How Children Cognitively Process and Emotionally Respond to Victimizing Others: A Multimethod Developmental Approach

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy

Department of Psychology
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Abstract

After violating ethical norms, such as stealing, why do some children feel positively-valenced, selfish emotions while others feel negatively-valenced, kind emotions? Psychologists have argued that, while victimizing others, how people cognitively process environmental cues related to conflicting selfish and other-oriented concerns influences how they emotionally respond. Yet, no studies have examined these assertions during childhood, when kind emotions develop most rapidly. In this dissertation, I tested these assertions using multiple methods and study designs with samples of 4-, 6-, and 8-year-olds.

In Study 1, I used eye tracking and found that, across age groups, attentional tendencies (calculated as the percentage of time children visually attended to other-oriented minus self-serving cues) positively and negatively related to kind and selfish emotions, respectively. In Study 2, I incorporated facial expression recognition technology to examine how concurrent measures of attentional tendencies and sad facial expressions related to each other, as well as kind and selfish emotions. I found that attentional tendencies better predicted sad facial expressions than vice versa, but that only sad facial expressions were directly related to kind and selfish emotions.
In Study 3, I experimentally tested three techniques for promoting children’s cognitive processing of other-oriented cues, with the goal of enhancing their kind emotions. In the other-focused and self-focused role-taking conditions, children were instructed to think about, respectively, how the victim would feel and how they would feel if they were the victim during each transgression. In the orienting condition, children were only drawn to attend to the victim’s face via an animation. The results revealed that children in the orienting condition reported the most kind emotions and significantly more than the other-focused, but not the self-focused, condition.

Overall, this dissertation points to the impact of children’s cognitive processing on their emotional responding during ethical transgressions. In doing so, it offers new insights for theory and the practice of parents, teachers, and interventionists.
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In this dissertation, I’ve primarily used the pronoun “I” as a sign of taking responsibility for the ideas and decisions made here. But, this does not speak to the wealth of intellectual and personal support I’ve received, without which this work would not have been possible.

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Chapter 1

1 General Introduction

1.1 Overview

At some point in their lives, virtually all children break ethical rules. Consequently, some feel guilt or sorrow, which motivates them not to break these rules again and to engage in reparative, kind behaviour; conversely, some feel happiness or pride, which reinforces their selfish, antisocial behaviour. But, why do some children feel happy about these violations while others feel bad? Despite substantial knowledge about socialization’s impact (see Dunn, 2014; Grusec, 2011), we know far less about how psychological mechanisms involved in children’s cognitive processing of transgressions—such as attention allocation—relate to their own emotions. This is surprising given the importance leading theories have placed on mechanisms of cognitive processing in explaining how emotions are activated (Frijda, 1986; Scherer, 2009) and develop (e.g., Crick & Dodge, 1994; Hoffman, 2000; Malti, 2016).

In this dissertation, I aim to evaluate whether and how the ways in which children attend to and cognitively process environmental cues—such as a stolen treat or a victim’s facial expression—while victimizing others relate their subsequent, finalized kind and selfish emotions. Examining this question is important as these emotions are integral for children’s social behaviour, peer relationships, and wellbeing. I start, here in Chapter 1, by defining kind and selfish emotions and highlighting their relations to social behaviour. I outline developmental trends in these emotions before explaining how they are commonly measured. Next, I move to discussing attention, its subsystems, and how it is measured, followed by a discussion on whether it functions as a cause or consequence of emotions. Then, I overview the importance of examining my research questions from a developmental perspective. Here, I argue that the ways in which children process social conflicts becomes less malleable with age and subsequently explain the value of testing the attention–emotion link between early and middle childhood.
In Chapters 2–4, I describe three studies testing the link between attention and emotions in transgression situations across early and middle childhood. The first study examined children’s attentional tendencies and subsequent self-reported kind and selfish emotions. It revealed that children who spend comparatively more time attending to other-oriented versus self-centered cues report more kind and less selfish emotions. It also showed that these relations remain stable across age.

The second study took a broader approach to understanding the processes that preceded children’s arrival at finalized, kind and selfish emotions. It investigated how concurrent measures of children’s attentional tendencies and sad facial expressions related to each other, and to kind and selfish emotions. It demonstrated that attention better predicts sad expressions than vice versa, but that sad expressions alone predict kind and selfish emotions. It also revealed some, although weak, evidence that attention indirectly links to kind emotions through sad facial expressions. Furthermore, sad facial expressions were related to subsequent kind emotions among 6- and 8-year-olds, but not 4-year-olds.

The third study experimentally examined three approaches for increasing children’s attention to, and their processing of, other-oriented cues with the goal of understanding which approach best enhanced children’s kind emotions. Surprisingly, children assigned to a visual orienting condition—in which the victim’s head moved slightly during the story—reported the most kind emotions, followed by those instructed to think about how they would feel in the victim’s situation (i.e., self-focused condition). Children instructed to think about how the victim feels (i.e., other-focused condition) reported the least kind emotions and significantly less than those in the orienting condition. Analyses also revealed that that conditions worked similarly across age groups. In Chapter 5, I distill these studies’ theoretical implications, their strengths and weaknesses, and future directions for research and practice.

1.2 Kind and Selfish Emotions

1.2.1 Prerequisites and Precursors

Kind emotions are emotions that reflect: (a) internalized principles of fairness, justice, or omissions of harm, (b) concern for another’s welfare, or (c) both (Eisenberg, 2000; Malti, 2016).
kind emotions may be self-conscious (e.g., feeling guilt after harming another), other-oriented (feeling sympathy or concern for a person in need), or a combination of the two (Hoffman, 2000). Thus, kind emotions include feelings of guilt for ethical reasons, but would not include other related types of guilt such as conventional or neurotic guilt, which are rooted in concerns over social conventions and inappropriate self-blame, respectively (Malti, Dys, Colasante, & Peplak, 2018). Kind emotions are often considered inherently complex because they typically require coordinating and balancing one’s own and others’ perspectives, intentions, and emotions (e.g., Killen, Mulvey, Richardson, Jampol, & Woodward, 2011; Lagattuta, 2014; Malti, Gasser, & Gutzwiller-Helfenfinger, 2010). Selfish emotions are those that demonstrate hedonistic, self-indulging concerns in response to transgressions, such as happiness after stealing a desired treat.

Here, I argue that selfish emotions arise in response to everyday, interpersonal transgressions—such as stealing or not helping a person in need—for two possible reasons. People either: (a) fail to sufficiently consider how their actions affect others, or (b) lack concern for how their actions influence others (Malti & Dys, 2015). Between these two explanations, the former likely accounts for more people’s selfish emotions because most young people show high and stable levels of dispositional concern for others (i.e., sympathy) from middle childhood across adolescence (Carlo, Padilla-Walker, & Nielson, 2015; Malti, Zuffianò et al., 2016). For these reasons, I employed normative samples in this dissertation to better understand how the cognitive processing of ethical transgressions underpins kind and selfish emotions for most young people.

Much research on how kind and selfish emotions are elicited is rooted in appraisal theories of emotions (Frijda, 1986; Malti et al., 2018; Wondra & Ellsworth, 2015). According to appraisal theories, kind and selfish emotions—like any emotions—arise in response to a person’s appraisal of a stimulus against their concerns (Frijda, 1986; Lazarus, 1991). Here, concerns denote everything a person holds important: their needs, goals, beliefs, and standards (Moors, Ellsworth, Scherer, & Frijda, 2013). As appraisals are made, they are presumed to cause changes in subsequent components of the emotional episode, including somatic (e.g., physiological arousal), motor (e.g., facial expressions), and feeling (e.g., the subjective emotional experience) components. Because all components are interlinked, changes in one component may cause changes in another. By some definitions, these reactions only qualify as an emotion when changes across components become synchronized (see Scherer, 2009).
In this dissertation, I focus on three components of emotions. The first component, attention, is typically believed to precede appraisals and enable information processing (Frijda, 2009). As such, it may exert a particularly strong influence on subsequent emotions by changing the content of what one appraises (Frijda, 2009; Malti et al., 2018). In support of this idea, psychologists have found that by manipulating the cues to which people attend, they can influence adults’ decisions on matters ranging from the simple—such as which treat a person prefers—to the complex—such as whether murder is sometimes ethically justifiable (Pärnamets et al., 2015; Shimojo, Simion, Shimojo, & Scheier, 2003). The second component, facial expression, provides an ongoing indicator of one’s emotional reactions. In so doing, it also continuously reflects how a situation is being appraised or evaluated in real time without interrupting a person with questions (Kaiser & Wehrle, 2001). The final component, self-reported emotion, reflects the conscious, subjective emotional experience. These typically reflect one’s dominant, finalized emotional response(s) to a stimulus (Dys & Malti, 2016). By cross-referencing how children feel with why they feel that way, we can assess whether children’s finalized emotions reflect kind, selfish, or other motives.

1.2.2 Why Are They Important? Kind Emotions and Social Behaviour

Kind emotions play a central role in children’s social lives. First, they are important motivators of prosocial and antisocial behaviour (Eisenberg, 2000; Malti, 2016). A meta-analytic study found that guilt positively and negatively relates to prosocial (d = .26) and antisocial (d = .39) behaviour, respectively, from early childhood to adulthood (Malti & Krettenauer, 2013). Similarly, cross-sectional and longitudinal studies have also found that children high in sympathy show less aggressive behaviour, such as bullying (Lovett & Sheffield, 2007; for a meta-analytic review, see van Noorden, Haselager, Cillessen, & Bukowski, 2014), and more prosocial behaviour, such as sharing (Ongley & Malti, 2014; for a review, see Eisenberg, Spinrad, & Knafo, 2015). Second, simply communicating kind emotions can qualify as a prosocial act. By matching a victim’s emotional expression, people can signal to the victim that they are aware and concerned for their situation, which can provide comfort to the victim (Bavelas, Black, Chovil, Lemery, & Mullet, 1988; Hoffman, 2000). Therefore, kind emotions can not only motivate ethical behaviour, but also function as prosocial behaviours themselves.
By understanding how to promote kind emotions, we can enhance prosocial and reduce antisocial behaviours, and in so doing, improve children’s peer relationships and wellbeing.

1.2.3 When and How Kind Emotions Develop

There is some debate regarding when kind emotions in response to one’s own wrongdoings first emerge in development. One approach to investigating this question involves examining children’s behavioural (e.g., gaze aversion) and affective (e.g., distress) responses to contrived transgressions or mishaps, wherein children are led to believe they had accidentally damaged or broken an experimenter’s valued toy. Using this paradigm, researchers have found that children show guilt-like signs of distress as early as 22 months (Kochanska, Gross, Lin, & Nichols, 2002; see also Vaish, Carpenter, & Tomasello, 2016). There is some question, however, about whether children’s reactions reflect a sense of ownership over the wrongdoing because they did not intend any damage. This is important because children use intentions to evaluate the wrongfulness of people’s transgressions (Killen et al., 2011). Furthermore, it’s unclear whether children show negative expressions out of concern for ethical principles or the experimenter’s feelings as opposed to expected sanctions (e.g., punishment). Thus, it’s unclear whether this paradigm elicits the kind emotion of guilt, which includes feeling remorse for one’s actions, or other non-kind negatively-valenced reactions to the unfortunate outcome. For these reasons, some have argued that children’s reactions to these mishaps may better qualify as precursors to guilt feelings (Malti, 2016; Malti & Ongley, 2014).

Another approach involves asking children how they would feel if they had committed everyday ethical transgressions (Malti, Gummerum, Keller, & Buchmann, 2009; Nunner-Winkler & Sodian, 1988). Studies using this approach, coined the *happy-victimizer paradigm*, have found that about half of 4-year-olds report feeling positive emotions about hypothetically transgressing (e.g., taking a desirable treat meant for a peer). This is surprising because children as young as 3 years of age understand that violating such norms is wrong and harms others (Turiel, 1983). By ages 6 to 8, children shift to reporting more negatively-valenced, kind emotions, such as sadness or guilt (Arsenio, 2014). Here, some have argued that children’s reports of sadness may reflect a precursor of guilt, as sadness is often presumed to develop into guilt when children develop a stronger sense of responsibility for their wrongdoings (Malti et al., 2009). So, while the
precursors of kind emotions appear to emerge in infancy, 4 to 8 years of age is when kind emotions develop most quickly.

Developmental scientists have proposed several explanations for how kind emotions develop. Some have argued that the motivational capacity for kind emotions does not develop for most children until middle childhood (Nunner-Winkler & Sodian, 1988). This notion, however, sits at odds with the findings that children’s sympathy emerges early and remains relatively stable, and that precursors of guilt appear even earlier in life (Malti, 2016; Malti, Zuffianò et al., 2016). Others have argued that various cognitive factors play a role: improvements in theory of mind (i.e., perspective taking), sense of agency (i.e., understanding that one has the choice to act differently), and understanding of emotions likely all play some part (Denham et al., 2003; Gibbs, 2013; Gummerum, Cribbett, Nicolau, & Uren, 2013; Lane, Wellman, Olson, LaBounty, & Kerr, 2010). Still, these cognitive developments do not necessarily elicit guilt as some children who bully demonstrate higher cognitive skills, but fewer kind emotions, and a portion of people persist in happy-victimizing through adulthood (Gasser & Keller, 2009; Krettenauer & Eichler, 2006). Thus, it’s most likely that how kind emotions emerge is the result of motivational and cognitive processes. In a following section, I will examine a foundational mechanism that may activate and coordinate both types of processes. But first, I will explain how I measure children’s kind and selfish emotions.

1.2.4 Measuring Kind and Selfish Emotions

A common approach to testing children’s kind and selfish emotions involves asking them to anticipate whether they would feel bad for committing an ethical transgression, such as stealing or not helping. For ethical reasons, hypothetical vignettes are used to avoid undue distress to children. There has been some disagreement over how children should be asked about their feelings in response to these transgressions. In early studies, children were asked to attribute expected emotions to third-person victimizers (e.g., “How would [transgressor’s name] feel if he had done this?”; Arsenio & Kramer, 1992; Nunner-Winkler & Sodian, 1988). This approach was used, in part, because third-person attributions were believed to be more objective and reduced the chance of eliciting socially desirable responses. Years later, however, scientists began asking children to anticipate their emotions as victimizers (e.g., “How would you feel if you had done
This approach was employed to avoid conflating children’s perceptions of their own emotional responses with those of others. In support of the latter approach, a meta-analysis of children’s kind emotions found that, compared to emotions attributed to third-person victimizers, people’s first-person attributed emotions were more strongly related to prosocial and antisocial behaviour (Malti & Krettenauer, 2013). Thus, most contemporary studies ask children to attribute emotions to themselves, not others, as socially desirable responding appears less of a concern than conflating one’s own and others’ expected emotional responses.

This approach was well-suited to assess children’s finalized, kind and selfish emotions. It was not, however, ideal for assessing how children cognitively process and emotionally respond to ethical dilemmas in real time because it was unclear whether children took the perspective of the victim, victimizer, or a bystander while the story was being read (Dys & Malti, 2016). For this reason, I adapted this paradigm for the studies in this dissertation to ensure that children took the victimizer’s perspective throughout the story. Prior to being read the stories, children were trained to understand the first-person point of view illustrated in the stories and then read a practice story. By using this approach, I could better approximate how children would visually attend and emotionally respond to victimizing others in real life.

1.3 Attention

1.3.1 Subsystems and Their Study

Attention—focused mental engagement with information—consists of three subsystems: alerting (signaling an incoming stimulus), orienting (selecting information for processing), and controlling (higher-order regulation of awareness; Pashler, 1998). While these systems function in parallel, they operate and develop at least somewhat independently with distinct neural circuits and neurotransmitters underlying each (Hrabok, Kerns, & Müller, 2007; Parasuraman, 2000; Posner, 2012). Still, all three systems interact and jointly impact how people allocate their attention in daily life. Although attention can involve any sense (e.g., auditory, tactile) and can be directed outward (e.g., toward one’s environment) or inward (e.g., to one’s own thoughts), most studies on attention have focused on visual attention.
Interestingly, research on children’s attention allocation and emotions in response to transgressions is largely absent. Most directly related developmental research has examined how attentional control links to other dimensions of regulation and behaviour (Eisenberg et al., 2004)—a trend driven, in part, by attentional control’s role in prominent mental health challenges that are increasingly prevalent among children, such as hyperactivity, anxiety, and depression (Bell & Calkins, 2012; Groman & Barzman, 2014; Sportel, Nauta, de Hullu, de Jong, & Hartman, 2011). In addition, this work has often included measures in which attentional and behavioural control are unintentionally conflated at the measurement level (e.g., in parents’ reports), intentionally merged at the statistical level, or both (see Eisenberg & Spinrad, 2004). Consequently, the construct of attention allocation has been largely overlooked in this line of research, which is surprising given its role in numerous theories on emotions (e.g., Lazarus, 1991; Scherer, 2009).

### 1.3.2 Measuring Attention

Attention has been measured with a range of behavioural (e.g., eye tracking, reaction time) and neurological (e.g., electroencephalography, functional magnetic resonance imaging) methods. Of these, eye tracking is arguably the most useful method for studying how people process environmental cues in real-world scenes due to the close relation between what people gaze on and to what they attend.

When orienting toward a stimulus, people shift their eyes into a position where light reflecting off the stimulus projects onto their fovea—the area with the highest concentration of light-sensitive photoreceptors, or cones. This operation, known as foveal processing, allows people to process stimuli in the greatest detail (Hoffman, 1998). Some experimental paradigms, however, have shown that people can process cues immediately outside of the scope of their foveal vision, known as parafoveal processing (Eriksen & Hoffman, 1972, 1973). This type of processing allows for more rudimentary examining of stimuli due to the mixture of cones and rods (photoreceptors less sensitive to light) in the area surrounding the fovea. Nonetheless, most everyday visual processing depends on foveal processing because it allows people to extract visual information most efficiently. Moreover, compared to other motor systems, the oculomotor system is arguably the most efficient and earliest developing because of how much it is exercised.
from an early age: by one estimate, infants make between 3 million and 6 million eye movements a day (Haith, Hazan, & Goodman, 1988). Thus, eye tracking provides a valuable index of children’s attention allocation because children have extensive practice with moving their eyes toward visual cues and because there exists a strong link between to what they visually attend and what they cognitively process.

1.4 Relations Between Attention and Emotions

1.4.1 Attention’s Link to Emotions: A Cause or Consequence?

While psychologists largely agree that people’s attention and emotions are related, they agree less about how they are related. Here, I overview clinical, affective, and developmental perspectives on the matter.

1.4.1.1 Attention as a Cause

Early clinical theorists focused on factors associated with vulnerability to and persistence of affective disorders. One of the most renown clinical psychologists, Aaron Beck, argued that disorders such as depression and anxiety are driven by dysfunctional schemas (or mental working models) reflecting negative views of themselves, their surroundings, and their futures (Beck, 1967). According to Beck’s cognitive model of depression, people in anxious or depressed moods should be more likely to attend to information congruent with their mood. More recent research, however, has found that people in anxious moods—characterized by feelings of fear—attend more to threatening stimuli, whereas people in depressed moods—characterized by feelings of sadness—show no such attentional biases¹ (Fox, Russo, Bowles, & Dutton, 2001; Williams, Mathews, & MacLeod, 1996; Williams, Watts, MacLeod, & Mathews, 1997). Fear may be unique in this respect as it adapted to help rapidly detect and respond to dangers (LeDoux, 1996).

Associated research, more rooted in affective science, has paid greater attention to how cognitions and emotions are inter-related. Many theorists in this realm have argued that

¹ But, unlike people with anxiety, people with depression show explicit memory biases for mood-congruent information (Williams et al., 1997).
cognitions are necessary to activate emotional episodes, but that emotions are not necessary for cognitive processing (Arnold, 1960; Frijda, 1994; Lazarus, 1984). Here, cognition typically refers to knowledge structures, whereas emotion refers to motivational forces (Izard, 1994; for an alternative definition, see Zajonc, 1984). According to appraisal theory—people’s evaluations (or appraisals) of their environment activate emotional responses (Lazarus, 1991; Scherer, 2009). These appraisals are often believed to progress through a series of checks (Scherer, 2001), including (but not limited to) those related to relevance (e.g., “Is the situation relevant to me?”), implications (e.g., “Is the situation conducive to my goals?”), and coping potential (e.g., “Can I control the situation?”). By this view, interindividual and intraindividual differences in people’s appraisals of the same situations often account for discrepancies in their emotional reactions.

Here, attention may play a causal role in these differences by modulating the type of information people process, thereby influencing their subsequent emotional responses (Frijda, 2009; see also Crick & Dodge, 1994; Lemerise & Arsenio, 2000).

More recently, some psychologists have become more focused on the dynamic quality of emotional experiences, which has strengthened our need for understanding the temporal relations between attention and emotion (Scherer, 2009). These theorists have pointed out that emotional episodes are not static, but rather processes that unfold with time. Consequently, emotional reactions may be iteratively updated with new information—by some estimates in as quickly as every 200 milliseconds—and change over time until all available information is fully processed (Cunningham, Zelazo, Packer, & Van Bavel, 2007; Scherer, 2009). Thus, at some point attention may drive changes in emotion, while at others, emotion may direct attention. In this vein, a neuroimaging study exploring the temporal relations between attention and emotion concluded that attention influences later (280–410 millisecond) but not early (40–140 millisecond) emotional responses (Luo et al., 2010). Critics, however, have strongly argued that the weaknesses in the methodology and design of this study should preclude such conclusions, and assert that questions regarding the relation between emotion and attention remain open ( Pessoa, 2010).

Developmental scientists have theorized about what causes the substantial changes we observe in emotional development. In addition to biology and socialization, developmental theories have placed a strong emphasis on how cognitive development—in particular, attention—interacts with
emotional development in infancy and childhood (Izard, 1994; Lewis, 2008). In large part, developmentalists have argued that attention influences emotion, doing so through effects on emotion’s emergence, elicitation, and regulation. Being able to sufficiently attend to and process elements of one’s experience allows for certain emotions to emerge. Early in life, attending to their surroundings enables infants to evaluate their social worlds, leading to the first signs of pleasure and interest (Lewis & Michaelson, 1983). In the second and third years of life, attending to their self-concept in relation to others enables children to feel self-conscious emotions, leading to the first signs of guilt and shame (Harter, 1999; Lewis, Sullivan, Stanger, & Weiss, 1989).

Even after certain emotions emerge, infants substantially attend to and cognitively process their environments prior to responding emotionally. For example, while reacting to frustrating situations (e.g., having their hands constrained), infants engage in substantial looking, gaze shifting, and eye contact prior to responding emotionally (Stenberg & Campos, 1990). These findings converge with the assertions of appraisal theorists that people proceed through a series of checks prior to experiencing emotions (see Scherer, 2001). This temporal relation between attention and emotion may simply be clearer early in life as infants are slower to execute evaluations of their surroundings.

Infants and children may also use attention as a way of managing emotional reactions. For example, four-month-olds who disengage their attention from overarousing stimuli tend to be less susceptible to negative affect (Rothbart, Ziaie, & O’Boyle, 1992). Furthermore, preschool children who distract themselves from a desirable treat (e.g., a marshmallow), as opposed to directly attending to it, can better manage their positive emotions, allowing them to delay their gratification much longer (Mischel, Ebbesen, & Zeiss, 1972). In addition, kindergarten children partaking in interventions training attentional flexibility show greater improvements in delaying gratification compared to those participating in interventions focusing on physiological relaxation (Murray, Scott, Connolly, & Wells, 2018). For these reasons, many developmentalists have concluded that how children allocate their attention is critical to determining when and how their emotions are elicited (Stein, Hernandez, & Trabasso, 2006).

1.4.1.2 Attention as a Consequence
Meanwhile, other affective and developmental scientists have argued that attention is better described as a consequence of emotions. For instance, children and adults appear to locate and identify fear-inducing stimuli, such as snakes and spiders, more quickly than neutral stimuli, such as flowers and caterpillars (LoBue & DeLoache, 2008; Öhman, Flykt, & Esteves, 2001). Thus, certain types of stimuli may be affectively “tagged”, causing people to orient toward and fixate on those cues. Others, however, assert that recognizing a stimulus as important and emotionally-salient requires some degree of attention and cognitive processing (Stein et al., 2008; see also Pessoa, McKenna, Gutierrez, & Ungerleider, 2002). Nonetheless, once elicited, fear may engage and sustain attention toward stimuli one deems as threatening. This is important as some children show spontaneous fearful expressions in response to hypothetically victimizing another child (Dys & Malti, 2016). It is unclear, however, to what extent such fear persists over the course of a transgression, and whether such fear because of sanctions or for another’s wellbeing similarly directs people’s attention. Ultimately, there is some evidence that emotion may direct attention, but it appears limited to experiences of fear.

Over the long-run, the experience of emotions may foster changes in cognitive processes, including attention. Experiences of guilt may contribute to children’s self-reflection and awareness of others: for example, guilt may motivate children to behave more self-consciously and be more considerate of how their actions impact others (Dunn, 1994). Emotions may also direct attention in situations where there are multiple, potentially conflicting goals at hand (Ruff & Rothbart, 1996). For example, anger directed toward a teacher may hamper children’s abilities to focus on conversations with peers, or happiness over obtaining a treat may hamper children’s abilities to realize they have hurt other children’s feelings in doing so.

1.4.1.3 What Can We Conclude About Directionality?

Although solid empirical evidence is lacking, what is likely the soundest theorizing suggests the relation between attention and emotion is bidirectional. Nonetheless, one mechanism may have substantially more influence over the other, which likely has meaningful implications for interventions aimed at disrupting emotional responses that lead to maladaptive behavioural outcomes, such as proactive (self-interested, reward-oriented) aggression. Prevailing perspectives across psychology suggest that attention is better described as a cause than a
consequence of emotion. By most accounts, attention is a prerequisite to emotion, and modulates
the content of what one appraises and emotionally reacts to. Fear, however, appears uniquely
capable of influencing one’s attention toward fear-inducing stimuli. But, compared to emotions
like sadness, fear is much less commonly shown and reported in response to everyday ethical
transgressions (Dys & Malti, 2016). Ultimately, how attention and emotion interact, especially
over the course of an emotional episode, remains an open question.

1.4.2 Examining How Attention and Emotion Jointly Develop

Investigating the links between children’s attention and kind emotions is arguably most
important between early and middle childhood when kind emotions develop most rapidly and
influence children’s growing social lives (Malti, 2016). In response to hypothetically
transgressing, about half of 4-year-olds report feeling happy, despite understanding that such
transgressions are wrong and harm others (Arsenio, 2014). Meanwhile, 6- and 8-year-olds report
feeling far more kind emotions. Likewise, all three of the attentional subsystems develop rapidly
between 4 and 8 years of age, while more gradual development continues through late childhood
into adulthood (Betts, Mckay, Maruff, & Anderson, 2006; Mezzacappa, 2004; Posner, 2012).

Furthermore, examining this attention–emotion link from a developmental perspective between
early and middle childhood may be optimal as the ways in which children process environmental
cues during transgressions may be practiced, and consequently, automatized (Dys & Malti,
2016). With time, the ways in which people process environmental cues likely stabilize and their
subsequent responses become more habitual. Failing to attend to and process other-oriented
considerations may prevent children from immediately experiencing kind emotions but may also
inhibit their kind emotions’ development. As such, there may be more difficulty in changing
people’s patterns of attention allocation, emotions, behaviour, and related processes later in life.
As philosopher Iris Murdoch (1970) explained:

[I]f we consider what the work of attention is like, how continuously it goes on, and how
imperceptibly it builds up structures of value round about us, we shall not be surprised
that at crucial moments of choice most of the business of choosing is already over. This
does not imply that we are not free, certainly not. But it implies that the exercise of our
freedom is a small piecemeal business which goes on all the time […] (p. 36).
In the short term, attention may underlie children’s immediate emotional reactions. Over the long term, in conjunction with developing memories, changes in these emotional reactions may also influence people’s anticipatory emotions—those emotions one experiences in anticipation of potential outcomes (Malti et al., 2018; see also Crick & Dodge, 1994). For instance, after pushing a peer to get a treat, attending to their victim’s emotional state may lead children to feel guilty; in similar future situations, these children may anticipate that pushing another would make themselves feel guilty, leading them to refrain from behaving aggressively. Therefore, testing these relations between early and middle childhood offers several advantages for theory and practice.

1.5 Summary

In this dissertation, I sought to better understand how children’s cognitive processing accounts for interindivdual differences in how they emotionally respond to victimizing others. My overarching goals were to: (1) advance theorizing on how children’s cognitive processing, attention allocation, and emotions interact and differ across age in the context of ethical transgressions, and (2) provide recommendations for parents, educators, and interventionists seeking to enhance children’s kind emotions. Each study’s sample consisted of 4-, 6-, and 8-year-olds because these age groups encompass an important period of development for kind emotions and attentional subsystems. In the first study, I investigated how children’s tendencies to allocate attention to self-serving versus other-oriented cues related to their kind and selfish emotions. In the second study, I examined how concurrent measures of children’s attentional tendencies and sad facial expressions related to each other, and to their subsequent kind and selfish emotions. In the third study, I experimentally tested the effect of three different attentional prompts on children’s kind emotions.
Chapter 2

2 Children’s Attentional Tendencies Are Associated with Their Kind and Selfish Emotions (Study 1)

2.1 Introduction

Why do some children feel happy about violating societal norms, such as stealing, while others feel bad? This question has interested many psychologists, economists, and philosophers because children’s emotions strongly motivate their prosocial and antisocial behaviors (Eisenberg, 2000; Malti & Krettenauer, 2013). Despite extensive information on socialization’s impact (see Dunn, 2014; Grusec, 2011), we know far less about how children’s endogenous mechanisms, such as their cognitive processing, relate to their own emotions. This is surprising because prominent psychologists and philosophers have argued that how people process environmental cues related to conflicting selfish and other-oriented concerns influences how they feel (e.g., Hoffman, 2000; Malti, 2016; Murdoch, 1970). For instance, primarily attending to self-serving cues—such as stolen goods—may cause children to reflect upon the benefits of transgressing, thus eliciting selfish emotions; conversely, primarily attending to other-oriented cues—such as a victim’s face—may lead children to better consider how their actions affect others, thus eliciting kind emotions. This link, however, has yet to be tested directly.

Related research suggests that people’s tendencies to allocate attention to certain environmental cues may substantially impact whether and how strongly they experience kind emotions. For instance, when adults are instructed to focus on how a disadvantaged individual feels, they tend to feel more concern for others (sympathy) compared to controls (Batson, Eklund, Chermock, Hoyt, & Ortiz, 2007). Furthermore, among adults observing victims in distress and children imagining themselves victimizing another, those whose heart rates decelerate—an effect believed to indicate other-oriented attention—experience more kind emotions (Eisenberg et al., 1989; Malti, Colasante, Zuffianò, de Bruine, 2016). Still, it remains unknown whether attention allocation and kind emotions are related (a) when using direct measures of attention in real time, (b) in situations where children themselves transgress norms involving fairness and other people’s welfare, and (c) when examining the joint effects of attending to other-oriented and self-serving cues. Here, I used eye tracking to test the relation between real-time attention toward
other-oriented and self-serving cues during a hypothetical transgression (i.e., attentional tendencies), and subsequent kind and selfish emotions.

Testing the link between attention and kind, other-oriented emotions may be most valuable in childhood. Kind emotions develop most rapidly between 4 and 8 years of age (Malti & Ongley, 2014). Surprisingly, about half of 4-year-olds feel happy about hypothetically violating norms of fairness and others’ well-being. These children typically justify their feelings by referring to the selfish benefits of transgressing despite understanding that violating such norms is wrong and harms others (Arsenio, 2014). By 6 to 8 years of age, most children shift toward anticipating self-conscious or other-oriented, kind emotions, such as guilt or sympathy. Testing the relation between attention and emotions across this developmental period may shed light on when these mechanisms become related. For instance, it could reveal whether these mechanisms become linked between middle and late childhood or whether they are already related by middle childhood. Thus, I tested this research question with a sample of 4-, 6-, and 8-year-olds.

2.1.1 The Present Study

To summarize, I tested whether children’s attentional tendencies toward environmental cues during a hypothetical transgression were associated with their subsequent kind or selfish emotions. I focused on cues representing conflicting other-oriented and self-serving concerns as they may relate to opposing emotional responses. Because these conflicting cues are simultaneously present, I was most interested in calculating how much longer children attended to other-oriented compared to self-serving cues. I expected that these attentional tendencies would positively and negatively relate to kind and selfish emotions, respectively (Hypotheses 1 and 2). I also hypothesized that with age, children would increasingly attend to other-oriented compared to self-serving cues (Hypothesis 3). Lastly, I tested whether the relation between attentional tendencies and emotions remain across age groups.

2.2 Method

2.2.1 Participants
I ran an a priori power analysis to determine what sample size was needed to detect my expected effects. Using G*Power 3, I calculated the sample necessary to detect a small effect (which was expected based on previous findings), Cohen’s $f^2 = .07$, given a power of 0.80 and an $\alpha$ of 0.05, in a multiple regression analysis. This analysis revealed a sample size of 160. I decided to oversample to compensate for issues related to technical difficulties (e.g., invalid eye-tracking data due to children’s excessive movement, see Appendix 2.1) and, to a lesser extent, children’s responses (e.g., unelaborated; neither kind nor selfish emotions, see Measures). The entire sample consisted of 329 children, of which 12% did not report either kind or selfish emotions (e.g., fear of sanctions or responses with unelaborated reasons) and another 20% for which reliable eye tracking data could not be collected (for more information, see Appendix 2.1).

Ultimately, my final sample included 225 children, consisting of 62 4-year-olds ($M_{\text{age}} = 4.62$ years, $SD = 0.26$; 55% girls), 91 6-year-olds ($M_{\text{age}} = 6.55$ years, $SD = 0.33$; 43% girls), and 72 8-year-olds ($M_{\text{age}} = 8.45$, $SD = 0.36$; 54% girls) from a major Canadian city. The sample was ethnically diverse, with primary caregivers reporting backgrounds from Asia (42%), Europe (22%), the Middle East (22%), and other backgrounds (8%; 6% did not report their background). Across primary caregivers and their partners, the highest levels of education reported were representative of the city from which families were recruited (Statistics Canada, 2017), with caregivers holding bachelor’s degrees (42%), master’s degrees (23%), college diplomas (20%), high school diplomas (7%), and other (5%; 3% did not report their education).

### 2.2.2 Procedure

Ethics approval was obtained from the University of Toronto Research Ethics Board. Families visited the research laboratory where caregivers provided written informed consent for their child’s participation, while children provided verbal assent. Children were presented the vignettes and interviewed about them. At the end of the study, children were debriefed and received a book and certificate of participation. All interviewers were undergraduate psychology students who were trained in developmental testing.

### 2.2.3 Measures

#### 2.2.3.1 Ethical Transgression Vignettes
I assessed children’s attentional tendencies and emotions in response to hypothetical transgression vignettes adapted from previously established measures (Malti et al., 2009). All children were presented three vignettes (within-subjects design) in a randomized order. The stories involved pushing another child to get a lollipop, not sharing an ice cream cone meant for a friend, and stealing a chocolate bar from a peer. I chose these stories because they visually depicted other-oriented and self-serving cues, and represented the types of social transgressions children regularly encounter in their everyday lives (for an example, see Figure 1). Each story first introduced the situation and characters involved in the story (i.e., introduction portion), after which it described the transgressing act (i.e., transgression portion).

As an example, one story went: “[First image appeared.] Your teacher is giving out lollipops and many students are waiting in line. You’re standing behind the child in the purple shirt. [Second image appeared.] As you get near the front of the line, you see that there is only one lollipop left. You push the child in front of you out of the line and get the last lollipop.”

To control for presentation effects, I used Experiment Builder to present each vignette with a standardized audio recording and two images shown on a computer screen. All images were illustrated from the viewpoint of the transgressor to facilitate children’s perspective taking and to best approximate how children would visually process the scenario in real life. To ensure they understood the perspective, children underwent a perspective training exercise and were read a practice story told from the same perspective (for more information, see Appendix 2.2). Finally, to avoid conflating issues, the transgressors’ and victims’ genders and skin tones were matched to each child’s own, in all training and transgression illustrations.

During preliminary analyses, I found that the stealing story showed developmental effects opposite of those of the pushing and not sharing stories. The pushing and not sharing stories showed general trends of increasing attentional tendencies with age while the stealing story showed a developmental decrease. This may reflect varying purposes for attending to the victim: in the stealing story—the only one depicting a covert act—children may attend to the victim to see whether the victim notices that they have stolen the victim’s chocolate bar. For this and related reasons, I proceeded with analyses using only the pushing and not sharing stories (for more details, see Appendix 2.3).
2.2.3.2 Kind and Selfish Emotions

2.2.3.2.1 Reporting Emotions, Reasons, and Emotional Intensities

After each story, children’s emotions and reasons were assessed by asking them “How would you feel if you had done this?” and “Why?” Whenever children answered, “I don’t know,” the interviewer probed for further responses. Interviewers also gathered scored for the intensity of children’s emotions by asking them how strongly they would feel their reported emotion using a visual, age-appropriate, 3-point scale (1 = not strong, 3 = very strong). Because 6-year-olds often report mixed emotions, up to two emotions, reasons, and emotional intensities were recorded per story.

Children’s responses were coded using a simplified version of an established coding system that has shown strong validity (Malti et al., 2009; see Table 2.1). To ensure reliability in coding, two undergraduate students independently coded a random subsample (10%) of the data. Across stories, the coders were highly reliable with Cohen’s $\kappa$s of 1.00 and 0.94 for emotions and reasons, respectively. All discrepancies were discussed until a consensus was reached, after which the rest of the data were coded.

2.2.3.2.2 Coding

In line with past research, responses which included sadness and reasons related to universal ethical principles were considered kind emotions; responses which reported happiness and hedonistic, self-indulging reasons were considered selfish emotions (Malti et al., 2009). Participants who responded with neither kind nor selfish emotions were omitted from final analyses because such responses (e.g., fear of punishment) likely do not reflect internalized ethical considerations and are likely associated with different patterns of attention allocation. To add further gradation, I factored in how strongly children reported feeling their emotions (see Reporting Emotions, Reasoning, and Emotional Intensity), producing a 4-point scale for each reported emotion. For those children who reported two emotions and reasons, I averaged their kind and selfish emotion scores across their two reports.

2.2.3.3 Attentional Tendencies
Children’s attentional tendencies toward other-oriented versus self-serving cues was measured in each story. I used the Eyelink 1000 Plus’s remote mode (SR Research Ltd, Mississauga, Canada), which permitted children to sit unobstructed while a sticker on their foreheads allowed the system to track their head movements. Upon exporting and cleaning the data, I calculated the percentage of time children spent attending to other-oriented and self-centered cues during the transgression portion of each story. Details on how the eye-tracking data were collected, cleaned, and calculated eye are available in Appendix 2.1.

2.2.4 Data Analytic Approach

I analyzed how other-oriented and self-serving cues related to self-reported kind and selfish emotions in a structural equation modeling framework (SEM; Kline, 2016). First, using the two vignettes, I modeled the percentage of time children attended to other-oriented and self-serving cues as two latent variables, each measured by two tau-equivalent indicators (Kline, 2016). Second, to test links with children’s emotions, I used a latent difference score analysis (LDS; McArdle, 2009; see also de Haan, Prinzie, Sentse, & Jongerling, 2018). Specifically, I modeled the difference between children’s tendencies to attend to other-oriented cues (OO) and self-serving (SS) cues ($f[OO] - f[SS]$) by regressing $f[OO]$ onto $f[SS]$ with a regression coefficient fixed at 1, and by including a third latent factor ($\Delta f$) aimed at capturing the residual component of $f[OO]$ (i.e., the non-overlapping variance between $f[OO]$ and $f[SS]$). The LDS model is visualized in Figure 2.2. Third, I used the latent difference variable $\Delta f$—representing children’s attentional tendencies, which was calculated by taking the difference in attention allocation between the two cues (with positive scores indicating a higher percentage of time attending to other-oriented cues)—as a predictor of children’s kind and selfish emotions, while controlling for gender and age. I hypothesized that as children increasingly attended to other-oriented relative to self-serving cues (i.e., higher scores on attentional tendencies) they would report more kind emotions and less selfish emotions. In addition, I expected that, with age, children would increasingly attend to other-oriented versus self-serving cues (i.e., higher scores on attentional tendencies). Lastly, I explored whether the effects of attentional tendencies on kind and selfish emotions varied by age group.
I followed standard criteria for evaluating model fit (Hu & Bentler, 1999; Kline, 2016). In addition to a nonsignificant $\chi^2$ test (which is sensitive to sample size), I also considered the following cut-off values as indicative of acceptable fit: Comparative-fit-index ($CFI$) and Tucker-Lewis-Index ($TLI$) > .90, root-mean-square-error-of-approximation ($RMSEA$) < .08 with 90% confidence intervals (CI). Analyses were run in Mplus 8 (Muthén & Muthén, 1998–2017) with maximum-likelihood estimation of the parameters.

2.3 Results

2.3.1 Descriptive Statistics

The descriptive statistics and correlations among the primary study variables are reported in Table 2.2. As expected, attention to other-oriented cues was positively correlated across stories, as was attention to self-serving cues. Consistent with previous findings, age was positively and negatively related to kind and selfish emotions, respectively (Malti et al., 2009).

2.3.2 Results for Latent Difference Score of Attentional Tendencies

The unconditional LDS showed an excellent fit to the data $\chi^2(3) = 0.40$, $p = .94$, $CFI = 1.00$, $TLI = 1.00$, $RMSEA = .00$ (90% CI = [.00, .03]). The negative mean of the latent difference score of attentional tendencies indicated that, on average, children had a self-serving attentional tendency, meaning they were more focused on self-serving than other-oriented cues ($M = -11.15$, $SE = 1.29$, $p < .001$). The latent difference score had a significant variance ($s^2 = 101.32$, $SE = 30.05$, $p = .001$), suggesting the presence of meaningful inter-individual differences around this average negative mean. Next, I tested the conditional LDS which included age, gender, and latent difference scores of attentional tendencies as predictors of kind and selfish emotions. The conditional LDS model fit the data excellently, $\chi^2(13) = 5.51$, $p = .96$, $CFI = 1.00$, $TLI = 1.00$, $RMSEA = .00$ (90% CI = [.00, .00]). As shown in Figure 2.3, age and gender (1 = girls, 2 = boys) were associated with higher levels of kind emotions (respectively, $\beta = .34$, $SE = .07$, $p < .001$; $\beta = .18$, $SE = .07$, $p = .01$) and lower levels of selfish emotions (respectively, $\beta = -.33$, $SE = .08$, $p < .001$; $\beta = -.15$, $SE = .07$, $p = .03$).
In support of Hypotheses 1 and 2, attentional tendencies (i.e., more attention to other-oriented relative to self-serving cues) were associated with higher reported kind emotions ($\beta = .28$, $SE = .14$, $p = .04$) and lower reported selfish emotions ($\beta = -.28$, $SE = .13$, $p = .03$), while controlling for age and gender differences. Overall, the model explained a moderate amount of variance in kind ($R^2 = .26$) and selfish emotions ($R^2 = .24$). In contrast to Hypothesis 3, there was no relation between attentional tendencies and age ($\beta = .02$, $SE = .07$, $p > .70$). Relatedly, however, I found that children attended marginally less to self-serving cues with age ($\beta = -.27$, $SE = .14$, $p = .051$).

Finally, I explored whether latent difference scores of attentional tendencies were related to kind and selfish emotions differently across age groups (i.e., 4-, 6-, and 8-year-olds) in a multiple group analysis. The comparison test for nested models ($\Delta \chi^2$) did not reveal a significant moderating effect of age: The constrained model in which all the parameters of interest were equated across the three age groups, $\chi^2 (61) = 74.85$, $p = .11$, $CFI = .94$, $TLI = .94$, $RMSEA = .06$ (90% CI = [.00, .09]), was not statistically different from the unconstrained model in which the parameters were freely estimated, $\Delta \chi^2 (14) = 21.67$, $p = .09$.

2.4 Discussion

At some point in their lives, virtually all children break societal rules. Subsequently, some children feel guilt or sorrow, which motivates them not to break these rules again and engage in reparative, kind behavior, while others feel happiness, which reinforces their selfish, antisocial behavior. Here, I tested whether the ways in which children attend to environmental cues during social conflicts involving fairness and others’ welfare relates to their emotional experiences. I tested my research question using a sample of 4-, 6-, and 8-year-olds to examine whether attention and emotions were related across the age range during which kind emotions develop most quickly. I hypothesized that as children increasingly attended to other-oriented versus self-serving cues, they would experience more kind and less selfish emotions. The results supported these predictions.

I found that increasingly attending to other-oriented compared to self-serving cues was positively and negatively related to kind and selfish emotions, respectively, across age groups. Children’s attention can influence their emotions by modulating which cues they perceive and evaluate, and
to what extent children process these cues (Orquin & Loose, 2013). Attending to different cues in a transgression may lead children to experience contrasting feelings (Malti et al., 2018; Wondra & Ellsworth, 2015). On the one hand, transgressions usually involve desired possessions or opportunities, and focusing on these cues can highlight the salience of self-serving desires, potentially leading to selfish emotions. On the other hand, transgressions involve violating societal norms and focusing on associated cues can prompt other-oriented, ethical concerns, potentially leading to kind emotions. These novel findings provide support for prominent theories of how kind emotions develop, which posit that (among other factors) children need to process the negative consequences of their actions on others to elicit feelings of responsibility for their wrongdoings (Hoffman, 2000; Malti, 2016). At a broader level, these findings also add new information to a growing literature documenting attention allocation’s influence on emotions showing, for example, that mindful attention training influences people’s emotional reactions (Desbordes et al., 2012).

I also found that with age, children attended marginally less to self-serving cues. Because children across ages enjoy treats, this effect may reflect their developing abilities to regulate positive emotions. Despite the lack of developmental research, there is slight evidence that children become better at regulating positive emotions between 4 and 5 years of age (Carlson & Wang, 2007). By attending less to self-serving cues, older children may be more able to consider other elements of a transgression. Because older children did not spend more time attending to other-oriented cues, they likely spent more time attending to cues depicting bystanding peers or authority figures. While these cues presumably reflect concerns for peer sanctions—not an internalized concern for others—they could prompt children to reflect upon their deeds, which may eventually elicit emotional responses reflecting concern for societal norms (Dys & Malti, 2016; Kochanska et al., 2002).

This study was unique and innovative in several ways. First, the study was novel in examining the link between emotions and attention allocation in real time. Although psychologists and philosophers have extensively theorized about how people’s attention allocation relates to their emotions during transgressions (e.g., Hoffman, 2000; Murdoch, 1970), empirical studies have yet to test these links directly. Second, this study simultaneously assessed other-oriented and self-serving factors. While numerous studies have assessed children’s concern for others, few
have examined how children’s conflicting self-serving concerns may impact their subsequent emotional responses (c.f., Arsenio & Lover, 1992; Dys & Malti, 2016). Third, I used latent variable modeling to reduce error variance and create a purer measure of attentional tendencies. Lastly, to my knowledge, I collected one of the largest samples in an eye-tracking study to date (for comparisons, see meta-analytic reviews: Armstrong & Olatunji, 2012; Kronmüller & Barr, 2015), which is noteworthy because of widespread concerns about underpowered studies (Szucs & Ionnidis, 2017).

Like any study, this one comes with its limitations. I assessed children’s responses to hypothetical vignettes, and it is possible that children may process and react to transgressions differently in real life. Still, these types of vignettes have been extensively used, have shown validity across numerous studies (for a review, see Malti & Ongley, 2014), and were adapted to better mirror children’s experiences in everyday transgressions. Next, this study was cross-sectional and correlational, which prevents us from making any causal claims. Future studies using experimental designs or approaches modeling the temporal relations between attentional tendencies and kind emotions can further elucidate the directional, causal, and dynamic relations between these factors (see Cole, Martin, & Dennis, 2004; Hollenstein, 2011). Lastly, visually attending to other-oriented cues may be beneficial, but insufficient, for eliciting kind emotions. Thus, subsequent studies should test whether subsequent components of emotions, such as negative appraisals of the transgression, mediate this link.

In sum, this study provides new insight into the link between attentional tendencies and emotions in response to transgressions. These findings show that as children increasingly attend to other-oriented versus self-serving cues, they experience more kind and less selfish emotions. These results suggest that how children allocate their attention may influence their emotions. Thus, prompting children to attend to other-oriented cues, rather than self-serving cues, may promote their kindness and motivate them to behave more prosocially and less antisocially.
Table 2.1.  
*Coding Categories for Emotions and Reasons*

<table>
<thead>
<tr>
<th>Emotion Labels</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>Happy, good, great, joyful, glad.</td>
</tr>
<tr>
<td>Sad</td>
<td>Sad, bad, guilty, upset, disappointed.</td>
</tr>
<tr>
<td>Other</td>
<td>Angry, scared, anxious, disgusted, selfish.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reason Labels</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal ethical</td>
<td>References to violations of principles related to fairness, justice, or another person’s welfare.</td>
<td>“It’s not fair.”</td>
</tr>
<tr>
<td>principles</td>
<td></td>
<td>“He’ll be sad.”</td>
</tr>
<tr>
<td>Hedonistic</td>
<td>References to self-indulging benefits.</td>
<td>“Because I get to eat another ice cream.”</td>
</tr>
<tr>
<td>Other</td>
<td>Meaningful references that do not overlap with universal ethical principles or hedonistic concerns.</td>
<td>“I’ll get in trouble by the teacher.”</td>
</tr>
<tr>
<td>Unelaborated</td>
<td>Unelaborated, inappropriate, or avoidant responses.</td>
<td>“Because.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I would never do that.”</td>
</tr>
</tbody>
</table>
Table 2.2

*Descriptive Statistics and Correlations for Primary Study Variables for Study 1*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PSH OO</td>
<td>18.01</td>
<td>7.32</td>
<td>—</td>
<td>−.18*</td>
<td>.31***</td>
<td>−.14</td>
<td>−.22</td>
<td>.26*</td>
<td>.15</td>
<td>−.15</td>
</tr>
<tr>
<td>2. PSH SS</td>
<td>29.40</td>
<td>9.70</td>
<td>—</td>
<td>−.21</td>
<td>.28*</td>
<td>.20</td>
<td>−.18</td>
<td>−.21*</td>
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Note. PSH = Pushing vignette; NSH = Not sharing vignette. OO = Attention to other-oriented cue; SS = Attention to self-serving cue. Gender: Girls = 1, Boys = 2. *$p < .05$, ***$p < .001$. 
Figure 2.1. Sample illustration for the introduction (left) and transgression (right) portions of the pushing vignette. © Copyright by Laboratory for Social-Emotional Development and Intervention, 2017.

Note. Overlain shapes in the transgression image represent visual interest areas for other-oriented (circle) and self-serving (rectangle) cues.
Figure 2.2. Unconditional latent difference score model of attentional tendencies.

*Note.* SS = Attention to self-serving cue; OO = Attention to other-oriented cue. PSH = Pushing vignette; NSH = Not sharing vignette.
Figure 2.3. Conditional latent difference score model of attentional tendencies and emotions predicted by age and gender.

Note. Values represent standardized parameters, with standard errors in parentheses. SS = Self-serving attention; OO = Other-oriented attention. PSH = Pushing vignette; NSH = Not sharing vignette. Gender: Girls = 1, Boys = 2. † $p < .06$, * $p < .05$, ** $p < .01$. 
Appendix 2.1

Eye-Tracking Procedure

Monocular eye movements were recorded at a sampling rate of 500hz. A 5-point calibration procedure was used, the recommended configuration for children. I used remote mode tracking to allow children to sit unobstructed by a chinrest and better experience the transgressions as they would in real life. But, because children were not restrained, I had to rely on several indices to clean invalid data caused by excessive movement.

During validation, children’s calibration accuracy was required to meet the eye-tracker’s threshold for “good”: average and maximum errors of less than 1 and 1.5 degrees of visual angle, respectively. Ninety-three percent of children’s calibrations met this threshold; I omitted the eye-tracking data for those whose calibrations did not pass. I exported and processed these cleaned data using Data Viewer. I focused on children’s attention allocation during the transgression portion to better assess how children react during social conflicts. By story, the durations of the transgression portions were 18.7s for the pushing story, 21.4s for the not sharing story, and 12.7s for the stealing story.

In line with related studies, I filtered fixations shorter than 100ms and longer than 1500ms to exclude noise and staring, respectively (Horsley, de Castro, Van der Schoot, 2010). Next, I imported previously defined interest areas for self-serving and other-oriented cues. These areas were drawn with a buffer around the stimuli roughly corresponding to an average of 1 degree of visual angle to match the upper limit for children’s average error of visual angle during calibration. Then, in line with previous cleaning approaches, I—blind to children’s responses—inspected each trial and, if it was deemed appropriate (based on where fixation clusters were located relative to key stimuli in each image), applied global shifts to all fixations (Hornof & Halverson, 2002).

I then exported a sample report for the eye-tracking data. To ensure the eye-tracking data were accurate, I filtered out all samples where the participant’s head was less than 55 or more than 70 centimeters away from the eye tracker. I did so because fixations made while children’s heads were outside this range are less dependable with the remote mode of the eye tracker used for this study (D. McEchron, personal communication, January 12, 2017). Using these cleaned samples,
I calculated the percentage of time children spent fixating on each area of interest relative to the total time they spent attending to the story.
Appendix 2.2
Perspective Training Procedure

To familiarize children with the first-person perspective, they were administered a training task in which they were given a tennis ball to hold in their right hand. Next, the interviewer brought up an image of a child holding a ball from this same perspective. The interviewer then pointed out to the child how the arm in the image looks a lot like the child’s own and it looks like they are the person holding the ball in the illustration. The interviewer then asked the child whether they agreed, after which the interviewer explained that for the rest of the stories the child should imagine that they are in each story in this same way. Children were then read a practice story told from the same perspective to acquaint them to the approach.
Appendix 2.3

Supplementary Information for Analyses

Children were presented with three hypothetical vignettes. Upon running preliminary analyses, I decided to exclude the stealing story from subsequent analyses for several reasons outlined below. The story (for girls) read as follows: “[First image appeared.] Imagine that you’re at school. Another child in your class shows you a chocolate bar she brought from home. She then puts it back in her backpack. [Second image appeared.] You really like chocolate. Later, when nobody is watching you take the chocolate bar from the child’s backpack so you can eat it.” From a first-person perspective, the transgression image depicted the transgressing child holding a chocolate bar which was positioned behind a backpack (seemingly out of the victim’s view).

The preliminary analyses for the pushing and not sharing stories appeared to reflect developmental increases in the difference score (i.e., more other-oriented relative to self-serving), as age positively correlated with those scores $r(120) = .24, p < .01; r(105) = .13, p = .18$; meanwhile, the correlation in the stealing story appeared to slant in the opposite direction, $r(119) = -.11, p = .22$. For further illustration, mean attentional difference scores (i.e., other-oriented minus self-serving attention) by age group are displayed in Supplementary Figure 2.1.

Unlike the other two stories, the stealing story involves hidden, covert information. I believe that in this vignette, many children processed the scene with concern for whether others know they stole the chocolate. A central concern here may be whether the chocolate is sufficiently hidden behind the backpack, otherwise the victim or a classmate could catch the transgressor (i.e., the participating child), presumably leading to sanctions from teachers and peers. Thus, as children become more cognizant of others’ perspectives and more sensitive to punishments with age (e.g., Crone, Bunge, Latenstein, Maurits, & van der Molen, 2005), they may become more focused on whether their stolen treat will remain a secret. In this manner, attending to the chocolate bar could reflect a focus on sanctions, rather than self-indulging concerns per se, and as such, made little sense to include as an aggregate in my further analyses.
Supplementary Figure 2.1. Mean observed attentional difference scores by story and age group.

*Note.* Negative scores indicate more attention paid to self-serving than other-oriented cues.
Chapter 3

3 Children’s Attention and Sad Facial Expressions in Relation to Their Kind and Selfish Emotions (Study 2)

3.1 Introduction

After committing the same ethical transgression, such as stealing from a peer, why might two children experience vastly different emotions? Understanding the factors that underlie interindividual differences in such emotional experiences is important because emotions motivate our social behaviour (Lazarus, 1991; Lench, Flores, & Bench, 2011). Answers to these questions have implications for people’s experiences of, and behaviours in, ethical transgressions: selfish, hedonistic emotions (e.g., happiness in response to stealing) may motivate destructive, antisocial behaviour, while kind, other-oriented emotions (e.g., guilt in response to harming another’s wellbeing) motivate fair and prosocial behaviour (Malti & Krettenauer, 2013). Furthermore, examining this question from a developmental perspective may provide insights into how these mechanisms change with age, which may provide insights into how and when to best intervene when promoting kind emotions.

According to prominent social-cognitive and social-emotional theories, the ways in which people process ethical transgressions influence their subsequent emotions (e.g., Crick & Dodge, 1994; Malti et al., 2018). Therefore, examining how people attend to environmental cues during ethical transgressions can provide us with insight into the cognitive antecedents of people’s finalized emotional responses, which affect their social behaviours (Malti, 2016). For example, children who attend more to other-oriented cues versus self-serving cues tend to report more kind and less selfish emotions (see Chapter 2). But, some theories also posit that shifting one’s attention allocation will only cause changes in finalized emotional response insofar as it alters the way in which one evaluates ethical transgressions (Malti & Dys, 2015; Malti et al., 2018). For example, two children may react differently to having their attention directed toward other-oriented and away from self-serving cues. Children may evaluate the victim’s state as personally-binding—and consequently, evaluate transgressing as negative—leading them to experience kind emotions; the children may evaluate the same stimulus as not personally-binding—and consequently, evaluate transgressing as positive—causing them to persist in experiencing selfish
emotions. Thus, attention’s impact on kind and selfish emotions may be mediated by subsequent, more proximal components of the emotional experience, such as whether a person evaluates transgressing against another, or causing another distress, as negative.

Examining attention, however, only provides insight into what children attend to, not how they evaluate environmental cues. Currently, many challenges exist around assessing people’s immediate appraisals or evaluations during ethical transgressions without interrupting them; fortunately, we can examine how people evaluate social situations by observing their emotional facial expressions, which typically change because of their evaluations (Moors, 2013; see Scherer, 2009). These expressions can also be examined in real time, without interruption, and can be coded reliably (Ekman, 1977). By examining children’s tendencies to allocate their attention to certain cues and facial expressions, we can better understand whether each factor independently relates to kind and selfish emotions. This should advance our understanding of how children’s kind emotions are elicited.

Moreover, examining attention and facial expressions in real time can provide insight into the directional relation between attention and emotion. Though their association is likely bidirectional, understanding which factor more strongly causes the other has implications for whether strategies promoting kind emotions should target attention or other components of emotion. In support of attention’s causal role, infants exhibit substantial looking, gaze shifting, and eye contact during frustrating situations, prior to responding with anger (Stenberg & Campos, 1990). In addition, infants and children who can better manage their attention are often less susceptible to dysregulated affect (Rothbart et al., 1992; Shields & Cicchetti, 1998).

In support of emotion’s causal role, children and adults appear to locate and identify fear-inducing stimuli, such as snakes and spiders, more quickly than neutral stimuli, such as flowers and caterpillars (LoBue & DeLoache, 2008; Öhman, Flykt, & Esteves, 2001). This effect, however, may be unique to experiences involving fear (Williams et al., 1996; Williams et al., 1997). Taken together, there appears to be stronger evidence for attention directing emotion than vice versa. Still, the relations between children’s attention and emotions in the context of everyday ethical transgressions remains an open question. Here, I tested this question using eye tracking and emotion recognition software with a sample of children during a hypothetical
ethical transgression. I focused on sad facial expressions as these have been shown to be the most common in children’s reactions to ethical transgressions and have been identified as potential precursors to children’s kind emotions (Dys & Malti, 2016; Malti, 2016).

Examining how the relations between attention and facial expressions with kind and selfish emotions differ across ages may be most important in childhood. Between early and middle childhood, most children undergo strong increases in kind and decreases in selfish emotions (Malti & Krettenauer, 2013). Examining how attention and facial expressions differentially relate to kind and selfish emotions across age may promote a better understanding of the mechanisms underlying the development of these emotions. For example, the ways in which children’s facial expressions relate to their subsequent emotions may change with development as children crystallize the ways in which they process ethical transgressions (Dys & Malti, 2016; see Chapter 1). Thus, with age, children’s sad expressions may more commonly prompt them to consider how their transgressions violated ethical norms, eliciting more kind and fewer selfish emotions. For these reasons, I tested my research question using a sample of 4-, 6-, and 8-year-olds.

3.1.1 The Present Study

To summarize, I tested whether children’s attentional tendencies (toward other-oriented and self-serving cues) and sad facial expressions during an ethical transgression were related to their subsequent, self-reported kind and selfish emotions. Furthermore, I investigated the directional relation between attentional tendencies and emotional reactions (as indicated by sad facial expressions). Predicated on this finding, I also wanted to test whether attentional tendencies indirectly affected kind and selfish emotions through sad expressions. I expected that kind and selfish emotions would be associated with sad expressions (respectively, Hypotheses 1 and 2). But, I expected that attentional tendencies would not directly be associated with kind and selfish emotions after accounting for sad expressions (Hypotheses 3 and 4) as these expressions may reflect a more proximal, mediating component. I also expected that attentional tendencies would better predict sad expressions than vice versa (Hypothesis 5) and that attention would be indirectly associated with kind and selfish emotions through sadness (Hypotheses 6 and 7). Finally, I examined whether age interacted with sadness in their link to kind and selfish
emotions. I predicted that, with age, sadness would be more associated with kind and selfish emotions (Hypotheses 8 and 9).

3.2 Method

3.2.1 Participants

This sample consisted of a subset of those included in Study 1. As in Study 1, children were excluded for not reporting kind or selfish emotions (12%) and invalid eye tracking data (20%). In addition to these criteria, I also excluded 29% of children based on technical difficulties related to facial expression analyses. These technical issues resulted from factors such as children moving and tilting their heads excessively, as well as covering parts of their faces (for more information, see Appendix 3.1). Relatively high rates of invalid data are to be expected when integrating eye tracking and facial expression software, in part due to their competing needs for testing environments: eye tracking operates best in a dimly lit room (which causes the pupil to enlarge), while facial expression analyses function best in a reasonably bright setting.

The final sample included 130 children, consisting of 32 4-year-olds ($M_{age} = 4.67$ years, $SD = 0.28$; 59% boys), 52 6-year-olds ($M_{age} = 6.56$ years, $SD = 0.28$; 60% boys), and 46 8-year-olds ($M_{age} = 8.48$, $SD = 0.29$; 46% boys) from a major Canadian city. This sample was ethnically diverse, with primary caregivers reporting backgrounds from Asia (40%), Europe (26%), the Middle East (22%), and other backgrounds (6%; 6% did not report their background). Across primary caregivers and their partners, the highest levels of education reported were representative of the city from which families were recruited (Statistics Canada, 2017), with caregivers holding bachelor’s degrees (39%), master’s degrees (22%), college diplomas (22%), high school diplomas (8%), and other (6%; 3% did not report their education).

3.2.2 Procedure

This study followed the same overarching procedure as Study 1. Details on how eye tracking and facial expression data were synchronized can be found in Appendix 3.2.

3.2.3 Measures
3.2.3.1 Ethical Transgression Vignette

I assessed children’s attentional tendencies, facial expressions, and self-reported emotions in response to one of the stories used in Study 1. The story described a prototypical ethical transgression wherein the protagonist pushes another child to get a lollipop. All presentation procedures were identical to those in Study 1.

3.2.3.2 Kind and Selfish Emotions

After the vignette, children’s kind and selfish emotions and reasoning were assessed using the same approach as Study 1.

3.2.3.3 Attentional Tendencies

I measured children’s attentional tendencies toward the other-oriented (i.e., victim’s face) versus self-serving (i.e., lollipop) cues in the vignette. Procedures for how I collected, cleaned, and processed these data were identical to those in Study 1. Because I examined one story, unlike in Study 1, I computed the difference between attention to other-oriented and self-serving cues using observed scores. As in Study 1, higher scores reflected attending more to the other-oriented cue relative to the self-serving cue.

3.2.3.4 Sad Facial Expressions

I analyzed sadness in children’s facial expressions in response to the transgression portion of the vignette. The analyses were performed using Noldus’s FaceReader 7.0. The program, which was trained using Facial Action Coding System (see Ekman, Friesen, & Hager, 2002; van Kuilenburg, Wiering, & den Uyl, 2005), calibrates a 3-dimensional model of over 500 key points on the face and neck. Then, using the software’s neural network, it generates scores reflecting the match between the observed expression and prototypical basic emotions. The program has performed well on tests of validity: it has correctly classified 88–90% of images from several facial expression databases and performs as well or better than human coders (Bijlstra & Dotsch, 2011; Lewinski, den Uyl, & Butler, 2014). In total, I used the software to analyze 467 frames per
participant and averaged their sadness scores across all frames. For details on cleaning and processing procedures, see Appendix 3.1.

3.2.4 Data Analytic Approach

I analyzed how children’s attentional tendencies and facial expressions of sadness related to self-reported kind and selfish emotions in a structural equation modeling framework (SEM; Kline, 2016). Using path models, I modelled attentional tendencies, sadness, and their interaction was associated with kind and selfish emotions, while controlling for age and gender as these variables have been related to children’s kind and selfish emotions (Malti et al., 2009). In addition, I also tested the indirect effect of attentional tendencies on kind and selfish emotions through sadness. I followed standard criteria for evaluating model fit (Hu & Bentler, 1999; Kline, 2016). I considered the following cut-off values as indicators of acceptable fit: a nonsignificant $\chi^2$ test (which is sensitive to sample size), comparative fit index ($CFI$) and Tucker-Lewis index ($TLI$) > .90, root mean square error of approximation ($RMSEA$) < .08 with 90% confidence intervals (CI).

I tested whether attentional tendencies predicted sad facial expressions better than vice versa by running competing non-nested models and comparing their Bayesian information criterion ($BIC$) values. Here, the smaller value indicated a better fit with the data. Analyses were run in Mplus 7 (Muthén & Muthén, 1998–2012) with maximum-likelihood estimation of the parameters. Unfortunately, due to the sample size, I was unable to conduct a multiple group analysis to investigate whether age group moderated the effect of these relations (see Little, 2013).

3.3 Results

3.3.1 Descriptive Statistics

The descriptive statistics and correlations among the study variables are reported in Table 3.1. Consistent with previous findings, age was positively and negatively related to kind and selfish emotions, respectively (Malti et al., 2009).

3.3.2 Linking Emotions to Attention and Facial Expressions
I tested a path model in which I tested links to kind and selfish emotions from attentional tendencies, sadness, age, and gender. My final model fit the data excellently, $\chi^2(6) = 5.49, p = .48$, $CFI = 1.00$, $TLI = 1.00$, $RMSEA = .00$ (90% CI = [.00, .11]). As shown in Figure 3.1, age was positively associated with kind ($\beta = .41, SE = .08, p < .001$) and negatively associated with selfish emotions ($\beta = -.37, SE = .09, p < .001$). Gender was marginally associated with kind ($\beta = .15, SE = .08, p = .051$), but not selfish emotions ($\beta = -.23, SE = .19, p = .23$).

In line with my hypotheses, children’s attentional tendencies were unrelated to their kind or selfish emotions (respectively, $\beta = .09, SE = .09, p = .34; \beta = -.14, SE = .09, p = .12$), while children’s sad expressions were related in the expected directions, (respectively, $\beta = .22, SE = .07, p < .01; \beta = -.13, SE = .06, p < .05$). In support of my hypothesis, I found that children’s attentional tendencies predicted their sad expressions ($\beta = .24, SE = .10 p < .05$), and that the model with this path fit the data better than an alternative model wherein sadness predicted attentional tendencies (respectively, $BIC = 654.98$ and $BIC = 656.94$). Next, I tested whether attentional tendencies were indirectly associated with kind and selfish emotions through sadness. I found weak support for only the first prediction, with a marginal indirect effect on kind emotions ($\beta = .05, SE = .03 p = .07$), but no indirect effect on selfish emotions ($\beta = -.03, SE = .02 p = .12$).

In support of my expectations, the results showed that the interaction between sadness and age was associated with kind emotions ($\beta = .17, SE = .05, p < .01$). Upon probing the interaction, I found that the effect of children’s sad expressions on kind emotions was moderated by their age (see Figure 3.2). In line with recommendations by Cohen et al. (2003), I plotted the regression lines at the mean age of each age group, rather than at the mean and +/- 1 $SD$—the latter being a more common, but less informative approach, especially where alternative meaningful values exist. Simple slopes analyses revealed no effect of sadness on kind emotions for 4-year-olds ($\beta = -.09, p = .52$), but positive effects for 6- and 8-year-olds ($\beta = .24, p < .01$ and $\beta = .57, p < .001$, respectively). This interaction was unassociated with selfish emotions. All other interactions were not significant.

### 3.4 Discussion
Understanding what accounts for individual and developmental differences in experiencing ethical transgressions is important for our understanding of how kind and selfish emotions in these contexts are elicited. Here, I examined the effect of children’s attentional tendencies and sad facial expressions on their subsequent kind and selfish emotions, using a sample of 4-, 6-, and 8-year-olds. I hypothesized that children’s sad expressions, but not attentional tendencies, would be directly related to their kind and selfish emotions, while attentional tendencies would be indirectly associated with kind and selfish emotions through sad expressions. I also expected that, with age, children’s sad expressions would be more strongly associated with kind and selfish emotions. These results mostly supported my predictions.

Sad facial expressions, but not attentional tendencies, were associated with kind and selfish emotions in the expected directions. This finding provides empirical support for previous theorizing that cognitively processing other-oriented considerations during ethical transgressions is necessary, but insufficient for promoting kind emotions (Hoffman, 2000; Malti et al., 2018). Thus, children also need to evaluate others’ welfare as personally important—this allows children to bind others’ welfare to their own, which elicits their kind emotions (see Batson, Turk, Shaw, & Klein, 1995; Eisenberg et al., 1989). This interpretation also aligns with findings that, despite their high cognitive skills (e.g., perspective taking) some children who display bullying behaviour show deficits in kind emotions (Gasser & Keller, 2009). By contrast, sad facial expressions may reflect evaluations that the eliciting stimulus is personally relevant, and transgressing is viewed as negative. Sad expressions may also exert a stronger influence on kind and selfish emotions because these expressions may be elicited in response to considerations for ethical principles, which may not depend on visually attending to the victim. For example, children may show sad expressions while contemplating how unfair was their transgression. Alternatively, some children may understand the victim’s emotional state without extensively attending to the victim’s face. So, being aware of the victim’s state may trigger children’s sad facial expressions, but this awareness might not always or linearly depend on the percentage of time children attend to the victim’s face.

Furthermore, I found that attentional tendencies predicted sad expressions better than vice versa. There was also a marginal indirect effect between attentional tendencies and kind emotions through sad expressions. The first finding supports the notion of a directional relation from
attentional allocation to emotional reactions in children’s experiences of everyday ethical transgressions. This furthers the notion that the directional path from emotion to attention may be limited to fear-eliciting situations. It may also substantiate the notion that the ways in which children process ethical transgressions is important for their subsequent emotional reactions (Crick & Dodge, 1994; Malti, et al., 2018). The second finding shows weak evidence for the idea that attending to the victim of one’s transgressions may promote kind emotions to the degree that it promotes negative emotional reactions. It is possible that attending to the victim’s face may promote kind and selfish emotions through other basic emotional reactions (e.g., anger)—which are expressed in response to transgressing far less often (Dys & Malti, 2016)—or more complex emotional reactions (e.g., guilt)—which currently lack validated, universal scoring procedures. Incorporating additional measures of emotional activation (e.g., heart-rate activation) may better clarify the relations between attention, emotional reactions, and kind and selfish emotions.

With age, children’s sad facial expressions were more strongly related to their kind emotions, despite younger children displaying more sadness. The former effect may indicate that older children’s sad expressions more often prompt reflecting upon ethical principles. With age, children’s sad emotional reactions may more effectively activate scripts instilled by their caregivers, leading them to better connect their actions with internalized ethical principles, thereby inducing more kind emotions (Dys & Malti, 2016). The latter effect may indicate that, compared to older children, younger children experienced emotional reactions longer, needing more time to return to baseline after experiencing an emotional reaction (see Obradović & Finch, 2017). While younger children could be experiencing more intense reactions, I find it unlikely as a previous study of spontaneous emotional reactions, spanning 200 milliseconds, found that older children showed stronger reactions to ethical transgressions (Dys & Malti, 2016). But, because I examined expression scores over the course of the vignette, I was unable to parse duration of an expression from peak intensity. Future studies should systematically investigate unique effects associated with intensity versus duration emotional facial expressions.

The conclusions we can draw from this work are limited by a few features of the study. First, my design was cross-sectional, not longitudinal, and my attentional and facial expression measures were taken concurrently. These preclude us from making causal claims about age effects or the relation between attentional tendencies and sad expressions. Moreover, the sample was limited,
in part due to technical difficulties associated with analyzing an ethnically diverse range of children’s faces. This kept me from obtaining a sample large enough to investigate whether the relations between variables systematically changes from one age group to the next. Lastly, I presented children with a hypothetical vignette and it is possible that some children may have reacted to it differently in real life. Still, these vignettes have been widely employed and have shown validity across many studies (for a review, see Malti & Ongley, 2014).

In summary, this study sheds new light on the relations between children’s attentional tendencies, facial expressions, and kind and selfish emotions in response to hypothetically transgressing. These findings suggest that simply attending to other-oriented over self-serving cues is insufficient to promote kind and inhibit selfish emotions. Instead, evaluating the transgression as negative—consequently activating sad emotional reactions—is far more important. Still, attentional tendencies may play a role by promoting sad emotional reactions. Finally, the findings showed a developmental trend in how sad facial expressions are associated with kind emotions. This result suggests that sad expressions may increasingly activate subsequent cognitive processes (e.g., reflecting upon internalized ethical principles) between early and middle childhood.
Table 3.1

*Descriptive Statistics and Correlations for Primary Study Variables in Study 2*

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<td>3. Selfish</td>
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<td>−.77***</td>
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<td>5. Age</td>
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*Note.* Gender: Girls = 1, Boys = 2. Scale ranges: Attention = −100 to 100; Sad expressions = 0 to 1; Selfish and kind emotions = 0 to 3. † *p < .10, * *p < .05, ** *p < .01, *** *p < .001.
Figure 3.1. Path model linking kind and selfish emotions to attention, sadness, age, and gender.

Note. Gender: Girls = 1, Boys = 2. † p < .10, * p < .05, ** p < .01, *** p < .001.
Figure 3.2. Effect of sad expressions on kind emotions by age group.

Note. Slopes are plotted at the mean of each age group.
Appendix 3.1

Facial Expression Analysis Procedure

In line with the software’s recommendations, I placed globe table lamp, with subtle bulbs (400 lumens), on either side of the presentation screen to improve the quality of my video recordings (Noldus Information Technology, 2016, p. 33). I recorded children’s facial expressions using a standard analog camera which sampled at a rate of 24.9 frames per second. I analyzed every video frame during the transgression portion using the face model for children, which is appropriate for 3- to 10-year-olds. I also used continuous calibration to correct for individual differences in facial configurations which may otherwise bias some children’s emotional expression sadness. I chose the “Maximum accuracy” preset for face modeling, which optimizes the accuracy of the analyses, simply at the cost of computing time.

Despite its strengths, FaceReader 7 is still limited in analyzing facial expressions of children from certain ethnic backgrounds (e.g., South-East Asian) and children who move or cover parts of their face (Noldus Information Technology, 2016, p. 15). For these reasons, two independent raters inspected each analysis using the visualization overlay—which demonstrates where on a child’s face the program is registering approximately 50 key points—to assess how accurately the program mapped points onto each child’s face. If the program misidentified points for more than three seconds (i.e., 16%+ of the video), the participant’s analysis was scored as invalid. Agreement between coders was high, κ = .94, and any disagreements were discussed until consensus was reached. Participants whose scores were considered invalid were omitted from the final sample.
Appendix 3.2

Data Synchronization

I synchronized eye tracking and facial expression data using a customized solution. I programmed the experiment to deploy TTL pulses at the start and end of key intervals. These pulses were sent through a parallel cable which connected to a TTL-to-USB matrix board (PI Engineering Inc., Williamston, Michigan, USA), which connected to the computer recording the interview videos. The matrix board converted pulses into keypresses, which were logged using Noldus’s Observer XT, and corresponded to start and end times for each key interval. Based on these markers, only those video segments that corresponded to the transgression portion of the interview were precisely extracted.
Chapter 4

4  Attending and Role-Taking in Relation to Children’s Kind Emotions (Study 3)

4.1 Introduction

Feeling responsible for one’s wrongdoings motivates children to behave prosocially and refrain from behaving antisocially (Malti & Krettenauer, 2013; Tangney, Stuewik, & Mashek, 2007). But how can we nurture the development of children’s negative feelings for violating ethical norms? Psychologists, philosophers, and religious figures have suggested that taking another’s viewpoint can foster ethical motivations and prosocial behaviour (Batson et al., 2003; Lickona, 2018; Luke 6:31; Murdoch, 1970). By considering other people’s viewpoints and feelings, one may be better able to understand and appreciate how their actions impacted another and recognize how one violated ethical principles (Batson, 2009; Malti & Latzko, 2010; Selman, 1980). Yet, to date, very few studies have directly examined these effects during childhood. Here, I tested the effect of role-taking on children’s kind emotions between early and middle childhood—a critical developmental period for these emotions.

The relation between children’s role-taking and their ethical and emotional development has long been emphasized by developmental scientists. Piaget (1928), Kohlberg (1976), and Selman (1971) discussed role-taking’s relations with judgments and reasoning to ethical dilemmas. Hoffman (1975, 2000) most described the link between role-taking and kind emotions, especially in his seminal theory of guilt induction (see also Keller & Edelstein, 1991). According to Hoffman, induction involves communicating to a child that their behaviour was wrong by (a) calling attention to the victim’s distress, and (b) highlighting how the child’s actions caused that distress (2000, p. 151). Thus, children’s selfish behaviour typically indicates that they are predominantly attending to their own viewpoint and require intervention with inductions to prompt them towards others’ viewpoints (2000, p. 245). In support of this idea, Thompson and Hoffman (1980) found that after imagining themselves committing an ethical transgression, children who were asked to identify a victim’s emotion reported somewhat more kind feelings.
(e.g., guilt) and reasoning based on other-oriented concern and justice principles, compared to controls who received no additional instructions. Yet, imagining another’s feelings represents only one approach to role-taking.

Related theorizing and research with adults have explored and delineated two approaches to role-taking: (a) imagining another person’s perspective (i.e., other-focused), or (b) imagining yourself in another person’s position (i.e., self-focused; Batson, Early, & Salvarani, 1997). These approaches are believed to enhance the strength of emotional responses, such as sympathy, by stimulating people’s understanding of, and sensitivity to, another person’s situation (e.g., their emotional distress or socioeconomic disadvantage; Hoffman, 2000; Stotland, 1969).

Furthermore, compared to an other-focus, self-focused approaches are thought to promote stronger emotional responses because they likely better evoke memories of similar events from one’s past, enhancing one’s empathic response to the other (Hoffman, 1978).

Theorizing around the effect of other- and self-focused role-taking has been mostly supported. People instructed to use self-focused approaches show and report stronger emotional responses, such as sympathy, than those told to carefully attend to a disadvantaged person’s behaviour or given no instructions (Batson et al., 2007; Myers, Laurent, & Hodges, 2014; Stotland, 1969). Other-focused approaches show similar though less consistent effects (e.g., Batson et al., 1997). In addition, partly supporting previous theorizing, self-focused role-taking elicits similar or stronger emotional responses than other-focused role-taking (Batson et al., 1997; Myers et al., 2014; Stotland, 1969). These effects, however, appear driven by people’s focus on others’ and their own feelings, but not thoughts (Oswald, 1996).

Still, little is known about whether these effects generalize to situations in which a person causes another’s distress, not just observes it. Moreover, its unknown how these approaches relate to kind emotions during childhood. This is important to discover because early to middle childhood encompasses an important period of growth for cognitive skills (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Wellman, Cross, & Watson, 2001) and kind emotions (Arsenio, 2014; Malti, 2016). For example, older children may be better able to role-take, leading to stronger effects of these approaches on children’s kind emotions.
Its also unclear to what extent children naturally engage in such role-taking and how much these higher-order approaches promote kind emotions beyond simpler approaches, such as prompting children to orient their attention toward a victim. Examining these questions may also provide insight into causes of the normative increases in children’s kind emotions (Malti & Ongley, 2014). Here, I compared other- and self-role taking approaches to a low-level orienting approach, which used movement to promote visual orienting toward the victim.

Moreover, some psychologists have argued that self-focused role-taking may be maladaptive. Batson et al. (1997) found that participants instructed to take a self-focus approach reported less sympathy—concern for the victim’s welfare—and more personal distress—concern for managing one’s own emotions (Batson, Fultz, & Schoenrade, 1987). Thus, self-focused role-taking may be harmful, as personal distress prevents people from behaving prosocially, instead prompting them to focus on alleviating their own distress (Eisenberg et al., 1989). But, this relation between self-focused role-taking and personal distress may vary depending on the severity of the disadvantaged person’s distress. For example, in many of Batson and colleagues’ studies, participants listen to highly distressing (though fictitious) situations, such as a university student struggling to care for her younger siblings after her parents were killed in a car collision (1997). Because personal distress results from empathic over-arousal (Eisenberg et al., 1989), more common, less severe situations—e.g., where a victim has a desirable object stolen—may cause little (if any) personal distress because they are less emotionally arousing. Thus, compared to other-focused role-taking, a self-focused approach might promote more kind emotions in response to everyday situations. Here, I examined this notion using vignettes depicting everyday acts of theft and not helping.

4.1.1 The Present Study

To summarize, I tested the effect of three different manipulations on 4-, 6-, and 8-year-old children’s kind emotions in response to violating an ethical norm. Before hearing a hypothetical ethical transgression, children were either instructed to imagine how a victim feels (i.e., other-focused condition) or how they would feel in the victim’s position (i.e., self-focused condition). I also investigated whether visually orienting to the victim was enough to elicit similar effects using a condition where the victim’s head moved slightly during the transgression (i.e., orienting
condition). I expected that children would report more kind emotions in the self-focused condition than the other two (Hypotheses 1 and 2), and in the other-focused compared to the orienting condition (Hypothesis 3). I predicted that these effects would be most pronounced among 4- and then 6-year-old children, who report less kind emotions than 8-year-olds (Hypothesis 4).

4.2 Method

4.2.1 Participants

We recruited and interviewed 178 children and their parents from a major Canadian city. As in Studies 1 and 2, children were excluded from analysis if they did not report kind or selfish emotions in response to either of hypothetical vignettes, which amounted to 19% for this study. The final sample consisted of 144 children, including 52 4-year-olds \( (M_{age} = 4.54 \text{ years, } SD = 0.26; 39\% \text{ boys}) \), 50 6-year-olds \( (M_{age} = 6.57 \text{ years, } SD = 0.27; 54\% \text{ boys}) \), and 42 8-year-olds \( (M_{age} = 8.42, SD = 0.29; 52\% \text{ boys}) \). The sample was ethnically diverse, with primary caregivers reporting backgrounds from Europe (48%), Asia (24%), Central or South American (6%), and other backgrounds (17%; 5% did not report their background). Across primary caregivers and their partners, the highest levels of education reported were representative of the city from which families were recruited (Statistics Canada, 2017), with caregivers holding bachelor’s degrees (45%), master’s degrees (24%), college diplomas (16%), high school diplomas (8%), and other (6%; 1% did not report their education).

4.2.2 Procedure

Ethics approval was obtained from the University of Toronto Research Ethics Board. Families visited the research laboratory where caregivers provided written informed consent for their child’s participation, while children provided verbal assent. Prior to arrival, children were randomly assigned to one of three conditions. Children were then presented the vignettes and interviewed about them. At the end of the study, children were debriefed and received a book and certificate of participation. All interviewers were undergraduate psychology students who were trained in developmental testing.
Prior to final data collection, a pilot study with 50 children was conducted to test whether all conditions and their instructions were age-appropriate. From this pilot, I found that in 66% of cases 4-year-olds were unable to complete the self-focused role-taking condition. For these reasons, I decided to only use this condition with 6- and 8-year-olds for the final data collection.

4.2.3 Measures

4.2.3.1 Ethical Transgression Vignettes

I assessed children’s emotions in response to two hypothetical transgression vignettes adapted from previously established measures (Malti et al., 2009). The stories involved stealing another child’s chocolate bar and not helping to teach another child a drum beat. I chose these stories because their illustrations of the victim made it possible to create the head tilt necessary for the orienting condition. Furthermore, the vignettes depict the types of ethical transgressions children encounter in their everyday lives (for an example, see Appendix 4.1). The stories first introduced the situation and characters involved (i.e., introduction portion), after which they described the transgressing acts (i.e., transgression portion). The boys’ version of one story read: “[First image appeared.] One day at school, another child in your class, Walter, shows you a chocolate bar he brought from home. He then puts it back in his backpack. [Second image appeared.] You really like chocolate. Later, when nobody is watching, you take the chocolate bar from Walter’s backpack so you can eat it.”

4.2.3.2 Attentional Manipulation Conditions

Children were randomly assigned to one of three experimental conditions. Children were each assigned to only one condition to avoid any carry-over effects from one story to the next.

4.2.3.2.1 Orienting Condition

Children’s visual attention was subtly drawn toward the victim during the transgression portion of the story. To accomplish this, a brief video was played during the transgression portion of story where victims’ heads tilted downward for about ten seconds, after which they returned to their original position. Throughout this clip, the victim’s eyes also blinked several times. No
other characters or objects in the video moved. Children received no additional instructions for this condition.

4.2.3.2.2 Other-Focused Role-Taking

Prior to reading each story, children were introduced with an image of the victim against a white backdrop. The boys’ version of instructions for the stealing story read: “Now I’m going to read you a story. I want you to think about this child. His name is Harvey and he goes to your school. In this next story, I want you to think about how Harvey is feeling. So, what are you going to think about during this story?” Testers then either confirmed or corrected children’s responses, after which they proceeded to read the vignette. As a check, children were asked after the vignette how they thought the victim would feel.

4.2.3.2.3 Self-Focused Role-Taking

Prior to each story, children were presented with the same photo of the victim as in the other-focused role-taking condition. The boys’ version of instructions for the stealing story read: “Now I’m going to read you a story. His name is Harvey and he goes to your school. In this next story, I want you to think about how you would feel if you were Harvey. So, what are you going to think about during this story?” Testers then either confirmed or corrected children’s responses, after which they proceeded to read the vignette. As a check, children were asked after the vignette how they would feel if they were the victim.

4.2.3.3 Kind Emotions

After each vignette, children’s kind emotions and reasoning were assessed using the same approach as Study 1. To ensure reliability in coding, two coders independently coded a random subsample (15%) of the data. Across stories, the coders were highly reliable with Cohen’s $\kappa$s of 1.00 and 0.95 for emotions and reasons, respectively. All discrepancies were discussed until a consensus was reached, after which the rest of the data were coded.

4.2.4 Data Analytic Approach
This analysis examined how children’s self-reported kind emotions differed between three groups which received one of three different prompts manipulating their attention allocation. First, kind emotion scores for both stories were averaged to create a composite kind emotion score. The correlation between kind emotions in both stories was high ($r = .66$), which justified creating an aggregate score. Next, an Analysis of Covariance (ANCOVA) examined how kind emotion (dependent variable) scores varied as a function of age group and condition (two between-subject factors), while controlling for the effect of gender (covariate). Because the self-focused condition did not include 4-year-olds, who tend to score lower on kind emotions, I ran these comparisons after partialing out variability associated with age group. In addition, although planned contrasts are typically conducted for a priori comparisons, I used “post-hoc” multiple comparisons because analyses in which hypotheses are made about all possible comparisons ought to be treated the same as unplanned comparisons (Ruxton & Beauchamp, 2008). Multiple comparisons were conducted using the Least Significant Difference (LSD) test, which is the most appropriate for multiple comparisons involving three means (Carmer & Swanson, 1973).

4.3 Results

4.3.1 Descriptive Statistics and Differences Among Age Groups

The descriptive statistics and correlations of main study variables independent of condition are reported in Table 4.1. Participant count and gender composition by age group and condition can be found in Appendix 4.2. The ANCOVA revealed that, in line with extant research, kind emotions varied by age group, $F(2, 128) = 8.96, p < .001$, partial $\eta^2 = .12$. Follow-up analyses revealed that 8-year-olds reported more kind emotions than 6- and 4-year-olds, $p < .001$ and $p < .01$, respectively. Gender was unrelated to kind emotions, $p > .40$.

4.3.2 Differences in Kind Emotions by Condition

Means and standard errors of kind emotion scores by age and condition are shown in Figure 4.1. In line with my expectations, kind emotions differed by condition, $F(2, 135) = 4.64, p = .01$, partial $\eta^2 = .06$. Next, I proceeded with follow-up tests to determine which conditions’ scores were different from one another. After partialing out the effect of age group, kind emotion scores were highest for orienting, followed by self-focused, and other-focused conditions. In opposition
to Hypothesis 1, t-tests revealed that kind emotion scores for the self-focused condition were not different from the orienting condition, \( p > .25 \). In opposition to Hypothesis 2, scores for the self-focused condition were not different than the other-focused condition, \( p = .14 \). Post-hoc analyses showed that the difference met the threshold for a small effect, Cohen’s \( d = .29 \), and had low power, power = .31, indicating that this difference may not have been significant due to a lack of power. In contrast to Hypothesis 3, kind emotion scores for the orienting condition were higher than the other-focused condition, \( p < .01 \), Cohen’s \( d = .60 \). In contrast to Hypothesis 4, there were no age group by condition interactions, \( p > .70 \).

### 4.4 Discussion

How can we promote children’s kind motivations? Studies with adults have found that prompting people to take a disadvantaged person’s viewpoint can promote sympathy for them (Batson et al., 1997). Until now, however, these techniques had not been tested (a) in situations where one is responsible for causing another’s distress, and (b) in childhood, when promoting such emotions is arguably most important. Here, I addressed these gaps by experimentally testing three manipulations with a sample of 4-, 6-, and 8-year-olds. I found that the orienting condition elicited the most kind emotions in children, followed closely by the self-focused condition. The other-focused condition has the least kind emotions, and significantly less than the orienting condition.

Contrary to my expectations, the orienting manipulation was the most successful at eliciting kind emotions. This may because this manipulation was most effective at drawing children’s attention toward the other-oriented cue. This explanation aligns with the finding that, among 3-year-olds, the ability to control goal-directed action in the presence of interfering stimuli is driven primarily by attending to, rather than their labeling, goal-relevant cues (Müller, Zelazo, Hood, Leone, & Rohrer, 2004). This finding may further suggest that, for typically developing children, orienting to (and sustaining attention on) the victim may suffice for promoting kind emotions. But, atypically developing children—for instance those with clinically-low sympathy, which is often found for children with severe aggression and conduct problems, or cognitive impairments, such as autism spectrum disorders (Hawes & Dadds, 2005; Ten Eycke & Müller, 2015)—may not
experience such an increase in kind emotions because orienting to the victim may not elicit feelings of concern for others’ welfare, a sense of responsibility for the transgression, or both.

I also found that the orienting manipulation was as successful as the self-focused role-taking manipulation. This may suggest that children are more adept at recognizing and appreciating the negative effects of their actions on others than previously expected. For instance, in his seminal theory of guilt induction, Hoffman (2000) argues that after children transgress ethical norms, caregivers ought to “highlight the other’s perspective, point up the other’s distress, and make it clear that the child’s action caused it” (p. 143). These findings, however, suggest that young children might process such considerations autonomously so long as they attend to the victim. A complementary or alternative possibility is that the orienting manipulation promoted kind emotions by inhibiting children’s attention to self-serving cues and considerations (see Chapter 2). If either explanation holds true, it would suggest that practices drawing attention to the victim’s distress are sufficient and possibly superior to those which emphasize the causal role of the child’s actions.

Another explanation for these findings is that the children’s kind emotions may have been lessened during the other- and self-focused conditions by assigning a label to emotions they believed would be experienced by the victim or themselves in the victim’s position. Increasing evidence suggests that emotion labeling—an approach also used as a psychotherapeutic technique—reduces emotional responding. For example, adults instructed to use emotion labeling while observing emotional faces show less amygdala activation than those instructed to simply observe the faces (Lieberman et al., 2007). Furthermore, while watching negative emotional photos, people instructed to label emotional events reported less distress than those simply observing the photos, and showed reductions in distress similar to emotion regulation strategies such as distraction (Lieberman, Inagaki, Tabibnia, & Crockett, 2011). Whether these effects extend to children is currently unknown. Nonetheless, it is possible that emotion labeling may have masked increases in emotional arousal elicited by other- and self-focused manipulations.

Somewhat surprisingly, I found no interactive effect between age group and condition, suggesting that conditions were equally effective across age groups. This indicates that across
this age range, within a normative population, children’s cognitive developments do not amplify or limit the effect of these attention-manipulating approaches. Still, this needs to be considered in light of the fact that the self-focused condition could not be completed with 4-year-olds. This strategy may be feasible with young children in their real lives, where situations involve fewer hypotheticals and are typically less cognitively demanding; however, these findings cannot speak to whether the condition would be equally effective with this age group.

As with any study, this one has its shortcomings. First, as indicated by the pilot test, most 4-year-olds were unable to complete the self-focused condition. It remains possible that the manipulation may might quite differently for this age group compared to the others. But, I find this unlikely, given how the effects of the orienting and other-focused conditions show similar patterns across age groups. Second, the size of some subgroups in the sample were low, leaving some analyses underpowered. Thus, more differences may exist between conditions than these findings were able to establish. Third, the degree to which these manipulations exert similar effects in response to children’s real-life transgressions is unknown. For example, interpersonal dynamics, such as synchrony, may cause children to experience other-focused role-taking as more arousing during real-life, compared to hypothetical, transgressions. Also, the nature of the child–caregiver relationship within which these prompts are delivered may modulate their real-life efficacy (Grusec & Goodnow, 1994). These are issues important topics for future research.

To summarize, this study was the first to examine the effect of three types of attention manipulations on children’s kind emotions after transgressing ethical norms. I found that the orienting manipulation elicited the most kind emotions. Surprisingly, the other-focused role-taking manipulation elicited the least kind emotions, across age groups. Furthermore, these effects appear consistent across early to middle childhood. These findings have implications for practices aiming to enhance children’s kind emotions: they suggest that directing children’s attention to the victims of their transgressions may be more important than other elements often involved in caregiver interventions. Thus, asking children to take others’ perspectives or recognize how their actions caused others harm may be unnecessary or even counter-productive.
Table 4.1

Descriptive Statistics and Correlations for Primary Study Variables in Study 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>STL Kind</th>
<th>NHP Kind</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>STL Kind</td>
<td>0.95</td>
<td>1.14</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHP Kind</td>
<td>1.24</td>
<td>1.15</td>
<td>.66***</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>6.26</td>
<td>1.63</td>
<td>.42***</td>
<td>.43***</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.48</td>
<td>0.50</td>
<td>.08</td>
<td>.05</td>
<td>.06</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. STL Kind = kind emotions in response to stealing vignette. NHP Kind = kind emotions in response to not helping vignette. Gender: girls = 1, boys = 2. ***p < .001.
Figure 4.1. Mean kind emotion scores by condition and age group.

Note. Error bars represent standard errors.
Appendix 4.1

Supplementary Information for Method

*Supplementary Figure 4.2.* Sample illustration for the introduction (left) and transgression (right) portions of the stealing vignette. © Copyright by Laboratory for Social-Emotional Development and Intervention, 2017.
Appendix 4.2

Supplementary Sample Information

Supplementary Table 4.2

*Participant Count and Gender Composition by Age Group and Condition.*

<table>
<thead>
<tr>
<th>Condition</th>
<th>4-year-olds</th>
<th>6-year-olds</th>
<th>8-year-olds</th>
<th>Subgroup n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orienting</td>
<td>15 (38%)</td>
<td>16 (63%)</td>
<td>9 (46%)</td>
<td>40</td>
</tr>
<tr>
<td>Other-focused</td>
<td>37 (46%)</td>
<td>19 (52%)</td>
<td>16 (56%)</td>
<td>72</td>
</tr>
<tr>
<td>Self-focused</td>
<td>— *</td>
<td>15 (47%)</td>
<td>17 (47%)</td>
<td>32</td>
</tr>
</tbody>
</table>

*Note.* Percentages in brackets refer to portions of each subsample that were male. *4-year-olds did not complete the self-focused condition.*
Chapter 5

5 General discussion

5.1 Overview

At some point, virtually all young people violate ethical principles, often in favour of obtaining a favourable outcome or avoiding an unfavourable one at a cost to another person. But why do some children subsequently feel kind emotions, while others feel selfish emotions? Answers to these questions have consequences for people’s social behaviour and well-being across the lifespan (Malti, 2016). Yet, to date, theorizing on these matters has outweighed empirical testing.

Kind and selfish emotions are believed to arise in response to how one appraises or evaluates a situation, relative to their concerns (Frijda, 1988; Malti et al., 2018). Ethical transgressions often elicit conflicting underlying concerns because they typically involve negative consequences for victims while providing self-serving benefits to victimizers (Malti et al., 2018). Thus, which type of consideration one attends to and how they process it may impact how one subsequently feels about transgressing and victimizing another. To date, however, no research has examined the relations between children’s attention to such cues, their evaluations of these situations, and their subsequent finalized emotions. In three studies, I aimed to test the relations between these mechanisms between early and middle childhood. Taken together, the findings suggest that attending to other-oriented cues, as opposed to self-serving cues, enhances children’s kind emotions.

5.2 Summary of Studies

Across all three studies, I used samples of 4-, 6-, and 8-year-old children because they cover an age range during which attentional subsystems and kind emotions develop extensively (Arsenio, 2014; Betts et al., 2006). The first study tested whether there was an association between children’s tendencies to attend to other-oriented versus self-serving cues and their subsequent emotional responses. The findings revealed that, across age groups, children’s attentional tendencies were related to more kind emotions and less selfish emotions. The second study
observed children’s sad facial expressions and a concurrent measure of their attentional tendencies in real time. It did so to answer two primary questions: First, is attention better described as a cause or a consequence of emotions? Second, are attention, sad facial expressions, or both related to children’s subsequent, finalized kind and selfish emotions? The findings supported the notion of attention as a cause of emotions and found that sad facial expressions, but not attention, were directly associated with kind and selfish emotions. There was some evidence, albeit weak, that attentional tendencies were related to kind emotions through sad expressions. Meanwhile, sad expressions were related to kind emotions for 6- and 8-year-olds, but not 4-year-olds.

The third study experimentally tested the effect of three attentional prompts on children’s subsequent kind emotions. Findings demonstrated that children who viewed a simple orienting manipulation, without any explicit instruction, reported the most kind emotions. Children who were instructed to think about how they would feel if they were the victim reported less kind emotions, but not significantly so. Even after controlling for age group, children who were asked to think about how the victim would feel reported significantly less kind emotions than those who received the orienting manipulation. Findings also revealed that conditions had similar effects across all age groups.

5.3 Implications for Theory

These findings hold theoretical implications for how kind emotions are activated in childhood. First, it supports theories which posit that attention exerts a stronger influence on emotion than vice versa. Because it changes the content a person evaluates, attention may modulate a person’s emotional response (Scherer, 2009; Malti et al., 2018). Thus, attention allocation may be thought of as a mechanism “forking” between potential emotional responses. For example, a child who predominantly focuses on self-serving cues may focus on the desired treat they obtain by transgressing, thereby evaluating their behaviour as positive, leading to selfish emotions. Conversely, a child who focuses relatively more on other-oriented cues may focus on how the victim feels, thereby evaluating their behaviour as negative, resulting in kind emotions.
From a developmental perspective, my findings generally spoke to two ideas: (1) that the relations between attentional tendencies, sad facial expressions, and kind and selfish emotions appear mostly consistent across age, but that (2) mean-levels in each of these mechanisms change between early and middle childhood. To the first point, Studies 1 and 3 both found that the links between attention and kind emotions were independent of age. To the second, Studies 1 and 2 found age-related differences in the mean-levels of attentional tendencies (though marginal in Study 1), sad facial expressions, and kind and selfish emotions.

Together, these findings may suggest that the connections between components involved in emotional episodes—such as attention allocation, evaluations of stimuli, bodily expressions, and subjective experiences—are relatively established by early childhood. This idea coincides with theories that emotions have evolved to serve a functional purpose in helping people adapt and respond to their environments, even from an early age (Darwin, 1872; Frijda, 1994; Lewis, 2008). It also aligns with the view that kind emotions are fundamentally similar to non-ethically-relevant emotions in their ontogeny (Malti et al., 2018). Instead, what primarily changes between early and middle childhood is which input (e.g., an other-oriented versus a self-serving cue) is evaluated and processed by one’s emotional architecture. Thus, these findings support the idea that there are developmental changes in what children process, but no changes in how processing impacts their emotions.

5.4 Implications for Practice

The studies in this dissertation offer some recommendations for parents, educators, and intervention developers aiming to enhance children’s kind emotions and prevent maladaptive behavioural outcomes. These suggestions, however, come with two caveats. First, more studies are needed to confidently recommend implementing these practices. Second, I expect that these practices would be effective for most, but not all, children. In Chapter 1, I proposed two primary reasons one may experience selfish emotions after transgressing ethical norms and victimizing another: (a) they fail to sufficiently consider how the action affects others, or (b) they have no concern for how their actions impact others. I then argued that, in most cases, the former reason

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2 One exception to this trend was that age group moderated the link between sad facial expressions and kind emotions (but not selfish emotions; see Study 2).
is responsible for selfish emotions because most young people show high and stable levels of concern for others (Carlo et al., 2015; Eisenberg et al., 2015; Malti, Zuffianò et al., 2016).

But, children with extreme paucities of sympathy may require fundamentally different intervention approaches (Hawes & Dadds, 2005). For those children, directing their attention toward other-oriented cues may not elicit any negative evaluations and subsequent negative emotions. Consequently, these children likely need to first develop the prerequisite sympathy, which appears best achieved by improving the warmth of their parent–child relationships (see Malti, Song, Colasante, & Dys, 2018). In prevention terms, I regard these recommended practices to be most fitting for primary and secondary prevention, which, respectively, aim to prevent harm for normative populations (generally targeting about ~80% of children) and reverse harm for children at-risk of developing social-emotional problems (~15% of children; see Lane, Kalberg, & Menzies, 2009) because these children likely meet a minimum threshold for other-oriented concern. For instance, at-risk children may experience sympathy for their in-group (e.g., friends), but not experience kind emotions after victimizing those from their out-group.

Taken together, these studies suggest that caregivers, educators, and practitioners should prompt children to visually attend to other-oriented cues, and away from self-serving cues. Meanwhile, questioning children about how the victim feels or prompting them to recognize that their actions caused the victim’s distress (see Hoffman, 2000), appear unnecessary or even counter-productive. Instead, children might autonomously process such considerations while passively attending to a victim’s face. Imagine a situation at school where one child steals a toy from another: how should the teacher respond? Based on these findings, I recommend that the teacher should take the stolen toy and place it out of sight (e.g., behind their back). Next, they should prompt the victimizing child to look at the victim’s face, observe how the victimizing child feels for transgressing, and scaffold a solution for making reparations.

5.5 Limitations and Future Directions

Some features of these studies limit the inferences that we can make from these findings. First, the studies used standardized, hypothetical vignettes. On one hand, this provided stronger methodological control over the possible cues to which children could attend, making it feasible
to use eye tracking and emotion recognition technology. It also ensured that interindividual comparisons were meaningful because children processed and responded to the same situation. On the other hand, children may still respond differently to victimizing others in real life. In real-life conflicts, for example, children may be influenced by certain interpersonal factors, such as biobehavioural synchrony, and less influenced by others, such as social desirability (see Cirelli, 2018; Gutzwiller-Helfenfinger, Gasser, & Malti, 2010; Schellenberg, Corrigal, Dys, & Malti, 2015). Also, it may be challenging to create a real-life equivalent of the orienting condition from Study 3, where all visual cues—except the victim’s face—are less able to capture attention. Conversely, it may be even easier to implement self-focused role-taking with young children in real life, as it would provide a more concrete and immersive situation than my vignettes. Thus, future research in more ecologically-valid environments (e.g., classrooms) could compliment the findings presented here to provide a clearer picture of how these effects map onto real-life. And while recreating Studies 1 and 2 in such milieus may not be currently feasible—due to the many risks involved in equipping young children with eye-tracking glasses and portable cameras—rapid technological advancements promise to make such studies more feasible in coming years.

Second, I focused on processing related to hedonistic and other-oriented, ethical concerns. On average, these cues were the two most attended to, and together accounted for about 50% of children’s dwell time (see Study 1). But, other concerns may also factor into how children process social transgressions. For example, one could examine how children’s concerns over sanctions relate to their attention toward onlooking peers and teachers. Though such reasons are less commonly reported, they may still advance our understanding of how children arrive at their finalized emotional responses by clarifying the motivational importance of external penalties to children. In addition, some other concerns are difficult to visually depict with a unique cue. For instance, a concern for violating ethical principles, such as fairness, does not map onto any unique and specific interest area in my illustrations. Some theorists, who posit that ethical principles are activated via other-oriented concern, might argue that studying a cue specific to ethical principles may not be necessary (Hoffman, 2000); other theorists, who argue that such principles are inherently motivating, may disagree (Gibbs, 2013).

Third, these studies used a cross-sectional approach. By using cross-sections, we cannot be certain whether differences between age groups are the consequence of sample differences or
indicators of developmental effects. Thus, longitudinal designs could better clarify how cognitive processing impacts emotional responding differently across early to middle childhood and beyond. Future studies could benefit by experimentally testing the effect of the recommended attentional prompts with follow-ups to examine whether (and if so, for how long) these techniques alter the ways in which children subsequently process ethical transgressions without direct prompting.

Fourth, the addition of a control condition to Study 3 would benefit our understanding of the absolute effects each condition. Although other-focused role-taking elicited less kind emotions than the orienting manipulation, this type of role-taking may still significantly increase children’s kind emotions relative to a control group. Although Studies 1 and 2 involved no such manipulation, mean-levels of kind emotions cannot be confidently compared with Study 3 since the latter employed different vignettes. Thus, including a control group which receives no manipulations or additional instructions would further our understanding of these findings.

In addition to addressing the shortcomings of these studies, I will highlight two more future directions I find most promising. The first involves investigating the role of positive emotion regulation in promoting kind emotions. Children who regulate positive emotions related to self-serving gains—for example, the happiness which stems from obtaining a desired treat—may be able inhibit attention toward salient, self-serving cues, and instead more fully process less salient, other-oriented elements (Müller et al., 2004)—such as the victim’s emotions. By regulating these positive emotions, children are more likely they recognize and appreciate the harm they have caused. Thus, positive emotion regulation may serve a complimentary mechanism for promoting children’s kind emotions. The second involves investigating how these effects function in cross-race and cross-gender interactions. The present studies controlled for racial and gender effects by adjusting the victim’s characteristics to match those of the participating child. Focusing on a victim more different from one’s self may produce an even stronger increase in kind emotions. For example, those who are asked to imagine the perspective of a person from another racial group later show less prejudice than controls (Shih, Wang, Trahan Bucher, & Stotzer, 2009). Examining how attention-manipulation strategies and intergroup factors interact in relation to children’s kind emotions promises to be a fruitful avenue for future research.
5.6 Conclusions

In this dissertation, I set out to better understand how children’s cognitive processing while victimizing affects the ways in which they emotionally respond. I focused on how mechanisms—especially attention allocation—relate to children’s kind and selfish emotions. Across three studies, using an array of methods, I found evidence that increasingly attending to and processing of other-oriented cues promotes kind emotions in early and middle childhood. These findings contribute to our understanding of how kind emotions develop and offer practical recommendations for parents, educators, and interventionists. Future studies can build upon these findings by testing these effects with victims of varied backgrounds, using more ecologically valid settings, and employing longitudinal designs.
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