater difficulties with regulating their emotions may have an insufficiently developed ability to manage their feelings in a socially acceptable way. During situations of high emotional activation, the inaccurate interpretations of the context are more likely; these inaccuracies lead to cognitive distortions that may block the chances of appropriate empathic responses (Estévez et al., 2019).

There is a robust connection between conscientiousness and emotion regulatory processes, as both are characterized by the ability to inhibit specific behaviors to execute alternate behaviors, the ability to accomplish tasks, and the ability to successfully direct one's attention (Jensen-Campbell et al., 2007). Conscientiousness is used to refer to individuals who are careful, efficient, organized, self-controlling and show self-discipline. Within personality literature, Conscientiousness is viewed as a meta-trait that emerges from and includes early effortful emotion regulation (McAdams, 2015). Moreover, conscientiousness may act as the link between anger and aggression, as individuals may be better equipped to suppress their dominant responses of anger during a frustrating situation (Jensen-Campbell et al., 2007). Agreeableness, another tenet of the Big Five, is also thought to be a personality derivative of emotion regulation for early childhood (McAdams, 2015). Additionally, individuals who are characterized as sympathetic, good-natured, and trustworthy are agreeable (McAdams, 2015; McCrae & Costa, 1987). Overall, conscientiousness and agreeableness have been linked to effective emotion

regulation strategies through an individual's ability to engage in self-control, prosocial behavior, and interpersonal relationships (Schriber et al., 2014).

### **Empathy in Typical Development**

Although there are numerous definitions of empathy, for the purpose of this study, the construct of empathy will be examined through a social cognitive neuroscience perspective. According to Walter (2012), empathy is the ability to share another person's internal thoughts and feelings as well as an effective reaction to another person's emotional state. Utilizing Walter's model, empathy includes both affective and cognitive empathy, as these are interrelated yet distinguishable forms (Walter, 2012). Broadly defined, affective empathy describes feeling an emotion without focusing solely on the cognitive processes, whereas cognitive empathy is defined by perspective taking without actually feeling the emotional state of another person.

Specifically, in Walter's model, the components of affective empathy include: 1) affective experience, 2) affective isomorphy, 3) perspective taking, 4) the self-other distinction and 5) other-orientation (Walter, 2012). Affective empathy includes affective experience that is elicited by the observed emotional state of another person matching that person's emotional state (i.e., affective isomorphy). In addition, it involves understanding another person's emotional state including perspective taking, the self-other distinction, and the understanding of the self and another person's emotional state.

By contrast, cognitive empathy includes perspective taking and the self-other distinction (Walter, 2012). It is defined as the ability to understand the feelings of another person without noting that the other person is also in an affective state. An example of cognitive empathy is when an individual understands that another person is angry but does not feel the same emotion as the person who is angry. Moreover, cognitive empathy is associated with Theory of Mind

(ToM), which is the ability to understand and represent the mental states of others. These mental states are comprised of cognitive beliefs in addition to emotions and affective states (Walter, 2012). Empathy and ToM overlap through affective empathy and by mentalizing about affective states, which is parallel to cognitive empathy.

Generally, empathy is equated with sympathy, but in Walter's model, sympathy includes: 1) affective experience, 2) perspective taking, 3) the self-other distinction, 4) other-orientation, and 5) prosocial motivation (Walter, 2012). A component that is not included in sympathy is affective isomorphy, or the similarity to another person's emotional state. An individual does not have to experience affective isomorphy to feel sympathy for another person, which is one of the main distinctions of affective empathy.

Additionally, there are other components of empathy such as emotional mimicry, emotional contagion, and personal distress (Walter, 2012). Emotional mimicry is the automatic imitation and synchronization of emotional behavior with that of another person (i.e., affective behavior), while emotional contagion is when others experience emotions that are similar to those by association, involving both affective experience and affective isomorphy (Walter, 2012). For example, an individual may feel happy when others around them are happy. Affective empathy, however, differs from emotional contagion in that emotional contagion occurs when individuals experience emotions that are similar to those that others experience by association, where the context of the situations matter (Walter, 2012). For example, an infant may imitate their caregiver's smile, which does not require the self-other distinction or perspective taking. Affective empathy does require both the self-other distinction and perspective taking. One working hypothesis of this research study is that individuals with autism have emotional contagion, but it may be derailed by the ambiguity of the self-other distinction. Furthermore,



personal distress is a negative emotional state elicited by the emotional states of others. This state does involve the self-other distinction because an individual is distressed by the state of another person (Batson, 2009; Walter, 2012).

### **Personality Traits Related to Emotion Regulation and Empathy in Typical Development**

Emotion regulation is a critical adaptive mechanism, where the process of appropriately modifying emotional responses to stressful stimuli can increase, decrease, or maintain emotions, depending on the intensity, duration, and valence of the affective experiences. In order to tolerate another person's emotional state, an individual must be able to turn down the intensity or strength of that emotion. Moreover, affective empathy is not possible if an individual cannot regulate the emotional impact of a situation. When an individual can successfully regulate their emotions when experiencing empathy, that experience can propel perspective-taking skills.

Many processes involved in the modulation of emotion are automatic and can be difficult to consciously manage (Eisenberg et al., 2010). Other voluntary processes can be controlled and managed through effortful control (Bargh & Williams, 2007). An important aspect of effortful control involves the ability to sustain and actively engage with a task (i.e., focused attention; Eisenberg et al., 2010). Previous studies have shown that deficits in regulatory processes are associated with reactive, emotionally-driven conduct problems, whereby dysregulation can undermine the quality of social interactions with caregivers and peers (Frick & Morris, 2004). Individuals who are conscientious and agreeable may demonstrate both empathy and abilities to engage in effective emotion regulation skills.

### ***Regulatory Processes and Social Learning Theory***

According to Bandura (1977), social learning theory posits that behavior is learned from the environment through modeling, which is also known as imitation or observational learning.

By imitating and observing another person's behavior, children acquire many skills.

Consequently, the development of empathy stems, in part, from imitation of facial expressions and mimicry of others' experiences, for an individual to simulate emotions and experiences of others (McDonald & Messinger, 2011; Schipper & Petermann, 2013). Bandura emphasized that children become more selective with what they choose to imitate, further giving the child more agency and self-efficacy.

Bandura's social learning theory emphasizes the importance of cognition, as the theory was later referred to as *the social cognitive theory* (Bandura, 1986). The social cognitive theory accounts for an individual's past experiences, which affect what behavior or action will occur. This theory parallels the claim that the brain reacts with less empathy when the individual being observed has been previously perceived as unfair or as though it was their fault (Breithaupt, 2012). Past experiences inform expectations, which influence both whether and why a person engages in a specific behavior and thus, their affective response (Bandura, 1977).

Moreover, thoughts and emotions influence behaviors, which in turn influence actions. If caregivers appropriately expressed empathy and regulated their emotional reactions, children could then model their reactions and regulatory behaviors after what they observe. During a child's early years of their life, much of their behavior is learned and imitated based on their experiences with others. If children learn to adaptively regulate their emotional reactions and employ empathy, they can then become more conscientious adults. A system of empathetic and conscientious individuals (both children and adults) will positively contribute to an equitable society.

Thus, the current study uses Bandura's social cognitive theory to situate the mimicry and observation of others' behaviors to shed light on the association between empathy and

personality traits associated with emotion regulation. To date, the social learning theory has not been applied to examining empathy for individuals with autism. Although individuals with autism use fewer emotion regulation strategies, when they do use these skills, they employ them less flexibly compared to their typically developing peers (Conner et al., 2020). Therefore, the current study posits the connection of Conscientiousness, Agreeableness, and empathy to examine these skills that may be present—albeit slightly less present—in individuals with autism.

## **Autism Spectrum Disorder**

### **Personality Traits Related to Emotion Regulation in Autism**

Numerous autism research studies have demonstrated that individuals with autism may have difficulties with emotion regulation skills which may manifest through lack of eye contact, lack of regulating their responses to situations, and deficits in Theory of Mind (Conner et al., 2020; Eisenberg et al., 2009; Wood et al., 2019). Preexisting studies have shown that individuals with autism have challenges with perspective taking skills, problem-solving, misreading social cues, and sensory sensitivity (Conner et al., 2018; Mazefsky & White, 2014). Individuals with autism may exhibit less agreeableness due to their reduced capacity to comprehend interpersonal cues, to engage in emotionally sensitive, social responses, or to empathize with others (Schriber et al., 2014). Individuals with autism have higher levels of negative affect in response to frustrating situations, and once they are upset, they tend to remain upset for longer durations than their typically developing peers (Conner et al., 2018; Konstantareas & Stewart, 2006).

Often, the medical model follows a deficit-based approach when discussing which skills or abilities individuals with autism do not have, as there is a large body of evidence in support of poor emotion regulation for individuals with autism. The current study aims to find a strengths-

based approach to guide the analysis and findings. Given the nature of the deficit-based work in much of this field, it is important to highlight both the strengths of individuals with autism. Much the existing focus is on understanding challenges or difficulties in this population, as experts are very adept at identifying what children do not know. I argue, however, that it is even more critical to understand what children with autism do know, thereby utilizing a strengths-based approach for the current study.

### **Empathy in Autism**

According to Breithaupt (2012), the three-step model of empathy proposes that people have various empathy-related strategies available to them and they may block or control empathy, thus only sustaining empathy when the blocking strategies are bypassed. Therefore, one of the central hypotheses of this research study is that individuals with autism may block more empathy compared to typically developing children. If this is true, how can these individuals circumvent the blocking strategies that allow them to experience empathy?

Breithaupt argues that human empathy is strongest when it is coupled with secondary mental activities that help to bypass blocking strategies of empathy such as: narrative thinking, fairness perception, past experiences, and temporal development (Breithaupt, 2012).

Although the relationship between empathy and autism symptomology is not well documented, research has implicated that for individuals with autism, the mimicry of others' emotions may be too overwhelming to tolerate (Baron-Cohen & Wheelwright, 2004; Walter, 2012). Some studies indicate that for these individuals, the ability to recognize another person's emotions and handle their own set of emotions may be more challenging, as they often lack empathy (Baron-Cohen, 1995; Yirmiya et al., 1992). Moreover, individuals with autism tend to

exhibit vague emotional responses and impaired insight which may interfere with effective emotion regulation skills (Mazefsky et al., 2014).

### **Personality Traits Related to Emotion Regulation and Empathy in Autism**

Some symptoms intrinsic to autism are thought to contribute to emotion regulation impairment, such as poor perspective taking and problem-solving, lower response inhibition, deficits in recognition of others' emotions, and misreading social cues (Conner et al., 2018). Additionally, sensory sensitivity may also contribute to emotion regulation impairment in autism, given links between high bodily awareness and internalizing distress in typically developing populations (Mazefsky & White, 2014). Previous research has found that higher levels of emotion regulation impairment are associated with increased severity of core autism symptoms among children with autism (Conner et al., 2020; Hourigan et al., 2011). For individuals with autism, it may be challenging to inhibit the automatic response of their emotions, as exhibited by inflexibility and rigid behaviors (Laurent & Gorman, 2018; Mazefsky et al., 2013). Although the linkage between emotion regulation and empathy in typical development may or may not manifest similarly in autism, the current study aims to describe the connection between personality traits that related to emotion regulation and empathy in individuals with autism. By examining this relationship, the study will determine if these constructs correlate with one another. This study may elucidate why individuals with autism express reduced levels of empathy and emotion regulation skills.

### **The Current Study**

The purpose of the current study is to examine the relationship between empathy and personality traits related to emotion regulation in children with autism. Further, connecting personality traits related to emotion regulation with empathy for school-aged children (ages 7-

13) may inform future studies on the impact that emotion regulation plays in early development and thus how it affects children by the time they reach school age. Through quantitative secondary data analysis of an RCT (Wood et al., 2019), the current study utilizes personality measures and empathy measures that school-aged participants had completed to analyze the association between personality traits related to emotion regulation and empathy. The study addresses this research question: How are personality traits that are related to emotion regulation and empathy associated in school-aged children with autism? The central hypothesis of this study is that levels of Conscientiousness and Agreeableness will be positively associated with levels of empathy in school-aged children with autism. Individuals with autism who exhibit levels of conscientiousness and agreeableness should therefore demonstrate increased levels of empathy.

## **Methods**

### **Participants**

This secondary data analysis used a dataset within Wood et al.'s (2019) study. The study was conducted at the University of California, Los Angeles (UCLA) from April 2014 to January 2017. Wood et al. (2019) evaluated a sample of school-age participants ( $N = 195$ ) ranging in age from 7 to 13 years of age ( $M = 9.98$ ,  $SD = 1.81$ ). The experimenters recruited the participants through flyers, clinician referrals, and letters. Of all the participants, 20% identified as female, 22% Latinx, followed by 6% African American, 8% are Asian/Pacific Islander, 76% are White, 1% are Native American or Alaskan, and 3% are multiracial. The percentage breakdown of race/ethnicity is due to the fact that questions about race and ethnicity were included in the same section of the demographic survey, where many families reported on *either* race *or* ethnicity but did not report both as separate responses (Wood et al., 2019). For example, one family listed that

their child identifies as both Latinx and White, but the questions on the demographic survey were not explicit in asking about race and then about ethnicity separately. Relevant demographic data are depicted in Table 1.

In addition, the eligibility criteria included that individuals have (a) an  $IQ \geq 70$ , as assessed by the Wechsler Intelligence Scale for Children-IV (WISC-IV;  $IQ$  range = 54–146,  $M = 100.79$ ,  $SD = 16.21$ ), (b) a clinical diagnosis of ASD confirmed by two clinicians using the Childhood Autism Rating Scale Second Edition, High Functioning Version (CARS-2HF) and the Autism Diagnostic Observation Schedule-2 (ADOS-2), as well as, (c) maladaptive and interfering anxiety as indicated on the Pediatric Anxiety Rating Scale (PARS), with a score of 14 points or higher (see Table 1). Exclusion criteria for this study were that the participants should not receive weekly interventions that target anxiety through psychotherapy nor should they receive interventions greater than 2 hours per week. In order to promote internal validity in this study sample, the experimenters established these eligibility criteria.

## **Measures**

### ***Empathic Reaction Task (ERT)***

Inspired by the Feshbach Audiovisual Test for Empathy (Feshbach, 1982), the Empathic Reaction Task (ERT) measures a participant's levels of empathy (Feshbach & Feshbach, 1987; Wood et al., 2019). During the screening process of Wood et al.'s (2019) study, trained examiners administered the ERT, which used five video vignettes to elicit empathic reactions from school-age children (Feshbach, 1982). Each participant was presented with five two-minute videos, where the protagonist in each of these videos experienced a different emotion: sadness, fear, embarrassment, anger, and happiness. After each two-minute video, the examiner asked the participant to identify what emotion the protagonist was feeling and to describe a time when the

participant had also felt that emotion. In addition, the examiner asked the child to rate the strength of their feeling using a nine-point pictorial rating scale—the Self-Assessment Manikin (SAM) scale—that increases in strength, ranging from *Not at all strong (1)* to *Very Strong (9)* (Bradley & Lang, 1994; see Appendix A). The examiner asked the participants six questions regarding each emotion video. As the examiner documented the participant’s verbal responses to the questions, the activity was video recorded.

**Rater training and reliability.** Rater training on coding the ERT responses from each participant was conducted. A random selection of videos (11 videos from each of the five emotions) was coded for interrater reliability by the two raters. A second independent rater, unaware of the original codes mapped to the ERT, independently coded 37.9% of the total videos. Adherence was above 80% for all interrater-coded videos. Central to hypothesis testing, five specific variables demonstrated rater concurrence in the excellent range: Appropriate SAM score (ICC = 1.00), Negative SAM score (ICC = 1.00), Absolute Value SAM reaction score (ICC = 1.00), and Prosocial score (ICC = .987); while Perceptive Taking fell in the good range (ICC = .883). The SAM scale ranged from *not at all strong* to *very strong*, from 1–9 for positive emotions, while the scale switched for negative emotions to *not at all strong* = 1 and *very strong* = 9 (Bradley & Lang, 1994; see Appendix A).

### ***Hierarchical Personality Inventory for Children (HiPIC)***

Within personality literature, conscientiousness and agreeableness are considered meta-traits that emerge from and incorporates early skillful regulation abilities (McAdams, 2015). The current study will focus on items from the subdomains of Conscientiousness and Agreeableness of the HiPIC questionnaire. The HiPIC is a caregiver-rated personality questionnaire that includes 144 items that are grouped into 18 subcategories (Mervielde & De Fruyt, 1999). When



completing the HiPIC during this study, the caregiver was instructed to describe their child by their child's most frequent behaviors that had occurred within the last year. The caregiver's responses were indicated on a Likert scale (from 1–5) ranging from *barely characteristic* to *highly characteristic*. Throughout various studies with clinical and nonclinical samples, the internal consistencies of the HiPIC's domains and facets have been well documented (Mervielde & De Fruyt, 1999; Tackett et al., 2013; Wood et al., 2019).

### ***Autism Spectrum Disorder Assessments***

Certified and trained evaluators conducted assessments for Autism Spectrum Disorder (ASD) through the Childhood Autism Rating Scale Second Edition—High Functioning Version (CARS-2HF) and the Autism Diagnostic Observation Schedule-2 (ADOS-2; Wood et al., 2019). The participants who were eligible for the study met criteria for an ASD diagnosis on the algorithm scores of both of these assessments. Furthermore, an additional evaluator—without prior knowledge of the original scores—rated the ADOS-2 and CARS-2HF to confirm complete agreement for a diagnosis of ASD on both measures (Wood et al., 2019).

### **Procedure**

Once the informed consent and assent were provided to the caregivers and the participants, the screening and eligibility process began. During the screening phase, the trained evaluators and research teams at each site conducted the clinician-administered assessments and explained the questionnaires to the caregivers. This study used two measures to examine the correlation between empathy and personality traits related to emotion regulation: (a) the Empathic Reaction Task and (b) the HiPIC caregiver-rater questionnaire.

### ***Empathic Reaction Task***

During the Empathic Reaction Task (ERT), the child met with the examiner in an exam room with a table, chair, computer screen, and headphones. First the examiner informed the child that they would watch five consecutive videos on the computer screen and then answer questions about each one. Each 1- to 2-minute video showed a scenario of one of five different protagonists experiencing a different emotion (i.e., sadness, scared, embarrassment, anger, and happiness). Each video began with a neutral calming clip of fish swimming across the screen for 1 minute accompanied by classical music. To eliminate distraction, the videos had minimal sound effects and background music when the emphasis was on the protagonist's facial expressions and vocal emotions.

The video clips were presented on the computer screen explain the vignette and storyline of each of the five scenarios. As an example, the scenario described in the Embarrassed video vignette is presented below:

A male adolescent is shown on the screen. He is to perform a song in the school talent show with a friend, who was supposed to accompany him to play his instrument while he sang. His friend is not able to perform with him, so he must sing by himself. He begins singing without any music and the students in the auditorium boo and laugh at him.

After each video, the examiner asked the child six questions about their own emotions while watching the vignette as well as the emotions that the protagonist felt. The six questions are:

- 1) How does the protagonist feel?
- 2) Why does the protagonist feel that way?
- 3) How do you feel while watching the protagonist? Why do you feel that way?
- 4) Now I'm going to have you show me how strong your feeling was. How strong is your feeling on this scale? [show SAM Rating Scale to child; see Appendix 1]
- 5) If you were the protagonist's friend, and you watched this happen from the audience, what would you want to do? Why would you want to do that?
- 6) Can you tell me about a time when you felt Embarrassed? [Examiner asks about appropriate emotion related to video here]

In Question 4, the child identified their own emotion and rated the valence of their emotion on the Self-Assessment Manikin (SAM) scale, which ranged from 1 (*not at all strong*) to 9 (*very strong*) for positive emotions, while the scale switched for negative emotions to 9 (*very strong*) to 1 (*not at all strong*; Bradley & Lang, 1994; see Appendix A).

### ***ERT Coding System***

Using an established coding system to analyze the empathy components within the ERT, the primary rater and secondary rater coded all video vignettes for the five emotions measured in the ERT: Fear, Sadness Embarrassment, Anger, and Happiness (see Table 2; Wood et al., 2019). The coding system parallels Walter's (2012) model of empathy by including both cognitive and affective components: affective isomorphy, affective experience, perspective-taking, prosocial motivation, emotion-focused responses, verbal responses, and problem-solving responses. Within cognitive empathy, the participant must understand that their behavior could affect the protagonist's emotions (referencing Question 5 above). Additionally, many affective components of empathy are embedded in the coding variables: emotion recognition, emotional valence, verbal and emotion-based responses, mean/callous responses, and self-interested responses and affective isomorphy (further referencing Question 5).

Affective isomorphy categorically captures how the child felt when watching each video, such that the child's responses are synonymous with the emotion portrayed (e.g., for the Happy video, isomorphic responses may include "cheerful"; "happy"; "awesome"). Additionally, the SAM scores captured affective experience in three ways: (a) absolute value SAM reaction score, (b) negative SAM reaction to negative video, (c) appropriate SAM score (Wood et al., 2021). The coding system captures participants' empathic reactions through 23 individual categories that include five verbalization codes, two emotional valence codes, and two emotion recognition

codes based on the participants' responses (Wood et al, 2019). The remaining 14 codes were used in primary analyses, with a focus on five specific codes that are central to hypothesis testing (see Table 4.)

When coding each video, the coders used 23 overall categories that corresponded to each of the primary six questions that the examiner asked the child (see Appendix B). For example, Questions 1–4 relate to emotional valence, emotion recognition, detail specificity, perspective taking, and SAM emotion score (see Appendices A and B). Questions 5–6 correspond to emotion-focused responses and the helpfulness of the participant's response, where they are related to these individual codes: (a) emotional how helpful responses, (b) verbal emotional responses, problem-solving responses, (c) mean/callous responses, (d) self-interested responses, (e) prosocial motivation responses, and (f) response rationale quality (see Appendix B). Each of the participants' verbal responses in the videorecording were transcribed verbatim.

Two additional codes were included into the coding system: “appropriate emotion” and “emotional isometry.” The appropriate emotion score depicts whether the participant indicated the same valence feeling on a scale from -1 to 2. The emotional isometry score indicates whether or not the participant feels the same emotion as the protagonist in the video (i.e., affective isomorphy; Walter, 2012). For example, does the participant indicate an emotion that is synonymous with the emotion that the protagonist portrays and feels in the empathic reaction task video?

Each coding schema corresponds to one of the primary six questions mentioned in the previous section. For example, in the perspective-taking schema, the scale describes accuracy from 0 (*not at all accurate*) to 5 (*very accurate*). Here, the codes are broken into five responses options that explain the participant's rationale in responding to Question 2 (“Why does [the

protagonist] feel that way?”). In another example, coders scored participants’ prosocial motivation responses to Question 5 (“If you were his friend, and you watched this happen from the audience, what would you want to do? Why would you want to do that?”). Here, prosocial behavior is defined as voluntary, intentional behavior that results in the benefit of another person (Walter, 2012).

Participants responses to the ERT question, “Why would you want to do that?”, ranged from one to two-words to sentences with varying detail. As an example, participants responded to this question with answers such as, “I don’t know” to “I would do the same thing that the friend did”. Another example response is “I would do my best to comfort him and make him feel better”. These responses vary in terms of understand the “why” portion of the question. The high cognitive load is a limitation of the ERT, and it is further addressed in the Discussion section.

### ***Hierarchical Personality Inventory for Children (HiPIC)***

When coding items on the HiPIC questionnaire, factors were selected that are associated with Conscientiousness and Agreeableness (two of the Big Five Personality Traits). Utilizing the HiPIC may elucidate the connection between individuals with autism and their abilities to regulate their emotions and regulate their social-emotional behaviors. Previous studies have shown that agreeableness has also been linked to effortful control (Jensen-Campbell et al., 2007). Individuals who are highly agreeable exhibit more competent social skills, which is often a challenging task for individuals with autism (Jensen-Campbell et al., 2007). Although both agreeableness and conscientiousness are linked to regulatory processes, a stronger case can be made for conscientiousness. For example, individuals who are conscientious are often described as organized, self-controlling, and aiming for achievement (McAdams, 2015; Nader-Grosbois & Mazzone, 2014). Through the processes of conscientious thinking, behaving, and feeling,

individuals maintain, modulate, change, or tolerate the emotions that they experience. One study examined the differences in personality traits between typically developing children and children with autism; the researchers found that typically developing children experienced higher levels of conscientiousness as compared to individuals with autism (Fortenberry et al., 2011). Further, the authors found the dysregulation was negatively correlated with conscientiousness for individuals with autism.

## Results

### Descriptive Statistics of ERT

Descriptive statistics of the Empathic Reaction Task (ERT) are presented in Table 2. In the ERT, 14 variables of interest were used for descriptive analysis. After frequency analysis was conducted, the researcher followed the model used in the Wood et al. (2021) study, where variables were dropped through a principal component analysis so that 10 items that made up two scales remained: Perspective Taking ( $M = 5.23$ ,  $SD = 0.98$ ) and Prosocial Motivation ( $M = 19.68$ ,  $SD = 5.59$ ; see Table 4). Each of the scores on these scales was scored from 0 to 5. Most data were normally distributed, whereas some skewed towards mainly lower scores (i.e., 2) for detail specificity of the Happiness and Anger videos, for example.

Perspective Taking is comprised of two items: (a) the accuracy of the child's description of the cause of the protagonist's feelings and (b) the specificity of detail given to explain the cause of the protagonist's feelings. For example, in the Sadness video, a protagonist is shown playing with his brother in their treehouse and then his brother falls out of the treehouse and the protagonist is afraid to tell his father about the incident. To obtain a maximum score of 5 for *accuracy* on the Sadness video, the child's response needed to include that the protagonist's father blames him *and* that the protagonist feels responsible for hurting his brother (Wood et al.,

2021). If the participant provided a detailed response recounting the events for the way in which the protagonist felt, then higher scores for *specificity* were achieved. For example, a score of 5 for the Sadness video required citing all four elements of the vignette as an explanation of why the protagonist felt the way he did: the treehouse setting, the accident, and the father's reaction (not necessarily in that order). The scores for accuracy and specificity were summed to create the overall Perspective Taking score for the five videos (Wood et al., 2021).

Prosocial Motivation comprises the remaining eight items. These items addressed children's responses to questions about what actions they would take if they were the protagonist's friend and if they had been present during the incident portrayed in the video. These items included a scoring system with a 0–5 scale that is similar to the aforementioned scoring system. Two items captured how likely it was that the participant's response reflected a callous or self-interested reaction to the protagonist (e.g., that the participant was glad the protagonist was in trouble, or that he/she would avoid the protagonist because, e.g., he was "crying too loudly"). These two items were reverse scored. Three other items focused on how likely the participant's response intended to positively impact the protagonist's mood by providing emotional or verbal support (i.e., Emotional how helpful; Verbal emotional helpful; How helpful overall) or by offering solutions (i.e., Problem solving). The remaining three items focused on how prosocial the participant's intended actions were, how helpful the protagonist would likely find them, and how logical the participant's rationale was for why their intended actions would be helpful for the protagonist (i.e., Response rationale). These eight item scores were summed to create the Prosocial Motivation scale (Wood et al., 2021).

Finally, the remaining items central to hypothesis testing are listed in Table 4: Isomorphy percentage ( $M = 0.38, SD = 0.2$ ), Appropriate SAM score ( $M = 1.98, SD = 3.75$ ), Negative SAM score ( $M = 1.39, SD = 3.55$ ) and Absolute value SAM score ( $M = 2.14, SD = 0.96$ ).

### **Descriptive Statistics of HiPIC**

Cronbach's alpha and descriptive statistics for the HiPIC are presented in Tables 3 and 4, respectively. As discussed above, the Big Five factors of personality domains are Emotional Stability, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness. In this study, Conscientiousness and Agreeableness are the main focus. The Conscientiousness factor is broken up into four subdomains: Achievement ( $M = 3.91, SD = 3.04$ ), Concentration ( $M = 2.79, SD = 2.12$ ), Orderliness ( $M = 3.07, SD = 2.49$ ), and Perseverance ( $M = 2.49, SD = 2.12$ ). The Agreeableness factor is comprised of five domains: Altruism ( $M = 2.65, SD = 2.44$ ), Compliance ( $M = 3.75, SD = 2.85$ ), Dominance ( $M = 4.86, SD = 3.59$ ), Egocentrism ( $M = 8.43, SD = 2.31$ ), and Irritability ( $M = 7.41, SD = 3.11$ ; see Table 4). All items within the Conscientiousness and Agreeableness factors are based on a scale from 1 to 10 (see Table 4).

### **Primary Outcome Analysis**

Table 5 lists the following associations that were statistically significant in correlational analysis. Conscientiousness was positively associated with Isomorphy percentage ( $r = .184, p = .01$ ). There were no other significant associations for Conscientiousness and the other ERT variables. When looking specifically at the four domains of Conscientiousness, some associations were statistically significant (see Table 5). Concentration, however, was negatively associated with ratings on the Absolute Value SAM score ( $r = -.158, p = .029$ ). Orderliness, however, was positively associated with ratings on Isomorphy percentage ( $r = .223, p = .002$ ), Appropriate SAM score ( $r = .167, p = .023$ ) and Negative SAM score ( $r = .194, p = .008$ ).



Perseverance was also positively associated with Isomorphy percentage ( $r = .180, p = .012$ ) and Negative SAM score ( $r = .149, p = .042$ ).

In addition, Agreeableness was positively associated with ratings on Isomorphy percentage ( $r = .268, p < .01$ ), Appropriate SAM score ( $r = .206, p = .005$ ) and Prosocial motivation ( $r = .154, p = .032$ ). There were no additional overall significant associations for Agreeableness and the other ERT variables. When breaking down the Agreeableness factor into five domains, however, some associations were statistically significant. Compliance was positively associated with Isomorphy percentage ( $r = .174, p = .015$ ). In contrast, the Dominance domain was negatively associated with Isomorphy percentage ( $r = -.185, p = .01$ ), Appropriate SAM score ( $r = -.185, p = .011$ ), and Prosocial motivation ( $r = -.146, p = .042$ ). Moreover, the Egocentrism domain was negatively associated with Isomorphy percentage ( $r = -.205, p = .004$ ) and Appropriate SAM score ( $r = -.181, p = 0.013$ ). Finally, the Irritability domain of Agreeableness was negatively associated with Isomorphy percentage ( $r = -.224, p = .002$ ), Appropriate SAM score ( $r = -.173, p = .018$ ), and Prosocial motivation ( $r = -.144, p = .045$ ).

When looking at the remaining three factors of the Big Five, the Openness to Experience factor was negatively associated with Appropriate SAM score ( $r = -.170, p = .020$ ) and the Emotional Stability factor was positively associated with Negative SAM score ( $r = .174, p = .018$ ). There were no statistically significant findings for the Extraversion factor. Individual items within the Openness to Experience domain, Emotional Stability domain, and the Extraversion domain were also statistically significant. In the Openness to Experience factor, the Curiosity domain was negatively correlated with Isomorphy percentage ( $r = -.143, p = .047$ ) and Appropriate SAM score ( $r = -.198, p = .007$ ). In the Extraversion factor, the Energy domain was negatively correlated with Isomorphy percentage ( $r = -.237, p = .001$ ), while the Expressiveness

domain was positively correlated with the Absolute value SAM score ( $r = .178, p = .013$ ). In the Emotional Stability factor, the Anxiety domain was negatively correlated with Negative SAM score ( $r = -.144, p = .049$ ).

## **Discussion**

The present study addressed the relationship between two personality traits related to emotion regulation and empathy for school-age children with autism. Through descriptive and correlational analyses, this study examined the association between items of empathy as they related to personality subdomains of Conscientiousness and Agreeableness. The researcher predicted that the personality traits related to emotion regulation will be positively associated with levels of empathy in this population. As emotion regulation skills are associated with conscientiousness and agreeableness, the positive association with components of empathy garners support for the hypothesis of this study (Tackett et al., 2013). First, the relationship of conscientiousness, agreeableness, and empathy was supported primarily through emotional (i.e., affective) isomorphy within the ERT. Significant results revealed that there was a positive association between Isomorphy and both Conscientiousness and Agreeableness factors, as well as, specific domains such as Perseverance, Orderliness and Compliance. As the development of empathy stems from the imitation of facial expressions and the mimicry of others' experiences, participants may have imitated the protagonists' emotions that were viewed in the video vignettes through their responses to questions related to Isomorphy (McDonald & Messinger, 2011; Schipper & Petermann, 2013). Isomorphy captures the synonymous feeling to another person's emotional state, therefore, participants in this study may have imitated behaviors and emotions by observing the protagonist in the video (i.e., the protagonist in each video vignette; Bandura, 1977).

An important distinction between affective empathy and sympathy is that an individual does not have to experience affective isomorphy in order to feel sympathy for another person, whereas within affective empathy, isomorphy is a central component (Walter, 2012). Affective empathy (i.e., one of the two main components of empathy), includes meta-knowledge about the self and the other person, which allows for that person to identify their own affective state as differing from the other person's affective state. Therefore, significant results highlighted in the association of SAM scores are in line with this finding (Schuler et al., 2016). The SAM scores measured the child's strength of the positive and negative emotions expressed in their responses to each video vignette. Both positive and negative emotions can induce affective reactions via imitation and observation of when to express their emotions (Morris et al., 2007). Orderliness in the Conscientiousness domain was positively associated with the Appropriate SAM score, which supports Breithaupt's (2012) argument that these individuals may have bypassed the blocking strategies of empathy through secondary mental activities such as narrative thinking by watching the scenarios unfold in each video vignette.

Moreover, existing literature describes a robust connection with Conscientiousness and regulatory processes, as both are characterized by the ability to inhibit specific behaviors in order to execute alternate behaviors and the ability to successfully direct one's attention (Jensen-Campbell et al., 2007; Rothbart et al., 1994). Agreeableness has also been linked to effective regulatory strategies through an individual's ability to engage in self-control and prosocial motivation (Schriber et al., 2014). Within the prosocial motivation questions of the ERT, participants successfully responded to questions about how they would help the protagonist navigate an unfortunate situation in each video vignette. Although there were no direct significant links to perspective taking within this sample, connections between

conscientiousness, agreeableness, and empathy may inform future research on how to effectively support individuals with autism in regulating their emotions.

### **Limitations and Future Directions**

Some of the limitations of this study are that the findings are not generalizable to the larger population beyond school-age children. Further, the representativeness of the diversity in the sample is limited, given that most participants were mostly White males and that questions about race/ethnicity were included in the same section of the demographic survey, but not as separate responses. Future research will include open-ended responses to correct for this omission. Another consideration is to expand the study to a sample of non-speaking or minimally verbal children, as all children who met eligibility criteria for the study were verbally fluent. There may be important implications for individuals who are non-speaking in that regulating their emotions and utilizing empathy skills may help these individuals communicate through non-verbal techniques.

Another limitation in this study is that the ERT produced a high cognitive load for participants. Individuals with autism often have difficulty with cognitive load and the ERT may have contributed to those challenges. It is important to note, however, that when participants expressed their boredom or exhaustion during the ERT, they did enjoy watching the videos as the last video of the five videos (i.e., the Happiness video) left each participant in a positive mood. Although the cognitive load expectations are high in order to complete the ERT, the majority of participants offered responses to all of the ERT questions.

### **Conclusion**

The current study provides insight into personality traits related to emotion regulation and empathy for both typically developing individuals and individuals with autism. There are

important considerations for this work, such as implications for social-emotional learning, developmental trajectories and coping mechanisms. Additionally, emotional processes are required for helping behaviors, in order for children to decide when and how to apply what they have learned through social-emotional development to the rest of their lives. The current study captures a holistic picture of each participant, wherein various modalities of assessment, observation, and survey were used. For example, the audiovisual, verbal, and clinician-administered components of the Empathic Reaction Task, coupled with the HiPIC parent-rated questionnaire allows for a well-rounded understanding of the child. Ultimately, this research could be furthered by identifying subgroups of participants, which in turn, would lead to more effective individualized treatment for individuals with autism. This work contributes to increasing research within the fields of personality, socio-emotional learning, and regulatory processes, in order to disseminate findings for all individuals with autism and their typically developing peers.

## Tables

**Table 1**  
*Demographic and Clinical Characteristics of Sample*

<b>Characteristics</b>	<b>Participants/Total (%) (N = 195)</b>
Male <sup>1</sup>	156/195 (80%)
Female <sup>1</sup>	39/195 (20%)
Participant's race <sup>2</sup>	
White	148/195 (76%)
Latinx	39/195 (20%)
African American	12/195 (6%)
Asian	15/195 (7%)
Multiracial	16/195 (8%)
Native Hawaiian/Pacific Islander	1/195 (<1%)
American Indian/Alaskan Native	2/195 (1%)
Total household income <\$40,000	157/195 (80%)
Father's education	
≤ High school diploma	15/195 (7.6%)
≥ 4-year college degree	180/195 (92%)
Mother's education	
≤ High school diploma	31/195 (16%)
≥ 4-year college degree	164/195 (84%)
Autism Diagnostic Observation Schedule-2 algorithm total score, mean (SD)	12.60 (4.62)
Estimated IQ by Wechsler Intelligence Scale for Children-IV, mean (SD)	100.79 (16.21)
Childhood Autism Rating Scale total score, mean (SD)	34.87 (5.04)

<sup>1</sup>Options for reporting gender were limited to male and female at the time of the study. Other gender identities were not included in the survey and future research will correct this omission.

<sup>2</sup>Race/ethnicity were included in the same section of the demographic survey, where participants reported on either race or ethnicity, but not both as separate responses. Future research will include open-ended responses to correct for this omission.

**Table 2***Mean Rating on ERT for All Emotions Portrayed in Five Videos*

<b>ERT Variable</b>	<b>Range</b>		<b>Fear</b>	<b>Sadness</b>	<b>Embarrassment</b>	<b>Anger</b>	<b>Happiness</b>
Detail specificity	0	5	3.18 (1.15)	2.30 (1.01)	2.49 (1.01)	2.00 (0.70)	2.13 (0.54)
Perspective taking	0	5	2.93 (1.08)	3.17 (1.32)	2.08 (0.78)	2.76 (0.84)	3.09 (0.62)
SAM emotion score	0	9	5.99 (2.09)	6.85 (1.90)	6.35 (1.96)	6.33 (2.14)	7.89 (1.65)
Appropriate emotion	-1	2	0.66 (1.00)	1.44 (0.96)	0.65 (1.04)	1.22 (1.29)	1.62 (0.88)
Emotional isomorphy	0	1	0.17 (0.38)	0.61 (0.48)	0.04 (0.20)	0.33 (0.84)	0.81 (0.39)
Emotional how helpful	0	5	1.44 (1.46)	2.10 (1.32)	2.08 (1.62)	1.77 (1.54)	1.88 (1.46)
Verbal emotional helpful	0	5	1.05 (1.34)	1.79 (1.56)	1.16 (1.56)	1.35 (1.45)	1.81 (1.49)
Problem solving <sup>1</sup>	0	5	1.39 (1.42)	0.73 (1.19)	1.48 (1.69)	1.23 (1.42)	---
How helpful overall	0	5	1.88 (1.53)	2.23 (1.45)	2.17 (1.67)	1.87 (1.59)	1.96 (1.47)
Don't know	0	1	0.09 (0.28)	0.10 (0.29)	0.12 (0.37)	0.09 (0.28)	0.05 (0.21)
Self-interested response	0	5	0.39 (1.14)	0.23 (0.89)	0.32 (1.08)	0.53 (1.36)	0.58 (1.19)
Mean callous response	0	5	0.24 (0.89)	0.14 (0.61)	0.24 (0.91)	0.19 (0.86)	0.09 (0.58)
Prosocial motivation	0	5	1.85 (1.46)	2.06 (1.25)	1.95 (1.58)	1.87 (1.63)	1.67 (1.42)
Response rationale	0	5	1.58 (1.26)	1.93 (1.30)	1.69 (1.37)	1.52 (1.30)	1.61 (1.38)

<sup>1</sup>The problem-solving variable was not applicable within the Happiness video vignette and is therefore not listed above.

**Table 3***Internal Consistencies for Big Five Factors on HiPIC Questionnaire*

<b>Big Five Factors</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Number of items on HiPIC<sup>1</sup></b>
Emotional Stability	.857	16
Extraversion	.734	32
Openness to Experience	.907	24
Conscientiousness	.885	32
Agreeableness	.76	40

<sup>1</sup>The HiPIC is a 144-item questionnaire.



**Table 4***Descriptive and Frequency Statistics of Aggregated Data for ERT and HiPIC*

<b>Variable</b>	<b>Range</b>		<b>Mean (SD)</b>
<u>ERT</u>			
Perspective taking	2	8.2	5.23 (0.98)
Prosocial motivation	2.89	33.06	19.68 (5.59)
Isomorphy percentage	0	1	0.38 (0.20)
Appropriate SAM score	-9	9	1.98 (3.75)
Negative SAM score	-9	9	1.39 (3.55)
Absolute value SAM score	0	4	2.14 (0.96)
<u>HiPIC Big Five Factors</u>			
Emotional Stability	1	10	2.51 (2.05)
Extraversion	1	10	1.81 (1.67)
Openness to Experience	1	10	3.34 (2.58)
Conscientiousness <sup>1</sup>	1	10	2.62 (2.10)
Achievement	1	10	3.91 (3.04)
Concentration	1	10	2.79 (2.12)
Orderliness	1	10	3.07 (2.31)
Perseverance	1	10	2.49 (2.12)
Agreeableness <sup>1</sup>	1	10	3.15 (2.72)
Altruism	1	10	2.65 (2.44)
Compliance	1	10	3.75 (2.85)
Dominance	1	10	4.86 (3.59)
Egocentrism	1	10	8.43 (2.31)
Irritability	1	10	7.14 (3.11)

<sup>1</sup>Subdomains of Conscientiousness and Agreeableness are listed under each factor, respectively.

**Table 5***Pearson's r Correlations for HiPIC AND ERT*

	ERT	Isomorphy Percentage	Appropriate SAM Score	Negative SAM Score	Absolute Value SAM Score	Perspective Taking	Prosocial Motivation
<b>HiPIC</b>							
<u>Big Five Factors</u>							
Emotional Stability		.011	.037	.174*	-.022	-.002	-.057
Extraversion		-.110	-.044	.055	.060	-.011	.030
Openness to Experience		-.126	-.170*	-.011	-.006	.045	-.033
Conscientiousness		.184*	.040	.143	-.084	-.057	.027
Agreeableness		.268**	.206**	.080	.054	.013	.154*
<u>Conscientiousness Domains</u>							
Achievement		.085	-.080	.017	-.091	.023	.005
Concentration		.039	-.019	.087	-.158*	.021	.014
Orderliness		.223**	.167*	.194**	.032	-.107	.012
Perseverance		.180*	.067	.149*	-.053	-.111	.022
<u>Agreeableness Domains</u>							
Altruism		.139	.106	.070	.035	.039	.133
Compliance		.174*	.120	.071	-.015	-.049	.114
Dominance		-.185*	-.185*	.023	.001	.020	-.146*
Egocentrism		-.205**	-.181*	-.030	-.019	-.006	-.111
Irritability		-.224**	-.173*	-.082	-.109	.012	-.144*
<u>Openness Domains</u>							
Creativity		-.080	-.108	.070	-.054	.116	.000
Curiosity		-.143*	-.198**	-.015	.031	-.028	-.101
Intellect		-.022	-.060	.002	.015	.112	.108
<u>Extraversion Domains</u>							
Energy		-.237**	-.096	-.028	.019	-.006	-.030
Expressiveness		-.140	-.088	-.037	.178*	-.050	.042
Optimism		.009	-.006	.097	.085	.061	.003
Shyness		-.085	-.074	-.050	-.083	-.025	-.107
<u>Emotional Stability Domains</u>							
Anxiety		-.007	-.102	-.144*	.022	.023	.069
Self confidence		.027	-.019	.139	.052	.057	.021

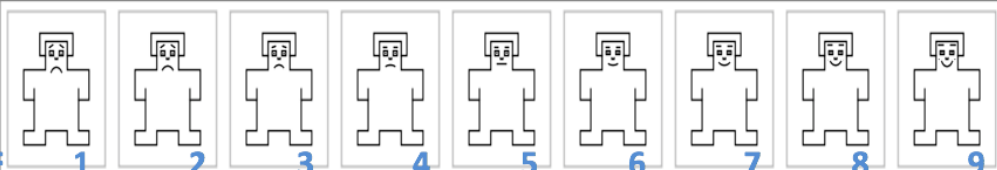
\*Correlation is significant at the 0.05 level.

\*\*Correlation is significant at the 0.01 level.

# Appendices

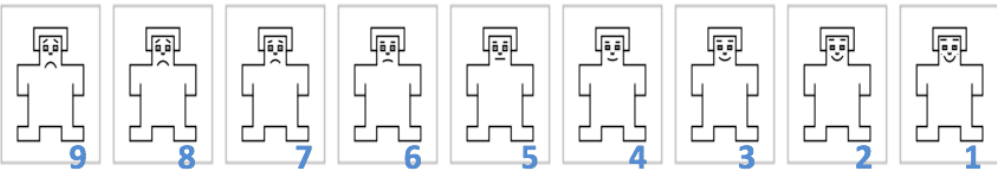
## Appendix A SAM Rating Scale

### Positive Emotion Rating Scale

Original Score:  1 2 3 4 5 6 7 8 9

Not at all \_\_\_\_\_ Very \_\_\_\_\_

### Negative Emotion Rating Scale

Original Score:  9 8 7 6 5 4 3 2 1

Very \_\_\_\_\_ Not at all \_\_\_\_\_

## Appendix 2

### Empathic Reaction Task Codebook

Question 1: "How does ___ feel?"			Question 2: "Why does ___ feel that way?"			Question 3: "How do you feel while watching ___?"			Question 4: "Rate how strong your emotion is"		
Emotion Recognition	Emotional Valence (positive, negative, neutral)	Specific verbalizations	Detail Specificity Score [0-5]	Perspective Taking Accuracy Score [0-5]	Specific verbalizations	Child's Stated Emotional Reaction to Video	Emotional Valence	Specific Verbalizations	4A: Number indicated on SAM sheet [1-9]	APPROPRIATE: -1 No it is opposite or callously neutral e.g. happy feeling or i dont care for negative emotion portrayed in video 0 unclear or impossible to categorize	Emotional Isomorphy (must be a synonymous emotion with the video's protagonist... e.g., nervous, scared, afraid, worried) 1=YES, ISOMORPHY, 0=NO, NO
Question 5: "If you were ___'s friend, what would you do?" & Question 6: "Why would you do that?"						Questions 5 & 6		Questions 5 & 6		"Can you tell me about a time when you felt scared?"	
Emotion-Focused Response: How likely is it that the participant's proposed response is intended to help improve/maintain the actor's mood? [0-5]	Verbal (Emotional) Response: How likely is it that the participant's proposed response is intended to help improve/maintain the actor's mood by <u>acknowledging the actor's feelings or saying something</u>	Problem-Solving Response: How likely is it that the participant's proposed response is intended to help improve/maintain the actor's mood by <u>problem-solving or offering pragmatic solutions for situation</u> (e.g., what	Overall Impression (how helpful): How likely is it that the child's proposed response would be experienced by the actor as compassionate and thoughtful? [0-5]	Child responds "Don't know" without elaboration? (Yes = 1, No = 0)	Specific Verbalizations	Self-Interested Response: How likely is it that the participant's proposed response is intended to help the participant's interests rather than the actor's interests (e.g., "I'd ask for a turn on the iPod Touch" or "I'd stay	Mean or Callous Response: How likely is it that the child's proposed response is intended to hurt the actor's feelings or intensify the actor's negative affect (e.g., "I'd laugh at him too for singing so badly" or	Prosocial Response: How prosocial was the participant's proposed response? [0-5]	Response Rationale Quality [0-5]	Specific Verbalizations	

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