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CHAPTER 37

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**DEVELOPMENT, CULTURE,
AND NEUROBIOLOGY OF
MORAL EMOTIONS IN
ETHNIC/RACIAL MINORITY
CHILDREN**

A Case Study of U.S. Latino/a Children

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GUSTAVO CARLO, PAUL D. HASTINGS,
J. LOGAN DICUS, AND ELISA UGARTE

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INTRODUCTION

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C37.S1

C37.P1

ALTHOUGH early theories of moral development emphasized cognitive, rather than emotive processes, psychodynamic scholars highlighted the roles of moral emotions such as guilt and shame in understanding human behaviors (Carlo & Edwards, 2005). Yet, they linked these emotions more often to psychological maladjustment and pathological behaviors than to morality. Within developmental science, traditional theorists (e.g., Piaget, Kohlberg) emphasized cognitive and sociocognitive processes as predictors and indicators of moral development (Lapsley, 1996). Thus, moral emotions and socioemotive processes received secondary importance in much of the early moral development research.

C37.P2

However, early scholars' work on moral development posited that empathy (i.e., resonance with or sharing of another's emotional state) had an important link to moral behaviors (Eisenberg & Strayer, 1987; Hoffman, 1975). Furthermore, moral scholars suggested that guilt (i.e., aversive feeling that stems from the self or another evaluating one's actions and their consequences negatively) was a key element of moral conscience

(Eisenberg, 1986; Hoffman, 1982; Kochanska, 2002; Zahn–Waxler & Robinson, 1995). Shame (i.e., aversive feeling that stems from the self or another evaluating one’s self negatively) was viewed as a related construct that could undermine moral development. This early work, coupled with new biologically-based theories of morality and social-cognitive theories, prompted a shift in attention to moral emotions (Bandura, 1986; Eisenberg, 1986; Staub, 1979; see also Lapsley, 1996).

C37.P3

Moral emotions are now a central aspect of many contemporary theories of moral development (Bandura, 1986; Carlo, 2014; Eisenberg, 1986; Hoffman, 2000; Hitlin & Harkness, this volume; Thompson, this volume; but see Turiel, this volume). Moral emotions are numerous and can include a range of positively and negatively valenced responses and traits (see Thompson, this volume), but the most studied are empathy and sympathy. Empathy involves the recognition, understanding, and sharing of another’s emotional state (Carlo, 2014; Grusec et al., 2011). This conceptualization entails at least two related yet distinguishable components. The first component, cognitive empathy, encompasses the ability to perceive and comprehend another’s emotion from that person’s perspective. The second component, affective empathy, involves the vicarious inducement within oneself of an emotional state that is similar to another’s emotion. Affective empathy is related to emotional contagion, experiencing an emotion that closely matches another’s emotion, but affective empathy additionally involves a clearer distinction of self and other; an empathic emotion is an emotion that is experienced as being on behalf of another person (Eisenberg et al., 2016; Zahn–Waxler & Robinson, 1995).

C37.P4

Closely related to empathy is sympathy; defined as feelings of concern or sorrow arising from another’s distress, pain, or need, and often coupled with a motivation to assist or relieve the other person’s distress. Although quite similar and difficult to distinguish, sympathy (sometimes referred to as empathic concern) is conceptually linked more strongly to moral behaviors than empathy. This is because sympathy can move persons to engage in moral action to relieve the other’s suffering.

C37.P5

Despite the increased interest in moral emotions, several gaps remain. First, moral-emotion scholars have devoted most research to empathy, sympathy, and related vicarious responses. Less is known about the development of other moral emotions, such as guilt, shame, embarrassment, forgiveness, pride, and gratitude (see Hitlin & Harkness, this volume). Second, this is particularly true for research focused on the biological basis of moral emotions. Also third, very few theorists and researchers have considered the conjoint roles of culture and biology in the development of moral emotions.

C37.P6

In this chapter, we aim to present avenues that might address these gaps. We begin by discussing the importance of studying moral emotions from both neurobiological and cultural perspectives. Although most existing research on moral emotions has been conducted in white European and European American samples, a growing body of culturally-informed work examines these processes in U.S. Latino/a youth. This likely stems from the rapid growth of diverse Latino/a communities within the U.S., contributing to some states now having “majority minority” youth populations; for example, more than 50% of residents under 18 years in California identify as Latino/a (Pew

Research Center, 2011; Public Policy Institute of California, 2019). Therefore, we focus specifically on the growing developmental literature on moral emotions in U.S. Latinos/as.

NEUROBIOLOGY, CULTURE, AND MORAL EMOTIONS

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C37.P7

Developmental scientists have increasingly examined the neurobiological aspects of empathy and sympathy from infancy through adulthood (see Hastings et al., 2014). This research is most often framed in evolutionary and functional theories, and embedded within the bioecological-systems perspective or processes of familial socialization (Hastings et al., 2006; Miller & Hastings, 2016). Yet, despite the integral role of culture in bioecological-systems theory and the clear embeddedness of families within culture, “culture” has been largely absent from biologically-informed theories and studies of the development of moral emotions.

C37.P8

However, over the past decade, some scholars have begun to examine the connections between cultural processes, neurobiological functioning, and prosocial behaviors such as sharing and donating (e.g., Telzer et al., 2010), which often are motivated by moral emotions (Eisenberg et al., 2016). Within this emergent field of developmental cultural neurobiology (Doane et al., 2018), there is growing recognition that “culture and biology are the two major systems of inheritance” (Causadias et al., 2018, p. 7). Everything humans feel, think, and do is necessarily the product of both culture and biology, which are mutually embedded and interpenetrating (Overton, 2010). Culture shapes the varied experiences that contribute to the development of children’s interconnected brain and body systems, and culture is perceived, interpreted, and responded to (engaged with, internalized, rejected, modified) through those same systems (see Holbrook & Hahn-Holbrook, this volume).

C37.P9

To date, this integrative and holistic framework has not been applied to moral *emotions*. Michalska and Davis (2019) advocated for bringing the cultural neurobiology approach to the study of emotional development, with specific emphasis on the need to understand the contributions of the Latino/a values of *respeto* (i.e., respect towards authority and elders), *familismo* (i.e., identification with and loyalty to the nuclear and extended family), and *simpatía* (i.e., harmony, personal agreeableness) (see Carlo & de Guzman, 2009; Knight et al., 2010) to the neurobiology of emotional reactivity, regulation, and resilience in U.S. Latino/a children and youth. They argue that “sociocultural processes inevitably interact with biological factors such as brain maturation to shape emotional responses across development” (Michalska & Davis, 2019, p. 421), but the application of this perspective to “our understanding of Latino/a children’s emotional development is still scant and preliminary” (p. 424). In this chapter, we illustrate why it is necessary to take a page from Michalska and Davis (2019), Causadias and colleagues

(2018), and others (e.g., Khan et al., 2017) to summarize what is known about the developmental neurobiology of moral emotions, the roles of family, culture, and cultural socialization experiences in the development of moral emotions, and the nature of moral emotions in U.S. Latino/a children and youth.

The Developmental Neurobiology of Moral Emotions

C37.S3

C37.P10

Empathy is subserved by neural networks involving a number of lower and higher brain regions entailed in brain–body coordination; emotional arousal, perception, resonance, understanding, and regulation; reward and approach motivation; and self–other mentalizing and interpersonal perception (Hastings et al., 2006). These regions include the brainstem, amygdala, striatum, and multiple regions within the prefrontal cortex (PFC), many of which are anatomically and functionally connected within the “social brain network” and “mirror neuron system” (Decety, 2015; Hastings et al., 2014). Most research has involved adults, although studies with children and youth replicate several of these associations (e.g., Flournoy et al., 2016). The experience of empathy may progress from being more visceral or “bottom–up” (e.g., amygdala, striatum) in children to more regulated or “top–down” (e.g., dorsolateral and ventromedial PFC) in adults (Decety & Michalska, 2010; Decety et al., 2012). Thus, there may be neurobiologically distinct processes underlying phenotypically similar emotional capacities across different periods of development.

C37.P11

Neurotransmitters are essential to brain functioning. An affiliative response to potential stressors is linked to the neuropeptide oxytocin (OXTR; Taylor et al., 2000). Administering oxytocin increases adults’ empathy, sympathy, generosity, trust, paternal engagement with infants, and activity in brain regions associated with empathy (Hurlemann et al., 2010; Riem et al., 2012; Rilling et al., 2012; Weisman et al., 2012; Zak et al., 2007). Genotypic variation in OXTR, reflecting individual differences in the functional effectiveness of transmission of oxytocin across synapses, has been linked to cognitive empathy in adults (Uzefovsky et al., 2015) and children (Ben–Israel et al., 2015; Wade et al., 2014).

C37.P12

There has been considerable developmentally informed research on the associations between activity of the autonomic nervous system (ANS) and empathy, sympathy, and related emotions. The sympathetic branch (SNS) of the ANS is tied to defensive (fight–or–flight) responding, and greater SNS activity as reflected in elevated electrodermal activity in response to emotional stimuli has been linked with greater personal distress and less empathy or sympathy in children (Eisenberg et al., 1991; Fabes et al., 1993; Holmgren et al., 1998). Conversely, the parasympathetic branch (PNS) of the ANS has been characterized as the “social engagement system” (Porges, 2007, 2011), supporting coordinated brain–body regulation needed for cooperative behaviors by mammalian species who typically live in groups, including humans. There are numerous studies of PNS activity and children’s empathy and sympathy, but these have not produced consistent findings (Hastings & Miller, 2014).

C37.P13 Recent efforts to understand these inconsistencies reveal that the connections between neurobiology and moral emotions in children might be even more subtle and complex than previously imagined. The majority of research on the neurobiology of moral emotions (and other emotions) has treated emotions and physiology as static states, and examined the linear relations between them (Hastings & Kahle, 2019; Hastings et al., 2014; Kahle & Hastings, 2015). Emotions are transient but temporally dynamic experiences with varying properties of latency to onset, duration, intensity, attenuation, and recovery. The chronometry of emotional neurobiology, logically, should also involve nonlinear temporal dynamics (Fox et al., 2012).

C37.P14 As an example of what this may mean for one neurobiological system, consider the PNS. More baseline parasympathetic activity, as measured by respiratory sinus arrhythmia (RSA) or other markers of high-frequency heart-rate variability (HF-HRV), is associated with better emotion regulation (Beauchaine & Thayer, 2015; Calkins, 2007). Children's well-regulated parasympathetic activity is predicted by some of the same aspects of positive parenting that predict moral and prosocial development (Feldman, 2012, 2015; Hastings et al., 2019). Feeling empathy and sympathy entails some degree of emotional self-regulation in order to not be focused exclusively on one's own emotional state or needs; and empathy, sympathy, and other moral emotions are the affective cornerstones of cooperative social engagement. Therefore, the PNS is posited to play a central role in the development of empathy, sympathy, and prosocial behavior (Miller & Hastings, 2016), with baseline parasympathetic activity positively predicting empathy and sympathy. Yet, studies have not produced consistent linear associations.

C37.P15 Intriguingly, associations between baseline RSA or HF-HRV and empathy or sympathy are *quadratic*, not linear. In preschool-aged children (Miller et al., 2017), school-aged children (Acland et al., 2019), and young adults (Kogan et al., 2014), individuals with moderate to moderately high baseline parasympathetic activity are more empathic, sympathetic, and prosocial than individuals with either lower or higher baseline parasympathetic activity. Why would this be the case? The PNS does not exclusively subserve the capacity for emotion regulation; it also is a marker of the threshold for arousal in response to stimuli (Hastings et al., 2000, 2006). Individuals who approach the social world with moderate parasympathetic activity have a physiological resource to regulate their own state of arousal when they perceive others in need or distress (so that they do not experience emotional contagion leading to personal distress), but the calming or down-regulatory influence of their parasympathetic activity is not so high that the needs or distress of others fails to evoke the resonant response needed to prompt their positive social engagement (Miller et al., 2017).

C37.P16 Supporting this argument, Miller and colleagues (2019) recently showed that baseline HF-HRV was inversely associated with adults' brain activity in the inferior frontal gyrus, insula, and amygdala while passively viewing emotional faces in a magnetic resonance imaging (MRI) scanner, but not while actively imitating the faces. These brain regions are key components of the social-brain network and mirror-neuron system, and support attending to and engaging with social cues like facial emotional expression. Thus, when they were not prompted, adults with higher HF-HRV were less likely to

spontaneously detect and mark the facial expressions as salient cues necessitating orientation and engagement; these emotional stimuli did not meet their threshold for empathic arousal (Miller et al., 2019). Conversely, when prompted to imitate faces, adults with lower and higher HF-HRV did not differ in neural activity, suggesting they were equally capable of attending to emotion when that was an explicit goal.

C37.P17

Nonlinear patterns of dynamic change also characterize children's parasympathetic activity while they are watching emotionally-charged video scenes (Cui et al., 2015; Miller et al., 2013, 2016). When 4- to 6-year-old children watched video scenes of a child and mother experiencing distressing events and expressing sadness, children initially showed decreasing RSA, indicative of a decline in PNS activity that could support orienting to the evocative emotional stimulus (threshold for arousal), followed by increasing RSA that could support calm engagement with a nonthreatening stimulus (regulation; Miller et al., 2016). Those children with stronger nonlinear slopes (greater decreases and increases) were more likely to report feeling sad when watching the scenes (indicative of affective empathy), and their empathic sadness mediated the associations between nonlinear RSA slopes and children's sympathy and prosocial behavior toward adults who simulated accidents and injuries. Further, nonlinear RSA slopes directly predicted increases in prosocial behavior over the subsequent two years (Miller et al., 2016).

C37.P18

Thus, the developmental neurobiology of moral emotions is likely to reflect many such nonlinear and dynamic processes across brain and body systems that support the developing capacities to experience, express, and act upon empathy, sympathy, and other affects. As researchers continue to advance this field, and to incorporate cultural processes in the study of the developmental neurobiology of moral emotions, it will be important for the sophisticated and integrative theoretical framework of developmental cultural neurobiology to be paired with similarly sophisticated empirical approaches to the study of moral emotions.

C37.S4

The Different Developmental Neurobiologies of Different Moral Emotions

C37.P19

The few studies of shame, guilt, and embarrassment in children and adolescents suggest these have both overlapping and distinct neurobiological features as seen for empathy and sympathy. Adolescents primed to experience guilt and embarrassment evidence activity in some of the same brain areas implicated in empathy (Burnett et al., 2009; Klapwijk et al., 2013), with more advanced pubertal maturation being associated with greater functional connectivity within the social-brain network (Klapwijk et al., 2013). This suggests that increasingly, over adolescent development, guilt and embarrassment may be tied to mentalizing and consideration of other's experiences, supporting functional arguments that guilt motivates approach, engagement, and reparation with aggrieved others (Tangney et al., 2007). Analogously, Colasante and colleagues (2018)

found that guilt-inducing stories provoked decreased skin conductance and increased RSA in children, indicative of a social-engagement response, rather than a fight-or-flight response. Conversely, shame provokes physiological stress reactions in preschoolers (Lewis & Ramsay, 2002; Mills et al., 2008), indicating that shame is experienced as an aversive emotion motivating withdrawal or flight.

CONCEPTUAL AND EMPIRICAL LINKS BETWEEN CULTURE AND MORAL DEVELOPMENT

C37.S5

C37.S6

Traditional Conceptions of Parents as Primary Socializing Agents

C37.P20

Most families include several possible socialization agents, such as siblings and extended family members (e.g., grandparents, uncles, aunts, cousins). However, most research on the influence of the family on moral emotional development focuses on parents. Parents are primarily responsible for transmitting beliefs and training competency skills for the positive development of their offspring. Moral socialization theorists posit various mechanisms and processes such as modeling, caregiver practices, and direct instruction that inculcate children about moral issues, emotions, and behaviors (Bandura, 1986; Carlo, 2014; Eisenberg et al., 2016; Grusec & Goodnow, 1994; Hoffman, 2000). Among the many parental moral socialization mechanisms studied, parenting styles and practices are the most researched.

C37.P21

According to parenting scholars, there are two major dimensions of parenting: support and control. Support (sometimes referred to as warmth or nurturance) is a construct that reflects affection, respect for autonomy, and responsiveness to the child's needs. Research with predominantly white samples shows that this aspect of parenting style is conceptually linked to good self-regulation and empathic responding (Barnett, 1987; Hastings et al., 2007). Conversely, control involves both behavioral and psychological characteristics (Barber & Harmon, 2002). Psychological control refers to parents' use of techniques aimed at guiding and manipulating children's emotions. Common forms include love withdrawal and guilt-and-shame inductions, with more extreme examples like helicopter parenting reflecting micromanagement, overprotection, and undermining of children's autonomy. This form of control is often associated with less empathy and higher levels of guilt and shame proneness in children (Hoffman, 2000; Padilla-Walker et al., 2016). Behavioral control encompasses the "rules-and-consequences" aspects of parental authority and can involve a range of parents' exertion of power. Lower-power strategies include inductive reasoning (by which parents explain the rationales for rules and encourage their children to take another's viewpoint), monitoring of activities and peers, and structuring daily routines. Higher-power

strategies reflect rigid inflexibility, yelling and threatening, and imposing severe or physical punishment. Whereas low-power parental control is often linked to higher levels of moral emotions and behavior, high-power parental control predicts less empathy, sympathy, and prosocial behavior in children and adolescents (Hastings et al., 2015).

C₃₇:P₂₂ However, many findings on the relations between parenting and moral emotions do not hold in samples of families of ethnic and racial communities (e.g., Asian American, African American, U.S. Latinos/as) (e.g., Brody & Flor, 1998; Chao & Otsuki-Clutter, 2011). This undermines the veracity or applicability of many parenting theories to ethnically and racially diverse populations.

C₃₇:S₇ Culture-Specific Approaches to Understanding Moral Development

C₃₇:P₂₃ Major cultural theorists postulate that culture-specific human behaviors can be explained by an understanding of culture-specific beliefs, practices, and contextual affordances (Harkness & Super, 1997; Whiting & Edwards, 1988). However, studies on culture-specific beliefs, practices, contextual processes, and moral emotions were sparse until recently because early theories and research on moral development assumed that moral development was universal (Kurtines & Greif, 1974; Lapsley, 1996). Contemporary moral developmental researchers have begun examining moral emotions in distinct cultural groups. Although an understudied area of research, there has been an increasing amount of empirical attention given to the links between culture, socialization, and moral emotions in U.S. Latino/a youth.

C₃₇:P₂₄ Carlo and his colleagues have conducted much of the research focusing on U.S. Latino/a parents' socialization of children's moral emotions and behaviors (Carlo & de Guzman, 2009; Knight & Carlo, 2012). As with white European American samples, their studies with U.S. Latinos/as have shown that more sympathetic adolescents engage in more prosocial behavior, with the strength of the association varying across the different forms of prosocial behavior (Carlo et al., 2011, 2012, 2018; Davis et al., 2018). Some studies show that U.S. Latino/a adolescents who are more securely attached to their parents, who perceive their parents as more supportive, or who have parents that use more inductive reasoning, have more sympathy for others (Carlo et al., 2011, 2012, 2018a). Adolescents' sympathy has also mediated associations between parent attachment or inductions and youths' engagement in prosocial behaviors, suggesting that the socialization of moral emotions has positive behavioral consequences (Carlo et al., 2011, 2012). However, this mediation was not seen for all aspects of prosocial behavior, including altruistic (e.g., helping others at some cost to oneself) and public (e.g., helping while others are watching) prosocial behaviors (Carlo et al., 2018a). Furthermore, researchers did not replicate the associations between inductive disciplining and adolescents' sympathy in one U.S. Latino/a sample (Shen et al., 2013) as has been found in a study of white European American youth (see e.g., Krevins & Gibbs, 1996).

C₃₇:P₂₅ Recently, Carlo and colleagues (2018b) produced evidence that a constellation of parenting that is unusual in white European American families, but more often observed in several other communities—including U.S. Latino/a, African American, and Asian American families—may benefit youths' prosocial development. The most common parenting style of white European American parents is called authoritative, reflecting a balance of support and control that implicates being highly involved and responsive, and relying primarily on low-power control techniques (Maccoby & Martin, 1983). Authoritative parenting is often seen in other ethnic and racial families as well, but so too is a style called no-nonsense parenting, with high involvement, more moderate responsiveness, and moderately high-power control techniques like strict demandingness and punishment (Brody & Flor, 1998; Kim et al., 2013; White et al., 2016). No-nonsense parenting is in some ways a blend of authoritative and authoritarian styles (i.e., harsh parenting with a relative lack of warmth; Maccoby & Martin, 1983), and may reflect a combination of traditional cultural socialization and parental adaptation to raising children within a minority or immigrant context characterized by systemic and structural inequality and discrimination (Garcia Coll et al., 1996; Guerra & Williams, 2005; Nazroo, 2003).

C₃₇:P₂₆ Carlo and colleagues (2018b) found that U.S. Latino/a adolescents of Mexican origin, raised by parents who endorsed a no-nonsense parenting style, reported just as high levels of prosocial behavior as their peers who were raised by parents who endorsed an authoritative parenting style, with both groups reporting more prosocial behavior than U.S. Latino/a adolescents of Mexican origin with less involved parents. Given that in white European American families, the higher-power control of this parenting style has been linked to less empathy, sympathy, and prosocial behavior, this study demonstrates that there might be culturally-specific links between socialization and moral development.

C₃₇:P₂₇ In another study, Knight and colleagues (2016) found support for a cultural-values transmission model in which endorsement of *familismo* values by U.S. Latino/a mothers of Mexican origin predicted their ethnic socialization practices. These practices were then linked positively to their adolescents' ethnic identity and subsequent endorsement of *familismo*. Finally, both ethnic identity and *familismo* were subsequently related to the youths' prosocial behaviors (Knight et al., 2016). This study yields evidence that parents' cultural values can be transmitted across time to their adolescent children, which can then shape their prosocial behaviors. However, whether no-nonsense parenting, traditional values, or ethnic socialization practices by U.S. Latino/a parents also support their children's development of moral emotions is an open question.

C₃₇:S₈ CONCLUSIONS

C₃₇:P₂₈ This chapter summarizes theories and research on the intersection of culture, biology, and moral emotions. We highlight the work in this area with U.S. Latino/a populations

because most of the existing research in this area has focused on this ethnic/racial minority group. Recently, Telzer and colleagues have applied a developmental cultural neurobiology lens to their study of prosocial decision-making and behavior (as well as risk-taking and other phenomena) that identifies the neural correlates of prosociality that seem to align with cultural differences in values and socialization for Mexican-origin and white European American adolescents (Telzer et al., 2010; see also Telzer et al., 2016). Consistent with Michalska and Davis (2019), it is reasonable to expect that similar cultural canalizations would be evident for the neurobiology of moral emotions, but this lens has not yet been applied to the development of moral emotions in ethnic/racial minority youth.

C₃₇:P₂₉ Consider that the interconnected parasympathetic nervous system, oxytocin-receptor system, and mirror-neuron system likely function in integrated and coordinated ways to support affiliation and social engagement. Consider also that affiliation and social engagement conceptually align with the ethnic identity and cultural values (particularly *familismo*, *respeto*, and *simpatia*) of Latinos/as. Within U.S. Latino/a families, parent-child attachment, parental support, parenting style, and cultural socialization practices contribute to the development of both ethnic identity, cultural values, and the moral emotions of empathy and sympathy, which may act as intertwined sociocognitive and affective mechanisms of moral behavior. Therefore, U.S. Latino/a caregivers who emphasize ethnic identity and corresponding cultural values may attune and scaffold this multisystem neurobiological capacity, enhancing children's ability to feel and act on moral emotions. Children with stronger neurobiological preparedness for empathy, social engagement, and affiliation also may be more inclined to orient toward their caregivers, understand their perspectives, and internalize the values they teach and model. Thus, the development of moral emotions in U.S. Latino/a children and youth may involve neurobiological mechanisms of reciprocal and transactional influences within the cultural family context.

C₃₇:P₃₀ This proposed model of the developmental cultural neurobiology of moral emotions is, of course, entirely hypothetical. We advocate for scholars interested in the development of moral emotions in U.S. Latino/a children, and in other ethnic and cultural communities (e.g., African Americans, Native Americans, Asian Americans—see Liew & Zhou, this volume), to adopt a developmental cultural neurobiology lens so that a more expansive, inclusive, and nuanced understanding of the diverse paths of the development of moral emotions may exist.

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