ABSTRACT

Title of dissertation: THE EFFECT OF SUPPORTIVE SOCIAL INTERACTION PRIMING ON CHILDREN'S PROSOCIAL COMFORTING RESPONSES TO DISTRESSED OTHERS

Bonnie Erin Brett, Doctor of Philosophy, 2016

Dissertation directed By: Professor Jude Cassidy
Department of Psychology

The ability to sensitively care for others' wellbeing develops early in ontogeny and is an important developmental milestone for healthy social, emotional, and moral development. One facet of care for others, prosocial comforting, has been linked with important social outcomes such as peer acceptance and friendship quality, underscoring the importance of determining factors involved in the ability to comfort. Although social support has been linked with a number of important social outcomes, no study has directly examined whether felt social support can foster children's positive behavior toward others. The purpose of the current investigation was to use an experimental priming paradigm to demonstrate that felt social support a) enhances children's ability to respond prosocially to the distress of others and b) decreases children's expressions of personal distress when faced with the distress of another person. Participants were 94 4-year-old children (M = 53.56 months, SD = 3.38 months; 52 girls). Children were randomly assigned to either view pictures of mothers and children in close, personal

interactions (supportive social interaction condition), happy women and children in separate pictures, presented side-by-side (happy control condition), or pictures of colorful overlapping shapes (neutral control condition). Each set of 20 pictures was presented in the context of a categorization computer game that participants played 4 times throughout the course of the study. Immediately following the first three computer games, children were given the opportunity to comfort someone who was distressed; twice it was the adult experimenter working with the child, and once it was an unseen infant crying over a monitor that participants had been trained to use. Comforting behaviors and distress/arousal were coded in 10-second time segments and yielded a global comforting score and a distress proportion score for each task. Results indicated that priming condition had no effect on either prosocial comforting behavior or expressions of personal distress. I discuss these null findings in light of the available literatures on priming mental representations in children and on prosocial comforting, and suggest some future directions for continued investigation in both fields.

THE EFFECT OF SUPPORTIVE SOCIAL INTERACTION PRIMING ON CHILDREN'S PROSOCIAL COMFORTING RESPONSES TO DISTRESSED OTHERS

By

Bonnie Erin Brett

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Advisory Committee:
Professor Jude Cassidy, Chair
Professor Jonathan Beier
Professor Lucas Butler
Professor Brenda Jones-Hardern
Professor Tracy Riggins
Professor Phillip R. Shaver

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Chapter 1: Introduction

The ability to sensitively care for others' wellbeing develops early in ontogeny (Roth-Hanania, Davidov, & Zahn-Waxler, 2011; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) and is an important developmental milestone for healthy social, emotional, and moral development. Theoretical and empirical work on the motivation and capacity to care for others has identified prosocial behavior as a particularly important component of this socially complex behavior. Prosocial behavior, defined as a voluntary behavior benefitting another person (Grusec, Hastings, & Almas, 2011), is often delineated into three categories: helping, sharing, and comforting. It is thought that helping, sharing, and comforting are appropriate responses to instrumental, material, and emotional needs, respectively (Dunfield & Kuhlmeier, 2013). Prosocial acts may be motivated by positive emotions, such as empathy, or negative emotions such as personal distress (Eisenberg et al., 1989; Staub, 1978).

Prosocial comforting in the context of another's distress emerges latest in development, with individual differences reliably emerging in the second half of the second year of life (e.g., Bischof-Köhler, 2012). Whereas signs of concern for others are evident in the first year of life (e.g., Roth Hanania et al., 2011), it is thought that advanced capabilities necessary for enacting comforting behavior are not present until later in development. For instance, one study, using an advanced longitudinal design, found that although 8- to 10-month olds showed affective concern towards their "distressed" mother, it was not until 16 months that infants showed considerable comforting or helping behaviors (Roth Hanania et al., 2011).

Specifically, the advent of empathic responding (i.e., prosocial comforting) coincides with the advancement of infants' cognitive and self-regulatory abilities (Decety & Meyer, 2008; Eisenberg, Fabes, & Spinrad, 2006). In particular, emotion regulation, or "initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral concomitants of emotion in the service of accomplishing affect-related… adaptation or achieving individual goals" (Eisenberg & Spinrad, 2004, p. 338) seems to play a key role in the development of infants' and children's prosocial comforting behavior. Facing the distress of another person is in itself a distressing event, and children must be able to regulate their own negative emotions to focus on the needs of the other person to respond empathically. If they are unable to do so effectively, their principle concern becomes relieving their own, rather than the other person's, distress (Batson, O'Quin, Fultz, Vanderplas, & Isen, 1983; Eisenberg et al., 1989). Consistent with this and beginning in toddlerhood, some children respond to the distress of others with concerned attention and prosocial overtures, whereas others respond with hostility, physical or emotional distancing, or personal distress. These individual differences in the ability to respond to another's distress are linked with important developmental outcomes such as peer acceptance and friendship quality (Clark & Ladd, 2000), underscoring the importance of determining predictive factors of the ability to care for others.

Interestingly, recent research on a number of social outcomes indicates that humans flourish in the context of close, supportive relationships, evincing such advantages as reduced neural and physiological reactivity to social stressors and the

threat of shock (Coan, Schaefer, & Davidson, 2006; Eisenberger, Taylor, Gable, Hilmert, & Lieberman, 2007), lowered risk for mortality (Holt-Lunstad & Smith, 2012), and better mental health outcomes (Kawachi & Berkman, 2001) in the context of supportive social relationships. In other words, humans behave best (and evince the best outcomes) in a social context. However, no study has directly examined whether felt social support can foster children's positive behavior toward others. Therefore, the purpose of the current study is to employ an experimental design to demonstrate how activation of felt social support just prior to experiencing the distress of another person a) decreases personal distress in young children, and b) enhances their ability to respond prosocially to the distress of others. In the remainder of this introduction, I will describe the theoretical and empirical links between social support and prosocial comforting behavior in young children. Given the wide range of social support an individual may encounter in his or her life, I will first focus on attachment, and how the quality of early parental support (i.e., the extent of a child's confidence in the parent as a secure based when needed) links with prosocial comforting, and then will widen the scope to discuss how social support more generally may relate to an increased ability and willingness to provide others with comfort. Then, I will discuss how subliminal priming offers an experimental framework for examining these links and will outline previous work demonstrating its utility in this endeavor. Finally, I will present the goal and hypotheses of the current study.

Theoretical Foundations of the Link Between Social Support and Prosocial Comforting Behavior

A multitude of theoretical perspectives posit that close, supportive relationships foster positive human behavior and outcomes. For example, attachment theory posits that

all children are evolutionarily endowed with an attachment system that compels them to seek proximity to one or more specific individuals in times of distress. This serves the biological function of obtaining protection in times of trouble, and increases the chance of surviving to reproductive age (Bowlby, 1969 /1982). Attachment figures, most often parents, are thought to serve as a secure base from which the child can confidently explore the world, and as a safe haven for him/her to return to when needed (e.g., when distressed or in danger). Some parents serve both of these roles effectively, supporting exploration and being consistently available when needed, whereas other struggle, stifling exploration or discouraging attachment behavior. These differences in parental responses to attachment-related needs are linked with the quality of the attachment relationship. In turn, attachment quality in early childhood has been linked with a large number of social and emotional competencies throughout life (see Thompson, 2008, for a review).

Beyond the parent-child relationship, social baseline theory posits that the human brain has a "baseline" assumption of the environment as one comprised of relationships that are familiar, predictable, cooperative, and interdependent (Beckes & Coan, 2011). That is, a supportive social network reflects the environment to which humans have adapted throughout our evolutionary history which, rather than conferring benefits, allows humans to spend fewer cognitive resources on activities such as emotion regulation and threat appraisal. This leaves more metabolic resources for other daily activities – such as providing comfort to members of the social environment. Indeed, rich and accessible social networks have been linked with a multitude of both positive mental and physical health outcomes (e.g., Cohen, 2004; Holt-Lunstad & Smith, 2012; Kawachi & Berkman, 2001).

There are multiple pathways through which social support may be linked with later prosocial comforting behavior. In the following sections, I will describe the roles of attachment specifically and social support more broadly in the formation and maintenance of emotion regulation strategies, mental representations of relationships and the self, and caregiving schemas, and how these, in turn, theoretically contribute to the development of prosocial comforting.

Social support and emotion regulation. First, as was mentioned, a key component of effectively caring for others is the ability to control one's own emotions (Batson et al., 1983). It has long been held that early attachment relationships may be the context in which children first learn to effectively regulate their emotions (Cassidy, 1994; Kopp, 1989; Sroufe, 1979, 1996; Thompson, 1990, 1994). Infants, wholly unequipped to deal with powerful emotions themselves, turn to caregivers in times of distress for help regulating feelings like fear, sadness, and anger. Through repeated experiences of co-regulation and recovery, infants are able to learn effective strategies for reducing emotional arousal, laying the foundation for later self-regulation (e.g., Thompson, 1991; Tronick, 1989).

Importantly, the types of strategies learned depend in part on the quality of the attachment relationships within which they are learned (Calkins & Leerkes, 2011; Cassidy, 1994). Secure children, who are able to use their attachment figures as both a secure base and a safe haven, and who have had the experience of being sensitively responded to in times of distress, likely learn that negative emotions are an acceptable form of communication for expressing needs and that they serve to elicit care from concerned caregivers (Bretherton, 1990). Moreover, through repeated, sensitive care,

secure children likely learn that emotions are not overwhelming, and should be able to develop strategies to effectively regulate their own negative emotions (Calkins & Leerkes, 2011; Cassidy, 1994).

Insecure children, on the other hand, have parents who struggle with either providing a secure base or a safe haven and consequently learn entirely different strategies for dealing with negative emotions. Avoidant children, whose parents tend to reject and devalue negative emotions or to respond to them harshly, are likely to learn that negative emotions are unacceptable and should be terminated quickly, or not expressed at all. Consequently, they learn to suppress, rather than regulate negative emotions (Cassidy, 1994). For example, in the Strange Situation Procedure (SSP; Ainsworth, Blehar, Water, & Wall, 1978), a procedure designed to elicit stress in infants through a series of separations and reunions with their caregivers, avoidant infants may appear less stressed than other infants and are unlikely to seek out their parents at reunion. Despite this, research has shown that avoidant infants do evince cardiac acceleration during separations of the SSP, belying their apparent calm (Sroufe & Waters, 1977).

Insecure-resistant children, on the other hand, whose parents are only inconsistently responsive to their attachment needs, likely learn that only large, dramatic emotions are sufficient to elicit a response. As Main and Soloman (1986) noted, "in its heightened display of emotionality and dependence upon the attachment figure, this infant successfully draws the attention of the parent" (p.112). Consequently, insecure-resistant children may learn to hyperactive, rather than regulate, negative emotions in the service of keeping caregivers close by (Cassidy, 1994; Cassidy & Berlin, 1994).

Empirical research supports the notion that the quality of early attachment relationships may influence the development of emotion regulation, and has consistently shown that individual differences in attachment quality lead to theoretically expected individual differences in emotion regulation (see Calkins & Leerkes, 2011, for a review; see also Mikulincer & Shaver, 2008). In turn, these learned emotion regulatory capacities may be linked with the sensitive, other-focused care children are willing and able to provide. Secure children, when faced with the distress of another, should be able to regulate their own negative affect and focus on the plight of the other person in a sensitive manner. Insecure children, who may not have learned effective emotion regulation strategies, may employ different strategies. Insecure avoidant children may be expected to protect themselves from their own distress by devaluing the needs of the other person, by escaping or ignoring the situation, or when this is not possible, reacting in an angry or defensive manner. Insecure-resistant children, on the other hand, might be expected to hyperactivate the distress they feel in response to another's distress, and to become overwhelmed and dysregulated. This may lead them to engage in self-focused responding with the goal of alleviating their own, rather than the other person's, distress.

In addition to specific emotion regulation strategies learned early in life, the presence of other people may foster better emotion regulation. In support of this notion, recent research has demonstrated that the mere presence of others, and not necessarily supportive others, attenuates neural activity associated with environmental stressors (e.g. Coan, et al., 2006). This indicates that the presence of others does not activate regulatory mechanisms, but rather, returns the brain to "a baseline state of relative calm (Beckes &

Coan, 2011, p. 277).” Put simply, in the presence of others, the human brain is adapted to reduce threat monitoring and the associated emotional activation and self-regulation.

Empirical work with adults has consistently shown that this is case, with the least regulatory brain activity in response to threat occurring in the presence of supportive others and the most occurring while alone. For example, Coan et al. (2006) found that women under the threat of shock while holding the hand of their steady partner evinced the least amount of threat-related brain activity and that this effect was moderated by the quality of the relationship. Women who reported higher quality relationships showed the least threat-related brain activity, followed by women who reported lower quality relationships. Women who held the hands of strangers evinced greater threat-related brain activity, and those who held no one’s hand showed the most. It is notable that even the presence of a stranger was enough to mitigate threat-related brain activity, indicating that even minimal social support is associated with regulatory advantages. Consequently, it may be that persons in the presence of others have to expend fewer resources to regulate their own emotions in the face of another’s distress, leaving more resources for providing comfort. This notion is supported in the early childhood emotion regulation literatures as well. One study, specifically examining emotion regulation strategies in young children, indicated that starting in the preschool years, children elicit social support to help regulate their emotions more than any other strategy (Sala, Pons, & Molina, 2014).

Social support and mental representations. A second means by which early attachment quality specifically and social support more broadly may predict later expressed empathy and prosocial comforting behavior is through the formation of representations about the self and the environment. Theories in multiple psychological

fields (e.g. social psychology, developmental psychopathology) have underscored the importance of social relationships in the formation of individual differences in social information processing (see Crick & Dodge, 1994, for a review; see also Bowlby, 1973; Cassidy & Shaver, 2008; Dykas & Cassidy, 2011). Children's earliest social experiences occur largely in the context of the parent-child relationship, and it is through these early repeated relational experiences that children form initial representations of themselves, of relationships, and of other people (Bowlby, 1969/1982; Bretherton & Munholland, 2008; Main, Kaplan, & Cassidy, 1985). The structure of these representations leads to specific, predictable patterns of expectations and interpretations of the world and the people in it (Dykas & Cassidy, 2011) and are adaptive in helping children to interpret the world around them by providing a quick, efficient means for understanding and interpreting social information (Bowlby, 1973; Bretherton & Munholland, 2008). By using representations of themselves, others, and the world as a perceptual filter, children are able to quickly assign meaning to a range of social cues on a moment-to-moment basis.

With respect to care for other people, secure children, who have had the experience of being cared for in times of distress, have representations of themselves as capable of eliciting care, of others as being kind and worthy of care, and of the world as a place where distressed persons are cared for. Insecure children, however, who have been responded to harshly, inconsistently, or not at all, form representations of themselves as incapable of eliciting or unworthy of care. Further, they may come to view others as unkind and untrustworthy, and of the world as a place where distress is not worthy of a response (Bretherton & Munholland, 2008). In fact, research has shown that beliefs about the appropriateness of negative emotions significantly influence sympathy and helping

behavior in children (Hepach, Vaish, & Tomasello, 2013). Given that insecure children learn that negative emotions are often inappropriate, they should be less willing to sympathize and help others in distress. Theoretically, the representations formed in early relationships are carried with the child throughout development, and serve to guide behavior and expectations in new relationships and in new situations. Thus, when faced with the distress of another, secure children have the expectation that someone will help in a sensitive manner, whereas insecure children do not. These expectations should have predictable consequences on prosocial comforting behavior directed toward the distressed person.

Similarly, broader social experiences with a variety of relationship partners inform expectations of future events, adding to these schemas. Coan (2008) likened the human brain to a Baysian bet-making machine, through which humans are able to take their previous experiences, contextual cues, and conceptual knowledge to estimate the likelihood of a particular outcome. Representations of the self, others, and the world, gleaned through daily interactions, most certainly play a role in these estimations, as well as the social context in which the person finds him or herself, including a person's perceived availability of social resources. In the context of another person's distress, the human brain must compute how costly it will be to the self, including the cost of regulating one's own negative affect, to intervene in a caring and sensitive manner. In cases where social support is presumed and self-regulation requires lower effort, a person may be more willing and able to respond in such a way.

Social support and caregiving scripts. The third avenue by which early attachment relationships and broader social support may influence the expression of

empathy and prosocial comforting behavior is through scripts. Scripts are enduring cognitive representations of an expected sequence of events given a particular situation (e.g., visiting a restaurant; Shank & Ableson, 1977) that serve to inform expectations of events and guide and organize ongoing behavior (e.g., Shank & Ableson, 1977). Scripts are an important component of attachment representations (Waters & Waters, 2006) and help to organize behavior and patterns of interaction with attachment partners. For example, one type of script, formed through a person's history of secure base experiences (i.e., situations when support was needed and sought and their resolution) is termed a secure base script. When accessed (e.g., when the attachment system is activated), a secure base script for a specific attachment figure will guide expectations and behavior with that person, even if he or she does not always behave according to the script (Waters & Waters, 2006). Additionally, these specific script-like representations are carried forward into new relationships and can guide expectations about and behavior with new people (Sroufe & Fleeson, 1986). This is likely true for a number of phenomena, from specific relationships (as in the case of the secure-base script) to specific kinds of situations (as in the case of the "restaurant" script).

Accordingly, children's behavior in relevant situations should reflect the expectations and emotions contained in whichever script is readily accessible, given the situation. For example, children who have had consistent and reliable support when needed theoretically have a complete, coherent, and readily accessible script for such occasions that includes successful support seeking, problem resolution, affect regulation, and return to play (or exploration, interaction, etc; Waters & Waters, 2006). One study examined this notion by presenting 12- to 16-month old infants with animations of two

circles meant to portray a child (small circle) and either a sensitive caregiver, who returns to the small circle when it pulses and cries, or an insensitive caregiver, who continues away from the small circle. Secure infants (i.e., those infants who had a history of supportive, consistent care) looked reliably longer at the animation of the insensitive caregiver, indicating that this violated their script of typical caregiving behavior. In contrast, insecure infants, whose attachment-relevant script likely reflects a history of harsh or inconsistent responses to attachment needs, looked longer at the animation of the sensitive caregiver (Johnson, Dweck, & Chen, 2007).

Importantly, children theoretically learn both sides of a script (i.e., support-seeking and support-provision) and are motivated to recreate it, even if roles are switched and new behavior is required (Sroufe & Fleeson, 1986). Thus, when children with a history of receiving support and care find themselves in a position to provide care to another, they should have a coherent, sensitive script to follow and be motivated to follow it. Insecure children, however, likely do not have a coherent, readily accessible script to follow and may become defensive or overwhelmed.

In sum, there are numerous pathways by which social relationships may influence how children provide care to distressed others and how the felt support of others may foster the development of prosocial comforting responses. Empirically, the link between felt support and prosocial responding to distress in childhood has been supported. Importantly, the entirety of this work has focused on how early attachment relationships link with prosocial comforting; none has examined the mere presence of others as a predictor of sensitive response to another's distress. However, this work, although

somewhat limited in scope, presents a compelling case indicating that early felt support links with care for others.

For instance, in the first two years of life, attachment security (which results from a history of sensitive care during one's own distress) has been linked with greater prosocial responding toward a "baby" (Londerville & Main, 1981) and an unfamiliar distressed adult (Van der Mark, van Ijzendoorn, & Bakermans-Kranenburg, 2002). Although the evidence has been mixed in studies examining this association in childhood (see Appendix A, for a review of the links between attachment and empathy and prosocial comforting), secure attachment in preschool and beyond has been empirically associated with care for others in a number of contexts. For example, one study of this association in preschoolers found that secure attachment was related greater sympathy and prosocial responding to maternal simulations of anger and sadness (Denham, 1994). In the same study, insecure children were less prosocial and became more upset and defensive in response to their mother's emotional displays, a finding consistent with the theory outlined above.

Another study examined the direction of effects of the proposed link by measuring both attachment quality and prosocial comforting (termed "empathy") at two time points (i.e., 42 and 48 months) and then testing two models, one with empathy as a predictor and the other with attachment (Murphy & Laible, 2013). Results indicated that attachment at 42 months predicted empathy at 48 months (controlling for empathy at 42 months), but that the relation did not hold in the opposite direction. This is indicative that there may be a causal relation between the two constructs. Secure attachment in the preschool years has also been linked with higher maternal reports of child emotion

regulation and empathy, which, in turn, predicted prosocial comforting behavior in an infant cry task (Panfile & Laible, 2012) and mother reports of prosociallity (Laible, 2006). In addition, the association between secure attachment and prosocial responding to another's distress is consistently supported in both the adolescent and adult literatures (e.g., Laible, Carlo, & Raffaelli, 2000; Feeney & Collins, 2003).

Overall, the empirical literature indicates that, consistent with theory, attachment security is positively associated with prosocial comforting behavior. However, this body of research is limited in two important ways. First, as mentioned, this work focuses entirely on attachment as a predictor of prosocial comforting, rather than felt social support in general. This narrow focus unnecessarily limits the development of prosocial comforting to the first years of life and ignores "in the moment" influences on comforting behavior. Although early relationships undoubtedly play a central role in the formation of many social and emotional capacities (e.g., emotion regulation; Cassidy, 1994), it is likely that additional factors, such as social support more broadly, also play a role. As social baseline theory posits, normally costly human capacities, such as emotion regulation, may be less costly in the presence of others. Accordingly, even insecure children, who have not had a history of being consistently supported in times of distress, will likely feel the bolstering effects of social support and may have an enhanced capacity to provide support in the presence of others (a notion supported in the adult attachment priming literature, briefly reviewed below). In addition, despite the consistency of the literature, due to its correlational and predictive nature, no causal claims about felt support (or attachment quality) and prosocial comforting behavior in childhood can be made. Studies examining the broader role of social support (rather than attachment

specifically) and employing an experimental design are needed to fill these substantial gaps. In the following section, I discuss how priming offers a means of experimentally increasing felt social support in children, and discuss research findings that support this proposition.

Priming as a Way of Experimentally Increasing Attachment Security in Children

Experimental priming rests upon the notion that mental representations formed through past experiences provide a filter for interpreting and acting upon later environmental events (Bowlby, 1969 /1982; Taylor & Crocker, 1981). By exposing participants to stimuli relevant to a particular mental representation, experimenters can "activate" that representation, which then guides subsequent attention, emotion, cognition, and behavior (Bargh, 2003, 2006; Hamilton, 2005). Stimuli can be presented either supraliminally (i.e., above the threshold for conscious awareness) or subliminally (i.e., below the threshold for conscious awareness). Supraliminal priming can be made explicit, by asking participants to concentrate on a particular stimulus, or to imagine or write about a relevant scenario, or can be done surreptitiously by discreetly placing stimuli in the environment (e.g., a picture on the wall or the background on a computer) or exposing participants through an unrelated task (e.g., a word scramble of schema-relevant words). Subliminal priming, on the other hand, is a more covert method of priming, with stimuli being presented below the threshold of conscious awareness (usually less than one tenth of a second) and preceded or followed by a mask that is presented as long as, or longer, than the prime itself (Bargh & Chartrand, 2000). Despite such quick presentation, research has shown that subliminal primes influence brain

activity in predictable ways (Dehaene et al., 1998) and can even have effects lasting up to four days (Lowery, Eisenberger, Hardin, & Sinclair, 2007; Study 2).

Priming in children. Both subliminal and supraliminal priming have been employed to successfully active mental representations in children in a variety of contexts. Priming methodologies have largely found use in the domain of cognitive development, with researchers using priming to explore representations of number, language, and memory (see Stupica & Cassidy, 2014, for a review). More recently, social psychologists have employed priming to explore children's representations in such wide areas as in-group and out-group biases, emotional face processing, and the effects of maternal support on academic performance (Stupica & Cassidy, 2014). For example, using Silverman's "*Mommy and I are one*" (*MIO*) priming paradigm (see Hardaway, 1990), thought to activate representations of a nurturing and accepting mother, Bryant and Silverman (1984) demonstrated that repeated priming had positive lasting effects on emotionally disturbed children's and adolescents' self-concept, standardized math and reading scores, independence in the classroom, and time spent on homework and watching television. In a more recent example, Song, Over, and Carpenter (2015) primed social exclusion in 4- and 5-year-old children using videos of abstract shapes and found that the children who had been primed subsequently drew more affiliative pictures (i.e., themselves and a friend standing closer together) than children who hadn't been primed. Similarly, Watson-Jones, Legare, Whitehouse, and Clegg (2014) found that priming ostracism in children as young as 3 increased imitative behavior, particularly when actions were presented as a social convention. These studies and others like it provide

preliminary evidence into the utility of priming as a means for examining how socially nuanced mental representations influence children's subsequent behavior.

Security priming. Theoretically, mental representations guide reactions to social events by influencing thoughts, feelings, and behavior in theoretically predictable ways (Bowlby, 1969/1982; Bretherton & Munholland, 2008; Main et al., 1985). In fact, in the attachment literature, a wide body of work demonstrates that this is the case, with both children and adults processing social information (i.e., turning attention toward or away from social stimuli, making attributions about) in ways that are consistent with attachment theory (see Dykas & Cassidy, 2011, for a review). Thus, experimental activation of such representations should have a predictable effect on subsequent behavior. Specifically, exposure to positive attachment-relevant stimuli (e.g., a photo of a mother and child in close, warm interaction) should activate representations of accessibility to a protective figure and being cared for, and consequently, positive thoughts, feelings, and behavior in response to attachment-relevant or social events.

***Security priming in adults*.** Until recently, security priming has been utilized primarily with adult populations and has been used extensively to explore a variety of adult psychosocial phenomena. In general, such studies have supported the notion that secure attachment is causally linked with more positive psychosocial outcomes (see Mikulincer & Shaver, 2007). For example, Cassidy, Shaver, Mikulincer, and Lavy (2009) examined the effects of secure priming on psychological responses to hurtful events in young adults. Participants (whose dispositional attachment style were measured by the Experiences in Close Relationships Scale; ECR; Brennan, Clark, & Shaver, 1998) were asked to write about a time in which a close relationship partner had hurt their

feelings. Then, participants were randomly assigned to either a security priming condition (subliminally presented words such as *love*, *secure*, and *affection*) or a neutral priming condition (subliminally presented words such as *lamp*, *staple*, and *building*). Afterward, participants were asked to reflect upon and answer questions about the hurtful experience they had written about. Consistent with theory, secure priming reduced the propensity for anxious individuals to report less constructive reactions and more feelings of rejection, crying, and negative emotions in response to the hurtful event. Moreover, avoidant individuals in the security priming group evinced a lowered propensity to report less intense feelings of rejection and crying and more defensive and hostile reactions, indicating that increased feelings of security (manipulated through subliminal security priming) was associated with more constructive and less defensive reactions to painful social stimuli. Secure priming in adulthood has also been linked with increased desire for intellectual exploration (Green & Campbell, 2000), lowered propensity for risky behavior (Taubman-Ben-Ari & Mikulincer, 2007), and more positive thoughts and feelings about outgroup members (Mikulincer & Shaver, 2001).

More relevant to the current investigation, Mikulincer and colleagues have also repeatedly shown that experimental manipulation of attachment security leads to increased concern for others. For example, one series of three studies in Israeli undergraduates examined the effects of security priming, relative to the effects of neutral and happy priming, on concern for the wellbeing of close others (i.e., benevolence) and for humanity as a whole and nature (i.e., universalism; Mikulincer et al., 2003). Despite differences in priming methodology and the outcome measures used, all three studies found an effect of security priming, such that, in adults, increased feelings of security

lead to more concern for others and higher endorsement of both benevolence and universalism, and these effects were not explained by mood (Mikulincer et al., 2003). In other words, secure priming positively influenced values and beliefs related to prosociality.

In another series of studies, Mikulincer and colleagues (2001; Studies 1-4) examined the effect of experimentally enhanced attachment security on personal distress and empathic reactions to the needs of others. Employing both subliminal and supraliminal priming, these studies indicated that security priming (relative to neutral and happy priming) was effective in both reducing personal distress reactions and increasing empathic reactions to a story about a person in need (Studies 1-3). In addition, results indicated that activation of secure representations increased accessibility to and decreased recall time for an experience in which participants had witnessed another person in need and responded empathically (Study 4; Mikulincer et al., 2001). Interestingly, although there were main effects of dispositional attachment, such that insecure participants were less empathic than secure participants, and anxious participants reported the most personal distress reactions to the story, there were no interactions between priming condition and dispositional attachment (Mikulincer et al., 2001). The results of this series of studies highlight two important concepts in the attachment priming literature. First, at least in adults, security priming is capable of influencing the affective aspects of prosocial comforting behavior by decreasing feelings of personal distress and increasing feelings of empathy. Second, the effects of security priming are independent of the effects of pre-existing attachment orientations.

In a third series of studies by Mikulincer and colleagues (2005), these effects were extended to behavioral indices of prosociality (i.e., altruism) and replicated in two countries (Israel and the United States). In a series of five studies, participants were primed and then watched a video of a women engaging in increasingly aversive tasks and becoming increasingly distressed, eventually refusing the participate any longer. Following the video, participants were asked to rate their own feelings of empathy and personal distress, as well as their willingness to take her place in the aversive tasks. As expected, participants in security priming condition reported feeling more empathy, less personal distress, and more willingness and agreement to take the woman's place (Mikulincer, Shaver, Gillath, & Nitzberg, 2005). Again, these effects were over and above those of dispositional attachment, which also occurred in the expected directions, such that dispositional attachment avoidance was negatively associated with empathy and willingness and agreement to take the woman's place and dispositional attachment anxiety was negatively associated with empathy and helping behavior, and positively associated with reports of personal distress (although in some studies, these effects were non-significant; Mikulincer et al., 2005). These studies indicate that security priming also has a theoretically expected, positive association with prosocial behavior meant to relieve the distress of another person (see also Mikulincer, Shaver, Sahdra, & Bar-On, 2013, for similar results regarding comforting behavior with a close partner).

Taken together, these findings indicate that in adult populations, both subliminal and supraliminal security priming, implemented using a number of different methodologies, have the capacity to increase empathic concern for others (including strangers), to reduce personal distress, and to increase willingness to help a distressed

other with no personal gain. In addition, these effects were found over and above the effects of dispositional attachment, indicating that random assignment to priming conditions is an effective means of experimentally inducing attachment security in adult populations.

***Security priming in children*.** No one has utilized security priming to examine the link between secure attachment and prosocial comforting behavior and, to my knowledge, only one study has ever employed security priming with children. Stupica and colleagues (2016) examined the effect of security priming on physiological reactivity to fear-inducing pictures in 6- and 7-year-old children. Children were subliminally primed in three conditions (security priming, happy priming, and neutral priming) using a computer game cover and then were shown a fear inducing, excitement inducing, and neutral pictures in a counterbalanced order. Results indicated that children in the security priming condition evinced lower electrodermal reactivity to fear inducing, but not excitement inducing or neutral, pictures and that these effects were stronger than the effects of pre-existing attachment representations (measured with doll stories; Stupica, Brett, & Cassidy, 2015). This, along with the adult literature, indicates that security priming can be employed as a means of temporarily increasing one's sense of attachment-related security, and that subsequent behavior can reasonably be expected to reflect this in theoretically expected ways.

Affiliative priming. To my knowledge, only one study has experimentally examined the effects of priming felt social support (labeled by the authors as "affiliative priming") on prosocial helping (but not comforting) behavior (Over & Carpenter, 2009). In the study, 18-month-old infants were supraliminally primed with affiliation by seeing

pictures of common household objects with two dolls facing each in the background just prior to seeing an experimenter drop a bundle of sticks. Infants in the affiliative priming condition were three times more likely to help the experimenter in the first 10 seconds of the task than were the infants in the neutral prime condition (i.e., two small stack of blocks in the background) or the individuality prime condition (i.e., two dolls facing away from each other or one doll alone in the background; Over & Carpenter, 2009). This finding underscores the notion that simple stimuli, meant to activate representations of social constructs, can change children's behavior in meaningful and predictable ways.

The Proposed Study

The literature just reviewed indicates that feeling socially connected to others may increase a person's willingness and ability to sensitively respond to another person's distress. In addition, I discussed how priming offers an experimental method for determining the causal nature of this link, and demonstrated how priming has been successfully employed to provide support for this notion. Therefore, the goal of this study was to experimentally induce a sense of social connectedness in young children and examine the effect of social interaction priming (relative to neutral and happy priming) on prosocial comforting behavior. Although other experimental manipulations (e.g., a short, in-person supportive interaction; videos of children comforting others) could justifiably be used for this same purpose, I determined that priming was the most appropriate method for inducing felt social support for two reasons. First, this study, although examining broader social support, is an extension of previous literature indicating that characteristics of particular kinds of support (i.e., attachment quality as a reflection of parental support) influence children's ability to provide emotional support

for others (see Appendix D for a review). Given that daily parental support, the type of support most common in childhood, cannot be ethically manipulated, priming offers an ethical means for activating representations of particular times parents were supportive (even if this is not the norm). Second, I was concerned that manipulations modeling the target behavior (i.e., those that demonstrate provision of social support) would lead children to engage in supportive behavior simply through imitation or attempts to please the experimenter. By providing pictures with a cover story rather than a model, I hoped to avoid these effects.

To achieve the goal of experimentally inducing a sense of social connectedness in young children to examine the effect of social interaction priming (relative to neutral and happy priming) on prosocial comforting behavior, I randomly assigned preschool aged children to either be primed with social images (social interaction priming condition), affect enhancing images (happy priming condition), or neutral images (neutral priming condition). Children were primed three times, and after each priming instance, were given the opportunity to comfort someone who was in distress. This study extends the literature by examining for the first time the effect of social interaction priming on the comforting behaviors of young children. In doing so, I hoped to provide the first experimental evidence of a causal link between social connectedness and prosocial comforting behavior and social connectedness and effective regulation of distress.

Hypotheses.

Hypothesis 1. Children in the supportive social interaction priming condition will display more global concern across all tasks than children in the happy or neutral priming conditions.

Hypothesis 2. Children in the supportive social interaction priming condition will display less personal distress across all tasks than children in the happy or neutral priming conditions.

Chapter 2: Method

Participants

Participants were 106 preschool-aged children and their mothers recruited through flyers and list-serves in the Washington, D.C. area. The only criteria for inclusion in the study were that the child was 4 years old, typically developing, and that both mother and child spoke fluent English so they could complete the study protocols. Data from 12 participants were discarded for the following reasons: the first seven were discarded because substantial protocol changes were made after their visits, three because the children were not typically developing, one because the child refused to play the priming game without substantial experimenter support, and one because the child was not in our target age range, leaving us with a final sample size of 94 mothers and children (M = 53.56 months; SD = 3.38 months; missing exact age data on 10 participants because mothers declined to answer, did not come for their second visit to fill out the demographics questionnaire, or answered the question incorrectly). We recruited with no regard to the race or gender of the children and ended with a final sample comprised of 42 boys and 52 girls. The racial breakdown of the sample was: 45.7% White, 21.3% African American, 10.6% Hispanic, 3.2% Asian or Pacific Islander, 14.9% mixed race, and 1.1% other races. Three mothers (3%) declined to comment on their child's race and racial identity could not be determined from videotapes. Mean number of siblings reported was 1.31 (SD = 1.33), with 33% of participants having older siblings and 44% having younger siblings (three mothers declined to report the number of siblings their child had; two answered in confusing ways and we were unable to determine the number or age of siblings, and five families did not return for a second visit where this

information was reported). Three percent of mothers reported a yearly household income of less than $20,000 per year, 12% reported a yearly household income of $20,000 - $40,000 per year, 11% reported a yearly household income of $40,000 - $60,000 per year, 5% reported a yearly household income of $60,000 - $80,000 per year, 12% reported a yearly household income of $80,000 - $100,000 per year, and 44% reported a yearly household income of more than $100,000 per year. Eight mothers declined to report their yearly household income and five families failed to complete the second visit where this information was reported. Eighty percent of families in this study were two-parent families, and 13% were one-parent families. Two mothers declined to report this, and five families did not return for the second visit where this was reported.

Procedure

The present study is a one-way experimental design with three levels (priming condition: Supportive Social Interaction (SSI) Prime vs. Happy Control Prime vs. Neutral Control Prime) that was part of a larger study of caregiving behaviors in childhood. The study was comprised of one short pre-survey, filled out online prior to the first visit, and two visits to the research playroom. Although our initial intent was for the second visit to occur more than three days after but within two weeks of the first visit, scheduling difficulties with some families necessitated that the length of time between visits be longer. Of the 89 families who have returned for a second visit, 54 came within two weeks of the first visit and 76 within one month. The longest length of time between visits was 78 days. Measures collected during the pre-survey and second visit are not a part of the present study and will not be discussed further (but see Appendix C for a full

list of the measures and procedures for both visits). The first visit was approximately 90 minutes long and the second was approximately 60 minutes long.

Upon entering the lab, a research assistant gave an overview of the visit to each mother while the experimenter familiarized herself with the child during a brief warm-up period in which the child and experimenter played with an age appropriate play set. Then, mothers and children were left alone for 5 minutes with an array of toys to help the child familiarize with the room. Afterward, the experimenter re-entered with an attractive game and engaged with the child. After three minutes had passed, mothers were led to another room to complete measures unrelated to this study (Appendix C). Children were then primed four times over the course of one hour. Primes were delivered via a computer game, described below. Following each prime, a task occurred in which the child had the opportunity to respond to the distress of another person or to share resources they had recently acquired. In the first two tasks, children responded to the distress of the adult experimenter, in the third task, they responded to the distress of an infant in another room, and in the final task, they were given the chance to share with an unknown age and gender-matched peer. The fourth task did not involve prosocial comforting and will not be considered further (but see Appendix E for the study script, including all tasks). The order of adult distress tasks was counterbalanced across participants, and either occurred in forward (i.e., phone first and drawing last) or backward (i.e., drawing first and phone last) order. The infant task always occurred at the end of the child portion of the visit to give children ample time to be comfortable with their surroundings before being left alone for a short period.

Measures and Materials

Demographics. Mothers were asked to complete a demographics questionnaire in which they reported on their child's race and gender, the number of siblings in the house, and their annual income level. Additional information not relevant to this study was also collected (see Appendix F for the complete demographics questionnaire).

Priming conditions and presentation. Primes were presented in DirectRT (Jarvis, 2010) via four different computer games in which children answered a yes or no question about 20 randomly presented animal pictures by pressing an assigned key. The games asked: Does it fly in the Sky? Does it live in the water? Is it brown? and Is it bigger than me? The games were presented in a random order for each participant (see Appendix G game stimuli). All children were trained on this protocol at the beginning of the experiment and reminded of the procedure before each game. In addition, each participant completed a "practice round" of each game before receiving the 20 picture primes. A neutral picture prime was presented during the practice round.

During the game, children were exposed to the picture prime supraliminally for two seconds prior to each animal picture presentation. All children were told that the picture prime was the "the computer thinking about which animal to show next."

All priming conditions were randomly assigned to participants at the start of the study. A colleague of the experimenter used a random number generator to assign equal numbers of children to each condition and put them in an "autostart" file. The use of an autostart file allowed the experimenter to simply type in the child's participant number at the beginning of the game, blindly assigning them to their condition. During the game, the experimenter kept her back to the child as much as possible and made every effort to avoid seeing which condition the child was in. In cases where she did see the prime, she

noted it on the post-lab notes, which were kept in a binder for later referencing. She also noted anything unusual about the visit or the procedure.

Picture primes meant to evoke mental representations of supportive social interactions were pictures depicting mothers and children (similar in age to the participants) in close, personal interactions (e.g., a mother looking into her child's eyes or a child in his or her mother's arms; Appendix H). Happy control primes were two separate pictures of happy people with strikingly different backgrounds presented simultaneously but separated by a white border. The people presented in the happy prime condition were not looking toward each other or toward the camera (Appendix I). Happy primes were perceptually matched with social interaction primes in as many ways as possible. For instance, both social interaction primes and happy primes had blue borders and featured one adult female and one child. Both sets of primes featured ten boys and ten girls and had both woman and children of different races. Control primes were multiple overlapping abstract shapes (Appendix J). There were 32 participants in the supportive social interaction condition, 32 participants in the happy control condition, and 30 participants in the neutral control condition.

DirectRT recorded a log of which condition the child was in, as well as which key the child pressed during the game and the length of time the child was playing the game. In addition, the research assistant operating the camera wrote which priming condition the child was in on the back of the consent form for later referencing.

Prosocial comforting behavior. Prosocial comforting behavior was assessed across three tasks. Two of the three tasks involved responding to the experimenter's distress and the other involved responding to the distress of an infant. The two adult tasks

were designed for and successfully implemented with over 140 children in a large-scale study in Baltimore and have previously evinced a large range of variability in children's responses (J. Gross, personal communication, September 5, 2015). Adult tasks were presented in two orders. Participants assigned to forward order (n = 44) began with the phone task and ended with the drawing task. Participants assigned to the backward order (n = 50) began with the drawing task and ended with the phone task. The infant task was always presented last.

Adult tasks. Prosocial behavior toward an adult was assessed across two tasks. In the *broken phone task*, the child and experimenter played with an attractive pile of books and puzzles for approximately ten minutes. Then, the experimenter's watch signaled that it was "time to play a computer game," and the prime was delivered. Immediately following the prime, the child and experimenter returned to the pile of books and puzzles but the experimenter excused herself to "send a quick text message". She walked to the other side of the room, retrieved a phone, turned towards the child, and pretended to be texting. After a few seconds she dropped the phone and cried loudly, "Oh! My phone!" She then feigned sadness for two minutes according to a script with subtly increasing cues to her distress. For the first 30 seconds, she sighed and moaned softly. During the second 30 seconds, she stated the problem three times (e.g., "I'm so sad that I broke my phone!") without looking at the child. During the third 30 seconds, she stated the problem three times while looking at the child. In the final 30 seconds, she explicitly asked the child if there was anything he could do to make her feel better, stated the problem again, and then again explicitly appealed for comfort. She responded naturally to child overtures

throughout. Once two minutes had passed, she "remembered" that her cousin fixes phones, recovered, and returned to the table to clean up and present the next activity.

In the *ruined drawing task*, the experimenter first showed each participant a simple colored line drawing (standardized across participants) and stated that she had been working on it for a long time and was really proud of it. She then gave the participant a sheet of paper, making sure to emphasize that it was the last one, and asked the child to draw a picture of him- or herself. The experimenter and child then drew for approximately ten minutes, during which the experimenter stated that when the drawings were complete, she and the child could hang their pictures on the wall. She also feigned thirst and poured a cup of water for herself and the child if desired. After approximately ten minutes, the experimenter's watch signaled that it was time for another game and they paused drawing to complete it. Once the child had finished the game, the experimenter got a roll of tape to hang up the pictures and used it to knock over the cup of water onto her own picture. She cried out, "My drawing!" and then feigned sadness for two minutes according to a script with subtly increasing cues to her distress that followed the same progression as was described for the phone task. At the end of two minutes, she recovered, vowing to make "an even better one next time," hung the child's picture on the wall, and presented the next task.

Behavioral coding of adult tasks. For each participant, the 2-minute adult tasks were broken into 10 second segments and each segment was coded for the presence of: *positive prosocial responses, negative responses, distress / arousal, concerned attention, proximity* to the distressed adult, and *ignoring* behaviors (described below, but see also Appendix K for the complete coding manual; please note that the clipboard task

described in the manual was not used in this study). Segments that were fewer than 8 seconds were collapsed into the previous 10-second segment. The coding system, which was refined based on pilot cases, was adapted from a previously used coding system for similar tasks that has demonstrated good reliability (J. Gross, personal communication, September 5, 2015). Every moment in every 10-second segment received at least one code, and all codes were mutually exclusive (i.e., a comforting behavior could only be coded as comforting and nothing else) except *distress / arousal* and *concerned attention* which could co-occur with each other, and *proximity* which could co-occur with any code except *ignoring*. Coders also noted any experimenter errors, which included both procedural errors (e.g., the experimenter looked at the child in the first minute) and timing errors (i.e., a "30 second segment" that lasted fewer than 20 seconds or more than 45).

Positive prosocial responses. Positive prosocial responses included both emotion-focused and problem-focused responses to the experimenter's distress. Emotion-focused responses were defined as those responses meant to improve the experimenter's emotions without fixing the cause of her sadness. These included things like physical soothing (e.g., a pat or a hug), positive reframing (e.g., "It still looks pretty!"), verbal soothing (e.g., "It's ok"), mirroring the experimenter's sadness (e.g., frowning and saying "awww"), personal reflections that ended positively (e.g., "My daddy's phone broke once but it still worked!"), distraction or compensation (i.e., offering up a new activity or some compensatory object such as a toy or money), and friendly invitations to play. Problem-focused responses were defined as responses aimed at fixing the root of the experimenter's sadness and included things like verbal instrumental helping (e.g.,

offering to fix the phone), physical instrumental helping (e.g., wiping water off the drawing), offering the help of other people (e.g., "my mommy can fix it"), any suggestions intended to fix the problem (e.g., "You can dry your picture in the sun!"). Coders noted both the frequency (i.e., the number of 10-second slices in which emotion focused and problem focused responses were offered) and the latency of these types of responses. Latency was defined as the interval in which the child first offered each type of response (i.e., a one indicated that the child engaged in the behavior before the experimenter stated the problem again; a two indicated that the child engaged in the behavior after the experimenter stated the problem again but before the experimenter looked at the child; a three indicated that the child engaged in the behavior after the experimenter looked at the child, but before she directly asked for help; and a four indicated that the child engaged in the behavior only after the experimenter directly requested assistance), and was factored into the global score.

Antisocial (negative) responses. Antisocial responses were defined as any responses that would make the experimenter feel worse about her situation and included things like laughing at the experimenter, teasing, taunting, or mocking her, callous or controlling statements, scolding or yelling at the experimenter, intentionally making the situation worse (e.g., ripping the drawing), and withholding help because of the experimenter's emotional state (e.g., "I'll help you when you stop being sad"). Coders noted both the frequency and latency of antisocial responses. The presence of antisocial responses was factored into the global score, but will not be considered further.

Distress/arousal. Distress/arousal was defined as any behavior indicating that the child was emotionally aroused or uncomfortable, including crying, whining, or

whimpering, very obvious facial distress, physical self-soothing lasting for more than three seconds, verbal statements of distress (e.g., "I wanna go home"), speaking in a strained, upset voice, becoming upset about messing up own property, and defensiveness (e.g., "Well it's not MY fault!"). Coders noted both the frequency and latency of distress responses, but latency will not be considered further. A distress proportion score was created by dividing the number of slices in which distress/arousal occurred by the total number of codeable slices.

Concerned attention. Concerned attention was coded any time the child remained focused on the experimenter or the scene for at least three seconds without offering any comfort, and could be verbal or non-verbal. Verbal concerned attention was coded for any expression denoting attention to the problem but not offering a solution or comfort that also occurred with either a three-second stilling of play or obvious facial concern. Statements of verbal concerned attention included factual statements about the child's inability to help if said in a sympathetic manner, statements about items a child has at home that relate to the situation (e.g., "I have paper at home."), questions intended to seek more information, reflections on personal experiences that had negative, neutral, or ambiguous endings (e.g., "My daddy's phone broke and it was really expensive"), statements indicating the child is thinking of a solution, and sympathetic restatements of the problem. Non-verbal concerned attention was only coded if the child was engaging in all three of the following behaviors for at least three continuous seconds: focusing on the situation or experimenter, showing a reduction in play behavior, and displaying a concerned expression. Coders only noted the frequency of concerned attention as there was little variation in the latency; most children received a code for concerned attention

in first 10-second time segment, as they noticed and processed the situation. Frequency of concerned attention was factored into the global scores.

Proximity. Proximity was coded in any 10-second segment in which a child moved or remained closer to the experimenter than he was in his previous location. To be coded as proximity, any movement toward the experimenter had to also include at least one look toward the experimenter or situation; this way, if the child happened to pass by the experimenter on the way to somewhere else, he would not get proximity unless he was also focused on the experimenter or situation. Coders noted the frequency and latency of each child's proximity to the caregiver. Both were considered in deciding upon a global score.

Ignoring. Ignoring was coded in any 10-second segment in which no other codes were issued and reflected active ignoring on the part of the child. Examples include keeping attention focused on an activity, smiling at the experimenter, making irrelevant conversation, looking around the room, statements about the child's own property or activity, and nodding yes but not offering solutions when asked for help. Coders only noted the frequency of ignoring behavior. Ignoring was not considered in the current study.

Presence of physical comforting. Coders also noted the presence and latency of physical comforting (i.e., a pat or a hug). Physical comforting was distinguished from non-comforting touch, and only physical comforting was considered in the generation of global scores.

Global comforting score. Using all of this information (i.e., the frequency and latency of key behaviors), coders also generated a global comforting score, meant to

reflect how comforting overall the child was in each two-minute task. Global scores were generated using guidelines that took into account both the quality and quantity of comforting attempts, as well as the presence of other non-comforting behaviors such as antisocial responses and concerned attention. Global scores ranged from one to five and defined as follows: a one indicated that the child did not comfort at all or very briefly attempted comfort but did not engage with the situation much; a two indicated that the child was focused on the situation but offered little comfort; a three indicated that the child offered a few solutions and was engaged with the situation for a good portion of the time; a four indicated that the child either offered a few solutions but was engaged with the situation the entire time or offered many solutions with partial engagement; and a five indicated that the child comforted almost the entire time, or offered many solutions and was engaged with the situation when not offering solutions, or engaged in at least one large demonstration of comforting (e.g., a hug). In all cases, the presence of any antisocial responses reduced the global score by one point. (see Appendix K for a copy of the coding manual; see also Appendix L for a copies of the coding sheets).

Coding procedure for adult tasks, Behavior in response to all adult tasks was coded independently by three trained coders and two expert coders (i.e., coders who had ample experience using this coding system) who were blind to which priming condition the child was in. Coders were trained over the course of two months through weekly coding assignments. During training, coders each independently coded approximately five videos per week (including pilot cases and randomly selected videotapes) and then met with the two expert coders to go over discrepancies and to discuss difficulties in coding. Prior to beginning official coding, all coders evinced acceptable reliability (i.e., a

value of at least .70 on all variables of interest) with each other. Codes generated during the training phase were then discarded.

Sixty-eight percent of cases were double coded and coder discrepancies were resolved by consensus in weekly coding meetings, held to prevent coder drift. Discrepancies were defined in the following ways. For high frequency variables (i.e., those that occurred in many, if not most, cases; emotion- and problem-focused responses, concerned attention, proximity, and ignoring), codes were considered discrepant and discussed if they were more than two values apart. If they were only one or two values apart, codes were either averaged, or, when coded by an expert coder, the value recorded by the expert coder was entered as data. Everything else, including all latency scores, experimenter errors, and low frequency variables (i.e., distress and negativity) had to perfectly agree between coders or it was considered discrepant and discussed in coding meetings. Coders (including the two expert coders) coded five videos per week, four of which overlapped with one other coder. That is, each week, every coder overlapped with every other coder on one video only and coded one video on their own. In all cases, coders were blind to who was coding which video, were not permitted to code in the same room at the same time, and hid their folders containing their codes from all other coders. This was done to ensure that no coder was influenced by any other during the coding process.

Inter-coder reliability on the 68% of cases that were double coded was calculated using Krippendorff's alpha reliability estimate, capable of generating reliability estimates for judgments made at any level of measurement by any number of coders, and of generating these estimates in the presence of missing data regardless of sample size. This

was desirable as we were working with a multitude of variables at different measurement levels. Krippendorff's alpha takes chance agreement into account and is considered to be one of the more conservative measures available (Lombard, Snyder-Duch, & Bracken, 2002). Estimates were generated using KALPHA (Hayes & Krippendorff, 2007), an SPSS macro, with bootstrapping. Cases that were not coded by at least two judges were excluded from reliability estimates.

Conventional guidelines indicate that reliability of .70 or above (or percent agreement above 90%) is sufficient when using conservative indices such as Krippendorff's alpha (Lombard, Snyder-Duch, & Bracken, 2002). Coding reliabilities for the adult tasks were above .7 on most variables of interest (i.e., those used to generate global comforting scores and distress proportion scores, as well as those concerning procedural errors) and are presented in Table 1. Codes for identification of procedural errors fell well below this cutoff as they were infrequent binary variables and Krippendorff's alpha measures observed and expected disagreement, rather than agreement (Hayes & Krippendorff, 2007). Thus in cases where most variables are coded as zero (i.e., no procedural error), any discrepancies (i.e., one coder puts a one and the other puts a zero) are weighted heavily in alpha calculations. For the two variables just described, percent agreement was above 90% (94% and 94%, respectively). As with all discrepancies, all cases were discussed and agreed upon by all coders, and the data reflect what is written in the coding manual.

Table 1

Inter-coder Reliability of Key Study Variables (using Krippendorff's alpha)

Variable	Task	
	Ruined Drawing	Broken Phone
Frequency of emotion-focused comforting*	.89	.75
Latency of emotion-focused comforting*	.70	.70
Frequency of problem-focused comforting*	.90	.84
Latency of problem-focused comforting*	.91	.81
Latency of physical comforting*	1.00	1.00
Frequency of antisocial responses*	.76	.70
Concerned attention*	.71	.75
Proximity*	.89	.96
Global comforting scores	.80	.74
Frequency of distress/arousal	.76	.74
Presence of procedural error	-.05	.31
	Infant cry	
Frequency of comforting*	.91	
Frequency of antisocial responses*	.66	
Global comforting score	.88	
Frequency of distress	.70	
Presence of procedural error	1.00	

Note. * = codes considered in the assignment of global comforting scores

Infant Task. Children saw a research assistant posing as a mother and her "baby" upon entering the lab. The baby was in a car seat with a yellow blanket over it to obscure any gender cues the child might have gathered. A female research assistant was sitting near the entryway as each family walked by to get to the playroom and was tenderly stroking the baby's hand. She made eye contact with the child, smiled, held her fingers to her lips, and whispered, "Shhhh, the baby's sleeping!" Later in the visit, after the experimenter and the child had been playing in an indoor sand table for approximately five minutes, the research assistant entered the room with a baby monitor and greeted the experimenter and child. The experimenter mentioned that she was glad the research assistant had stopped by, as she had forgotten her baby's pacifier and retrieved it for her. A pink pacifier was used for female participants and an orange one was used for male participants; the pacifier task (which occurred directly after the baby cry task) is not a part of this manuscript and will not be considered further. The research assistant then asked if the experimenter and child could watch her sleeping baby while she got some water. The experimenter readily agreed, and the research assistant came and knelt between the experimenter and the child, turning on the monitor so the child could hear baby coos. She then trained the child on how to use the monitor, including teaching him or her how to turn the monitor on and off, and how to speak to the baby using the monitor. She checked for comprehension after presenting each skill and then departed. Immediately after, the experimenter remarked that "the baby must have fallen asleep," checked for comprehension one more time, and initiated a priming game. Once the priming game was complete, the child returned to the sand table and the experimenter, realizing she had "lost her favorite toy," left the room. Approximately 15 seconds after

the experimenter's departure, a baby cry sounded over the monitor for one minute or until the child turned it off. The cry was at a constant volume for all children, and could still be heard faintly from outside the room if they turned the monitor off. After one minute, the research assistant re-entered the room to initiate the pacifier task.

Behavioral coding of infant tasks. For each participant, the 1-minute baby cry task was broken into 10 second segments and each segment was coded for the presence of *positive prosocial responses*, *antisocial (negative) responses*, *distress/arousal*, *ignoring the baby*, and *all other behaviors* (described below, but see also Appendix M for the complete coding manual). Segments that were fewer than eight seconds were collapsed into the previous 10-second segment. The coding system, which was refined based on pilot cases, was adapted from the same coding system described above. Every moment in every 10-second segment received at least one code, and all codes were mutually exclusive (i.e., a comforting behavior could only be coded as comforting and nothing else). The only exception to this was the *all other behaviors* code, which could occur with any other code. Coders also noted any timing errors in the task (i.e., whether the task lasted fewer than 55 seconds or more than 65 seconds).

Positive prosocial responses. Positive prosocial responses included those responses intended to make the baby feel better. This included things like soothing, saying "shhhhhh," telling the baby it was ok, and singing to the baby. Given the lack of vocal control in four-year-olds, coders were instructed not to consider tone of voice when coding positive prosocial responses but rather, the words themselves (except in the case of screaming or yelling, which were always considered negative). Children could receive a score for positive prosocial responding in any 10-second segment in which they

engaged in at least one second of any of the listed behaviors, even if they did not properly operate the monitor. So, for instance, a child who did not press the button but sang to the baby would receive a code for positive prosocial responding, even though "the baby" could not hear what the child was saying. Coders noted both the frequency and latency of positive prosocial responses, and factored them into the global score.

Antisocial (negative) responses. Antisocial responses were considered responses that would typically frighten the baby or make the baby feel worse, and included things like laughing at the baby, taunting, teasing, or mocking, callous statements (e.g., "shut up!"), scolding (e.g., "stop making noise, baby!"), throwing the monitor, and screaming into the monitor. Children could receive a score for antisocial behavior in any 10-second segment in which they engaged in one of the listed behaviors for at least one second. Coders noted both the frequency and latency of antisocial responses. The presence of negative responses was factored into the global scores but will not otherwise be considered.

Distress/arousal. Distress/arousal was defined as any behavior indicating that the child was emotionally aroused or uncomfortable, and included the full range of behaviors described above, as well as stopping play entirely. Coders noted both the frequency and latency of distress responses. Latency is not considered in this study. A distress proportion score was also created by dividing the number of slices in which distress/arousal occurred by the total number of codeable slices.

Ignoring. Ignoring was coded as any response indicating that the child's focus had shifted from the baby cry back to play. To be coded as ignoring, the child had to resume his or her activity with no apparent signs of distress. Short (i.e., 3 seconds or less) pauses

in play (e.g., to look toward the door or the monitor) did not preclude a code for ignoring as long as the child then returned to play. Ignoring was not specifically examined in the current study.

Other responses. All other responses that did not fit into the described categories were coded as "other" and deemed uninterpretable. This included things like pushing buttons but not saying anything, stopping play to look at the monitor for more than three seconds with no apparent signs of distress or arousal, and walking over to the door and peering out the window. The other category was considered a default category for all behavior that was not of interest to the present investigation, and will not be considered further.

Attempts to leave and calling for help. Coders also noted if the children attempted to leave the room or called for help and the 10-second segment in which they did so. Neither of these variables are considered in the current investigation.

Global comforting score. Global comforting scores to the baby cry procedure took into account the amount of time the child spent comforting the baby and the presence of any negative behaviors and were meant to reflect how comforting overall the child was. Global scores ranged from one to five and defined as follows: a one indicated that the child did not comfort at all; a two indicated that the child comforted briefly; a three indicated that the child comforted for about half the time; a four indicated that the child comforted for almost the entire time; and a five indicated that the child comforted for the duration of the task. In all cases, the presence of any antisocial responses reduced the global score by one point (see Appendix M for the coding manual; see also Appendix N for a copy of the coding sheet).

Coding procedures for infant task. Behavior in response to the baby cry task was coded independently by two trained coders and one expert coder, all who were blind to which priming condition the child was in. Coders were trained over the course of one month through weekly coding assignments. During training, coders each independently coded approximately 15 videos per week (including pilot cases and randomly selected videotapes) and then met with the expert coder to go over discrepancies and to discuss difficulties in coding. Prior to beginning official coding, all coders reached acceptable reliability values (i.e., at least .70 on all variables of interest) with the expert coder. Codes generated during the training phase were then discarded.

Forty-nine percent of cases were double-coded and coder discrepancies were resolved by consensus in weekly coding meetings, held to prevent coder drift. Coders went over every double coded case in weekly meetings, discussing all discrepancies that occurred, regardless of how similar or dissimilar codes were. The only category not treated this way was the "other" category. As the "other" category was simply a place-holder and considered uninterpretable, when coders disagreed an average between their codes was taken and entered as data.

Inter-coder reliability on the 49% of cases that were double coded was calculated using Krippendorff's alpha reliability estimate, as described above. Krippendorff's alpha estimates were generated using KALPHA (Hayes & Krippendorff, 2007), an SPSS macro, with bootstrapping. Cases that were not coded by at least two judges were excluded from reliability estimates. Coding reliabilities for the infant cry task were above .70 on all variables of interest except for the frequency of negativity, due to its infrequent

appearance (as noted above). Percent agreement for the frequency of negativity was 99%. Coding reliabilities are presented in Table 1.

Missing data. Coders were unable to generate global comforting scores or distress proportion scores for one participant on the phone task and two participants on the drawing task due to equipment failure (i.e., the videos didn't have sound or the camera cut out prior to task completion). In addition, coders were unable to generate global comforting scores for two participants and distress proportion scores for one participant on the infant task due to equipment failure. They were also unable to generate global comforting scores or distress proportion scores for one participant who became distressed as soon as the experimenter left the room.

Data Analysis Plan

The purpose of this study was to examine the effect of social interaction priming on preschoolers prosocial comforting responses and personal distress reactions to the distress of other people (an adult and an infant). To explore these effects, I originally intended to use both generalized estimating equations (GEE) and analysis of variance (ANOVA) analyses. However, given the substantial methodological changes to my study design and the non-normal distributions of some of my outcome variables, my analytic plan did not proceed as outlined. For instance, instead of using GEE, which would have been ideal for three different, but correlated tasks, I examined the adult tasks and infant task separately. The distributions of the global scores and distress proportion scores were not similar across tasks, as assessed by visual inspection, lending credence to the fact that they were qualitatively different tasks and should be considered in separate models. Additionally, although there was a high correlation between the outcome variables in the

adult tasks (discussed below), I chose not to combine the two adult tasks due to previous literature showing that context is a key factor in predicating prosocial behavior (e.g., Demetriou & Hay, 2004). It may be that the broken phone and ruined drawing tasks were contextually different in unaccounted for ways and running analyses on them separately may illustrate some of these differences. Accordingly, I planned to run a series of *t* tests, ANOVAs, and nonparametric tests when appropriate to examine the outcomes associated with each of the tasks.

Data analyses are presented in three sections. First, I will describe the steps taken to prepare my data for analyses, including data entry and checking procedures. Then, I will discuss my preliminary analyses, including examination of possible covariates, and generation of descriptive statistics for all relevant study variables and how they were used to check that data were entered correctly. Finally, I will present the main analyses performed to examine my hypotheses.

Data preparation.

Priming conditions and delivery. A research assistant who was not part of any coding team went through the consent forms for the study and created a variable indicating which priming condition each child was in. In the 22 cases where no prime was indicated, she reviewed the video of the session and determined which prime the child saw while playing the games. This man-made variable was compared to the primes indicated in the data log generated by the Direct RT and cleaned using Compare It! (v. 4.0; Grig Software), a software program that allows direct comparison of two data files and highlights any discrepancies. Discrepancies were compared to the autostart file used

to place participants in conditions. In all cases, errors were on the part of the human data entry, lending confidence to the logs generated by Direct RT.

In addition, an undergraduate research assistant spot-checked videos of children playing the game to ensure that they were watching the screen as primes were delivered. She watched at least two instances of prime delivery for 88% of cases. Her checks indicated that a nearly all participants watched the screen for the entire duration of the priming game, and that those participants who didn't watched the screen for at least two thirds of the time, usually only looking away once the animal prompt was presented (e.g., to ask the experimenter a question about the animal or the game). Finally, Direct RT logs were examined to ensure that all 20 primes were delivered as intended (i.e., supraliminally for two seconds) in each priming game and that each child finished all four games. In the two cases where logs did not indicate this, post-lab notes were checked for an explanation. Post-lab notes indicated that two children did not finish the final game (i.e., the game before the dictator task, not considered in this manuscript), one because of equipment failure and one because she exited out of the game before finishing. A third child did not complete the priming game prior to the broken phone task because she exited the game after seeing only 14 (out of 20) primes.

Experimenter blindness. During the study, any time the experimenter was made aware of the child's priming condition (e.g., she noticed that the child was not pressing buttons and turned just in time to see a prime; or the child shouted "shapes!"), she recorded on the post-lab notes at what point in the experiment she had become aware. Two independent research assistants went through these notes and generated two variables, one indicating cases in which the experimenter became aware of the priming

condition prior to the adult tasks, and one indicating cases in which she became aware of the priming condition at all. The thinking behind creating these two iterations was that a) it is important to know if she was not blind while performing the experiment and b) it is particularly important know if she was not blind prior to performing the two adult tasks, as such knowledge could have changed her behavior in subtle ways that may not be easily apparent. Post-lab notes indicated that the experimenter was made aware of the participant's priming condition before the adult tasks in 11 cases. Accordingly all principal adult task analyses were run with and without these cases. In addition, the experimenter was made aware of the participant's priming condition after the adult tasks in an additional 11 cases. All principal infant task analyses were run with and without the cases in which the experimenter saw the prime at any point in the experiment (total n = 22). Results for both sets of analyses were not influenced by the exclusion of these cases; accordingly, the analyses presented in this manuscript include all cases.

Task delivery. As mentioned, all videos of the comforting tasks were examined to ensure that the tasks were properly administered to each child. As a part of coding, any mistakes in fidelity were noted and entered into a variable indicating the presence of an error in administration. Only four presentations of the ruined drawing task included procedural errors, whereas 10 presentations of the broken phone task included procedural errors. In all cases except two, the errors were timing errors on the part of the experimenter (i.e., one or more of the segments was too long or too short, often because the child was speaking). In the other two cases, the experimenter looked at the child before the third distress segment. Fifteen presentations of the infant cry task included procedural errors (i.e., the cry was too long or too short by five or more seconds). All

principal analyses were performed first including such cases, and then excluding them to ensure that errors in task administration did not influence priming effects. In all other cases, the exclusion of such cases made no difference in the pattern of results, so the analyses presented include all cases.

Data entry. Demographic data was collected online, thereby limiting entry errors. However, some questions, such as the child's race and number of siblings, were in a free-response format and had to be recoded to be used in data analyses. Whenever this was the case, two independent research assistants were trained to recode the data into the proper format. In addition, two independent research assistants used an online age calculator to calculate and create a variable reflecting each child's age in months at the date of his/her first playroom visit. For both sets of variables, the two files were compared for accuracy using Compare It! and any disputed values were checked against original records.

Prosocial comforting behavior codes were entered into a statistics program by coders and double-checked against handwritten coding sheets by a research assistant. In addition, discrepancy resolutions were saved in a Word file and entered by research assistant the following day. At the completion of coding, a research assistant double-checked the final data file to ensure that it accurately reflected these resolutions and that any data that were averaged rather than discussed were also accurately recorded. She also spot-checked individual coder's codes using original coding sheets.

Preliminary analyses.

Descriptive statistics and data exploration. I generated the means, standard deviations, and ranges of all study variables in order to identify any outliers or impossible values. If any were found, I examined the source of the data to determine if they were

entered in error or were meaningful values. I found no outliers, except in the distress proportion scores. It was determined that these values were not in error, and reflected children who became highly distressed during the tasks. Accordingly, they were left in the data set. I found no impossible values. I also generated the skew and kurtosis statistics for each of my outcome variables in order to calculate tests of normality, as the statistical tests I intended to use required dependent variables to be normally distributed. Skewness and kurtosis ratios were calculated using the procedure outlined by Weinberd and Abramowitz (2015), by dividing each statistic by its standard error. By convention, if the skewness or kurtosis ratios exceeded 2.0, variables were considered non-normal (Weinberd & Abramowitz, 2015). In all cases where variables were found to be non-normal, I attempted standard, accepted transformations (as outlined by Tabachnick & Fidell, 2007), and if unsuccessful, planned to use non-parametric tests when working with skewed outcomes. The only exception to this was when checking interaction effects. There is no commonly used or accepted nonparametric alternative to a two-way ANOVA, and ANOVA is robust to violations of non-normality (see Maxwell & Delaney, 2004, for a review), so I intended to run all interaction analyses using two-way ANOVAs, assuming all other assumptions were met. In cases where assumptions were not met, I planned to employ other analyses.

Identification of covariates. Previous literature indicates that there may be gender differences in the behavioral expression of empathy (e.g., altruistic and prosocial behavior; Christov-Moore et al., 2014; Larrieu & Mussen, 1986) even in young children (e.g., Blandon & Scrimgeour, 2015), although some studies have not found this association (e.g., Eisenberg-Berg & Hand, 1979; Eisenberg-Berg & Neal, 1979; Yarrow

et. al, 1976). In addition, race has been found to influence ratings of prosocial behavior (e.g., Jackson, Barth, Powell, & Lockman, 2006), although few studies have examined race-related differences in its expression, and those that did found no effects that were not explained in other ways (Rehberg & Richman, 1989; Richman, Berry, Bittle, & Himan, 1988). Given the contradictory nature of the literature on both of these variables, I decided *a priori* to examine these two covariates and their interactions with priming condition in my principal analyses with a series of two-way ANOVAs. Race was divided into White children (n = 42) and non-White children (n = 47; missing = 3) to retain approximately equal sample sizes in each category. I had no hypotheses regarding the associations of gender or race with either comforting behavior or distress.

To determine if I should include any other covariates in my planned analyses, I examined the literature for additional predictors of prosocial behavior and tested their bivariate associations with my outcomes of interest. For example, there is some literature indicating that the presence of older siblings is associated with lower rates of prosocial comforting behavior toward a same-aged peer (Demetriou & Hay, 2004). Accordingly, I ran of series of independent samples t tests or Mann-Whitney U tests (if outcomes were non-normal or contained many outliers; Ciechalski, 1990) to determine if the presence of older siblings was associated with either prosocial comforting behavior or personal distress reactions to another's distress. I expected the presence of older siblings to be associated with lower global comforting scores, but had no predictions regarding its association with distress or its interaction with the priming conditions. Some theorists have also proposed that the mere presence of siblings provides a stage upon which children can practice prosocial behavior (Dunn & Munn, 1986); accordingly, I examined

the association between the outcomes of interest and the number of siblings a child had using either Pearson's or Spearman's rho correlation coefficients. Given the scarcity of literature examining this association, I had no predictions regarding the effect of number of siblings on either prosocial comforting or personal distress.

Additionally, some studies have noted that the expression of prosocial behavior changes across time as children are better able to comprehend and react to situations in which someone expresses a need, with some studies noting an increase in both comforting sensitivity and number of strategies employed over time (e.g., Burleson, 1982; Denham & Couchoud, 1991) and others finding no such increase (e.g., Yarrow et al., 1976). Some authors have even proposed that prosocial behavior (including prosocial comforting) should decrease in the preschool years (Hay, 1994). Accordingly, I examined the association between child age in months and each of my dependent variables using either Pearson's or Spearman's correlation coefficient (again, dependent on the assumptions of the tests). I had no predictions regarding child age and my outcomes of interest.

For the adult tasks alone I also examined if the order in which the tasks were presented (i.e., either forward or backward) had an effect on children's responses to adult distress using either an independent samples *t* test or a Mann-Whitney U test, as appropriate. I did not expect to find a significant effect.

Finally, the presence of younger siblings in the home may provide crucial opportunities for young children to practice soothing a distressed infant, as well as models they can learn from, even if they themselves never soothe the infant. Accordingly, differences in infant task outcomes were also examined in relation to the presence of

younger siblings in the home using either an independent samples *t* test or a Mann-Whitney U test. I expected that children who had a younger sibling in the home would evince more comforting behavior toward the distressed infant (i.e., have a higher global comforting score) and would have a lower distress proportion score in the infant task, but had no specific predictions regarding an interaction with priming condition.

Importantly, although socioeconomic status has regularly been linked with a myriad of socioemotional outcomes in children (e.g., McLoyd, 1990) and with a variety of prosocial behaviors in adulthood (e.g., compassion, generosity, helpfulness; Piff, Kraus, Côté, Cheng, & Keltner, 2010; Stellar, Manzo, Kraus, & Keltner, 2012), the somewhat homogenous nature of the current sample (i.e., 71.2 % of families reporting a household income of $40,000 or more) did not allow comparisons of outcomes based on income. We also collected maternal education, an often-used proxy for socioeconomic status, but recent literature indicates that this practice is faulty, particularly for ethnically diverse studies with women of child-bearing age (Braveman et al., 2005). Accordingly, I did not test associations with maternal education. In addition, I had hoped to examine the effect of one- versus two-parent families on all outcomes of interest, given some literature showing that boys in single-mother homes are more comforting than boys in two-parent homes or girls in one- or two-parent homes (Rehberg & Richman, 1989; Richman et al., 1988). However, the current sample includes only 12 single-parent families, which is likely not an adequate representation of the population and limits power for comparisons (e.g., Boneau, 1960).

Principal analyses. An *a priori* power analysis with Power (1-β) set at 0.80 indicated that a sample size of 90 would be sufficient to detect a medium effect size (based on previous literature; e.g., Over & Carpenter, 2009) with up to five predictors (condition, prime, identified demographic controls, and interactions if needed). My final sample size of 94 exceeds this projected number, giving me confidence in my analyses. All preliminary analyses were run using Statistical Package for the Social Sciences (SPSS Version 22.0; 2013), a commonly used statistical software package. In cases where my planned analyses did not meet assumptions, I ran subsequent analyses in R (v. 3.2.4; described below), another commonly used statistical software package.

Adult tasks. As mentioned, I examined effects for the broken phone and ruined drawing tasks separately. For each outcome of interest (i.e., the global comforting scores and the distress proportion scores) in each task, I first ran separate models including significant covariates. Each model with a covariate also included priming condition and the priming condition by covariate interaction. If no significant covariates were detected, I ran an ANOVA or Kruskal-Wallis H test (a nonparametric test similar to an ANOVA but appropriate for non-normal response variables; Feir-Walsh & Toothaker, 1974) to examine the effects of the priming condition on my outcomes of interest. Then, I ran two additional models for each outcome in each task, including gender in one and race in the other.

Infant task. Similar to the adult tasks, I first ran separate models for each outcome (i.e., the global comforting score and the distress proportion score) including significant covariates and priming condition and the priming condition by covariate interactions. If no significant covariates were identified, I used ANOVA and Kruskal-

Wallis tests to examine the effects of priming condition and any identified covariates on my outcomes of interest. Finally, I ran two additional models for each outcome, including gender in one and race in the other.

Prior to running any of the above-mentioned tests, I checked the assumptions of the test and if assumptions were not met, found and utilized a more appropriate test. I intended to report significant main effects and interactions using appropriate test statistics and *p*-values and to explore any significant interactions using common statistical post hoc analyses and pairwise comparisons.

Chapter 3: Results

The results are organized into four sections: descriptive statistics, bivariate associations of key study variables, examination of covariates, and principal analyses. The examination of covariates and principal analyses sections are divided into subsections by the adult tasks and the infant task, and the principal analyses are further divided by hypotheses.

Descriptive Statistics

Means, standard deviations, and skew and kurtosis statistics for all outcome variables are presented in Table 2 and are further broken down by task and priming condition in Table 3.

Table 2

Means, Standard Deviations, Skew, and Kurtosis of Study Outcome Variables

	N	*Mean (SD)*	Skew (SE_{Skew})	Kurtosis (SE_{Kurt})
Broken Phone Task				
Global comforting scores	93	2.72 (1.30)	0.17 (0.25)	-1.01 (0.50)
Distress proportion scores	93	.10 (.20)	2.54 (0.25)	6.28 (0.50)
Ruined Drawing Task				
Global comforting scores	92	2.23 (1.19)	-0.30 (0.25)	-0.76 (0.50)
Distress proportion scores	92	.15 (.25)	1.98 (0.25)	3.33 (0.50)
Infant Cry Task				
Global comforting scores	91	2.31 (1.46)	0.75 (0.25)	-0.95 (0.50)
Distress proportion scores	92	.13 (.24)	1.84 (0.25)	2.21 (0.50)

Table 3.

Means and Standard Deviations of Outcome Variables by Tasks and Priming Conditions

	Broken Phone Task		Ruined Drawing Task		Infant Cry Task	
	GCS	DPS	GCS	DPS	GCS	DPS
SSI Condition	2.67 (1.40)	.12 (.23)	3.20 (1.30)	.12 (.18)	2.02 (1.33)	.17 (.27)
HC Condition	2.87 (1.20)	.09 (.19)	3.39 (1.05)	.14 (.26)	2.56 (1.59)	.10 (.21)
NC Condition	2.76 (1.30)	.06 (.09)	3.07 (1.19)	.16 (.27)	2.28 (1.43)	.12 (.25)

Note. GCS = global comforting score; DPS = distress proportion score; SSI = supportive social interaction; HC = happy control; NC = neutral control; all values presented are: mean (standard deviation).

Normality analyses indicated that the global comforting scores for the adult tasks were approximately normal, whereas the distress proportion skills were non-normal. Distress was relatively infrequent in the adult tasks (i.e., 60 children showed no distress in the broken phone task; 57 children showed no distress in the ruined drawing task), accounting for the extreme skew of these variables. Attempts to normalize the distress proportion scores through logarithmic transformation (following the guidelines advocated by Tabachnick & Fidell, 2007) were unsuccessful (phone distress proportion score: skew = 2.18, *SE* = .25; and kurtosis = 4.3, *SE* = .50 post-transformation; drawing distress proportion score: skew = 1.65, *SE* = .25; and kurtosis = 1.82, *SE* = .50, post-transformation). In addition, both outcome variables for the infant cry task (i.e., the global comforting scores and the distress proportion scores) were skewed. This is also an artifact of the relatively low rates of comforting (i.e., 38 children received a global comforting score 1, indicating no comforting behavior) and distress (i.e., 65 children showed no distress) in the infant cry task. Attempts to normalize these scores through

logarithmic transformation were also unsuccessful (infant cry global comforting score: skew = .29, *SE* = .25; and kurtosis = -1.50, *SE* = .50 post-transformation; infant cry distress proportion score: skew = 1.69, *SE* = .25 and kurtosis = 1.54, *SE* = .50 post-transformation). Although the post-transformation skew statistic for the infant cry global comforting scores is within normal range, the kurtosis statistic still indicates non-normality.

Bivariate Associations of Key Study Variables

Correlations between all global comforting scores and distress proportion scores for all tasks are presented in Table 4. In any case where one of the variables was skewed, I used Spearman's rho to estimate the association; otherwise I used Pearson's correlation coefficient.

Table 4

Correlations Between Study Outcome Variables

	1	2	3	4	5	6
Phone GCS	---					
Phone DPS	-.20	---				
Draw GCS	.61**°	-.09	---			
Draw DPS	-.27**	.41**	-.26*	---		
Infant GCS	.05	.03	.16	-.06	---	
Infant DPS	.01	.05	-.14	.24*	-.29**	---

Note. *$p < .05$; *$p < .001$; ° calculated using Pearson's correlation coefficient, all else calculated using Spearman's rho; GCS = global comforting score; DPS = distress proportion score.

Examination of Covariates

In order to assess bivariate associations of demographic and procedural variables (i.e., order of adult tasks) and study outcomes, I ran a series of parametric and nonparametric tests, described in the following sections. For every analysis, I first checked the assumptions of the test. In all cases, assumptions were met unless otherwise noted.

Broken phone task.

Global comforting scores. I examined the bivariate associations of child age in months, number of siblings, the presence of older siblings, and the order of adult tasks with the global comforting scores in the broken phone task using Pearson's correlation coefficient (i.e., for child age and number of siblings; Table 5) and independent samples *t* tests (i.e., for the presence of older siblings and for task order; Table 6). Child age in months, number of siblings, the presence of older siblings, and task order were all unrelated to the global comforting scores.

Table 5

Bivariate Associations of Outcome Variables with Continuous Covariates

	Child age in months	Number of siblings
Phone GCS	-.15 (82) °	.11 (82) °
Phone DPS	.06 (81)	-.10 (82)
Draw GCS	.07 (80) °	.02 (81) °
Draw DPS	.16 (80)	-.15 (81)
Infant GCS	.22 (81)	.21 (81)
Infant DPS	-.17 (80)	-.15 (81)

Note. **p* < .05; **p* < .001; ° calculated using Pearson's correlation coefficient, all else calculated using Spearman's rho; GCS = global comforting score; DPS = distress proportion score; all values presented are: correlation coefficient (degrees of freedom).

Table 6

Bivariate Associations of Normally Distributed Outcomes and Categorical Factors

Outcome	Presence of Older Siblings				
	Yes *M* (*SD*)	No *M* (*SD*)	*t (df)*	*p*	*d*
Broken Phone: Global Comforting	2.45 (1.29)	2.86 (1.28)	1.42 (81)	.16	.32
Ruined Drawing: Global Comforting	2.90 (1.27)	3.45 (1.27)	2.04 (80)	.05	.46
	Task Order				
	Phone first *M* (*SD*)	Draw first *M* (*SD*)	*t (df)*	*p*	*d*
Broken Phone: Global Comforting	2.75 (1.38)	2.69 (1.23)	-0.21 (91)	.84	-.04
Ruined Drawing: Global Comforting	3.16 (1.29)	3.29 (1.09)	0.53 (90)	.60	.11

Distress proportion scores. I examined the bivariate associations of child age in months, number of siblings, the presence of older siblings, and the order of adult tasks with the distress proportion scores in the broken phone task using Spearman's correlation coefficient (i.e., for child age and number of siblings; Table 5) and Mann-Whitney U tests (i.e., for the presence of older siblings and for task order; Table 7). Neither child age in months nor number of siblings was related to the distress proportion scores for the phone task. In addition, distress proportions scores for the phone task were not statistically significantly different based on the presence of older siblings or task order.

Table 7

Bivariate Associations of Non-normally Distributed Outcomes and Categorical Factors

Outcome	Presence of Older Siblings			
	U	*z*	*p*	*r*
Broken Phone: Distress Proportion	795	-0.13	.90	-.01
Ruined Drawing: Distress Proportion	749	-0.44	.66	.05
Infant Cry: Global Comforting	784	0.09	.93	.01
Infant Cry: Distress Proportion	814	0.27	.78	.05
	Task Order			
	U	*z*	*p*	*r*
Broken Phone: Distress Proportion	1,132	0.48	.63	.07
Ruined Drawing: Distress Proportion	1,269	1.91	.06	.20
	Presence of Younger Siblings			
	U	*z*	*p*	*r*
Infant Cry: Global Comforting	1, 029	2.04	.04	.23
Infant Cry: Distress Proportion	645	-2.19	.03	-.24

Ruined drawing task.

Global comforting scores. I examined the bivariate associations of child age in months, number of siblings, the presence of older siblings, and the order of adult tasks with the global comforting scores in the ruined drawing task using Pearson's correlation coefficient (i.e., for child age and number of siblings; Table 5) and independent samples *t* tests (i.e., for the presence of older siblings and for task order; Table 6). Child age in months, number of siblings, and task order, $t\,(90) = 0.53$, $p = .60$, $d = .11$, were all unrelated to the global comforting scores. An independent samples *t* test revealed that

global comforting scores were significantly lower for children with older siblings than for children without older siblings.

Distress proportion scores. I examined the bivariate associations of child age in months, number of siblings, the presence of older siblings, and the order of adult tasks with the distress proportion scores in the ruined drawing task using Spearman's correlation coefficient (i.e., for child age and number of siblings; Table 5) and Mann-Whitney U tests (i.e., for the presence of older siblings and for task order; Table 7). Child age in months and number of siblings were unrelated to distress proportion scores in the ruined drawing task. In addition, distress proportions scores were not statistically significantly different based on the presence of older siblings.

Infant cry task.

Global comforting scores. I examined the bivariate associations of child age in months, number of siblings, the presence of older siblings, and the presence of younger siblings with the global comforting scores in the infant cry task using Spearman's correlation coefficient (i.e., for child age and number of siblings; Table 5) and Mann-Whitney U tests (i.e., for the presence of older and younger siblings; Table 7). The global comforting scores were marginally positively associated with child age in months and the number of siblings a child had, but neither association reached significance. Global comforting scores were not statistically significantly different based on the presence of older siblings. However, a Mann-Whitney U test revealed that global comforting scores for children with at least one younger sibling (mean rank = 46.16) were statistically significantly higher than those for children with no younger siblings (mean rank = 35.96).

Accordingly, I planned include the presence of younger siblings an additional factor in my principal analyses for the infant cry task global comforting scores.

Distress proportion scores. I examined the bivariate associations of child age in months, number of siblings, and the presence of older and younger siblings with the distress proportion scores in the infant cry task using Spearman's correlation coefficient (i.e., for child age and number of siblings; Table 5) and Mann-Whitney U tests (i.e., for the presence of older and younger siblings; Table 7). Child age in months and number of siblings were unrelated to distress proportion scores. Distress proportions scores were not statistically significantly different based on the presence of older siblings. However, a Mann-Whitney U test revealed that distress proportion scores for children with at least one younger siblings (mean rank = 36.62) were statistically significantly lower than for children with no younger siblings (mean rank = 46.14). Accordingly, I planned to include the presence of younger siblings an additional factor in my principal analyses for the infant cry task distress proportion scores.

Principal Analyses

For my principal analyses, I ran a series of one- and two-way ANOVAs with priming condition as a fixed factor. For all outcomes of interest, I first examined models in which identified covariates (or factors; hereafter referred to as covariates) and their interaction terms were included. Due to sample size, I did not have enough power to include more than two predictors (plus interactions) in a single model and accordingly ran models with different covariates separately. If no covariates were identified as significant, I first ran a one-way ANOVA (or Kruskal-Wallis test when appropriate)

including only priming condition as a predictor. Then, I ran models including gender and race (and their interactions with priming condition) as covariates.

Broken phone task.

Hypothesis 1: Children in the supportive social interaction priming condition will display more global concern than children in the happy or neutral priming conditions. I did not identify any variables that were significantly associated with the global scores for the broken phone task. Thus, to examine this hypothesis, I first ran a one-way ANOVA with priming condition as the independent variable and the global comforting scores for the broken phone task as the dependent variable. Results indicated that the comforting global scores for the broken phone task did not differ across priming groups, F (2, 90) = 0.36, p = .70, η^2 = .01. My hypothesis was not supported.

To explore whether the effect of priming condition on the global comforting scores for the broken phone task was qualified by gender or race, I ran 2 two-way ANOVAs, one including gender and the gender by priming condition interaction, and one including race and the race by priming interaction. With gender included, the overall model was not significant F (5, 87) = 0.38, p = .87, partial η^2 = .02. In addition, the main effects of priming condition, F (2, 87) = 0.21, p = .81, partial η^2 = .01 and gender, F (1, 87) = 0.05, p = .82, partial η^2 < .01, were not significant, nor was the interaction term, F (2, 87) = 0.56, p = .57, partial η^2 = .01. The effect of gender on global comforting scores in the broken phone task was the same across conditions. The model including race as an additional factor was not significant F (5, 84) = 0.53, p = .75, partial η^2 = .03, nor were the main effects of priming condition, F (2, 84) = 0.27, p = .77, partial η^2 = .01, and race, F (1, 84) = 0.19, p = .67, partial η^2 < .01. The interaction term was also not significant, F

(2, 84) = 0.91, p = .41, partial η^2 = .02. The effect of race on global comforting scores in the broken phone task was the same across conditions.

Hypothesis 2: Children in the supportive social interaction priming condition will display less personal distress than children in the happy or neutral priming conditions. I did not identify any variables that were significantly associated with the distress proportion scores for the broken phone task. Thus, to examine this hypothesis, a Kruskal-Wallis H test was run to determine if there were any differences in the distress proportion scores for the broken phone task across priming conditions. Distributions of distress proportion scores for the broken phone task were similar for all participants in all priming conditions, as assessed by visual inspection of a boxplot. Median distress proportion scores for the broken phone task were not statistically significantly different across priming conditions, $\chi^2(2) = .88$, p = .65. My hypothesis was not supported.

I also explored whether the effect of priming condition on distress proportion scores for the broken phone task was qualified by gender or race. I ran 2 two-way ANOVAs, one including gender and the gender by priming condition interaction, and one including race and the race by priming interaction. The model including gender was not significant F (5, 87) = 0.64, p = .67, partial η^2 = .04. The main effects of priming condition, F (2, 87) = 1.14, p = .32, partial η^2 = .03, and gender, F (1, 87) = 0.10, p = .76, partial η^2 = .001, were not significant, nor was the interaction term, F (2, 87) = 0.40, p = .68, partial η^2 = .01. The effect of gender on the distress proportion scores in the broken phone task was the same across conditions. The model including race was also not significant, F (5, 84) = 0.69, p = .63, partial η^2 = .04. The main effects of priming condition, F (2, 84) = 0.90, p = .41, partial η^2 = .02, and race, F (1, 84) = 1.11, p = .30, ,

partial $\eta^2 = .01$, were not significant, nor was the interaction term, F (2, 84) = 0.06, p = .94, , partial $\eta^2 = .001$. The effect of race on the distress proportion scores in the broken phone task was the same across conditions.

Ruined drawing task.

Hypothesis 1: Children in the supportive social interaction priming condition will display more global concern than children in the happy or neutral priming conditions. Given that the presence of older siblings was associated with the global scores for the drawing task, I first ran a two-way ANOVA with priming condition, presence of older siblings, and their interaction term as the independent variables and the global comforting scores for the drawing task as the dependent variable. The overall model was not significant F (5, 76) = 1.72, p = .14, partial $\eta^2 = .10$. In addition, the main effects of priming condition, F (2, 76) = 0.40, p = .67, partial $\eta^2 = .01$, and the presence of older siblings, F (1, 76) = 3.47, p = .07, partial $\eta^2 = .04$, were not significant, nor was the interaction term, F (2, 76) = 2.09, p = .13, partial $\eta^2 = .05$. The effects of priming were non-significant, and did not differ based on the presence of older siblings. My hypothesis was not supported.

To explore whether the effect of priming condition on the global comforting scores for the ruined drawing task was qualified by gender or race, I ran 2 two-way ANOVAs, one including gender and the gender by priming condition interaction, and one including race and the race by priming interaction. The model including gender was not significant F (5, 86) = 0.38, p = 86, partial $\eta^2 = .02$. In addition, the main effects of priming condition, F (2, 86) = 0.27, p = .77, partial $\eta^2 = .01$, and gender, F (1, 86) < 0.01, $p > .99$, partial $\eta^2 < .01$, were not significant, nor was the interaction term, F (2, 86) =

0.53, $p = .59$, partial $\eta^2 = .01$. The effect of gender on the global comforting scores in the ruined drawing task was the same across conditions.

The model including race was significant, F (5, 83) = 2.66, $p = .03$, partial $\eta^2 = .14$, and included a statistically significant interaction between race and priming condition, F (2, 83) = 4.04, $p = .02$, partial $\eta^2 = .09$. Simple main effects analyses (performed with statistical significance receiving a Bonferroni adjustment and being accepted at the $p < .025$ level) indicated that there was a statistically significant difference in the global comforting scores for the ruined drawing task between White and non-White participants in the neutral condition, F (1, 83) = 9.64, $p = .003$, partial $\eta^2 = .10$. Pairwise comparisons revealed that the mean global comforting score for non-White participants ($M = 2.53$, $SD = 1.18$) was 1.38, 95% CI [.50, 2.26] lower than the mean global comforting score of White participants ($M = 3.91$, $SD = 0.83$) in the neutral condition of the ruined drawing task. However, the simple main effects of race on the global comforting scores for the ruined drawing task were not statistically significant for those participants in the happy, F (1, 83) = 1.72, $p = .19$, partial $\eta^2 = .02$, or supportive social interaction, F (1, 83) = 0.72, $p = .40$, partial $\eta^2 = .01$, conditions, indicating that global comforting scores for the ruined drawing task did not differ by race in these

conditions (Figure 1).

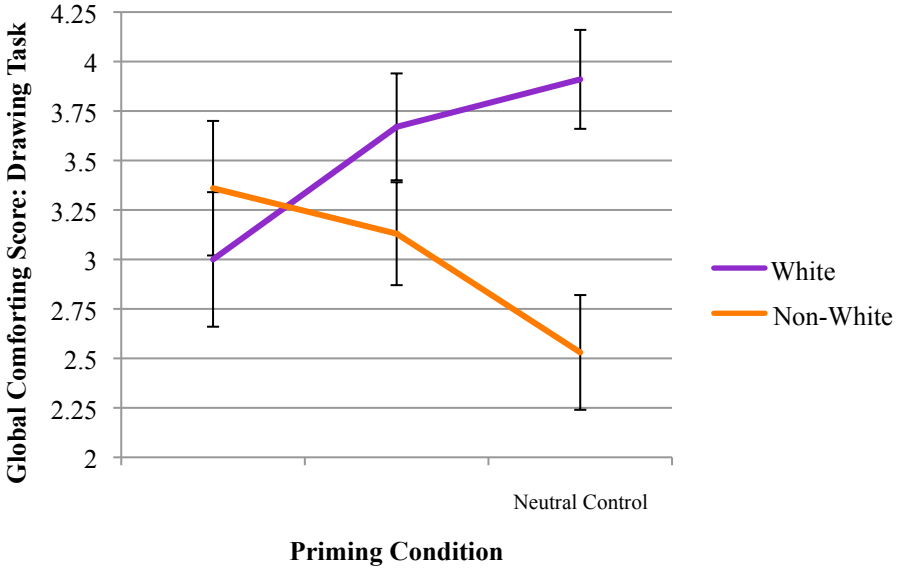


Figure 1. Two-way interaction between priming condition and race in predicting global comforting scores in the ruined drawing task.

In addition, priming condition did not have a statistically significant effect on the mean global comforting scores in the ruined drawing task for either non-White, F (2, 83) = 2.19, p = .12, partial η^2 = .05, or White participants, F (2, 83) = 2.36, p = .10, partial η^2 = .05. Global comforting scores in the ruined drawing task for non-White participants in the supportive social interaction, happy, and neutral conditions were 3.36 (SD = 1.28), 3.13 (SD = 1.02), and 2.53 (SD = 1.18), respectively. Global comforting scores in the ruined drawing task for White participants in the supportive social interaction, happy, and neutral conditions were 3.00 (SD = 1.37), 3.67 (SD = 1.05), and 3.91 (SD = 0.83), respectively.

Hypothesis 2: Children in the supportive social interaction priming condition will display less personal distress than children in the happy or neutral priming

conditions. I did not identify any variables that were significantly associated with the distress proportion scores for the ruined drawing task. Thus, to examine this hypothesis, a Kruskal-Wallis H test was run to determine if there were any differences in distress proportion scores across priming conditions for the drawing task. The distributions of distress proportion scores for the drawing task were similar for all participants in all priming conditions, as assessed by visual inspection of a boxplot. Median distress proportion scores in the ruined drawing task were not statistically significantly different $\chi^2(2) = .993$, $p = .609$.

I also explored the interactive effects of priming condition and gender on the distress proportion scores for the ruined drawing task. I ran a two-way ANOVA including priming condition, gender, and the gender by priming condition interaction. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, $p = .001$. A boxplot depicting distress proportion scores by gender revealed that the unequal variances were driven by 3 extreme cases where boys were distressed for the entire infant cry task. Given that this is meaningful information, these cases were not discarded. Although ANOVA is robust to violations of assumptions, it is only robust to heterogeneity of variance in cases where the ratio of the largest group variance (males in the happy condition; $\sigma^2 = .13$) to the smallest group variance (females in the supportive social interaction condition; $\sigma^2 = .02$) is less than 3 (Dean & Voss, 1999). My data did not conform to this parameter, so I ran a robust two-way ANOVA using Rfit, a statistical package designed to be used in R, designed to perform rank-based estimates that are robust to outliers in response space, hold no assumptions about distributions, and work for balanced and unbalanced designs alike (Kloke & McKean,

2012). In order to provide robust estimates and to satisfy the Rfit assumptions regarding discreteness, I had to jitter the data (i.e., add random noise, uniformly between -.001 and .001). Results revealed that neither the interaction, F (87, 2) = .01, p = .99, nor the main effects of gender, F (87, 1) = .07, p > .79, or priming conditon, F (87, 2) < .01, p > .99, were significant. Rfit did not generate effect sizes.

I also explored whether the effect of priming condition on the distress proportion scores for the ruined drawing task was qualified by participant race. I ran a two-way ANOVA including priming condition, race, and the race by priming condition interaction as predictors. The overall model was not significant, F (5, 83) = 0.30, p = .91, partial η^2 = .02. The main effects of priming condition, F (2, 83) = 0.12, p = .89, partial η^2 = .003, and race, F (1, 83) = 0.16, p = .69, partial η^2 = .002, were not significant, nor was their interaction term, F (2, 83) = 0.59, p = .56, partial η^2 = .01.

Infant task.

Hypothesis 1: Children in the supportive social interaction priming condition will display more global concern than children in the happy or neutral priming conditions. Given that the presence of younger siblings was associated with the global scores for the drawing task, I first ran a two-way ANOVA with priming condition, presence of younger siblings, and their interaction term as the independent variables and the global comforting scores for the infant cry task as the dependent variable. Results indicated that the overall model was significant, F (5, 75) = 2.75, p = .03, partial η^2 = .16. The interaction between priming condition and younger siblings was not significant, F (2, 75) = 2.05, p = .14, partial η^2 = .05, nor was the main effect of priming condition, F (2, 75) = 1.62, p = .20, partial η^2 = .04. There was, however, a main effect of younger

siblings, F (1, 75) = 5.34, p = .02, partial η^2 = .07. Pairwise comparisons indicated that, in the infant cry task, participants with at least one younger sibling had 0.69, 95% CI [.10, 1.28] higher global comforting scores than participants with no younger siblings regardless of condition. Global comforting scores in the infant cry task for participants with at least one younger sibling in the supportive social interaction, happy, and neutral conditions were 2.07 (SD = 0.36), 3.33 (SD = 0.34), and 2.36 (SD = .40), respectively. Global comforting scores in the infant cry task for participants with no younger siblings in the supportive social interaction, happy, and neutral conditions were 1.77 (SD = 0.34), 1.79 (SD = 0.39), and 2.14 (SD = 0.36), respectively.

To explore whether the effect of priming condition on the global comforting scores for the infant cry task was qualified by gender, I ran a two-way ANOVA including priming condition, gender, and the gender by priming condition interaction as predictors. The overall model was not significant, F (5, 85) = 1.06, p = .39, partial η^2 = .06. The main effects of priming condition, F (2, 85) = 1.16, p = .32, partial η^2 = .03, and gender, F (1, 85) = 2.19, p = .14, partial η^2 = .03, were not significant, nor was their interaction term, F (2, 85) = 0.24, p = .79, partial η^2 = .01.

I also explored whether the effect of priming condition on the global comforting scores for the infant cry task was qualified by participant race. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, p = .001. However, the ratio of the largest group variance (non-White participants in the happy condition; σ^2 = 2.99) to the smallest group variance (White participants in the neutral condition; σ^2 = 1.29) is less than 3. Under this condition, two-way ANOVA is robust to heterogeneity of variance (Dean & Voss, 1999). Accordingly, I

ran a two-way ANOVA including priming condition, race, and the race by priming condition interaction as predictors. The overall model was not significant, F (5, 82) = 0.45, p = .81, partial η^2 = .03. The main effects of priming condition, F (2, 82) = 1.07, p = .35, partial η^2 = .03, and race, F (1, 82) = 0.10, p = .92, partial η^2 < .01, were not significant, nor was their interaction term, F (2, 82) = 0.05, p = .95, partial η^2 < .01.

Hypothesis 2: Children in the supportive social interaction priming condition will display less personal distress than children in the happy or neutral priming conditions. Given that the presence of younger siblings was associated with the distress proportion scores for the infant cry task, I first ran a two-way ANOVA with priming condition, presence of younger siblings, and their interaction term as the independent variables and the distress proportion scores for the infant cry task as the dependent variable. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, p = .001. A boxplot depicting distress proportion scores by younger sibling status revealed that the unequal variances were driven by 3 extreme cases where children with no siblings were distressed for nearly the entire infant cry task. Given that this is meaningful information, these cases were not discarded. Although ANOVA is robust to violations of assumptions, it is only robust to heterogeneity of variance in cases where the ratio of the largest group variance (children with no younger siblings in the neutral condition; σ^2 = .1) to the smallest group variance (children with younger siblings in the neutral prime condition; σ^2 < .01) is less than 3 (Dean & Voss, 1999). My data did not conform to this parameter, so I ran a robust two-way ANOVA using Rfit, as described above (Kloke & McKean, 2012). In order to provide robust estimates and to satisfy the Rfit assumptions regarding discreteness, I had

to jitter the data (i.e., add random noise, uniformly between -.001 and .001). Results revealed that neither the interaction, F (77, 2) = .04, p = .96, nor the main effects of the presence of younger siblings, F (77, 1) = .21, p = .65, or priming condition, F (77, 2) < .01, p > .99, were significant. Rfit did not generate effect sizes.

To explore whether there was a gender by priming condition interaction, I ran a two-way ANOVA, including gender and the gender by priming condition interaction. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, p = .02. A boxplot depicting distress proportion scores by gender revealed that the unequal variances were again driven by 3 extreme cases where males were distressed for nearly the entire infant cry task. Given that this is meaningful information, these cases were not discarded. Although ANOVA is robust to violations of assumptions, it is only robust to heterogeneity of variance in cases where the ratio of the largest group variance (males in the supportive social interaction condition; σ^2 = .11) to the smallest group variance (females in the neutral condition; σ^2 =.02) is less than 3 (Dean & Voss, 1999). My data did not conform to this parameter, so I ran a robust two-way ANOVA using Rfit, a statistical package to R, designed to perform rank-based estimates that are robust to outliers in response space, hold no assumptions about distributions, and work for balanced and unbalanced design alike (Kloke & McKean, 2012). In order to provide robust estimates and to satisfy the Rfit assumptions regarding discreteness, I had to jitter the data (i.e., add random noise, uniformly between -.001 and .001). Results revealed that neither the interaction, F (87, 2) = .02, p = .98, nor the main effects of gender, F (87, 1) = .01, p > .91, or priming condition, F (87, 2) = .02, p = .98, were significant. Rfit did not generate effect sizes.

To determine whether there was a race by priming condition interaction, I ran a two-way ANOVA with priming condition, participant race, and their interaction term as the independent variables and the distress proportion scores for the infant cry task as the dependent variable. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances, $p = .01$. A boxplot depicting distress proportion scores by race revealed that the unequal variances were again driven by three extreme cases in which non-White children were distressed for nearly the entire infant cry task. Given that this is meaningful information, these cases were not discarded. Although ANOVA is robust to violations of assumptions, it is only robust to heterogeneity of variance in cases where the ratio of the largest group variance (non-White participants in the supportive social interaction priming group; $\sigma^2 = .09$) to the smallest group variance (White participants in the neutral condition; $\sigma^2 = .01$) is less than 3 (Dean & Voss, 1999). My data did not conform to this parameter, so I ran a robust two-way ANOVA using Rfit, a statistical package to R, designed to perform rank-based estimates that are robust to outliers in response space, hold no assumptions about distributions, and work for balanced and unbalanced design alike (Kloke & McKean, 2012). In order to provide robust estimates and to satisfy the Rfit assumptions regarding discreteness, I had to jitter the data (i.e., add random noise, uniformly between -.001 and .001). Results revealed that neither the interaction, $F(84, 2) = .01$, $p = .99$, nor the main effects of race, $F(84, 1) = .02$, $p > .89$, or priming condition, $F(84, 2) = .02$, $p = .98$, were significant. Rfit did not generate effect sizes.

Chapter 4: Discussion

The aim of the current investigation was to experimentally induce a sense of felt social support in a randomly selected group of preschool-aged children and to examine the effects of supportive social interaction priming (relative to neutral and happy priming) on both prosocial comforting behavior and the expression of personal distress in response to the distress of another person. Drawing on both social baseline theory and previous work in the attachment literature, I hypothesized that children in the supportive social interaction priming condition would display more global concern and less personal distress in response to a distressed adult and a distressed infant. However, results revealed no main effects of priming condition on children's prosocial comforting or personal distress in any of the comforting tasks. Interestingly, there was a significant interaction in the drawing task, such that non-White children were less comforting than White children in the neutral control condition only. It is also notable that few influences on prosocial comforting or distress were detected overall. In fact, I found only three effects across all analyses. I found a main effect of the presence of older siblings, with children with at least one older sibling displaying less comforting behavior in the drawing task than children without older siblings. I also found that children with at least one younger sibling were more comforting and less distressed in the infant cry task than children without younger siblings.

In following sections, I critically examine these findings in light of the known literature on prosocial comforting. I begin with a discussion of the findings of my principal analyses, at first broadly, looking at the findings as a whole. Then, I examine possible limitations of the adult tasks and the infant task separately, and discuss some of

the strengths of my design. I then discuss the significant interaction I found and the implications of my findings regarding the main effects of gender, age, race, and sibling status on prosocial comforting responses. Finally, I suggest future directions for the field, given the current state of the literature and the present findings.

Principal Analysis

There were no main effects of priming condition on either prosocial comforting responses or distress responses in any of the tasks examined in the present study, a surprising finding, given the extant literature reviewed in the introduction of this manuscript. The adult literature is rife with examples of supportive (termed: secure) priming being an effective means of increasing behaviors such as compassion, altruism, and self-reported empathy (e.g., Mikulincer et al., 2001; Mikulincer et al., 2003; Mikulincer et al., 2005; Mikulincer et al., 2013). A number of explanations may account for this observed disconnect. For instance, adults have a lifetime of experiences seeking social support from not only their parents and siblings, but from a variety of others, including friends, colleagues, mentors, and romantic partners. It is likely that throughout this long history, they have experienced at least a few instances of felt social support, even if this is not a regular occurrence in their lives. Accordingly, when primed with something outside their normative experience, adults may be able to unconsciously call upon these previous incidents, rendering the prime effective. In contrast, young children, even those who have attended preschool, have likely spent the majority of their lives with their parents and siblings, primarily within their parents' social circles. Given their limited social experience, children may be far less likely to have experienced true social

support. If this is the case for even a small number of children, the effect of the prime may be washed out, rendering the prime ineffective.

Even so, previous literature indicates that priming has been a successful means of examining how children's mental representations of the social world influence their thoughts, feelings, and behavior (e.g., Cortez & Bugental, 1995; Harris, Bargh, & Brownell, 2009; Hoe & Davidson, 2002; Over & Carpenter, 2009a, 2009b, Watson-Jones et al., 2014). However, it is important to note that a majority of these studies were conducted with children older than those in the current sample. Although the literature in cognitive science (i.e., studies of memory, language, and numerical representation) has many examples of priming being effectively utilized in young children (and even infants; e.g., Hartshorn, 2003; Rovee-Collier, Hartshorn, & DiRubbo, 1999), only two studies to date have utilized priming to influence social behavior through mental representations in very young children (Over & Carpenter, 2009a; Watson-Jones et al., 2014).

Given the age of the subjects in the current study, it may then be the case that the prime delivery mechanism (i.e., the categorization game) utilized was too cognitively complex for the primes to be effective. In both studies of social priming in young children, the authors used passive viewing paradigms, in which the children simply viewed either pictures with the prime in the background (Over & Carpenter, 2009a) or videos depicting abstract shapes (Watson-Jones et al., 2014). Although no studies have examined the effect of cognitive load on priming in very young children, it is a reasonable hypothesis that a large amount of mental activity may block access to unconscious representations. In addition, the primes I used were only presented for two seconds each, which may have been too short a duration for the children to fully grasp

what they were seeing, particularly in the happy and supportive social interaction priming conditions. In both conditions, the priming stimuli were fairly complex, with many colors, backgrounds, and people of different races and genders. It is possible that such complexity cannot be grasped by young minds in so short a time, and that more time might have made a difference. Again, by contrast, the primes in the Over and Carpenter (2009a) and Watson-Jones et al. (2014) studies were presented for an unspecified length of time, but long enough to produce a few short statements about the picture book in the former, and long enough to present a sequence of events in the latter. Future studies attempting to prime young children may wish to emulate the procedures utilized by Over and Carpenter (2009a) or by Watson-Jones et al. (2014) by employing passive viewing paradigms and longer exposure to primes to determine if priming can be an effective means of eliciting mental representations in young children.

Another possible confound stems from prime delivery procedures. Because the experimenter wished to remain blind to priming conditions and because the primes were delivered supraliminally, the experimenter had to turn her back to each child while he or she was playing the priming game. In addition, she told the children that the "only rule" of the animal game was that she and the child could not speak. She then kept dialogue to a minimum throughout the game. It is possible that these actions acted as an ostracism or rejection prime and counteracted the effects of the supportive social interaction prime. This may be particularly true for the children who tried to engage throughout the game but were minimally responded to. A stronger design would perhaps employ the use of a second experimenter who is not blind to condition to deliver the primes, while making the first experimenter unavailable through more natural means.

It is also possible that it was not that nature of the primes I was using, but rather, the target behaviors I was examining (i.e., comforting and distress) that contributed to my null findings. Over and Carpenter (2009a) examined a rather simple behavior (i.e., instrumental helping), known to develop early and to be consistently observed in early childhood (e.g., Warneken, 2015). It may be that a behavior as multifaceted as comforting, which requires a number of developmentally advanced skills (e.g., emotion recognition, approach motivation, emotion regulation), is too complex to be influenced by the activation of mental representations alone in the preschool years. Perhaps it is only as children mature and have more experiences with comforting and being comforted by a variety of individuals that they develop quicker access to the schemas and scripts related to this socially complex behavior. Regarding the current findings, it may be that prosocial comforting behavior is indeed influenced by felt social support, but in the preschool years, social support must take the form of the actual physical presence of another person. A stronger research design would tackle this problem head on by contrasting felt social support, through the use of primes, with actual social support by having close, available others accessible but not able to respond to the comforting need. For example, a study in which mothers were in the room during distress events but on the phone or "working" would better approximate the kinds of social support children are accustomed to experiencing and may be more successful at changing behavior.

In addition, my examination of the effects of felt social support on personal distress was limited by the low rate of personal distress evinced by the participants in my sample. Even in the task that elicited the most distress (i.e., the ruined drawing task), fewer than half of the participants displayed any distress at all, resulting in very skewed

distributions and little variability from which to draw conclusions. Research shows that the variety and complexity of emotion regulation strategies used by children increase over the preschool years and that, aside from seeking social support (a strategy that was not available in the present study), the strategies most utilized by 4-year-olds are behavioral (i.e., turning attention to another activity to regulate emotions; e.g., Sala et al., 2014). It is notable that the most distress was found in the ruined drawing task, where children had the fewest options to which to turn their attention. In both the broken phone task and infant cry task, children had a wide variety of available toys that they could play with to regulate distress, whereas in the drawing task, they could only re-engage with their drawing. Future researchers hoping to examine influences on distress regulation in the face of distressing events could address this concern in a number of ways. First, giving children fewer external options to help regulate distress may increase the amount of visible distress displayed across tasks. In addition, using more sensitive measures of distress / arousal, such as physiological indices (e.g., heart rate, electrodermal activity), in combination with behavioral measures may uncover a wider range of distress responses. For example, physiological measure could distinguish those children who are behaviorally regulated (i.e., not showing an outward signs of distress) but physiologically dysregulated. In both cases, a wider range of measured distress would allow for a more statistically sound examination of subtle influences on individual differences in this outcome. Alternately, it may be that examining such influences would be more appropriate in a younger sample, when children are less likely to have a variety of strategies available for regulating distress.

I must also consider the possibility that felt social support does not play a central role in prosocial comforting behavior or the ability to regulate one's emotions in stressful situations in preschool children. It may be that other personal or contextual factors, such as temperamental shyness or the familiarity or similarity of the distressed other, play a larger role in the production of prosocial comforting and the ability to regulate one's own distress in comforting situations in the preschool years. This notion is bolstered by the somewhat inconsistent findings regarding attachment and prosocial comforting in preschool age children (Appendix D). The quality of a child's attachment to his or her parents could be considered a measure of social support in the early years, given that individual differences in attachment quality are linked with parental responses to infant distress (i.e., support in times of need). Children whose parents respond sensitively to their distress most of the time (i.e., provide consistent social support) are considered secure. The fact that security is not consistently linked with prosocial comforting suggests that there are other more salient influences at play, at least in the early years.

Finally, as mentioned, few studies utilizing priming have examined effects in populations as young as the current sample, particularly in the social and developmental literatures. In fact, only one published study to date (Over & Carpenter, 2009a) has successfully utilized priming to tap into children's social representations. It may be that this dearth of evidence reflects a "file-drawer" problem, in which priming was attempted but not reported due to weak or null findings.

Task-Specific Considerations

The tasks I chose to assess prosocial comforting may also have influenced children's responses in unintended ways. In the following sections, I discuss the designs

of and specific issues with the adult tasks and the infant task in turn, and discuss possible limitations of each. I then discuss study strengths before considering the additional findings of the current investigation.

Adult tasks. In both the broken phone task and the ruined drawing task, children were given the opportunity to comfort a distressed, unfamiliar adult. Previous studies (e.g., van der Mark et al., 2002) have successfully employed similar designs and indeed, the high levels of comforting behavior seen in the present study attest to the fact that young children will comfort in these situations. However, it is important to note that previous research also indicates that children engage in differential prosocial responding based on who is expressing the need (e.g., van der Mark, et al., 2002) and, in the developmental course of prosocial comforting, respond first to caregivers, then to family members, and then eventually, to unfamiliar others (Zahn-Waxler et al., 1992). At preschool age, children's prosocial comforting responses to unfamiliar others may be determined more by temperamental variables, such as inhibition or approach motivation, by experimenter variables, such as the experimenter's friendliness, or by a combination of the two, rather than by purely cognitive mechanisms such as mental representations of felt social support.

In addition, children rarely find themselves in naturally occurring circumstances in which they must comfort adults, limiting the ecological validity of this design. One may reasonably ask, are we assessing a child's proclivity to engage in prosocial comforting behavior? Or, rather, their willingness to approach an unfamiliar adult who is behaving strangely? The validity of future studies examining prosocial comforting might be enhanced by utilizing more naturalistic settings where the age and gender of the

subjects are matched to the distressed other. Alternately, training someone familiar to the child to play the role of the distressed person may yield different results, as has been done in a number of studies (e.g., Denham, 1994; van der Mark et al., 2002).

Additionally, there are undoubtedly a number of underlying motivations for engaging in comforting behavior, and this study made no attempts to discover or untangle these varying motivations that could have influenced behavior in meaningful ways. For instance, children who are strongly motivated by social engagement may have comforted in an attempt to return the experimenter to play, whereas children who are strongly motivated by toys and solitary play may not have comforted as they were uninterested in obtaining a social partner. While it is possible that felt social support may foster the ability to comfort, it is equally possible that different children's motivations play a much larger role in their willingness to provide comfort in particular situations. A stronger research design may be one in which children have the opportunity to comfort someone else who is not currently engaging with them, thus making the motivation inherently intrinsic, rather than potentially based on circumstance.

Infant task. In the infant task, children were given the opportunity to comfort a distressed infant in another room through the use of a baby monitor. While some children did comfort, the overall rates of comforting were much lower in the infant task than in the broken phone or ruined drawing tasks, whereas the distress rates were comparable. This reduced variability in children's responses likely limited my ability to examine individual differences in comforting and regulation abilities in the infant cry task. A few reasons this attenuation in child behavior may have occurred are offered.

First, the baby monitor chosen appears to have been too complex for some children to effectively use. Many children pressed buttons somewhat haphazardly once the baby started crying, but didn't say anything, and it was unclear whether they were trying to turn it off and couldn't, or whether they thought that pressing buttons alone was enough to help the baby fall back asleep. Although all children demonstrated understanding of how to use the monitor during the comprehension check, it is possible that they forgot, either because of the cognitive demands of the priming game or because of the discomfort associated with being left alone in the room, the discomfort of hearing a baby cry, or both. Future studies using an infant cry paradigm with young children should make the baby monitor as easy to use as possible to get clean, interpretable data. For instance, rather than using a real baby monitor, researchers could construct a button box with only two, very clearly labeled buttons.

It is also possible that at younger ages, the combined effect of being alone and with an aversive infant cry was too overwhelming to see the full range of comforting behaviors that might have been possible with a different design. Although I did not find the most distress in this task, as mentioned, it may be that my measurement of distress was obscured by the availability of a fun, exciting set of toys (i.e., the sand table and toys) and that a more precise measure (e.g., a physiological measure) might may have found that even children who continued to play were actually somewhat distressed. Future studies using the infant cry task in younger populations might consider having the experimenter in the room but unable to respond to reduce the stress associated with being left alone. This would also offer the children the option to attempt to elicit adult help in

resolving the situation, an age appropriate and often used strategy among preschoolers (e.g., Caplan & Hay, 1989; Sala et al., 2014).

Study strengths.

However, despite the issues just discussed, the results of the present study should not be dismissed, as the study has many strengths as well. For instance, the adult tasks consistently elicited comforting behavior in the children, with 86% attempting at least one strategy, demonstrating that the tasks were both believable and age appropriate. Furthermore, the strong and significant correlation between the global scores for the adult tasks lends credence to their validity and reliability (Table 4). Children who comforted in one task appeared, by and large, to comfort at a similar rate in the other, indicating that something about the children, rather than the tasks, was driving comforting behavior. In addition, although no effects of priming condition were found, the measures of prosocial comforting and distress did relate to other theoretically meaningful child characteristics, such as the presence of older and younger siblings, lending further support to their validity. In addition, the rich behavioral coding employed to generate the global comforting scores was able to capture not only the quantity, but also the quality and diversity of children's prosocial responses, giving confidence that the scores truly reflect the entirety of each participant's behavior. This notion is bolstered by the consistently negative correlations between the distress proportion scores and the global comforting scores. It makes intuitive sense that children who were distressed would engage in less comforting behavior, a finding that seems to be reflected in the present data (Table 4). Furthermore, no children seemed to question the infant cry task, with many remarking on the presence of the infant throughout the study, lending credibility to the task as a

promising avenue to study children's prosocial responses to a distressed infant, a sentiment bolstered by previous work using a similar paradigm with children across a wide range of ages (e.g., Zahn-waxler, Friedman, & Cummings, 1983). The infant cry task also offered children two options that most comforting tasks cannot: a clear avenue by which to offer comfort (i.e., talking to the baby) and nearly complete escape if desired (i.e., turning the monitor off). This makes the infant cry task an excellent candidate for future research aimed at identifying individual differences between children who decide to comfort and those who do not. Moreover, the primes used in the present study were similar to primes that have been used to successfully influence children's reactivity to stimuli in previous studies (e.g., Stupica et al., 2016), lending support to their validity. Although the design issues just discussed may cast doubt on the findings just presented, the study's strengths lend support to the notion that it is equally likely that priming felt social support simply does not influence prosocial comforting in 4-year-old children. Future studies aimed at addressing the methodological inconsistencies between this study and the one other study that effectively used a social priming paradigm (Over & Carpenter, 2009a) will add to this body of evidence and are crucial for determining the utility of priming as a experimental means of influencing social behavior.

Additional Findings

Despite finding no support for my hypotheses, I did find some effects of note. I found a significant interaction between priming condition and race such that non-White participants showed less comforting behavior in the ruined drawing task than White participants, but only in the neutral control condition. Given that the neutral condition is meant to reflect children's natural propensities to respond in a certain way (i.e., it is the

condition most reflective of "real life"), this would seem to indicate that, at least in the ruined drawing task, non-White participants were less comforting than White participants. Although there is no literature that speaks directly to this finding, research does show that children begin to prefer ingroup members on the basis of perceptual similarities as a very early age (e.g., Mahajan & Wynn, 2012), and that context plays an important role in determining when and to whom children will direct prosocial behavior (Demetriou & Hay, 2004). Given that the experimenter in the current study was White, it may be that non-White children viewed her as part of their out-group and were thereby less willing to provide her with comfort. There is little research examining cross-racial provision of prosocial behavior in childhood, and none in non-White populations, but the few studies that have examined this have found that White children were slightly more likely to share with and behave prosocially (as measured by a composite of self-reported helping, sharing, and comforting in response to vignettes) toward other White children than African American children (Zimmerman & Levy, 2000, Zinser, Rich, & Bailey, 1981). It may be that examining in-group and out-group biases will prove fruitful in examining the development of prosocial comforting behavior.

Interestingly, if non-White participants were inclined to be less comforting in the ruined drawing task than White participants, this also implies that the effect of priming felt social support only worked for non-White participants, at least in the ruined drawing task. Research shows that ethnic minorities are disproportionately at risk to live in poverty (e.g., Costello, Keeler, & Angold, 2001; National Center for Education Statistics, 2007) and that children in poverty experience less social support than those children in more affluent homes (Evans, 2004). While our sample did not contain many families

living under the poverty line, it is possible that ethnic minority participants in our sample had lower incomes than White participants. Employing a *post hoc* chi-square test of association between race (defined as White and non-White) and yearly household income (defined as above and below $60,000 per year) indicated that there was a statistically significant association between the two, $\chi^2(1) = 17.64$, $p < .001$ and that this effect was moderately strong ($\varphi = -.47$, $p < .001$). Examining the cell counts revealed that there were many fewer non-White participants in the higher income bracket than the lower. This could contribute to the ethnic minority children in our sample experiencing less social support in their daily lives and thereby making it more likely that they would feel the bolstering effects of the supportive social interaction priming in all but the neutral control priming condition. It is indeed unfortunate that the sample in the present study was so homogenous with regard to socioeconomic status. It is a well researched and replicated finding that living in poverty has myriad effects on children's social and emotional outcomes and is associated with a number of developmental challenges (see Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013, for a review). Had I recruited a sample with a wider range of incomes, I may have also found meaningful variability in children's behavior. Future studies examining the effects of supportive social interaction priming should attempt to recruit more economically diverse samples and may consider including a baseline measure of social support.

It is also possible that this finding is simply a chance finding, due to the number of analyses run. Given that there was no effect of priming condition in any task (i.e., children's rates of comforting were the same across priming conditions in all tasks), and

that non-White participants did not differ from White participants in any other task (even in the neutral condition), this possibility seems especially likely.

Gender and age.

I did not find any gender or age related differences in the expression of prosocial comforting behavior or proportions of distress / arousal in any task. Given the somewhat inconsistent evidence of gender related differences in prosocial comforting in different stages of childhood, this result is in keeping with a growing literature on the development of prosocial behavior. While many studies of exclusively older children or those examining a large age range find that older children and girls engage in a greater number and variety of prosocial comforting responses to a variety of targets (e.g., Burleson, 1982; Fabes, Eisenberg, Karbon, Troyer, & Switzer, 1994; Larrieu & Mussen, 1986), this finding is much less consistent in studies examining samples of very young children or samples inclusive of children across a narrow age range beginning in early childhood, with many finding no gender or age related differences at all (e.g., Eisenberg-Berg & Hand, 1979; Eisenberg-Berg & Neal, 1979; Yarrow et. al, 1976) or contradictory findings (e.g., see Blandon & Scrimgeour, 2015, for evidence that 36-month-old girls expressed more concern towards a distressed peer than boys at the same age; and Rehberg & Richman, 1989, for evidence that preschool aged boys were more comforting than preschool aged girls).

It may be that as children grow older and become increasingly aware of gender roles, their adherence to these roles predicts comforting behavior. Girls, who are often socialized to value caregiving over independence, may internalize these beliefs as they age and extend them to interactions with others (e.g., Hastings, McShane, Parker, &

Ladha, 2007). This notion is consistent with recent evidence indicating that first grade females in Hong Kong who played with stereotypically feminine toys (as well as boys who played with gender-neutral toys) generated more comforting strategies during an infant cry paradigm than boys who played with masculine toys or girls who played with gender-neutral toys (although, importantly, girls scored higher on the comforting task overall; Li & Wong, 2016). The hypothesis that the relation between prosocial comforting and gender may emerge later in development has received additional support in a study examining the longitudinal course of prosocial behavior (defined as helping someone who has been hurt, comforting a child who is crying or upset, and helping other children who are feeling sick) between 29 and 41 months of age. Baillergeon and colleagues (2011) found no gender differences in the expression of prosocial behavior at either age, but that girls were more likely to begin exhibiting and boys were more likely to cease exhibiting prosocial behavior in this timeframe. The authors argued that this was evidence for a universal, rather than gender-related, course of prosocial development in early childhood that differentiates as children age. Similarly, Hay (1994; see also Hay & Cook, 2007) proposed that stable individual differences in prosocial comforting responses are likely to emerge during and just after the preschool years as children begin to internalize the rules governing social and moral conduct, including who to comfort and in which circumstances. This is in line with my own findings, as boys and girls expressed similar amounts of prosocial behavior to both distressed individuals, regardless of age. It is likely that I may have detected gender differences had I recruited children with a wider range of ages, and particular, with including older children.

Race. The finding that there were no main effects of race in preschoolers' expression of prosocial responses and distress towards distressed others provides preliminary evidence that there may not be early racial differences in the development of prosocial comforting behavior. Currently, the literature regarding race related differences in children's responses to distressed others is extremely limited. Although there is some evidence that ratings of prosociality and certain facets of prosociality (e.g., helping) may differ by race, with African American children rated as less prosocial by teachers (Jackson et al., 2006) but showing more helping behavior towards peers (Richman, Berry, Bittle, & Himan, 1988), only two studies to my knowledge have specifically examined racial differences in preschoolers' prosocial comforting. Both studies, examining samples comprised of 50% African American children and 50% White children, found no differences that could be explained by race alone (Rehberg & Richman, 1989; Richman et al., 1988). The story may be that, similar to gender, children's early prosocial comforting emerges due to factors unrelated to race. The dearth of evidence in African American and diverse samples, however, points to a clear need to examine the development of prosocial comforting in a wider range of populations.

The number and presence of siblings. That number of siblings was unrelated to prosocial behavior is perhaps unsurprising, given sparse literature on the subject. Although some have theorized that sibling relationships give children a chance to practice prosocial comforting, and indeed, evidence has shown that children do attempt to do so (Dunn & Munn, 1986), there is little evidence indicating that this in turn relates to the expression of prosocial comforting in other contexts or the ability to regulate one's own distress when faced with another's. It is likely that individual differences in sibling

relationships, as well as family units as a whole, play differential roles in the development of prosocial comforting. For instance, in some families, parents are able to fully take on the responsibility of soothing upset children and maintaining family harmony. In these homes, children may learn about what happens when someone is upset, as well what to do to make someone feel better, but they themselves do not have to take on a caregiving role. In other families, however, parents may not be able to consistently provide a safe haven for children for many reasons (e.g., there is only one parent, there is high parental conflict, etc.). In these families, children may provide comfort for each other, but it may be unregulated, ineffective, or insensitive comforting. Thus, it may be more accurate to theorize that the presence of siblings matters less than the familial unit as a whole and the emotion socialization practices of the family. Future research would benefit from studies aimed at examining individual differences in family dynamics, including distribution of caregiving roles and the role of comforting in sibling relationships, and how those dynamics contribute to the development of prosocial comforting abilities.

In addition, the other two findings regarding the presence of older and younger siblings indicates that it is not simply the presence of siblings that influences prosocial comforting; rather, it is specific dynamics of particular sibling relationships. For instance, the finding that children with at least one younger sibling were more comforting and less distressed in the baby cry task is perhaps unsurprising. Though no literature has examined this association specifically, it makes intuitive sense that children who had been around crying infants and seen them soothed would be better equipped to deal with a crying infant (and would be less distressed by it) than those children with limited experience in

this arena. Future studies might examine whether this ability extends to prosocial comforting toward other persons in the child's life, such as same-age peers, or whether it is associated with other capabilities, such as enhanced emotion regulation or empathy.

The finding that children with at least one older sibling were less comforting in the drawing task meshes with previous literature that found that children with older siblings were more likely to respond negatively to peer distress than children without an older sibling (Demetriou & Hay, 2004). The authors of that study propose that this finding may reflect young children imitating the ways their older siblings respond to their own distress. More work in this area is needed before any conclusions can be drawn, however, given the dearth of evidence available. Naturalistic observations in the home could elucidate the link between one's own experiences of being comforted (or not) by older siblings and prosocial comforting responses to others. It is interesting that this effect was found only in the drawing task and not the phone task, a phenomenon that will be discussed in a later section.

Future Directions.

The results of the current investigation indicate that priming felt social support in preschool aged children had no effect on prosocial comforting behaviors or personal distress reactions to distressed others, as assessed with the methods used. This finding raises a number of interesting questions that can be addressed by continued investigation.

First, it raises the question of whether priming can be used as an effective method for tapping into young children's mental representations of such social constructs as social support and attachment. It may be that when children are young and still entirely dependent on others for care, such representations are still developing and too weak to be

activated by something as passive as a picture. Although the current investigation seems to suggest that this may be the case, there are many possible alternative explanations for the null findings that have already been discussed. Given the promise priming holds in allowing experimental investigations of a range of developmental phenomena, more research is clearly needed before abandoning this intriguing method. A reasonable first step in this endeavor would be to replicate the effects reported by Over and Carpenter (2009a) in 18-month-old infants. Given the size of their reported effect ($\varphi = .38$), it seems unlikely that the effect was due to chance, but ruling this possibility out through replication would lend credence to priming as a viable methodology to activate social representations in younger populations. In addition, researchers should test a variety of methods for prime delivery, as some may be stronger than others. For example, perhaps pairing primes with a cognitive task only works in older populations with better working memories or who are better able to divide their attention. Understand which primes work and with whom could provide a valuable tool for developmental researchers interested in experimental studies of social cognition.

Second, the current results bring into question the idea that felt social support fosters the ability to respond sensitively to another person's emotional needs, particularly in childhood. Although experimental evidence in adults overwhelming supports this supposition (e.g., Mikulincer et al., 2001; Mikulincer et al., 2003; Mikulincer et al., 2005; Mikulincer et al., 2013), quasi-experimental evidence in young children has been mixed (Appendix D). Importantly, no one has examined the effects of felt social support more broadly on prosocial comforting in young children, instead focusing on parental support (i.e., attachment) almost exclusively. Future research should attempt to bridge this gap in

the literature by employing other experimental designs to determine the effects of felt social support on prosocial comforting in young children. For instance, manipulating actual social support (i.e., having a supportive but unavailable experimenter versus an uninterested and unavailable experimenter in the room during a distress event) may be a stronger design capable of illuminating the nature of this link. In addition, and given that this link appears to exist in adulthood, beginning this investigation in older children and working backward may also help to elucidate the developmental course of the link between felt social support and prosocial comforting.

A further question raised by the results of the current investigation concerns the relation between felt social support and the ability to regulate emotions in the face of distressing events. Again, there is ample evidence for this link in adulthood (e.g., Coan et al., 2006; Eisenberger et al., 2007), but the relation is less well-established in childhood outside of attachment research. Future investigations should attempt to examine the self-regulatory benefits gleaned through social support more broadly, particularly in young children and across multiple settings. For example, are parents and other attachment figures the only ones who can provide this kind of support in childhood? Or could any person perceived to be older and wiser be able to serve this role? Could peers provide a self-regulatory boost in certain circumstances or as children age? The field is ripe for investigations of questions like these, and the findings may have important implications for the home, as well as for childcare and classroom settings.

The results of this study clearly illustrate a need to study the development of prosocial comforting behavior in more diverse populations. Although it is interesting that I found an effect of race in the neutral control condition only, there was little literature

with which to frame this finding. Future studies should attempt to examine the roles that race and cultural expectations play in prosocial comforting and personal distress reactions to another's distress by conducting studies such as this one in more diverse populations.

Finally, the results of this study highlight the need to consider context when investigating influences on and the development of prosocial comforting behavior and the ability to regulate oneself in the face of another's distress. Although the two adult tasks were highly correlated, the associations I found in the drawing task did not appear in the phone task. This may indicate that the two tasks were fundamentally different in some way and that children were handling the two situations in qualitatively differently manners. Future investigations into the development of prosocial comforting should attempt to elucidate contextual factors described above that may account for individual differences in these abilities through tightly controlled study parameters, meticulous measurement, and the use of common tasks that allow for cross-study comparison. In addition, considering personal factors, such as the roles of personal experience and family composition and functioning, may help to tease apart why some children comfort or become distressed whereas others do not.

Conclusions

The aim of the current investigation was to experimentally induce a sense of felt social support in preschool aged children and to examine the effects of supportive social interaction priming (relative to neutral and happy priming) on both prosocial comforting behavior and the expression of personal distress in response to the distress of another. Although my hypotheses were not supported, this study represents an important step in determining the viability of priming as a method for tapping social representations in

children, calling into question its utility as research tool with younger populations. Future research with similar aims can add to this growing body of literature, determining what works and with whom. In addition, these results contribute to the evidence that gender may only play a role in the development of prosocial comforting behavior at later ages, and underscore the importance of examining its development in racially diverse populations. Understanding the determinants of prosocial behavior is a worthy goal for developmental scientists, as the ability to sensitively care for another's wellbeing is linked with a multitude of positive outcomes in both childhood and adulthood. Fostering this ability in young children fosters positive social development, and ultimately, the development of a kinder, more compassionate world.

Appendices

Appendix A: Institutional Review Board Approval Letter

UNIVERSITY OF MARYLAND
INSTITUTIONAL REVIEW BOARD

1204 Marie Mount Hall
College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu
www.umresearch.umd.edu/IRB

DATE:	June 5, 2015
TO:	Jude Cassidy, PhD
FROM:	University of Maryland College Park (UMCP) IRB
PROJECT TITLE:	[650635-1] Attachment and Prosocial Behavior in Preschool Children
REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	June 5, 2015
EXPIRATION DATE:	June 4, 2016
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # *4 & 7*

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of June 4, 2016.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Please note that all research records must be retained for a minimum of seven years after the completion of the project.

If you have any questions, please contact the IRB Office at 301-405-4212 or irb@umd.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Maryland College Park (UMCP) IRB's records.

Appendix B: Consent Forms

Consent

Thanks for your interest in our study of mothers and children! This research is being conducted by Dr. Jude Cassidy at the University of Maryland, College Park. In this part of the study, we'll ask you to answer some questionnaires about your personality and how you think and feel. The questionnaires will take less than 10 minutes to complete.

There are no big risks for you or your child. There may be some questions that you do not want to answer. You can skip any question that you do not want to answer. Also, you can exit the survey at any time.

There are no direct benefits to you for completing the surveys, but we hope the information will help us understand how moms of young children think and feel.

Your responses will be confidential, and your name will not be linked to what you say. We will assign a number code to identify your materials. The questionnaires will be stored on a password-protected computer (if you choose to complete them by mail, they will be stored in a locked filing cabinet).

Your participation in this research is completely voluntary, and you can decide not to participate or to stop participating at any time.

If you have questions and would like to talk to someone before participating, please contact Bonnie Brett, M. S., Graduate Researcher, at: Department of Psychology, University of Maryland, College Park, MD 20742, 301-405-0009, bbrett@umd.edu, or the investigator, Dr. Jude Cassidy at jcassidy@umd.edu, 301-405-4973.

By clicking "yes" below, you indicate that:
(1) you are 18 years of age or older;
(2) you have read and understood the information above; and
(3) you agree to participate in the online survey

- ○ Yes
- ○ No

 Initials _____ Date _____

Project Title	*Social Interactions in Preschool- and Kindergarten-age Children*
Purpose of the Study	*This research is being conducted by **Dr. Jude Cassidy** at the University of Maryland, College Park. We are inviting you and your child to participate in this research project because you have a child who is of kindergarten age. The purpose of this research project is to explore the development of social interaction in young children.*
Procedures	*The procedures will take place in three parts.* *Part 1: We sent you a few brief questionnaires to complete before we came here. You have already completed these.* *Part 2: Today we are visiting you in your home. You and your child will play together and then will separately complete stories; your child's stories will involve using dolls. In addition, you will complete one questionnaire about your behavior as a parent and your child will play a brief word and picture game with a research assistant (for example, your child will be shown several pictures and asked to point to the toaster). Today's visit will not last more than an hour.* *Part 3: The playroom visit will take place at the Maryland Child and Family Development Lab in the Department of Psychology in the next week or two, at a time that is convenient to you. First, you and your child will be together as your child gets used to our playroom and to the female research assistant. Next, you will be taken to a separate room while your child draws some pictures and plays some games with the research assistant. You will be asked to complete some questionnaires about your thoughts and feelings about being a parent. Then, we will record your breathing and heart rate by attaching two small Velcro straps to two of your fingers and fitting an elastic band around your chest. You should not experience any physical discomfort during the recording. You will also watch some short videos and answer questions about them. Finally, you will be asked some interview questions about your daily experiences with your child. The entire visit will not last more than 90 minutes. You will be paid $25 at the end of this visit.* *Recording: You and your child will be videotaped during the home visit and playroom visit. The videos and audio recordings are being made so we can watch them later. Only the research staff will see or hear these recordings unless you give separate written permission at the end of each visit for your recordings to be used for educational purposes.*
Potential Risks and Discomforts	*In this study, there are no big risks for you or your child. Like all research projects, there is the risk that someone who should not see the things you tell us might see them. This will probably not happen. We have many ways to make sure this does not happen. See the Confidentiality section below to see how we will keep the things you tell us private.* *Some questions you will answer are about personal things that have*

	happened to you or your moods and feelings. Sometimes, thinking or talking about personal things causes people to feel sad or angry. If you are feeling this way, you can skip any question that you do not want to answer. You can also choose to end any part of the study at any time. *The tasks and games that will be done with your child have been done by researchers many times before with no serious risks. These activities are meant to be fun for children, like playing with toys and drawing pictures. However, your child will be away from you for part of the time. This sometimes causes children to become upset. If your child is upset during the visit, you can ask us to stop any activity. We will also try to make sure your child leaves the playroom in a good mood.*
Potential Benefits	*This research is not designed to help you or your child personally, but the results will help the investigator learn more about child development. We hope that, in the future, other people might benefit from this study through improved understanding of children's development.*
Confidentiality	*Any potential loss of confidentiality will be minimized by storing data, including questionnaires, heart rate recordings, audio, and video in a locked office on password-protected computers and/or locked filing cabinets. Your names will never be used, and any identifying information will be removed from the interview transcripts. We will assign a number code to identify the research data of you and your child.* *If we write a report about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.*
Medical Treatment	*The University of Maryland does not provide any medical, hospitalization, or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.*
Right to Withdraw and Questions	*Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.* *If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact Bonnie Brett, Graduate Researcher, at: Department of Psychology, University of Maryland, College Park, MD 20742, 301-405-0009, bbrett@umd.edu, or the investigator, Jude Cassidy at jcassidy@umd.edu, 301-405-4973.*

Participant Rights	*If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:* **University of Maryland College Park** **Institutional Review Board Office** **1204 Marie Mount** **College Park, Maryland, 20742** **E-mail: irb@umd.edu** **Telephone: 301-405-0678** *This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.*	
Consent for Future Contact	*We request permission to contact you in the future. We may contact you about other research studies.* _____ *I agree to be contacted in the future* _____ *I **do not** agree to be contacted in the future.*	
Statement of Consent	*Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction; and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.* *If you agree to participate, please sign your name below.*	
Signature and Date	**NAME OF CHILD** **[Please Print]**	
	NAME OF PARENT **[Please Print]**	
	SIGNATURE OF PARENT	
	DATE	

Study ID_____

Educational Video and Information Consent Form

Thank you for being part of our research study. You agreed to let us use what you told us for research. You also agreed to let us use the videos of you and your child. These materials will help us learn a lot about how children grow.

Sometimes researchers find it helpful to share what they learn from studies like this one. It can help other parents and teachers learn more about how children grow. It can also help researchers and students. We now want to ask if we can share your and your child's materials with others. We would use it in places where it can help people learn about children. Some of these places are at meetings, workshops, and classes with researchers, students, teachers, and parents. Of course, your name and your child's name will never be used. If you do not agree to let us share your materials with others, that is ok.

If you do not sign this form, your and your child's materials will not be shared with others. This includes what you told us on the questionnaires and the videos of you and your child taken in the playroom and at the home visit.

I have read this form. I have had the chance to ask questions about it. I understand that I am now being asked to let all videos and materials of myself and my child be shared with others. This means that they may be used in places where it can help others learn about children.

_____I agree for the videos and materials of me and my child to be used in places where it can help others learn about children.

_____I do not agree for the videos and materials of me and my child to be used in places where it can help others learn about children.

Child's name: Your signature:

_____ _____

Your name [please print]: Date:

_____ _____

Appendix C: All Study Measures and Procedures

Pre-survey (completed prior to Visit 1)

Questionnaires

- Interpersonal Reactivity Index (Davis, 1983)
- Experiences in Close Relationships Scale - Revised (Fraley, Waller, & Brennan, 2000)
- Beck Depression Inventory (Beck, Steer, & Carbin, 1988)

Visit 1

Child and Mother Together

Intake and study overview
- Experimenter warm-up with child (playing with age appropriate toys)
- MomExp goes over consent form with mother

5 minute free play (child and mother alone in room)

Experimenter re-enters and plays game with child for 3 minutes

MomExp enters and takes mother to another room

Child and Mother Separate

Child Tasks (Forward Order)	**Mother Tasks**
Warm-up (I Spy game)	Begin physiological recording – electrodermal activity and heart rate
Set up for Drawing Task (drawing)	
Priming game #1	Modified Parent Development Interview – Revised (Slade et al., 2003; counterbalanced with Leerkes infant cry procedure)
Ruined Drawing Task	
Set up for Phone Task (books and puzzles)	Leerkes infant cry procedure (e.g., Leerkes et al., 2011; counterbalanced with parent interview)
Priming game #2	
Broken Phone Task	End physiological recording
Transition to sand table and set up for Infant Cry Task	
Priming game #3	
Infant Cry Task	
Pacifier task (Panfile & Laible, 2011, instrumental helping task)	
Priming game #4	
Dictator Game (sharing task)	

Child and Mother Together

4 minute Reunion

Goodbye / Certificate

Visit 2

Child and Mother Together

Intake and study overview

- Experimenter warm-up with child (playing with age appropriate toys)
- MomExp reviews study procedures with mother

MomExp enters and takes mother to another room

Child and Mother Separate

Child Tasks (Forward Order)	**Mother Tasks**
Modified Bryant Empathy Index (Bryant, 1982)	Secure Base Script Word Prompt Procedure (Waters & Waters, 2006)
Attachment Story Completion Task (Bretherton, Ridgeway, & Cassidy, 1990)	Questionnaires - Coping with Children's Negative Emotions Scale (Fabes, Eisenberg, & Bernzweig, 1990)
Peabody Picture Vocabulary Test (Dunn & Dunn, 2007)	- Spanking my Child (created for this study)
Caregiving Story Completion Task (created for the present study)	- Demographics - Shipley Living Institute Scale (Shipley, 1940; Zachary, 1986)
Clipboard set up and task	- Social Touch Questionnaire (Willhelm, Kochar, Roth, & Gross, 2001) - My Child questionnaire (Kochanska et al., 1994) - CBCL; aggression subscale (Achenbach, 1991) - Emotion Regulation Checklist (Shields & Ciccheti, 1997)

Child and Mother Together

5 minute reunion

Goodbye / Payment / Prize

Appendix D: Comprehensive Literature Review

Does Secure Attachment Foster the Development of Empathy and Prosocial Comforting in Childhood? A Review of the Literature

Bonnie E. Brett

Does Secure Attachment Foster the Development of Empathy and Prosocial Comforting in Childhood? A Review of the Literature

The ability to sensitively care for others' wellbeing develops early in ontogeny (Roth-Hanania, Davidov, & Zahn-Waxler, 2011; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) and is an important developmental milestone for healthy social, emotional, and moral development. Theoretical and empirical work on the motivation and capacity to care for others has identified prosocial behavior and empathy as two particularly important components of this socially complex behavior. Prosocial behavior, defined as a voluntary behavior benefitting another person (Grusec, Hastings, & Almas, 2011), is often delineated into three categories: helping, sharing, and comforting. It is thought that helping and sharing are appropriate responses to instrumental and material needs, respectively. Prosocial comforting, the focus of this review, is the prosocial response to emotional distress (Dunfield & Kuhlmeier, 2013). Prosocial comforting may be motivated by positive emotions, such as empathy, or negative emotions such as personal distress (Eisenberg et al., 1989; Staub, 1978). Empathy is defined as a vicarious emotional response to another's plight that is more aligned with the other person's plight than the emoter's own situation (Hoffman, 1978), and has both cognitive (e.g., emotion recognition and understanding) and affective (e.g., emotion contagion) components.

In the early days of developmental science, researchers showed little theoretical or empirical interest in children's capacity to care for others. Accepted developmental theory at the time asserted that children below school-age were largely egocentric and socially inept, with responsiveness to others' needs not evident until middle childhood

(Piaget & Inhelder, 1962; Zahn-Waxler et al., 1992). This effectively shifted the focus of inquiry on empathy to its characteristics in older children for many years (e.g., Feshbach & Roe, 1968). However, a major shift in the way emotions were conceptualized (i.e. as intra- and inter-personal motivators and regulators; see Campos, Campos, & Barrett, 1989, for a discussion of the socioemotional perspective), led to interest in the inner lives of children and interest in early empathy and prosocial behavior burgeoned. Hoffman (1978) advanced the first developmental theory of empathy, in which he described four stages of empathy, beginning in infancy. Accordingly, researchers soon uncovered primitive precursors to empathy in even newborn infants (termed emotional contagion, e.g., Sagi & Hoffman, 1976). However, as children begin to evince increasingly complex social skills (e.g., self-other differentiation, emotion understanding) and motor skills, they show rapid changes in their ability to care for others. The current view is that empathy emerges in the second half of the first year of life, though there is some variability due to normal individual differences in development (see Hoffman, 2000; Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008).

Prosocial comforting also emerges in this timeframe due to the advanced capabilities necessary for enacting comforting behavior. Specifically, the advent of prosocial comforting coincides with the advancement of infants' cognitive and self-regulatory abilities (Decety & Meyer, 2008; Eisenberg, Fabes, & Spinrad, 2006). In particular, emotion regulation, or

> the process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral

> concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals (Eisenberg & Spinrad, 2004, p. 338)

seems to play a key role in the development of infants' and children's prosocial comforting behavior. Facing the distress of another person is in itself a distressing event, and children must be able to regulate their own negative emotions to focus on the needs of the other person and respond empathically. If they are unable to do so effectively, their principle concern becomes relieving their own, rather than the other person's, distress (Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Batson, O'Quin, Fultz, Vanderplas, & Isen, 1983). Consistent with this and beginning in toddlerhood, some children respond to the distress of others with concerned attention and prosocial overtures, whereas others respond with hostility, physical or emotional distancing, or personal distress. These individual differences in the ability to respond to another's distress are linked with important developmental outcomes such as peer acceptance and friendship quality (Clark & Ladd, 2000), underscoring the importance of determining predictive factors of the ability to care for others.

Given that empathy and prosocial comforting behavior are both inherently relational constructs, researchers soon began to examine early relationships as a foundation of the development of care for others. The quality of attachment relationships emerged as a theoretically sound predictor of children's empathy and prosocial comforting, and empirical investigations soon followed. To my knowledge, there has been no systematic review of the link between attachment quality and empathy and prosocial comforting. Thus, the goals of this review are to (a) provide a thorough review

of the literature on links between early attachment quality and two specific components of caring for others: empathy and prosocial comforting and (b) identify possible future directions for moving this literature forward.

Overview.

First, I will lay out the theoretical foundations of link between attachment quality and empathy and prosocial comforting. Then, I will briefly discuss issues related to the measurement of empathy and prosocial comforting, and will provide parameters for the literature included in this review. Next, I will provide a systematic review of the empirical work examining this link, beginning in infancy and ending in adolescence. I will end by discussing logical future directions for moving the field forward.

Theoretical foundations of the link between attachment quality and empathy and prosocial comforting behavior

Attachment theory posits that all children are evolutionarily endowed with an attachment system that compels them to seek proximity to one or more specific individuals in times of distress. This serves the biological function of obtaining protection in times of trouble, and increases the chance of surviving to reproductive age (Bowlby, 1969 /1982). Attachment figures, most often parents, are thought to serve as a secure base from which the child can explore the world, and as a safe haven for him/her to return to when needed (e.g., when distressed or in danger). Some parents serve both of these roles effectively, supporting exploration and being consistently available when needed, whereas other struggle, stifling exploration or discouraging attachment behavior. These differences in parental responses to attachment-related needs are linked with the quality of the attachment relationship. In turn, attachment quality in early childhood has been

linked with a large number of social and emotional competencies throughout life (see Thompson, 2008, for a review).

There are multiple pathways through which early attachment quality may be linked with later empathy and prosocial comforting behavior. In the following sections, I will describe the role of attachment in the formation of emotion regulation strategies, mental representations of attachment relationships, and caregiving scripts, and how these, in turn, theoretically contribute to the development of empathy and prosocial comforting.

Attachment and emotion regulation. First, as was mentioned, a key component of effectively caring for others is the ability to control one's own emotions (Batson et al., 1983). It has long been held that early attachment relationships may be the context in which children first learn to effectively regulate their emotions (Cassidy, 1994; Kopp, 1989; Sroufe, 1979, 1996; Thompson, 1990, 1994). Infants, wholly unequipped to deal with powerful emotions themselves, turn to caregivers in times of distress for help regulating feelings like fear, sadness, and anger. Through repeated experiences of co-regulation and recovery, infants are able to learn effective strategies for reducing emotional arousal, laying the foundation for later self-regulation (e.g., Thompson, 1991; Tronick, 1989).

Importantly, the types of strategies learned depend in part on the quality of the attachment relationships within which they are learned (Calkins & Leerkes, 2011; Cassidy, 1994). Secure children, who are able to use their attachment figures as both a secure base and a safe haven, and who have had the experience of being sensitively responded to in times of distress, likely learn that negative emotions are an acceptable form of communication for expressing needs and that they serve to elicit care from

concerned caregivers (Bretherton, 1990). Moreover, through repeated, sensitive care, secure children likely learn that emotions are not overwhelming, and should be able to develop strategies to effectively regulate their own negative emotions (Calkins & Leerkes, 2011; Cassidy, 1994).

Insecure children, on the other hand, have parents who struggle with either providing a secure base or a safe haven and learn entirely different strategies for dealing with negative emotions. Avoidant children, whose parents tend to reject and devalue negative emotions or to respond to them harshly, are likely to learn that negative emotions are unacceptable and should be terminated quickly, or not expressed at all. Consequently, they learn to suppress, rather than regulate negative emotions (Cassidy, 1994). For example, in the Strange Situation Procedure (SSP; Ainsworth, Blehar, Water, & Wall, 1978), a procedure designed to elicit stress in infants through a series of separations and reunions with their caregivers, avoidant infants may appear less stressed than other infants and are unlikely to seek out their parents at reunion. Despite this, research has shown that avoidant infants do evince cardiac acceleration during separations of the SSP, belying their apparent calm (Sroufe & Waters, 1977).

Insecure-resistant children, on the other hand, whose parents are only inconsistently responsive to their attachment needs, likely learn that only large, dramatic emotions are sufficient to elicit a response. As Main and Soloman (1986) noted, "in its heightened display of emotionality and dependence upon the attachment figure, this infant successfully draws the attention of the parent" (p.112). Consequently, insecure-resistant children may learn to hyperactive, rather than regulate, negative emotions in the service of keeping caregivers close by (Cassidy, 1994; Cassidy & Berlin, 1994).

Empirical research supports this notion, and has consistently shown that individual differences in attachment quality lead to theoretically expected individual differences in emotion regulation (see Calkins & Leerkes, 2011, for a review; see also Mikulincer & Shaver, 2008). In turn, these learned emotion regulatory capacities ought to be linked with the sensitive, other-focused care children are willing and able to provide. Secure children, when faced with the distress of another, should be able to regulate their own negative affect and focus on the plight of the other person in a sensitive manner. Insecure children, who may not have learned effective emotion regulation strategies, may employ different strategies. Insecure avoidant children may be expected to protect themselves from their own distress by devaluing the needs of the other person, by escaping or ignoring the situation, or when this is not possible, reacting in an angry or defensive manner. Insecure-resistant children, on the other hand, might be expected to hyperactivate the distress they feel in response to another's distress, and to become overwhelmed and dysregulated. This may lead them to engage in self-focused responding with the goal of alleviating their own, rather than the other person's, distress.

Attachment and mental representations. A second means by which early attachment quality may predict later expressed empathy and prosocial comforting behavior is through the formation of attachment-related representations. Theories in multiple psychological fields (e.g. social psychology, developmental psychopathology) have underscored the importance of social relationships in the formation of individual differences in social information processing (see Crick & Dodge, 1994, for a review; see also Bowlby, 1973; Cassidy & Shaver, 2008). Children's earliest social experiences occur largely in the context of the parent-child relationship, and it is through these early

repeated relational experiences that children form representations, or internal working models of themselves, of relationships, and of other people (Bowlby, 1969/1982; Bretherton & Munholland, 2008; Main, Kaplan, & Cassidy, 1985). The structure of these internal working models leads to specific, predictable patterns of expectations and interpretations of the world and the people in it (Dykas & Cassidy, 2011) and are adaptive in helping children to interpret the world around them by providing a quick, efficient means for understanding and interpreting social information (Bowlby, 1973; Bretherton & Munholland, 2008). By using internal working models as a perceptual filter, children are able to quickly assign meaning to a range of social cues on a moment-to-moment basis.

With respect to care for other people, secure children, who have had the experience of being cared for in times of distress, have an internal working model of themselves as capable of eliciting care, of others as being kind and worthy of care, and of the world as a place where distressed persons are cared for. Insecure children, however, who have been responded to harshly, inconsistently, or not at all, form internal working models of themselves as incapable of eliciting or unworthy of care. Further, they may come to view others as unkind and untrustworthy, and of the world as a place where distress is not deserving of a response (Bretherton & Munholland, 2008). In fact, research has shown that beliefs about the appropriateness of negative emotions significantly influence sympathy and helping behavior in children (Hepach, Vaish, & Tomasello, 2013). Given that insecure children learn that negative emotions are often inappropriate, they should be less willing to sympathize and help others in distress. Theoretically, the internal working models formed in early relationships are carried with the child

throughout development, and serve to guide behavior and expectations in new relationships and in new situations. Thus, when faced with the distress of another, secure children have the expectation that someone will help in a sensitive manner, whereas insecure children do not. These expectations should have predictable consequences on both empathic concern for and prosocial behavior directed toward the distressed person.

Attachment and caregiving scripts. The third avenue by which early attachment relationships may form the basis of empathy and prosocial comforting behavior is through attachment-related scripts. Scripts are enduring cognitive representations of an expected sequence of events given a particular situation (e.g., visiting a restaurant; Shank & Ableson, 1977) that serve to inform expectations of events and guide and organize ongoing behavior (e.g., Shank & Ableson, 1977). Scripts are an important component of internal working models (Waters & Waters, 2006) and help to organize behavior and patterns of interaction with attachment partners. One type of script in particular, formed through a person's history of secure base experiences (i.e., situations when support was needed and sought and their resolution) is termed a secure base script. When accessed (e.g., when the attachment system is activated), a secure base script for a specific attachment figure will guide expectations and behavior with that person, even if he or she does not always behave according to the script (Waters & Waters, 2006). Additionally, these specific script-like representations are carried forward into new relationships and can guide expectations about and behavior with new people (Sroufe & Fleeson, 1986).

Accordingly, children's behavior in attachment-relevant situations should reflect the expectations and emotions contained in their secure base script. Secure children, who have had consistent and reliable support when needed, theoretically have a complete,

coherent, and readily accessible script that includes successful support seeking, problem resolution, affect regulation, and return to play (or exploration, interaction, etc; Waters & Waters, 2006). One study examined this notion by presenting 12- to 16-month old infants with animations of two circles meant to portray a child (small circle) and either a sensitive caregiver, who returns to the small circle when it pulses and cries, or an insensitive caregiver, who continues away from the small circle. Secure infants looked reliably longer at the animation of the insensitive caregiver, indicating that this violated their expectations of typical caregiving behavior. In contrast, insecure infants, whose secure base script likely reflects a history of harsh or inconsistent responses to attachment needs, looked longer at the animation of the sensitive caregiver (Johnson, Dweck, & Chen, 2007).

Importantly, children theoretically learn both sides of this relationship (i.e., support-seeking and support-provision) and are motivated to recreate it, even if roles are switched and new behavior is required (Sroufe & Fleeson, 1986). Thus, when secure children find themselves in a position to provide care to another, they should have a coherent, sensitive script to follow and be motivated to follow it. Insecure children, however, likely do not have a coherent, readily accessible script to follow and may become defensive or overwhelmed.

In sum, there are numerous pathways by which early attachment relationships may influence how children provide care to distressed others and how secure attachment specifically fosters the development of both empathy and prosocial comforting responses. In the following section, I will review the literature examining these links from infancy through adolescence.

Review of the Literature

Study Selection

As previously defined, empathy refers to the internal, felt, component of caring for others, whereas prosocial comforting behavior refers to observable, quantifiable behavior. Yet given the complexity of measuring cognitions and affect, particularly in children who are unable to self-report, many researchers interested in the capacity to care for others have used prosocial behavior as a proxy for empathy. Although empathy may motivate prosocial behavior, this is not always the case. Some situations may be too complex or too stimulating for young children to respond to, regardless of their internal feelings related to the situation. Similarly, prosocial behavior can follow from empathy, but often, it may be motivated by other influences, such as personal distress, compliance, and cooperation (Hastings, Utendale, & Sullivan, 2007). Thus, conflating empathy and prosocial comforting behavior may be problematic and lead to false conclusions regarding one construct or the other. Other researchers have effectively separated the two, measuring empathy through such visible indices as concerned attention and affect mirroring and classifying all attempts to comfort as prosocial behavior (e.g., Zahn-Waxler et al., 1992). For the purposes of this review, I intend to report on the constructs as they have been defined by the researchers studying them, but urge readers to bear these considerations in mind.

Additionally, research lines examining the constructs of attachment, empathy, and prosocial comforting have employed many different techniques to assess each. For the purposes of this review, I will include studies of typically developing populations that (a) claim to measure attachment and do so with a validated measure, and (b) claim to

measure empathy, prosocial behavior, or comforting behavior *and have a measure reflecting responses to distress in particular*. This is particularly important to note, as many of the studies described here employ the use of behavioral composites comprised of many different behaviors (e.g., helping, sharing, and comforting). Although this review is not concerned with helping or sharing specifically, I will include such studies if they contain a component of responding to another's distress. In the following sections, I review this literature, beginning in infancy and toddlerhood and ending in adolescence.

Attachment and Care for Others Infancy and Toddlerhood

Because of the difficulty of measuring affective and emotional constructs in very young children and the complex set of skills required for prosocial action, research addressing the link between secure attachment and empathy and prosocial comforting in infancy and toddlerhood is sparse. The three extant studies provide preliminary, though weak, evidence for the theorized link. For instance, in one study, secure infants (measured at 12 months using the Strange Situation Procedure; SSP; Ainsworth, Blehar, Waters, & Wall, 1978) were more likely than insecure infants to be compliant, cooperative, and to "rescue" a baby from a nearby dog at 21 months after being told, "Don't let the doggie bite the baby!" Although none of these outcomes directly measures empathy or prosocial comforting, these results illustrate that, in this sample, secure infants were more generally prosocial and willing to act on the behalf of another (effectively "caring" for the baby) than insecure infants (Londerville & Main, 1981).

Two other studies examining empathy and prosocial comforting in infancy found only partial support for the proposed link. For instance, van der Mark and colleagues (2002) found that security (assessed with the SSP at both 16 and 22 months) was

concurrently associated with empathic concern for a stranger's displays of pain and sadness, but not for participants' own mothers in a sample of young girls. Interestingly, empathic concern for stranger decreased from 16 to 22 months, whereas empathic concern for mothers increased (van der Mark, van Ijzendoorn, & Bakermans-Kranenburg, 2002).

In another study, attachment was assessed at 12 months using the SSP. Infants were assigned continuous scores for proximity-seeking, contact-maintenance, avoidance, and resistance and were assigned to one of the four classic attachment classifications (and subclassifications, if applicable; Carter, Little, Briggs-Gowan, & Kogan, 1999). Parents completed The Infant-Toddler Social and Emotional Assessment (ITSEA; Carter & Briggs-Gowan, 1993), which yielded scores for empathy. The ITSEA also has a prosocial peer interaction subscale, but its items do not refer to comforting behavior specifically and will not be considered here. Interestingly, neither continuous nor categorical scores of attachment quality were significantly related to maternal reports of child empathy. However, a series of three-way (secure, avoidant, and resistant) ANOVAs across the subscales of the ITSEA revealed marginal significance for group differences in mother-reported empathy. Follow-up pairwise comparisons indicated that both avoidant and resistant infants were rated as less empathic by their mothers than were the secure infants.

Summary of research on attachment and care for others in infancy. Overall, these three studies illustrate that, even early in development, children appear to be evincing individual differences in both empathy and prosocial comforting toward unknown others, and that these differences are at least partially driven by individual difference in attachment quality. The evidence, however, is weak at best. Of the three

studies presented, only one showed evidence of a clear link between secure attachment and prosociality, and it employed a measure of prosocial behavior that may be questionable. Rather than allowing the infants to respond naturally to their environment, the researchers gave the infants a specific command. Thus, infants' responses may have reflected compliance rather than prosocial intentions. Of the other two studies, one found only weak evidence (i.e., a marginally significant statistical model) linking attachment to maternal reports of child empathy. It is possible that mothers who have secure infants are also slightly more likely to notice and report on positive behaviors in their children. The third study found that attachment was related to empathy for a stranger, but not a caregiver. It may be that demonstrating empathy and prosocial responses to an attachment figure is less arousing than caring for a stranger, and it is particularly in the latter circumstance that children must draw on past relationships to guide behavior.

It is also possible that in the first two years of life, the link between attachment and care for others is not yet fully realized, due to the limited cognitive abilities and behavioral repertoires of such young children. In fact, although precursors to empathy are evident even in newborns (e.g., Sagi & Hoffman, 1976), many theorists have proposed that it is not until the second year of life that higher-order emotions requiring perspective taking (e.g., empathy, guilt, and shame) truly emerge (e.g., Campos, Barrett, Lamb, Goldsmith, & Sternberg, 1983). It may simply be that in young infants, individual differences in care for others is based more on individual differences in socio-emotional development than on individual differences in attachment quality.

Attachment and Care for Others in Preschool and Middle Childhood.

There are 17 studies examining the link between attachment quality and care for others in preschool and middle school aged children. First, I will first present empirical evidence in support of this hypothesized link. Then, I will present findings indicating mixed evidence. Third, I will present studies in which examinations revealed a null association between attachment quality and care for others. Keeping in mind the wide variety of methods used to assess the constructs of interest, and in an effort to organize the literature in a coherent way, within each section, I will present studies in groups according the measure used to assess attachment. I will begin each section with studies that used the SSP to assess attachment. Then, I will present studies that employed the Attachment Q-Sort (AQS; Waters & Deanne, 1985). Then, I will present studies employing measures designed to tap into attachment scripts, and then finally, those using self-report measures.

Studies providing empirical support for the link between secure attachment and care for others. Eight studies provide evidence for the link between early attachment quality and empathy and prosocial comforting. Three, conducted by Sroufe and colleagues, examined this link in preschool aged children and found that secure attachment was associated with greater empathy and prosocial comforting. For instance, in one study, research examined the proposed link longitudinally and found that attachment (assessed with a procedure similar to the SSP) at 15 months was positively associated with sympathy toward peers' distress at 3.5 years, assessed using a Q-sort measure (sorted by two independent observers across 5 weeks in a classroom setting; see Bronson, 1975 for a description of the measure; Waters, Wippman, & Sroufe, 1979).

The other two studies by Sroufe and colleagues used samples collected for the Minnesota Longitudinal Study of Parents and Children. In one, Sroufe (1983) found that attachment, assessed using the SSP, was related to teacher ratings of empathy using the California Child Q-Sort (Block & Block, 1969). Empathy was "characteristic" of secure children but "uncharacteristic" of avoidant children, and resistant children fell between these two extremes (Sroufe, 1983). Similarly, but using observational data in a naturalistic preschool setting, Kestenbaum, Farber, & Sroufe (1989) found that children who had been classified as secure at 12 and 18 months in the SSP displayed significantly more empathic overtures (measured on a 7-point-scale, with a 1 being "In the vicinity but no apparent concern" and a 7 being "Intense, clear-cut affective involvement with an attempt at helping, comforting, distracting the person… nurturing, or going to get the teacher;" Kestenbaum et al., 1989, p. 57) to distressed peers than did children who had been classified as avoidant. Empathy scores for the resistant group, although not statistically different from either of the other groups, fell in between those of the secure and avoidant groups. In addition, although the authors did not statistically examine group differences in anti-empathic responses (measured on a 3-point-scale, with a 3 being "Clear attempt to aggravate situation; ongoing physical or verbal abuse; or continued aggravation of situation even when the victim requests child to stop;" Kestenbaum et al., 1989, p. 57), they noted that of the twelve instances of anti-empathic responses observed across children, nine came from children with avoidant histories and two came from children with resistant histories. Further, of the six incidents in which children's responses reflected confusion about who was distressed (the distressed child or the responder), four of them were produced by children with resistant attachment histories.

In another study examining the association between attachment quality and care for others in 36-month-olds, security, assessed using the mother-sorted Attachment Q-Sort (AQS; Waters & Deanne, 1985), was positively associated with children's mother-reported emotion regulation and mother-reported empathy. Although attachment was not directly linked with prosocial comforting (measured behaviorally through the child's attempts to help the experimenter find a bottle to soothe a crying baby), empathy was (Panfile & Laible, 2012). Path analyses revealed that emotion regulation mediated the association between secure attachment and empathy, such that secure children were better able to regulate their own emotions, which in turn predicted greater empathy. Additionally, greater mother-reported child empathy also positively predicted children's observed prosocial behavior (Panfile & Laible, 2012). A second study by the same authors examined the link between mother-sorted attachment security on the AQS and children's empathic concern, but employed a longitudinal design (Murphy & Laible, 2013). Mother-child dyads visited the lab when the children were 42- and 48-months old. There, mothers rated their children's attachment security on the AQS and engaged in a video-recorded free play session with their children. Eight minutes into the session, a baby cry sounded from outside the room. Trained coders rated the infants' facial expressions on a 4-point scale from 1 (no concern or change in expression resulting from the baby cry) to 4 (strong facial concern, including brow furrowing for and downward turned mouth for at least 8 seconds) reflecting empathic concern. Results indicated that attachment security at 42 months significantly predicted for empathic concern at 48 months, controlling for empathic concern at 42 months. They also tested the inverse of this model, and found that attachment security, but not empathic concern, at 42 months

significantly predicted attachment security at 48 months, indiciating that the link between attachment quality and empathic concern is not bidirectional.

Denham (1994) also examined the link between mother-sorted AQS classifications and observed emotional (i.e., concerned / empathic, distressed, or non-optimal) and behavioral (prosocial or avoidant) responses to maternal simulations of anger and sadness in 3- to 4-year-old children (M = 44 months). She found that children who displayed sympathy and responded prosocially to their mothers were also rated as more securely attached by their mothers. In addition, children who showed non-prosocial, distressed, and defensive reactions were rated as less securely attached by their mothers (Denham, 1994). Finally, Teti and Ablard (1989) found that, when left in a strange room together, older siblings (M age = 4.02) who were rated as more secure on the mother-sorted AQS were more likely to soothe and comfort (i.e., offer verbal reassurance, hold, kiss, caress, and redirect attention) a distressed younger sibling than children who were rated as less secure, and that this effect increased with age (Teti & Ablard, 1989).

Only one study examining this link in school-age children found support for it, but it extended the literature in important ways. Futh and colleagues (2008) assessed attachment quality in an ethnically diverse at-risk sample of 5.5-year-old children using the Manchester Child Attachment Story Task (MCAST; Green, Goldwyn, & Stanley, 2000), a story stem battery meant to elicit attachment representations in school-age children. Children were assigned to one of four attachment groups (i.e., secure, insecure-avoidant, insecure-ambivalent, and insecure-disorganized) and received scores reflecting engagement (i.e., the child's engagement and arousal during the story procedure),

positive content (i.e., how much the child's story contained evidence of mentalizing and a secure base script), coherence (i.e., the narrative cohesion and completeness of the story) and disorganization (i.e., the amount of atypical or bizarre content) based on the content of their narratives. Additionally, prosocial behavior was assessed using the 5-item prosocial behavior subscale of the 25-item Strengths and Difficulties Questionnaire (SDQ; Goodman, 1999). Of the five items, only one refers to comforting in response to distress ("Helpful if someone is hurt"). Results indicated that all four attachment indices were associated with teacher-reported prosocial behavior in theoretically expected directions (i.e., higher scores on engagement, positive content, and coherence were positively associated and higher scores on disorganization were negatively associated with teacher reported prosocial behavior), but only coherence was positively associated with mother-reported prosocial behavior, controlling for demographic risk factors and verbal IQ (Futh, O'Connor, Matias, Green, & Scott, 2008). In addition, only disorganization (and not organized attachment) was a significant and negative predictor of prosocial behavior. The study provided both evidence that attachment-related scripts may be linked with prosocial behavior and the first study of this link in an ethnically diverse, at-risk sample.

Studies providing mixed evidence for the link between secure attachment and care for others. The following six studies provide only moderate evidence for a link between attachment quality and empathy and prosocial comforting.

Only one study, using a longitudinal design, assessed attachment using the SSP at 2 years of age (Iannotti, Cummings, Pierrehumbert, Milano, & Zahn-Waxler, 1992). Then, at age 5, children were observed interacting with a peer. Prosocial behaviors (i.e.,

helping, sharing, comforting, cooperating, and affection) were coded from the video taped interactions. In addition, researchers assessed children's affective responses to and understanding of photographs depicting various emotion matched and non-matched situations. Children were rated on how their self-reported emotions matched the situational and affective cues. Results indicated that secure attachment at age 2 was related to prosocial behavior (but not prosocial comforting, specifically) at age 5. There were no significant links between early attachment and later indices of empathy.

Two studies conducted by Laible (2004, 2006) assessed preschoolers' (ages 3 – 5) attachment using the mother-sorted AQS. In both, mothers reported on their children's prosocial behavior using the 7-item prosocial subscale of the Child's Behavior Scale (Ladd & Profilet, 1996). Although this measures is intended to tap into prosocial behavior in general, it contains two items that refer specifically to responses to distress (i.e., "Seems concerned when classmates are distressed" and "Offers help or comfort when classmates are distressed"). In one study, secure attachment had no direct link with maternal reports of children's prosocial behavior. However, secure attachment was associated with children's effortful control, which, in turn was associated with children's prosocial behavior. In the second study, Laible (2006) used a similar procedure with nearly identical measures and found that mother-sorted secure attachment on the AQS was positively associated with maternal reports of children's prosocial behavior. In both studies, empathy expressed in a shorted version of the MacArther Story Stem Battery (MSSB; see Oppenhiem, Nir, Warren, & Emde, 1997) was considered as part of a composite score reflecting positive or prosocial representations of relationships.

Attachment security on the AQS was unrelated to these representations (Laible, 2004, 2006).

In older children, a new pattern of findings begins to emerge. For example, one longitudinal study assessed attachment at age 5 using an adapted version of the Attachment Story Completion Task (see Verschueren, Marcoen, & Schoefs, 1996), which yielded categorical attachment classifications similar to those assigned to young children (i.e, secure, avoidant, and bizarre-ambivalent). One year later, the children's teachers completed the Social Competence Inventory (SCI; Rydell et al., 1997), which includes a 17-item prosocial orientation subscale (but one item was removed because it concerned behavior toward adults). The subscale includes one item that pertains to prosocial comforting ("Tries to comfort a peer who is upset, not feeling well, or has been hurt") and two that pertain to empathy ("Is able to interpret ('decode') another child's feelings" and "Is able to sympathize with peers"). Results indicated that children who had been classified as secure one year earlier were rated as more prosocially oriented than children who had been classified as avoidant, but were no different than children who had been classified as bizarre-ambivalent (Rydell, Bohlin, & Thorell, 2005). In a similar study with older children and nearly identical results, children who were classified as secure in the SSP at 15 months were rated 8 years later by both mothers and teachers (in a combined score) as significantly more prosocially oriented on the SCI than children who were classified as avoidant in infancy (Bohlin, Hagekull, & Rydel, 2000). In a followup analyses, the authors examined the two items thought to relate specifically to empathy and found the same pattern of association. Children who were secure as infant were rated higher than those who had been avoidant, but not ambivalent. It is also notable that in

this study, attachment was also assessed at 8.5 years using the Seattle Separation Anxiety Test (SAT; Slough, Goyette, & Greenberg, 1988; Slough & Greenberg, 1990), but the resultant security scores were unrelated to prosocial orientation (Bohlin et al., 2000), indicating that it may early attachment relationships in particular that affect the development of care for others.

A final study assessed attachment in a Belgian sample of 4- to 6-year-olds and their mothers and fathers using the *Security Scale* (Kerns, Klepac, & Cole, 1996; Dutch translation: Verscheuren & Marcoen, 2002), a self-report measure designed to tap children's perceptions of: the degree to which a particular attachment figure is available and responsive, the child's self-reported tendency to turn to a particular attachment figure in times of trouble, and the child's communicatory patterns with the attachment figure on a 4-point scale (Michiels, Grietens, Onghena, & Kuppens, 2010). In addition, researchers combined children's prosocial behavior subscale scores from the mother-, father-, and teacher- reported SDQ (described above; Goodman, 1997; Dutch translation: Van Widenfelt, Goedhart, Treffers, & Goodman, 2003) to create a combined prosocial behavior score. Hierarchical regression analyses indicated that the link between self-reported attachment and mother-, father-, and teacher-reported prosocial behavior differed for boys and girls. Specifically, 4.4 percent of the variance in girls' prosocial behavior was significantly predicted by a model including both maternal attachment and maternal positive regard. Further, the addition of father attachment and father's positive regard explained an additional 3.4% of the variance, over and above that explained by maternal variables. However, father's positive affection was the only significant

individual predictor. In contrast, there were no significant predictors of boys' prosocial behavior (Michiels et al, 2010).

Null findings regarding the link between secure attachment and care for others. Five studies have no found no evidence for the associations between attachment and empathy and prosocial comforting. The first assessed older sibling attachment to both mothers and fathers using the SSP at 12 and 13 months, respectively. Then five years later, children's interactions with their siblings were assessed and coded for instances of conflict, shared affect, and prosocial behavior, which included any instances in which one sibling helped, shared, taught, or comforted the other, as well as friendly invitations to play. Results revealed that attachment to mothers and fathers at 12 months was unrelated to prosocial interactions with siblings at 6 years of age (Volling & Belsky, 1992). In a similar study, again older sibling attachment was assessed to both mothers and fathers using the SSP at 12 and 13 months, respectively. Three years later, both older (M age = 4 years) and younger (M age = 21 months) were left alone in a strange room for a short interval. Soon after, older siblings left the room with an experimenter and then returned. Sibling interactions were coded for instances of distress in each sibling and emotion regulation strategies employed by the older sibling during distress episodes of the younger sibling (i.e., ignoring, watching, seeking help, verbal comforting, physical comforting, personal distress, and punishment). In addition, dyads were coded for levels of comfort seeking, hostility, and positive affect. Results revealed that were no differences in comforting behavior based on attachment to mothers or fathers; however, older siblings with resistant attachment histories were 9 times more likely to be hostile and engage in conflicts with their siblings than children with secure histories, and 29

times more likely to seek comfort from their younger sibling than children with secure histories (Volling, 2001). In another study, attachment was assessed at 6 years using the coding guidelines described by Main and Cassidy (1988) for assessment in older children. At child age 8, prosocial behavior was assessed using the teacher-reported Social Behavior Questionniare (SBQ; Tremblay, Vitaro, Gagnon, Piché, & Royer, 1992), which includes ten items taken from the Prosocial Behavior Questionnaire (PBQ; Weir & Duveen, 1981), some which refer to comforting another person who is in distress. Attachment at age 6 was unrelated to teacher reports of prosocial behavior at age 8 (Bureau & Moss, 2010).

A third study examining this link in preschoolers used both the mother- and the father-sorted AQS to assess attachment and the teacher-reported PBQ to assess prosocial behavior in the preschool classroom, but found no association between mother- or father-reported security and teacher-reported prosocial behavior (LaFreniere, Provost, & Dubeau, 1992). In another, observer-sorted maternal AQS scores for preschoolers (mean age = 45 months) were unrelated to naturalistic observations of reactions to emotional displays by peers in the classroom (computed by subtracting negative reactions from positive reactions; Mitchell-Copeland, Denham, & DeMulder, 1997).

Summary of research on attachment and care for others in preschool and middle childhood. Of the 19 studies presented here, eight found support for the link between attachment quality and care for others. However, six studies provided mixed evidence, and five found no association between attachment and care for others. Given the myriad ways attachment was assessed, I will frame the results by the measure used to assess attachment.

Studies using the Strange Situation Procedure. Evidence from three studies supported the notions that attachment security assessed using the SSP was associated with greater sympathy towards peers' distress, teacher ratings of empathy, and more empathic overtures to distressed peers (which combined elements of empathy and prosocial comforting; Kestenbaum et al., 1989; Sroufe, 1983; Waters et al., 1979).

It notable is that the SSP relies on automatic, unconscious behavior during separations and reunions to assess attachment quality (Ainsworth et al., 1978). Similarly, many of these studies used naturalistic or structured observations of child behavior rather than maternal reports. Thus, results cannot be explained by reporter bias, as parents are not reporting on their own perceptions of the relationship and then reporting on child behavior.

Even so, two studies provided mixed results. One found that secure attachment was not associated with empathy, but was positively associated with prosocial behavior directed toward a peer, (Iannotti et al., 1992). However, it is interesting to note that this study was also the only study to use photographs to assess empathy. A review of the association between empathy and prosocial behavior found that the only measures of empathy unrelated to prosocial behavior were those employing photographs (Eisenberg & Miller, 1987). This implies that measures of empathy using photographs are qualitatively different than observational or reporting measures, and may not have the same pattern of associations.

In addition, in one study in older children, secure children were rated as more prosocial than avoidant, but not ambivalent, children. Follow-up analyses were performed on two items pertaining to empathy in particular, and the same pattern of

results was found (Bohlin et al., 2000). Importantly, only five studies in this section examined the link between attachment and care for others in children above the age of 5; one (using a scripts measure) found a pattern of results similar to this (Rydell et al., 2005), the other three (using the SSP and self-report measures), did not (although they assessed children in much wider age ranges). This indicates that the relation between attachment and care for others may evolve as children age; however, more studies are needed to determine whether this is the case.

Three studies found null results. Two found that attachment to mothers and fathers at 12 months did not predict prosocial or comforting interactions with siblings at 4 or 6 years of age (Volling, 2001; Volling & Belsky, 1992). It may be that interactions with siblings are subject to different influences than interactions with peers. This makes theoretical sense, as peer relationships are much less established than sibling relationships, and children may have to rely more on internal schemas and expectations to guide behavior in such relationships. Conversely, sibling relationships have an entire history of interaction from which children can draw on, meaning that behavior may be based more on internal working models of that particular relationship, rather than attachment relationships in general.

The other study to find a null relationship between attachment to parents and prosocial behavior found that attachment assessed at age 6 did not predict teacher ratings of prosocial behavior at age 8 (Bureau & Moss, 2010). It is possible that assessing attachment at such an advanced age provides a different metric than assessing it in infancy. This may be the case, as a large component of responding prosocially to another's distress is the ability to regulate one's own negative emotions – a capacity that

is formed in early childhood. Given that attachment has been found to have only low to moderate stability across childhood (e.g., Groh et al., 2014), it is plausible that attachment classifications assessed at 6 years of age do not entirely map onto classifications in infancy, and may not reflect early internal working models or learned patterns of emotion regulation.

Overall, studies using the SSP, the gold standard measure of attachment in young children, offer moderate evidence that there may be a link between attachment quality and dimensions of care for others as early as preschool. Interestingly, results supporting the links of interest only assessed attachment at very early ages and assessed empathy and prosocial behavior directed toward peers; whereas one of the three studies that did not find support for this link assessed attachment at a much later age and the other two assessed prosocial behavior directed at siblings. It may early attachment as measured by the SSP holds the key to influencing later peer-directed prosocial behavior, and that sibling relationships are so unlike peer relationships that this link does not hold with siblings.

Studies using the Attachment Q-Sort. Studies using the mother-reported AQS found that mother-reported emotion regulation mediated the relation between secure attachment and mother-reported empathy, which in turn predicted greater observed prosocial comforting, that secure attachment at 42 months predicted mother-reported empathy at 48 months, but that the inverse relation did not hold, and that children who responded to maternal displays of emotion with sympathy and prosocial overtures were more likely to be rated as securely attached (Denham, 1994; Murphy & Laible, 2013; Panfile & Laible, 2012). Additionally, some studies found an association between

attachment security and maternal reports of prosocial behavior, or attachment security and maternal reports of effortful control, which was, in turn, related to mother-reported prosocial behavior (Laible, 2004, 2006). One study also found an association between attachment security and comforting behavior with a younger sibling (Teti & Ablard, 1989). Although these studies are compelling, they must be interpreted with caution as a large number of these associations are between mother-reported variables and may reflect shared method variance and spurious associations. However, these studies have some strengths as well. For instance, three of the studies employed observational outcome data, which may reduce bias, and one employed a longitudinal design to effectively demonstrate the likely direction of effects.

Interestingly, in 2 of the studies mentioned above, the author failed to provide evidence that attachment was related to prosocial representations of relationships (Laible 2004, 2006). However, one study examining the association of the security scores on the AQS and attachment classifications derived from the MacArthur Strange Situation (MAC; Cassidy, Marvin, & the MacArthur Attachment Working Group, 1992) found that there was no association between the two (Posada, 2006). This indicates that the AQS is likely tapping a different dimension of security than the Strange Situation, and thus, may not tap into representations of relationships.

In addition, two studies that did not find a link between attachment and care for others employed the AQS. Specifically, one found that mother- and father-reported security scores were unrelated to teacher-reported prosocial behavior and the other found that observer-rated maternal security scores were unrelated to naturalistic observations of reactions to peer distress in the classroom (LaFreniere et al., 1992; Mitchell-Copeland et

al., 1997). It may be that child behavior at home (where the AQS is completed) and the resultant security score does not necessarily reflect the child's behavior in less familiar social situations. It is notable that all of the outcome measures supporting the link between AQS-rated attachment and care for others were either maternal reports of typical behavior (which would most likely be observed in the home) or observed behavior toward a caregiver, a sibling, or an infant. It is possible that the SSP and the AQS are tapping into two different dimensions of security that are predictive of care for others in specific situations. This notion is bolstered by the fact that, of the three studies examining the link between attachment and care for siblings specifically, the one study using the AQS found support, whereas the two employing the SSP found null results.

Studies using representational measures. Only one study found that attachment representations, measured through a script assessment (MCAST), were associated with teacher-reported prosocial behavior in theoretically meaningful ways. Results of the same study also indicated that disorganization (and not organized attachment) was a significant and negative predictor of prosocial behavior (Futh et al., 2008). The only other study that employed representational measures (the Attachment Story Completion Task) to measure attachment found that children who had been classified as secure (one year earlier) were rated as more prosocially oriented than children who had been classified as avoidant, but were no different than children who had been classified as bizarre-ambivalent (Rydell et al, 2005). As was mentioned previously, these results are not inconsistent with theory or with other studies examining this link in older children. It may be that as children age and are more capable of self-regulation, ambivalent children become more proficient at responding to others in a sensitive manner. Additionally, it is important to note that the

two studies finding this pattern of results assessed prosocial behavior more generally, and not response to distress particularly. Theoretically, it should be particularly in times of distress that ambivalent children will be overwhelmed and distressed themselves, whereas being kind to others and helping may not be as challenging. Thus, it may also be that the measures employed to measure prosocial behavior were not specific enough to untangle to subtle differences in ambivalent children's responding (i.e., to distress versus non-distress).

Studies using self-report measures. Only one study used a self-report measure to assess attachment (Michiels et al., 2010). The results of this study indicated that self-reported parental attachment was related to parent- and teacher-reported prosocial behavior in 4- to 6-year-old girls, but not boys. It may simply be that girls are better at self-reporting than boys, particularly at younger ages, in part due to their advanced language skills. For instance, one study found that by 6 years of age, girls were more unique emotion terms in discourse with their parents than boys (Adams, Kuebli, Boyle, & Fivush, 1995). This may have implications for a self-report measure focused on relationships and emotions within relationships. Additionally, research consistently shows that girls are rated as more prosocial than boys (although none of the work reviewed here addressed this question specifically; e.g., Ladd & Profilet, 1996; Rys & Bear, 1997). Thus, it may be that a combination of higher self-reported attachment scores and higher teacher reports of prosocial behavior produced this effect.

General discussion of the link between attachment and care for others in preschool and middle childhood. Overall, the results presented provide modest evidence for a link between attachment quality and components of care for others. It also suggests

that this link appears to depend, in part, on the measures used to assess each construct. For instance, studies using the SSP in infancy to predict behavior with peers generally found support for this link, whereas studies using separation and reunion procedures in older children or assessing prosocial behavior in response to siblings did not. Similarly, studies employing the AQS typically found that parent attachment was related to empathy and prosocial responding to mothers and unknown infants, but not with peers. Studies using scripts measures and self-reported attachment measures yielded mixed results. It may be that the association between attachment and care for others really depends on the specific, regulatory and representational components born out of such relationships and that each measure of attachment only taps into particular aspects of the attachment relationship, some of which may not include the afore mentioned capacities. There may also be age-related changes in the pattern of association, as two of the three studies of older children found that secure children engaged in more prosocial responding than avoidant, but not ambivalent children. Following a review of the adolescent literature, I will explore these notions further and suggest future directions.

Attachment and Care for Others in Adolescence

The literature regarding the link between attachment quality and care for others in older youth presents a far more consistent story. Six studies provide evidence in support of this link.

One set of studies measured attachment quality using the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), a 53-item self-report measure, designed to tap into the affective and cognitive dimensions of attachment security, as well as trust in the availability and responsiveness of attachment figures. The IPPA results in

three subscales: trust, communication, and alienation. Half of the items refer to parents, and the other half to peers. Given that this review is about how attachment to parents shapes later prosocial behavior, I will focus only on results concerning parental attachment.

The first study, which used only the mother and father scales of the adolescent-reported modified IPPA (Papini, Roggman, & Anderson, 1991), examined how maternal and paternal attachment were related to adolescent prosocial behavior measured with the mother-, father-, and teen-reported Adolescent Prosocial Behavior Inventory (specifically created for this study; ABPI; Eberly & Montemayor, 1998). The ABPI taps into two dimensions of prosocial behavior – helping (such as helping around the house) and affection. The affection subscale covers such behaviors as prosocial comforting, praise, and consideration (e.g., saying "I love you"). Results indicated that attachment to mothers and fathers was positively associated with the affection dimension of the ABPI, regardless of who was reporting, supporting the notion that attachment to parents may be related to prosocial comforting. In contrast, only child-reported helpfulness in boys was associated with attachment (Eberly & Montemayor, 1998). A second study in a sample 16-year-olds, and using a shortened version of the IPPA (with only 12 items each for the peer and parent subscales), measured empathic concern and perspective-taking using two subscales of the Interpersonal Reactivity Index (IRI; 7 items each; Davis, 1983). These two subscales were summed and averaged to create a sympathy score. Results indicated that those participants with the highest scores on parent (and peer) attachment also reported the greatest levels of sympathy. Additionally, those with the lowest attachment score also reported the lowest levels of sympathy (Laible, Carlo, & Raffaelli, 2000).

Laible (2007) also assessed attachment using the IPPA and empathy using the empathic concern and perspective taking subscales of the IRI, but also included a self-report measure of prosocial behavior (The Prosocial Tendancies Measure; Carlo & Randall, 2002), which included items about helping others in distress (e.g., "I tend to help others particularly when they are emotionally distressed"). Results indicated that adolescent attachment to peers and parents was related to both empathy and prosocial behavior, but that peer attachment was a stronger predictor overall. Finally, using the parent scale of a revised version of the IPPA (IPPA-R; Gullone & Robinson, 2005), Thompson and Gullone (2008) examined how secure attachment related to self-reported empathy and self-reported prosocial behavior in a sample of 12- to 18- year old Australians. Empathy was measured using the Index of Empathy for Children and Adolescents (IECA; Bryant, 1982) and prosocial behavior was measured with the prosocial subscale of the SDQ, which has been described previously. Attachment was positively associated with both empathy and prosocial behavior, and a regression model with attachment and empathy as predictors explained over a quarter of the variance in prosocial behavior (Thompson & Gullone, 2008).

The link between attachment and care for others in adolescent was also examined in a study of 9th and 10th graders (and a few 7th and 8th graders) that used an adapted version of the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) to assess attachments to mothers, fathers, and peers. Participants rated how much each of four paragraphs describing secure, dismissing, preoccupied, and fearful styles of attachment (see Crowell, Fraley, & Shaver, 2008, for a description of these attachment styles) was like them. Only ratings on the "security" paragraph were used as indices of

participants' attachment security with mothers, fathers, and peers. Participants also completed a 5-item prosocial behavior scale, taken from the Feelings and Behavior Questionnaire of the National Longitudinal Survey of Children (Statistics Canada, 1995). The scale contained two items relating specifically to empathy (i.e., ''I show sympathy to (feel sorry for) someone who has made a mistake'' and ''I comfort a person (friend, brother or sister) who is crying or upset.''). Attachment security with mothers and peers (but not fathers) was positively related to self-reported prosocial behavior (Markiewicz, Doyle, & Brendgen, 2001).

Only one study used observational data during a mother-adolescent discussion to measure empathy. Diamond, Fagundes, and Butterworth (2012) used the Adolescent Attachment Scale (AAS; Miller & Hoicowitz, 2004), to measure adolescents' anxiety (i.e., preoccupation with relationships and fear of abandonment) and avoidance (i.e., discomfort with closeness) in attachment relationships. Lower scores on both are indicative of attachment security. In addition, each participant and their mother had a ten-minute conversation during which they first discussed a positive event and then discussed something they had both rated as a contentious subject in the relationship. Afterward, mothers and teens separately watched the interaction twice, first coding how they felt at regular intervals, and then coding how they believed their discussion partner felt. Empathy sensitivity was coded as the match between one person's estimation of how the other felt and how the other person actually reported feeling. Perceived concordance was coded as the match between one person's estimate of the other's affect and that person's own self-reported affect. In addition, indices of physiological arousal reflecting affect regulation were assessed. Results indicate that adolescent avoidance was associated with

less empathic sensitivity to positive maternal affect. In addition, adolescent anxiety was associated with less empathic sensitivity to negative maternal affect and greater perceived concordance with maternal emotion states. Moreover, the highest levels of empathic sensitivity were demonstrated by those adolescents with low attachment anxiety and high vagal tone (i.e., an indication of psychophysiological health and competent emotion regulation; Diamond et al., 2012).

Summary of research on attachment and care for others in adolescence. Overall, the literature on attachment and care for others in adolescence supports the notion that attachment security should be related to higher levels of empathy and prosocial behavior. However, there are a few important considerations to keep in mind when interpreting these results. First, this literature relies almost exclusively on self-report measures to assess both attachment and care for others. This could indicate that shared method variance has a role in these associations (i.e., adolescents who report using their parents as a secure base also report engaging in more prosocial and empathic behavior), and they must be considered with caution. Additionally, the only observational method employed to assess empathy (Diamond et al., 2012) could be considered somewhat questionable. Specifically, the measure of empathic sensitivity employed involved watching tapes of personal interactions and rating how another person felt. Empathic sensitivity reflected the degree to which this rating matched what the person actually felt, which seems an indication of emotion recognition, and important component of empathy, rather than empathy itself. Thus, although there is a remarkable consistency to the literature thus far, additional investigations are needed to draw any

firm conclusions. In the next section, I will briefly discuss this body of literature as a whole and will suggest future directions.

Conclusions and Future Directions

Overall, there is only moderate support for the link between attachment and empathy and for the link between attachment and prosocial comforting in children and adolescents. The lack of consensus among the literature may in part be due to the wide variety of measures used to assess attachment, empathy, and prosocial comforting behavior. Each was assessed using observational measures, parent reports, observer reports, and self-reports. Each of these measures may capture slightly different facets of the overall constructs they are intending to measure with more or less specificity, and may lead to inflated or decreased effect sizes or type I or type II errors. Researchers interested in these constructs should begin a dialogue in an attempt to standardize the definitions and measures used to examine them, so a comprehensive, integrated literature can be constructed.

To begin, future studies examining the links between attachment and empathy and prosocial comforting could strive to use gold-standard measures of attachment, empathy, and prosocial comforting, when available. Additionally, within studies, researchers could attempt to use multiple methods for examining each of these variables. For instance, a self-report measures of empathy could be supplemented with physiological measures intended to tap unconscious markers of empathy. In addition, studies using questionnaires could endeavor to assess constructs from the perspectives of multiple reporters. Parents, teachers, and peers (of older children) could be utilized to capture a more complete view of typical child behavior across a variety of situations.

Importantly, the measures employed to assess prosocial behavior in this review were particularly varied. Even more concerning, the research covered in this review often selected measures that collapsed different components of care for others (i.e., helping, sharing, and comforting) into one composite score, despite research indicating that these types of prosocial behavior may require different skill sets and may not develop in parallel (Dunfield & Kuhlmeier, 2013). As such, the relation between attachment quality and a particular type of prosocial behavior, such as prosocial comforting, cannot be determined from the available data. In fact, given attachment's theorized role in the development of emotion regulation (Cassidy, 1994; Calkins & Leerkes, 2011) and the crucial role of emotion regulation in promoting empathy and prosocial comforting (Batson et al., 1983), it seems likely that it is particularly these two components of care for others wherein attachment's influence may lie. Future investigations should endeavor to piece apart the distinct predicators and correlates of specific types of prosocial behavior by examining them in separate lines of investigation.

Another substantial limitation of the literature examining the link between attachment quality and care for others in childhood is the exclusive reliance on correlational or predictive investigations. It is only through experimental methods that one can make causal conclusions about the effect of one construct on another. In the adult attachment literature, researchers have been quite successful in using a variety of priming techniques to experimentally manipulate adults' secure attachment representations. In doing so, researchers have been able to causally link attachment security with a number of social and emotional outcomes, including empathy and prosocial behavior (e.g., Mikulincer et al., 2001). Given that priming has been successfully employed with

children in a number of psychological domains, including attachment research (Stupica, Brett, & Cassidy, 2015; and see Stupica & Cassidy, 2011 for a review), this seems like a particularly promising avenue for future research.

In sum, the body of literature presented provides moderate evidence for the link between attachment quality with parents and care for others. This evidence is bolstered by the fact that this link was found in a number of studies employing myriad measures and reporters, but more work is needed to form firm conclusions. Future researchers should endeavor to standardize the ways these constructs are defined and measured, should strive to utilize multiple methods and reporters, and should attempt to examine these links experimentally.

Appendix E: Study Script; Child Portion

MomExp (the experimenter working with the mother) brings family in.

MomExp: "Before I open the door, I want to let you know that there is a mom visiting us today with her baby so we need to be a little bit quiet as we walk in. You'll just walk in and go straight to the first room."

MomExp opens door and motions for family to enter.

As family is entering lab:

E2 (RA operating camera and playing the part of "mom") is positioned next to a car seat covered by a blanket by the back door. A lifelike babydoll's hand is peeking out from under the blanket and E2 is gently stroking it. As mom and child comes in, E2 makes eye contact with the child, smiles, raises finger to lips, and says in a loud whisper:

E2: "Shhhhh. The baby is sleeping!"

Mom and child enter playroom.

During consenting (led by MomExp), E and child play with age appropriate playsets. Once mom is consented, E and MomExp leave room for 5 minutes.

At the end of 5 minutes, E re-enters and engages with child for 3 minutes using a picture search game with a bell. After 3 minutes, MomExp comes and takes mom into another room.

Child Portion; FORWARD ORDER

After mom leaves, E continues to play with child for 3 min. and then suggests another activity.

As she is cleaning up game:

E: Thanks for coming to play with me today! You're helping scientists learn about how 4 year olds think and play! So when we're all done here, I'll give you a special certificate that says you're an official Junior Scientist! I also want to tell you that every Junior Scientist that comes here plays 4 computer games. So in a little bit, we'll hear a beeping sound from my watch, and that means it's time to play a computer game! While we're waiting for the computer to get ready, we can just play some games together!

BLOCK 1 (counterbalanced with BLOCK 2)

<u>Drawing Task Setup</u>

E: Now I want to show you something!

E goes to the shelf to gather pre-made drawing of a flower, a person, and football and holds it up for child to see.

E: This is a drawing I've been working on for a long, long time and it's ALMOST finished, so I want to finish it now. I'm really proud of it, I think it's really pretty! And when I'm all done with it, I'm going to give it to my very best friend!

E walks over to cabinet where she has left a folder with a piece of paper hidden underneath. E points to the folder.

E: And here, I some more paper for you! I keep it in this folder.

E opens the folder.

E: Oh no! There's none left! I guess I ran out!

E lifts folder slightly revealing paper underneath.

E: Oh! It looks like there is one piece left! Phew! Great. Here's a piece of paper for you!

E give child paper.

E: So here's your piece. And check it out – we have so many colors to choose from!

E gets markers and lays them out on the table.

E: Every junior scientist who comes to visit the playroom draws us a picture of him / herself! So on here, you can draw you

E colors and converses with child; at about 5 min into the task:

E: You know what? I'm kind of thirsty. I'm going to get some water. Would you like some water?
E pours some bottled water into a cup for herself (and some for child if child wanted some). **Be sure to pour just enough water to take a few sips and have enough left to ruin the drawing but not to make a pool of water**. This is typically 1/3 to ½ full. E sets water cups on the table (be sure to drink some!). Be sure to place child's near the wall so child doesn't knock their own over.

<u>Once approximately 10 min has passed:</u>

There is a quiet beep.

E: Oh! Did you hear that? That means it's time to play one of the computer games I told you about! I'll teach you how to play! Come on!

Prime #1.

E1 brings child to computer and has them sit facing the screen.

E1: "Every game you'll play today is about different kinds of animals. In each game, you'll see pictures of different animals and answer one question about them. In this first game, the question is "Does it live in the water?" When the game starts, you'll see a picture of shapes or people. You don't have to do anything then; that's just the computer figuring out which animal to show next. Then you'll see a picture of an animal. When you see the animal, as fast as you can, you'll answer the question "Does it live in the water?" You'll answer by pressing one of these buttons. The green button means YES! If you push the green button, that means YES this animal lives in the water! The red button means NO! If you push the red button, that means NO this animal does not live in the water.

Now let me make sure you understand. When you see an animal, what question will you ask about it?

If correct: That's right, you'll ask: Does it live in the water?

If incorrect: No, remember, in *this* game, we ask "Does it live in the water?" Let me ask you again. [ask again, following same prompts for responses; ask three times].

Ok, and if the answer to "Does it live in the water?" is YES, which button should you push?

If correct: Yes that's right, you push the green button if the answer is YES it lives in the water.

If incorrect: No, you push the green button if the answer is YES it lives in the water. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the green button].

E1: And which button should you push if the answer to "Does is live in the water?" is NO?

If correct: Yes that's right, you push the red button if the answer is NO it doesn't live in the water.

If incorrect: No, you push the red button if the answer is NO it doesn't live in the water. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the red button].

E1: Ok! We're ready to play! Let's do a practice round together and then you can do it all by yourself. Remember, first there will be a picture of either shapes or people. That means the computer is thinking about which animal to show you, so get ready! Then you will see the animal picture and as fast as you can, push this button if the animal lives in the water, and this button if the animal doesn't live in the water.

E pushes ~ and the first sequence of pictures comes up.

E talks along with the pictures:

E: Oh the computer's thinking… and there is the animal! Which button should you push?

If child does it correctly: "Great! The answer to the question "Does it live in the water?" was YES, so you pushed the green button! Now you're ready to play all by yourself! I'll be right here if you need anything. I'll push the button to start the game!"

If the child does not do it correctly: "Hmmm. I see you pushed the red button. That means NO this animal does not live in the water. But does this animal live in the water? Yes, that means you push the other button. The green button means YES this animal lives in the water.

Once the game is finished:

Drawing Task

E: Awesome! Now let's hang up our drawings!

Once the child has reached their drawing, E looks around room swinging tape and accidentally hits the water cup, which is directly in front of her own drawing, spilling water all over it (she may converse with the child to distract them)

Once the water is spilled, say, "Oh no!" and stand cup back up. Set child's drawing away from the water but where the child can still draw on it, and move E's drawing out of the puddle and to the far side of the table. Keep the placement of the drawing consistent across all children.

E: Ohhh! My drawing!

For 30 sec: Looking at drawing, looking sad, sighing, wiping water off pitifully with hands (BUT ACTUALLY spreading it all over the drawing!). Be obviously sad, not something the child can easily ignore. Turn up the sad volume!! Can say things like, "awww...." or "oh no.....", as long as they don't specify what the problem is. SAY ONE OF THESE WORDS 3 TIMES DURING THE 30SECOND PERIOD, spaced evenly. No eye contact.

For 30 sec (prompts can be variable – just need to make sure to say THREE in ea 30 second period): "I'm so sad about my drawing". Continue doing same as above. "Now my drawing is ruined...." No eye contact. "There's water all over my drawing...".

For 30 sec: Look at child and say, "I'm so sad that my drawing is ruined". Keep doing same as above, periodically looking at child. "Oh no, what am I going to do?" "I worked so hard on this".

For 30 sec: Look at child and say, "Is there anything you can do to make me feel better?" Continue to do same, looking at child for a response. And "I'm really sad that my drawing is messed up now. "E: "Can you think of anything you can do?"

After 2 minutes have passed, say: "I guess it's ok. I can make another one later, and it'll be just as pretty. Maybe I'll even make a better one!" If child comforted, also say "thank you".

Put ruined drawing in the trash and wipe the rest of the water off the table.

BLOCK 2 (Counterblanced with BLOCK 1)

Phone Task Setup

E hangs child's drawing.

E: Now we get to play with books and puzzles! I love books and puzzles!

E brings books and puzzles and sets them on the table. E and child read books and do puzzles for 10 minutes until they hear the beep.

E: Ooo another computer game! Let's go! I wonder what our new question is!

Prime #2

E1 brings child to computer and has them sit facing the screen.

E1: "Oooo this game about animals asks the question "Is it bigger than me?". When the game starts, first you'll see the picture of shapes or people. You don't have to do anything then; that's just the computer figuring out which animal to show next. Then you'll see a picture of an animal. When you see the animal, as fast as you can, you'll answer the question "Is it bigger than me?" You'll answer by pressing one of these buttons. The green button means YES! If you push the green button, that means YES this animal is bigger than me! The red button means NO! If you push the red button, that means NO this animal is not bigger than me.

Now let me make sure you understand. When you see an animal, what question will you ask about it?

If correct: That's right, you'll ask: Is it bigger than me?

If incorrect: No, remember, in *this* game, we ask "Is it bigger than me?" Let me ask you again. [ask again, following same prompts for responses; ask three times].

Ok, and if the answer to "Is it bigger than me?" is YES, which button should you push?

If correct: Yes that's right, you push the green button if the answer is YES it is bigger than me.

If incorrect: No, you push the green button if the answer is YES it is bigger than me. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the green button].

E1: And which button should you push if the answer to "Is it bigger than me?" is NO?

If correct: Yes that's right, you push the red button if the answer is NO it isn't bigger than me.

If incorrect: No, you push the red button if the answer is NO it isn't bigger than me. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the red button].

E1: Ok! We're ready to play! Let's do a practice round together and then you can do it all by yourself. Remember, first there will be a picture of either shapes or people. That means the computer is thinking about which animal to show you, so get ready! Then you will see the animal picture and as fast as you can, push this button if the animal is bigger than you, and this button if the animal isn't bigger than you.

E pushes ~ and the first sequence of pictures comes up.

E talks along with the pictures:

E: Oh the computer's thinking… and there is the animal! Which button should you push?

If child does it correctly: "Great! The answer to the question "Is it bigger than me?" was YES, so you pushed the green button! Now you're ready to play all by yourself! I'll be right here if you need anything. I'll push the button to start the game!"

If the child does not do it correctly: "Hmmm. I see you pushed the red button. That means NO this animal is not bigger than you. But is that animal bigger than you? Yes, that means you push the other button. The green button means YES this animal is bigger than me.

Once the game is finished:

Phone Task

E: Alright, that was a fun game! Have a seat… I'll be right back, I'm gonna send a quick text message. My phone's just over here!

E walks over to cabinet and picks up cell phone (on top of the cabinet). E pretends like she is sending a text message with her back to child, but turns to face child while "texting". Suddenly she fumbles and drops the phone on the floor.

E: Oh, my phone! (after picking it up) The screen broke! (face screen toward child so he/she can see the cracked screen; leave enough time that the child can register the cracked screen).

For 30 sec: PUT PHONE ON COUCH. Sit down in chair, staring at phone, trying to turn it on and looking sad, sighing. No eye contact. Can say things like "oh no..." "darn", as long as it doesn't specify the problem. SAY ONE OF THESE WORDS 3 TIMES DURING THE 30 SECOND PERIOD.

For 30 sec: "I can't believe I broke my phone..." continue doing same as above. "ohh noo....I'm so upset about my phone...." No eye contact. E: "this is really bad, I broke it!"

For 30 sec: Look at child and say, "I'm sad that the screen is broken". Continue doing same as above, periodically looking at child. E: "this is really bad". E: "Oh my poor phone, I'm so sad."

For 30 sec: Look at child and say, "Is there anything you can do to make me feel better?" Continue to do same, looking at child for a response. E: "Can you think of anything you can do?" E: "I'm really sad I broke it...".

After 2 minutes have passed, say: "You know what? I just remembered that my cousin knows how to fix broken phones. So I can just take it to his house and he'll fix it! Yea! It'll be ok!" If child comforted, also say "thank you".

BLOCK 3 (always last)

Crying Baby Setup

E: Now I have something REALLY cool to tell you. I have a secret. Do you want to know what my secret is? It's that this table is cooler than a regular table!

E opens sand table:

E: It's a sand table! And here are some toys we can play with! There is only one rule for the sand table – the sand stays in the table. Not on the edges, not on the floor. Where does the sand stay? That's right; in the table.

E moves child's chair, then E and child play for 3 min.

E: I'm kind of hot, I'm gonna open the door.

This is E2's signal to exit the video recording room, turn on the baby babbles and baby monitor, and knock on the door.

30 seconds later, there is a knock at the door!

E1: "Come in!"

E2 enters, carrying baby monitor.

E2: "Hi Bonnie! <<to child>> Oh hi, I saw you earlier! I'm the mom who had the sleeping baby in the other room! <<PAUSE>>

E1: Oh hey! I'm glad you came in! I found your baby's pacifier. <<holds up pacifier and turns to look at child>> What do you call these things at your house?

<<Wait for child to respond>>

E2: <<takes pacifier and puts it in pocket>> That's what we call it too! Cool! I came to ask if you two would mind watching the baby… the baby's about to fall asleep and I want to go get some water!"

Wait for E1 to consent (ok). The following portion should be directed to E1 and child.

E2: "Great! Let me show you how this works."

E1 beckons child to come closer and see the demonstration.

E2: "There are two important buttons and each one does something different. This button turns the monitor on and off (points to button). Let's turn it on now!" (pushes button)

Monitor turns on, baby babbling quietly.

E2: "Why don't you turn it off and then on again!"

E1 does so and says: Off! On! Wow! Now we can hear the baby!! Now you try!"

Prompt child to turn off monitor. Once it is off, E1 says "Off!" and then prompts them to turn it back on. Once it is on, she says "On!".

E2: “Great! Now we can hear the baby again! This next button is the button you push to talk to the baby, that’s why there is a picture of a mouth beside it! I’ll try it, and then you guys can give it a try!”

IF THE CHILD WANTS TO TRY RIGHT AWAY: This is ok, let him / her. After, still make sure both E1 and E2 have modeled talking to the baby; then, have him / her try again.

E2: (Presses button and says) “Hi baby, it’s sleepy time, shhhhhh shhhhh goodnight baby!” (to E1) “Now you try!”

E1: Ok! (Presses button) “Hi baby, sleepy time!” “Hey, that was easy! Now you try!”

Prompt child to try speaking to the baby.

If s/he doesn’t want to, that’s alright, E1 just asks, “Ok, which button would you push if you wanted to talk to the baby? That’s right, the one with a mouth beside it.”

E2: Hearing a voice really helps the baby fall asleep. Alright great, so remember: If the baby cries, you have a choice. If you want to help the baby fall back asleep, you can push this button and talk. If you don’t want to hear the crying, you can push this button to turn the monitor off. Thank you again for watching my baby, I’ll be back soon!”

E2 leaves.

E1 Looks to monitor: “Hey, I don’t hear anything, I guess the baby is asleep. Can you remind me how to use this monitor just in case the baby wakes up?” E1 prompts child to go through each button and say what it does, while demonstrating. If child does not show understanding, go over the instructions exactly as before. “Thank you, now I understand.”

E1 and child play until they hear a soft beep.

E1: Ooo! It’s time to play the very last game! Let’s go!

Prime #4

E1 brings child to computer and has them sit facing the screen.

E1: “In this game, our new question is “Does it walk on four legs?” When the game starts, you’ll see a picture of shapes or people. You don’t have to do anything then; that’s just the computer figuring out which animal to show next. Then you’ll see a picture of an animal. When you see the animal, as fast as you can, you’ll answer the question “Does it walk on four legs?” You’ll answer by pressing one of these buttons. The green button means YES! If you push the green button, that means YES this animal walks on four

legs! The red button means NO! If you push the red button, that means NO this animal does not walk on four legs.

Now let me make sure you understand. When you see an animal, what question will you ask about it?

If correct: That's right, you'll ask: Does it walk on four legs?

If incorrect: No, remember, in *this* game, we ask "Does it walk on four legs?" Let me ask you again. [ask again, following same prompts for responses; ask three times].

Ok, and if the answer to "Does it walk on four legs?" is YES, which button should you push?

If correct: Yes that's right, you push the green button if the answer is YES it walks on four legs.

If incorrect: No, you push the green button if the answer is YES it walks on four legs. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the green button].

E1: And which button should you push if the answer to "Does is walk on four legs?" is NO?

If correct: Yes that's right, you push the red button if the answer is NO it doesn't walk on four legs.

If incorrect: No, you push the red button if the answer is NO it doesn't walk on four legs. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the red button].

E1: Ok! We're ready to play! Let's do a practice round together and then you can do it all by yourself. Remember, first there will be a picture of either shapes or people. That means the computer is thinking about which animal to show you, so get ready! Then you will see the animal picture and as fast as you can, push this button if the animal walks on four legs, and this button if the animal doesn't walk on four legs.

E pushes ~ and the first sequence of pictures comes up.

E talks along with the pictures:

E: Oh the computer's thinking… and there is the animal! Which button should you push?

If child does it correctly: "Great! The answer to the question "Does it walk on four legs?" was YES, so you pushed the green button! Now you're ready to play all by yourself! I'll be right here if you need anything. I'll push the button to start the game!"

If the child does not do it correctly: “Hmmm. I see you pushed the red button. That means NO this animal does not walk on four legs. But does this animal walk on four legs? Yes, that means you push the other button. The green button means YES this animal walks on four legs.

Once the game is finished:

Baby Cry Task

E1: Ok great, you’re all done, so come on back over! You know, I just realized something. One of my favorite toys is missing, so I’m going to go see if I can find it down the hall. I’ll be right back. You need to stay in this room until I get back. Let’s leave the baby monitor on so you can hear. Remember, if the baby cries, you have a choice. You can push and hold this button to turn the monitor off if you don’t want to hear the crying, but you can push this button to talk to the baby to help the baby fall asleep. Ok, I’ll be right back.

If child seems reticent to be left alone, E can assure child she will be back quickly.

E1 leaves.

This is E2’s signal to exit the video recording room. E1 will be holding the door shut. E2 quickly turns on the baby cries and takes E1’s place holding the door shut.

Baby cry comes over the monitor and lasts for 1 minute.

Once one minute has passed or if child is upset for 30 seconds:

Pacifier Task

E2 knocks and then comes in and looks around.

E2: <<somewhat frantic>> My baby is crying and I can’t find the pacifier! <<pause>> I think I dropped it in here!

She looks for the pacifier for 60 seconds according to a script of ever increasing cues:

0 -20 seconds – just looks while moving around the room, occasionally saying “hmmmm”

20 – 40 seconds – continues to look, stating the problem three times (e.g., “I can’t find it”) without looking at the child

40 – 60 seconds – continues to look, stating the problem three times (e.g., “Where could it be?”) while looking at the child

After 1 minute, if the child has not helped, E2 will ask "Do you think you could please help me look for it?" and will continue searching for 30 seconds. If the child is already looking she will omit this prompt but still continue to look for 30 seconds.

After 1 min, 30 seconds, E2 brushes her hand over her pocket, pulls out the pacifier, and says:

"Silly me! It was in my pocket the whole time!" If the child has helped, she thanks him.

E2 leaves as E1 is coming back in.

Baby Debrief / Dictator Game setup

E1: What happened while I was gone?

If the child says the baby cried but does not elaborate, E1 can prompt for more information (e.g., "what did you do?"). If the child does not mention the baby, E can move on.

Once this is complete, there is a quiet beep.

E1: Oh! It's time for our very last game!

Prime #4

E1 brings child to computer and has them sit facing the screen.

E1: "Remember, every game you'll play today is about different kinds of animals. But this time, the question is different! This time, the question is "Does it fly in the sky?" When the game starts, you'll see a picture of shapes or people. Remember, you don't have to do anything then; that's just the computer figuring out which animal to show next. Then you'll see a picture of an animal. When you see the animal, as fast as you can, you'll answer the question "Does it fly in the sky?" You'll answer by pressing one of these buttons. The green button means YES! If you push the green button, that means YES this animal flies in the sky! The red button means NO! If you push the red button, that means NO this animal does not fly in the sky.

Now let me make sure you understand. When you see an animal, what question will you ask about it?

If correct: That's right, you'll ask: Does it fly in the sky?

If incorrect: No, remember, in *this* game, we ask "Does it fly in the sky?" Let me ask you again. [ask again, following same prompts for responses; ask three times].

Ok, and if the answer to "Does it fly in the sky?" is YES, which button should you push?

If correct: Yes that's right, you push the green button if the answer is YES it flies in the sky.

If incorrect: No, you push the green button if the answer is YES it flies in the sky. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the green button].

E1: And which button should you push if the answer to "Does is fly in the sky?" is NO?

If correct: Yes that's right, you push the red button if the answer is NO it doesn't fly in the sky.

If incorrect: No, you push the red button if the answer is NO it doesn't fly in the sky. I'll ask again. [ask again, following same prompts for responses; ask three times, on the third time, physically guide the child to point to the red button].

E1: Ok! We're ready to play! Let's do a practice round together and then you can do it all by yourself. Remember, first there will be a picture of either shapes or people. That means the computer is thinking about which animal to show you, so get ready! Then you will see the animal picture and as fast as you can, push this button if the animal flies in the sky, and this button if the animal doesn't fly in the sky.

E pushes ~ and the first sequence of pictures comes up.

E talks along with the pictures:

E: Oh the computer's thinking… and there is the animal! Which button should you push?

If child does it correctly: "Great! The answer to the question "Does it fly in the sky?" was YES, so you pushed the green button! Now you're ready to play all by yourself! I'll be right here if you need anything. I'll push the button to start the game!"

If the child does not do it correctly: "Hmmm. I see you pushed the red button. That means NO this animal does not fly in the sky. But does this animal fly in the sky? Yes, that means you push the other button. The green button means YES this animal flies in the sky.

Once the game is finished:

Dictator Game

E: Oh! You know what? If you poke around in the sand, there's something special buried! Let's look for it! Here, take this stick and poke at the sand like this [insert

chopstick several inches deep into sand]. You'll know you've found it when the stick hits something.

Give chopstick to child and encourage them to poke around different places in the sand. When they find it, let child mostly uncover it, but then make sure you 're the one who removes it fully so you have possession of it.

E: Wow! Look what you found! It's a treasure chest! Let's sit over here so we can see what's inside!

E positions child on floor in front of sand tavle.

E: OK here's how it works. Sometimes there's something in here, but sometimes there isn't. If there's anything in here, it belongs to you. Let's open it up and see what's inside! (open the treasure chest, and let child take the box out). Go ahead, take it out. Why don't you open it and dump out whatever is inside so we can see! Wow, they're nickels! That's a lot of nickels! Those nickels are all for you and you get to take them home!

(Take small box away from child and put it away/inside of pocket/out of the game). (Make sure the Nickels are spread out and don't appear to already be in small groups.)

E: But there's something else I need to tell you. There's another boy/girl coming later today and we don't have anymore nickels. So it's up to you to decide if he gets any nickels. If you want to give him any nickels, you can put them in this box (place box near child).This is his / her box. If you want to keep any of these nickels to take home, you put them in this box (place box equidistant to child). This is YOUR box.

So before you start, I want to make sure you understand. Right now, who do these belong to? (correct if necessary). If you want to give some to the other little boy, where would they go? (correct if necessary) And where will you put the ones you're going to take home with you (correct if necessary)? That's right! So now, I'm going to turn around and do some work. When you're all finished, I want you to put the lids back on and I won't peek inside. It'll be a secret! Ok, let me know when you're finished.

***be sure to take the original box from the floor and put it on the shelf.

While child is distributing coins, E keeps her back to the child, doesn't look at child, and keeps busy. If child is not done after 2 minutes, ask if done. Once child is finished…

E: Ok great! Which one was for you? (correct if necessart) Ok let's put that one over by the computer so you remember to take it home.

Put other child's box on shelf.

Slip finished sign under door.

E1 plays with the child until the MomExp removes the sign from under the door. She then excuses herself and lets the mother know she can enter.

[4 min reunion]

-- Recording end --

After 4 minutes have passed, E re-enters room, gives child certificate, let's child know that there are enough nickels for the other little boy/girl, and puts all 20 nickels in an envelope for child to take home.

MomExp walks family out.

Appendix F: Demographics Form

Demographics

Family Information

This form asks you for information about you and your family. Please tell us:

Your child's date of birth (e.g 08/2010)

Your child's gender:

Male Female

Siblings

Number of brothers and sisters child has:

Brothers' and sisters' ages:

Are there two parents living in the home with the child?

Yes No

Race/ethnicity

Your race:

Your child's race:

Your highest level of completed education:

Your occupation:

Total estimated yearly household income:

Less than $20,000

$20,000 - $39,999

$40,000 - $59,999

$60,000 - $79,999

$80,000 - $99,000

$100,000+

Appendix G: Priming Game Stimuli

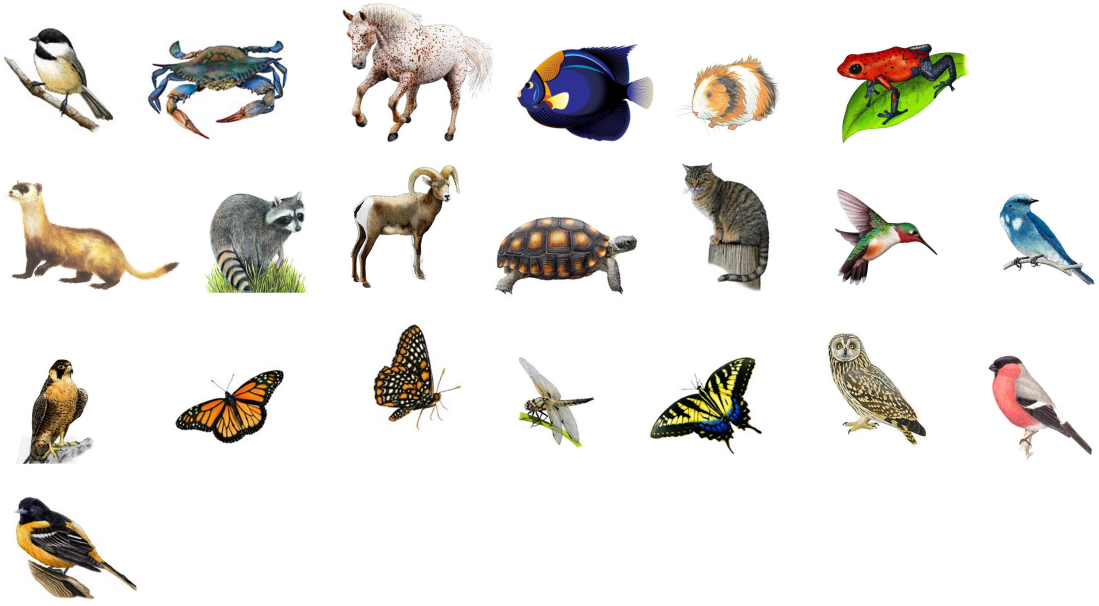
The first picture in each set is the example picture. All others were randomly presented.

Does it live in the water?

Is it brown?

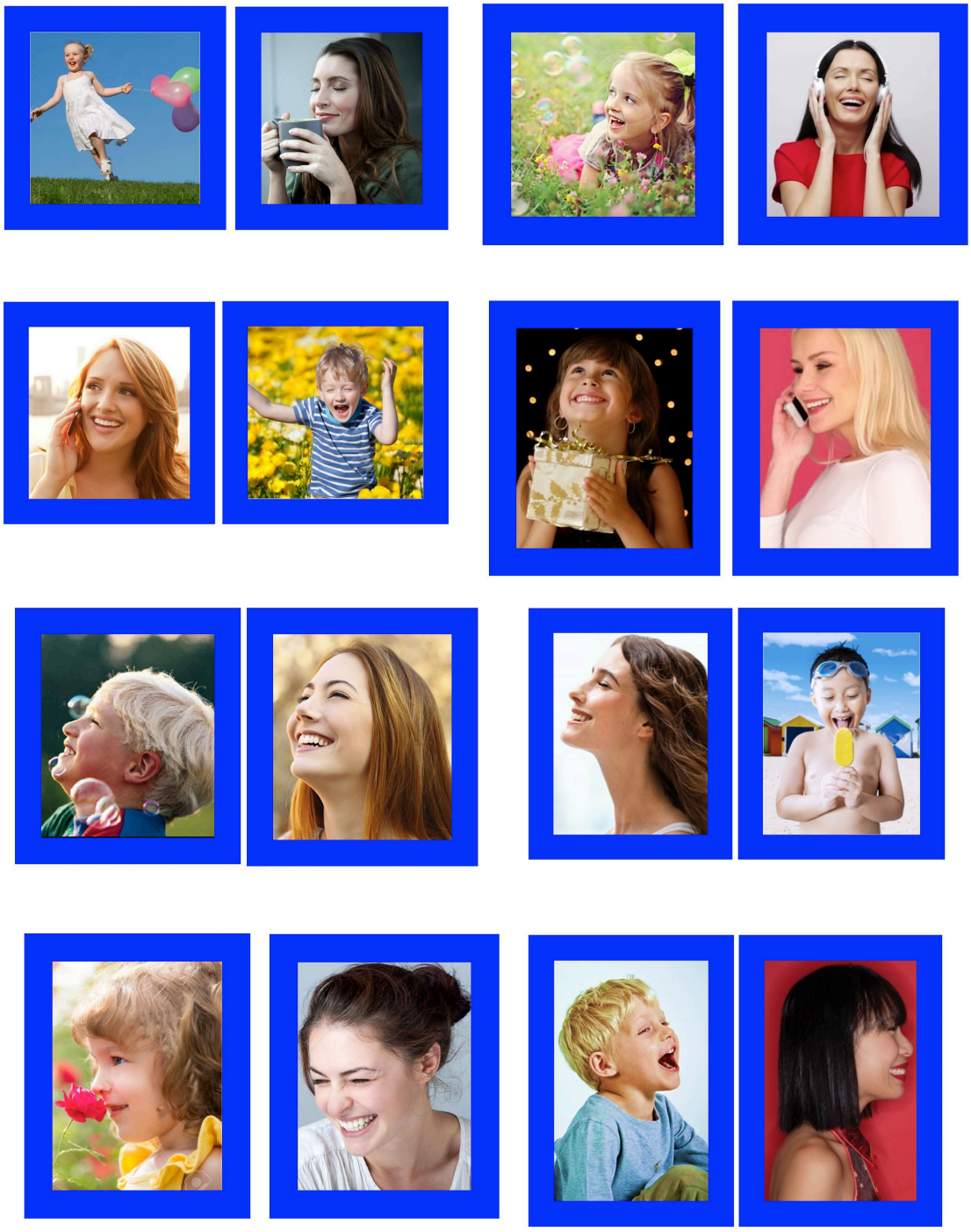
Is it bigger than me?

Does it fly in the sky?



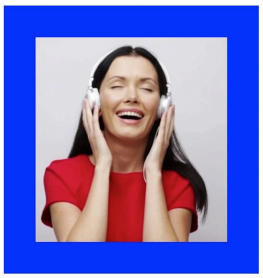
Appendix H: Supportive Social Interaction Primes

Appendix I: Happy Control Primes



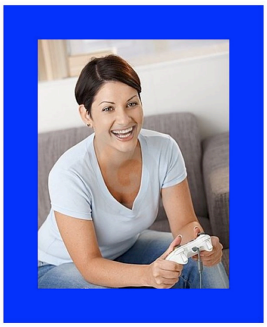




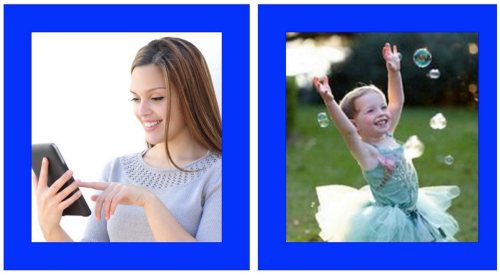





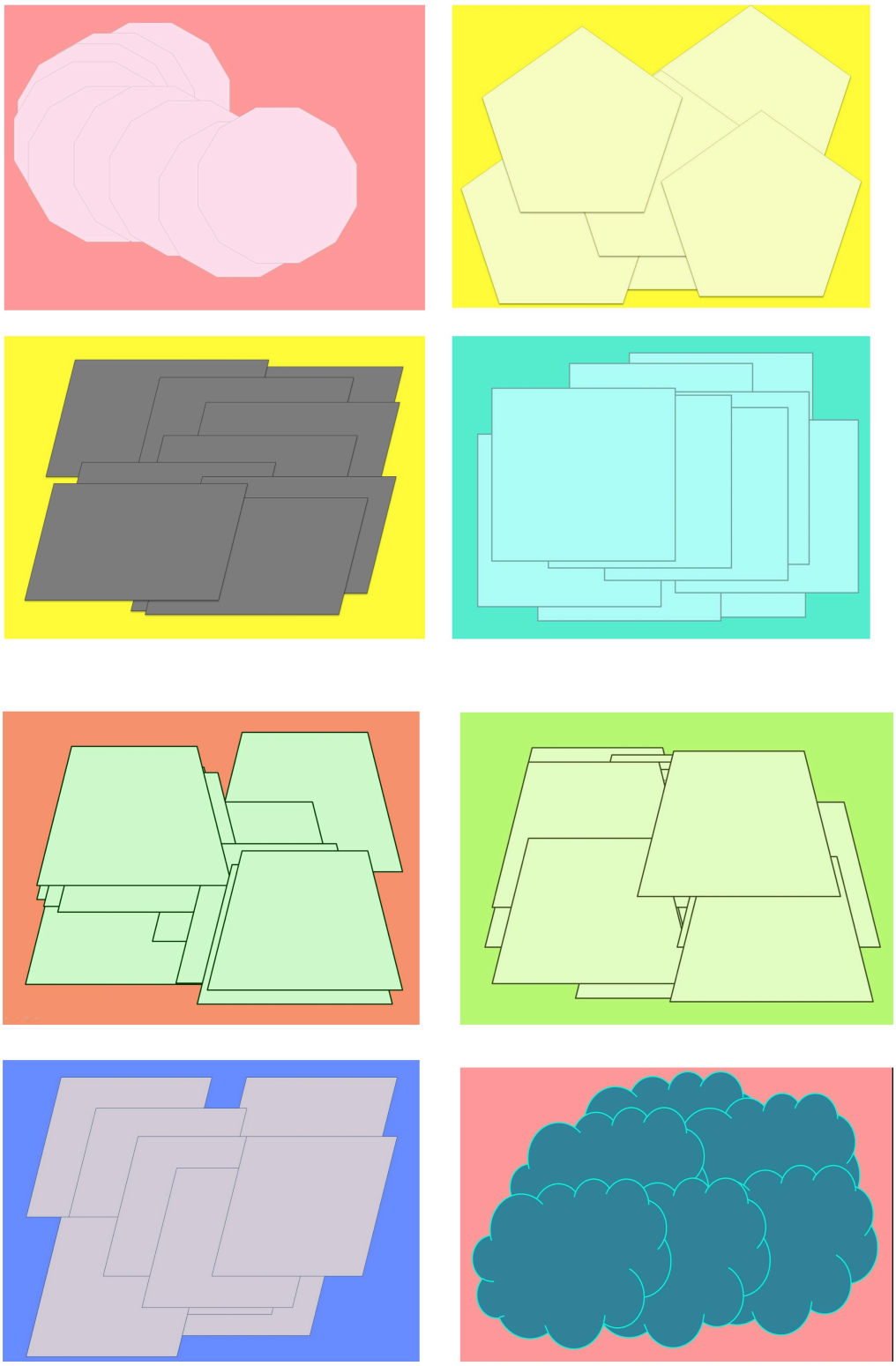


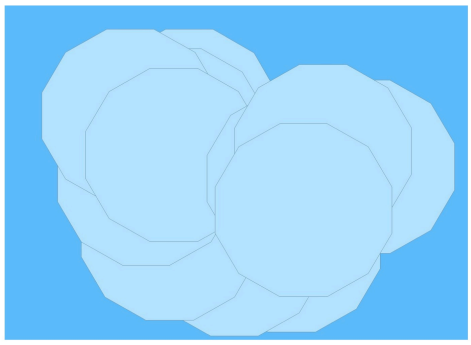
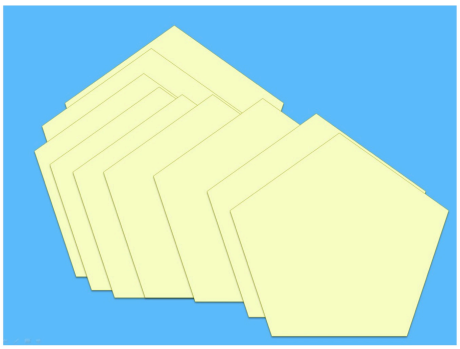
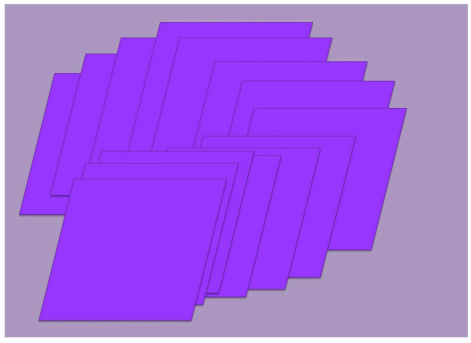
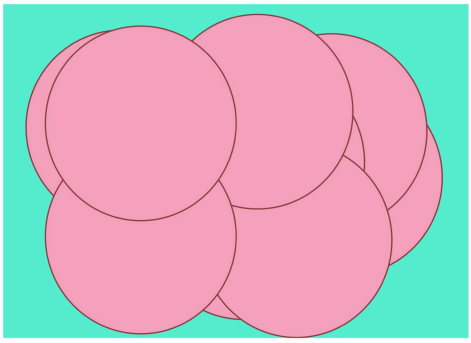
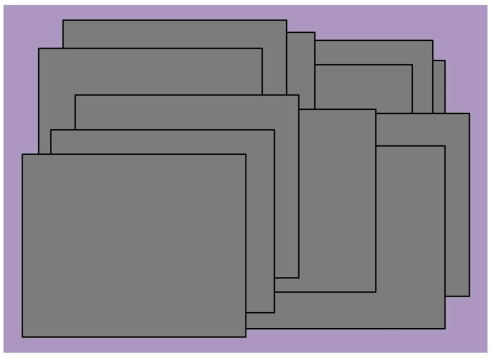
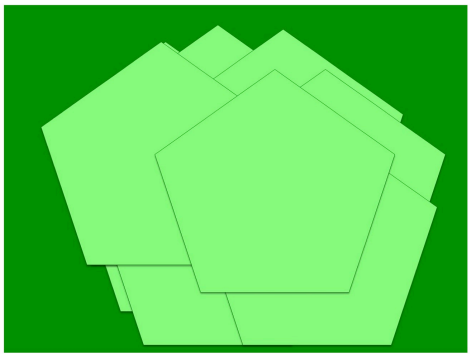
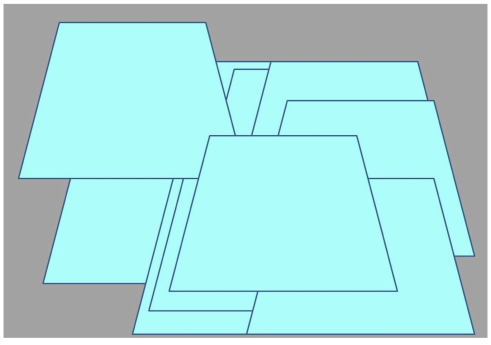
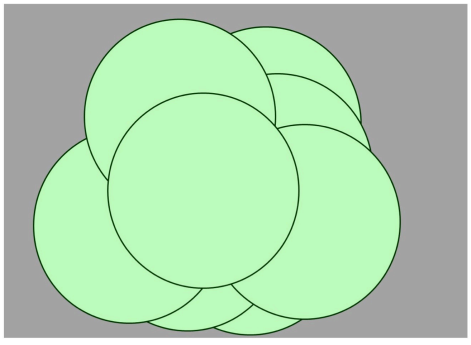


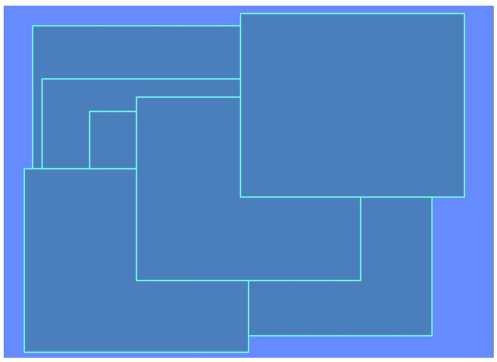
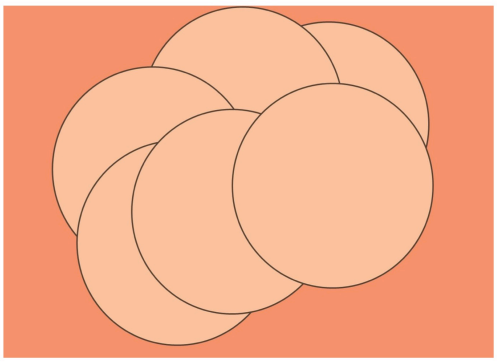
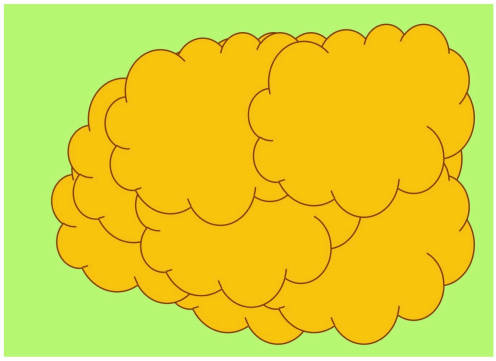
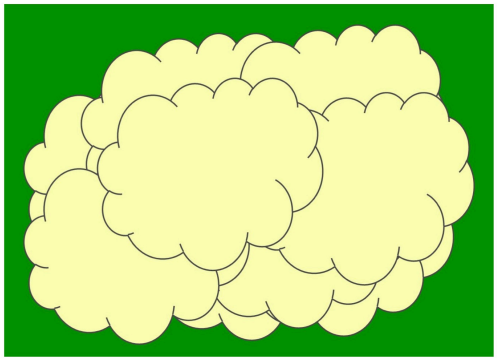




Appendix J: Neutral Control Primes



Appendix K: Prosocial Comforting Coding Manual, Adult Tasks

Comforting Task Coding Manual

Developed by: Jackie Gross, Bonnie Brett, Jonathan Beier, and Jude Cassidy
The University of Maryland

Unpublished Coding Manual

General Coding Notes

This manual codes the variety of behaviors shown by preschool children in a series of 3 tasks measuring children's comforting and/or negative behavior toward an adult experimenter's emotional distress (Phone, Clipboard, and Drawing).

Before you begin coding, please understand that capturing children's nuanced behavior from videotape is difficult to do with a series of strict rules. We have developed these coding rules to help capture the "spirit" of the children's intentions and attitudes, but there will always be cases that aren't covered by the existing rules. Sometimes, we will need to make exceptions to the rules or create NEW rules that more accurately reflect reality. **As a coder, part of your job is to recognize when the existing rules need to be changed or added to in order to better reflect reality.** These rules are no substitute for human reason. Therefore, always keep in mind the spirit of WHAT exactly you are coding and the underlying reasons for WHY. Always be alert and ask yourself what you think is really happening in the task, and whether the codes you enter are accurate reflections of reality. In other words, take into consideration both the "spirit" and the "letter" of the law.

Throughout this manual, we have included explanations for what the code is and why you are coding it, but if you ever feel like you don't fully understand the codes or their reasons, please ask a coding supervisor. It is important that you are fully informed about the construct you are coding.

Sometimes, the manual will specify how many times to watch a task. If, however, you need to watch a task or a portion of a task more times to fully understand what is happening or to hear something more clearly, please watch it as MANY TIMES AS NEEDED. Never guess at what you see or hear. Take the time to replay the segment or task until you fully understand. It is better to be accurate than quick.
It also may seem as though you are watching the task too many times, and it's becoming repetitive and boring, especially when it comes to coding the comforting tasks. However, the more you watch the task, the better you "get to know" the child and coding becomes easier. It is also very easy to miss some subtle behavior, especially if you don't watch it as many times as the manual specifies!

If a child says part of a sentence and then stops, code whatever information you have from what was said. We cannot guess at what the child WOULD HAVE said, but we can go ahead and code what was said. In addition, we cannot give a child credit for something they say they WILL do (but never follow through with), or with what we are certain they WOULD HAVE done (but never actually did).

Never code with another coder in the room. It is very important that your actions not influence any other coder. This includes you both coding silently but together. Only

during group meetings may you share any information about coding (other than asking for help with understanding a child's utterances).

Basic Coding Rules for Comforting Tasks

Instructions are the same for Phone, Clipboard, and Drawing tasks.
Code all of one type of task first, then all of the second type, then all of the third type. Do not code all tasks for a single child in a row, because scores from one task should not unknowingly influence scores from another task.

When coding, don't only pay attention to what is said, but also to actions. Nonverbal behavior and body language are also codeable responses.

Watch the video as many times as needed to determine what was said/what is happening. If you can't understand the child, keep watching as many times as needed. Do not guess at what the child said! If you still cannot understand what is happening or what was said, then do the following (in this order):

1) Check the transcript.

2) Open the file in VLC media player and turn up the volume all the way. Wear headphones, as this may also make it louder and clearer-sounding.

3) Ask other people in the lab to come in and listen. Ask other RAs and graduate students, whoever is around.

4) If no one can understand, then put a large star at the top of the coding sheet, with a note about which interval you could not understand. Bring it to the next coding meeting and we will all listen.

5) If no one can understand at the meeting, the starred interval will remain on the coding sheet. Code that interval as though the child said nothing at all - this means the child may get all 0's, or you may be able to code non-verbal behaviors, such as concerned attention or proximity.

Code each 10-second timeslice as a stand-alone segment. Meaning, for example, if a response begins in the first timeslice and continues into the second timeslice, both timeslices would receive a code of 1 for that type of response. Even if only 1 second of a response extends into a certain timeslice, that timeslice would get a code of 1 for that type of response. Anything less than 1 second does not count. If it's a full word, it counts, even if less than 1 second.

- When coding timeslices, watch out for behavior and/or verbal statements that carry over into the next timeslice, or began in the previous timeslice. It's very easy

to miss the codeable response that only occurred for a second in a particular timeslice - this is especially true of behavior!

- You may have to watch an timeslice before or after the one you are coding in order to determine whether something is part of a supportive/negative/personal distress response or not. Context is important.

- When in doubt of the subjective meaning or intent behind a child's response, then go with the literal wording. We cannot guess at child's intent when it is unclear.

- Each task is divided into 4 segments (if it did not end early). See the description of the tasks above for more details. While watching the task for the very first time, try to notice the 4 different segments. You will need to identify in which segment many responses occurred, so be familiar with what each segment looks like.

- As a general rule, never have any blank spaces on your coding sheet. If a certain blank space on the coding sheet is not applicable, then mark it with an X or NA.

- Intervals that are less than 8 seconds long are not included in your total response count. Instead, it will be included as part of the preceding interval. For example, if the last interval is 3 seconds long, it will be added to the previous 10-second interval, to create a 13-second final interval. Code both intervals separately, but then collapse the numbers across both intervals (i.e., if one or both intervals contain a certain behavior, then the 13-second combined interval will get a "1" for that behavior. Only if both do NOT contain the behavior will the 13-second interval get a "0" for that behavior). The only exception to this rule is if the child physically COMFORTS (not just touches) and E ends the task early, resulting in a single, short interval containing this important comforting action. We want 1 and only 1 interval to capture the physical comforting response, so keep the interval, even if it is less than 8 seconds long. Code other response types for what ever you can. If the child physically TOUCHES (non-comforting) or if E didn't end the task early, then code the intervals using the regular rules (above).

Description of Tasks

Phone: In this comforting task the experimenter (E) drops her phone and says, "oh my phone! The screen broke...look, it's all cracked!" Then E acts very sad, moaning and sighing for duration of the task. The maximum duration of this task is 2 minutes (task ended if and when child physically soothed). In the first 30 seconds (approximately), E says nothing (SEGMENT 1). In the second 30 seconds, E states the problem three times (e.g., "I'm so sad my phone is broken", "my phone won't even turn on now") but does not look at the child (SEGMENT 2). In the third 30 seconds, E states the problem three times while looking at the child periodically (SEGMENT 3). In the final 30 seconds, E first asks the child, "Is there anything you can do to make me feel better?", states the problem once more, and then asks, "Can you think of anything else you can do?" (SEGMENT 4).

She then resolves the problem – “Oh, I just remembered, my cousin knows how to fix phones… it’ll be alright.”

Clipboard: In this comforting task the experimenter (E) clips his finger with a clipboard and says, "oh, my finger!" Then E acts very hurt, moaning for duration of the task. The maximum duration of this task is 2 minutes (task ended if and when child physically soothed). In the first 30 seconds (approximately), E says nothing (SEGMENT 1). In the second 30 seconds, E states the problem three times (e.g., "my thumb hurts so much", "I clipped my finger really hard!") but does not look at the child (SEGMENT 2). In the third 30 seconds, E states the problem three times while looking at the child (SEGMENT 3). In the final 30 seconds, E first asks the child, "Is there anything you can do to make me feel better?", states the problem once more, and then asks, "Can you think of anything else you can do?" (SEGMENT 4). She then resolves the problem – “Maybe if I stretch a little… oh that feels better.”

Drawing: In this comforting task the experimenter (E) accidentally spills water on her own drawing and says, "oh my drawing!" Then E acts very sad, moaning and sighing for duration of the task. The maximum duration of this task is 2 minutes (task ended if and when child physically soothed). In the first 30 seconds (approximately), E says nothing (SEGMENT 1). In the second 30 seconds, E states the problem three times (e.g., "I'm so sad my drawing is ruined", "I worked so hard on this and now it's ruined") but does not look at the child (SEGMENT 2). In the third 30 seconds, E states the problem three times while looking at the child (SEGMENT 3). In the final 30 seconds, E first asks the child, "Is there anything you can do to make me feel better?", states the problem once more, and then asks, "Can you think of anything else you can do?" (SEGMENT 4). She then resolves the problem – “You know, I can just make another one tomorrow. Yea I’ll do that!”

Recognizing "segments" within each 2-minute task

It is important before you begin coding that you understand how and why each task is divided into segments. We are interested in the difference between SPONTANEOUS prosocial behavior and REQUESTED prosocial behavior. Some kids will be prosocial, but only after someone asks them to be. Other kids will automatically and spontaneously help a person without any requests or cues. Therefore, we divided every task up into segments, in which the requests for help become more and more obvious. Prosocial behavior exhibited during the first segment will be considered "more spontaneous" than the same behaviors exhibited during later segments. Each segment is ABOUT 30 seconds long.

The first segment is the most subtle, and therefore, any prosocial behavior occurring here will be the most spontaneous on the part of the child. It involves E simply drawing the child's attention to the situation (with a verbal statement), and then not saying anything more about the problem, and not even LOOKING at the child, since looking at someone while in need may be perceived as an implicit request for help.

The second segment is a bit more obvious. It involves E putting the problem into words 3 different ways. In case the child didn't understand the nature of the problem based on non-verbal cues, he/she will understand it now during this segment. That makes acting prosocially a little less spontaneous. However, E still does not look at the child, so as not to imply she is "requesting" help implicitly.

In the third segment, E again states the problem in 3 different ways AND periodically glances at the child. This segment makes prosocial behavior more likely.
In the final segment, E directly asks the child, "Is there anything you can do to make me feel better?" She then states the problem once more. She then asks the question again. Throughout this segment, E is periodically looking at the child.

Use the information below as a guide while coding:

> **Segment 1** = E doesn't say any sentences (only things like, "oh no") and doesn't look at the child at all. The only exception is that E will say something when the event first happens (e.g., “oh no, my phone broke! The screen is cracked!”). But after this initial comment, E will not say anything else about the nature of the problem or look at the child. E may answer the child's direct questions (because not doing so would be awkward). BEGINS: At the beginning of the initial comment about what happened. ENDS: When E first begins to say something (unless it was a response to the child's direct question, and occurred sooner than 30 seconds).
>
> **Segment 2**=E states the problem (e.g., "I hurt my finger!", "I'm very sad about my drawing"), but still does not look at the child at all. You’ll know this segment has begun when E first states the problem (and it’s been about 30 seconds). BEGINS: When child first begins to say something for the first time (after about 30 seconds have passed). ENDS: When E first looks at child.
>
> **Segment 3**=E states the problem AND looks periodically at the child. You’ll know this segment **has begun when E looks directly at the child** and states the problem again (and it’s been about 30 seconds from the start of the previous segment). Out of these two facotrs, the most important one is E looking at the child. BEGINS: When E first looks at child. ENDS: When E first begins to ask, "is there anything..."?
>
> **Segment 4**=Begins as soon as E asks, "Is there anything you can do to help me feel better?" This will be the final 30 seconds or so of the task. BEGINS: When E first begins to ask, "is there anything..."? ENDS: When E first begins to say something that will resolve the situation.

IMPORTANT NOTE ABOUT SEGMENTS: Sometimes, E made an error while moving through these segments. For example, E accidentally looks at the child at the transition into segment 2, thinking it was segment 3, or if a segment is > 45 seconds. **If this happens, code behaviors as if E did not make a mistake, and simply mark on the coding sheet that there was an error, and what the error was**. If, however, the error

was extreme, or makes it difficult to know how to code certain things, (such as E completely skips a segment or makes eye contact multiple times during segment 2), then flag it, do not code, let a coding supervisor know ASAP, and bring it to the meeting.

It is an error if a segment is more than 45 seconds long, or less than 20 seconds long.

Types of Responses

There are a variety of ways that someone can respond when another person is in need of comfort. The goal of coding these tasks is to capture the diversity of responses that a child can display, as well as to capture the frequency and duration of responses. To do this, we have divided all possible responses into 6 categories: (1) supportive responses (with two subtypes: emotion-focused and problem-focused), (2) negative responses, (3) personal distress, (4) concerned attention, (5) proximity increasing/maintaining, and (6) ignoring E's distress.

EVERY MOMENT of a comforting task can be classified into ONE AND ONLY ONE of these categories. **The only exception is that proximity increasing/maintaining can co-occur with supportive responses or concerned attention.** Some responses may seem to fit into more than one category or none of them at all. To determine which category a response is, you will use a decision hierarchy.

- First, consider whether the response is supportive OR negative OR personal distress. It can only be one of these. (If it is supportive then it may also be proximity increasing/maintaining).
- If it is none of these 3, then consider whether the response is concerned attention. (It may also be proximity increasing/maintaining).
- If it not concerned attention either, and it is also not proximity increasing/maintaining, then it will be coded as ignoring E's distress (by default).
- Also, any activity that is being done before the tasks begins is not coded as anything. If the C has their fingers in their mouth before Segment 1, then this would be considered as nothing. Verses if this happens after segment 1, which would be distress.

Use the following guidelines to decide which category a response fits into:

1. **Supportive responses**: In general, these responses are intended to make the other person feel better. There are two types of supportive responses: **emotion-focused** (i.e., any response oriented towards feelings/emotions/mood and with the goal of improving these things) and **problem-focused** (i.e., any response oriented towards solving or taking action to fix the underlying problem.) Use the following examples as a guide to classify the response in question:

Emotion-focused responses

Physical Soothing (e.g., hugging, patting, rubbing, leaning against E, handshaking). *Note: If the physical comforting happens during the Clipboard task, it may be coded as PF, not EF, because touching E would be in the service of fixing the "problem", while touching in every other task would typically only be to make E feel better.*

Verbal Soothing (e.g., "it's ok", "it happens sometimes", “It’s not your fault”)

- If child says, "I/it/she/he/they will make you feel better," this is EF because the focus is on E and/or E's feelings. If child says, "I/it/etc will make IT feel better," this is probably PF because the focus is on the Phone/Clipboard/Drawing (and thus on the problem).

Reframing the situation as though it's not so bad, in order to make E feel better (e.g., "don't be sad - it's not so bad", "it's not even that wet"). The child’s suggestions can also be oriented towards the future (e.g. “It will get better”), this does not fix or address the problem in an active manner (PF if this is the case), but it reframes the situation to make it seem better because it won’t be so bad in the future. Don't mistake this for negatively rejecting E's distress (e.g., "you shouldn't cry like a baby")

- Also anything that is considered to be passive solutions are considered to be reframing the situation as well. The way to identify these comments is to see if the child is suggesting that they or the experimenter should do anything to address the problem (which would be PF). “the world will heal you” is considered EF because the child is not suggesting to put any effort into fixing the problem. Instead, the problem will resolve itself in the future and therefore is reframing the situation to make it seem better because it will solve itself.

Mirroring E's sadness, in a way that is not personal distress ("awwwwww", "I feel bad", "I'm sad too"). Usually these statements have a similar emotional tone to E's distress, or sound sympathetic. They don't have to be exaggerated emotional expressions, however. A quiet child may look concerned and say, "oh no." The child clearly has to relate their pain to E’s current situation.

Reflection of personal experience with this same problem in which the personal experience ended positively (e.g., "my daddy dropped his phone, and it was ok"). If the reflection of personal experience ended neutrally, negatively, or did not end, then see the concerned attention section (concerned attention requirements would still apply). However, if the reflection is directly related to the experimenter at any point (e.g. “that is like what happened to you”) would be considered EF, no matter how the story ended.

Compensation (i.e., physically giving OR offering to give/share an object to E in order to help E feel better). Examples of compensation include: getting a book off the shelf and bringing it over to E, sharing the child's own nickels with E, saying, "I could buy you a racecar", saying, "do you want a cookie?".

- NOTE: It's only considered compensation if the material object offered isn't a "problem-fixer" but rather is an "emotion-helper". That is, consider

whether the object offered is instrumental in "fixing" the problem at hand (e.g., like giving a bandaid when E hurts her Finger, giving own drawing when E ruins hers) or, instead, is something irrelevant to the problem whose only purpose is to improve E's mood (e.g., like giving a teddy bear or an ice cream cone when E hurts her Finger). If the object offered is an "emotion-helper", it is compensation, because it targets the EMOTION of E, helping her to feel better. If the object offered is a "problem-fixer", it is NOT compensation, and instead is a problem-focused solution, because it targets the PROBLEM of E, helping her to solve it.

Attempts to distract E from her distress by introducing a new toy or activity to E with the intention of cheering her up. This is different from compensation because the child doesn't actually give or offer to give it to E, but just mentions it or holds it up to show E. This could include attempts to bring E back to play.

- Don't confuse attempts to distract with ignoring E's distress. Attempts to distract must include overt efforts to include E in the play, such as showing her a book or handing her a toy, and cannot be simply comments that the child is directing toward E (e.g., "look at this castle I made!"). Attempts to distract are always Experimenter-focused, and not child-focused. A way to tell if it is Experimenter focused is if the child tries to get the E's attention.

Friendly invitations to play (e.g., looking at E, smiling, switching to a new toy, phrasing the invitation as a suggestion for what E could do like "you can still…"). The key component here is that the child is trying to be nice to E while suggesting new play activities. If the child stops showing same friendliness or keeps suggestions the same thing over and over after E clearly says she doesn't want to, then it is no longer a friendly invitation to play.

- A good way to tell if this happened or not is to see if the child waited for E to response to their suggestions.

<u>Problem-focused responses</u>

Verbal instrumental helping. This category includes all suggestions for fixing the problem (e.g., "I'll buy you another one", "I'll get my mommy to help you", "when I get hurt, I do xx", "you could try to clean it up", "you can go to the doctor or get some medicine "). It also includes suggestions meant to be helpful, or advice (e.g., "you should watch out next time", "be more careful"). **<u>It does not include</u>** statements about how the child did it correctly (e.g., "I pushed my chair back", "I didn't spill my water", "my phone is still ok").

- Anything intended to be helpful toward making the problem or broken item itself better/go away, even if it's not reasonable or logical for the situation. For example, saying, "we can put some sand on it." While this might seem like nonsense because sand cannot help a phone or hurt finger, if the child is oriented to the situation and trying to help, then it would be counted as PF. We are not coding how much sense a child makes but whether they are trying to solve the

problem or not. E.g., a child offers to fix the phone in order to help the finger. This is PF.

Physical instrumental helping. These are physical ACTIONS the child takes to remedy the problem, and may or may not be accompanied by verbal instrumental helping (e.g., trying to clean up mess or fix the phone, wiping the drawing with hand, shaking the phone).

- The child must be doing something ACTIVE to the object to be considered PF and not simply curiosity or CA.
- e.g., MUST BE OBVIOUSLY TRYING TO CLEAN/REPAIR/MEND. USE THE WORDS OF THE CHILD BEFORE AND DURING AND AFTER THE ACTION TO HELP DECIDE THE PURPOSE OF THESE ACTIONS (e.g., "let me get this for you" is a clue that the action that follows is PF).
- Active things include: shaking the phone (rather than just picking it up and looking at it), holding up the drawing and shaking it (rather than just holding it up to look at it), balling up the drawing in order to throw it away or use it to clean off the table, or folding it deliberately to tidy it up (rather than just folding it over to look at the back of it). Moving a single finger across the drawing does not count as PF, as this is just playing with it (not CA, Neg, or PF). But wiping the water off with a hand is PF.
- ***But above all, use child's words to help decide if the action is meant to be helpful or is FOR the experimenter's benefit. That may clarify some of these ambiguous actions.***

If the child says something about how his/her mom, other family member or they could help, or ANY OTHER person could help, including the child him or herself, without specifying what the "help" would be, we will code these as problem-focused. If the child is more specific about what the help would entail, code it accordingly (e.g., "my mom could give you a teddy bear" is emotion-focused).

Asking where another person is, without giving more info, is too vague to be considered PF (e.g., "where the other lady at?", "where's my mom?"). This would be considered CA.

If the child asks a question (e.g. “why don’t you get a band aid” or “You have band aids at home”). Even though this is a question, the child has a solution in mind and directly relates it to the experimenter (uses a you). If there is a you in a question and a solution as well, then it is PF.

Future and Present suggestions (e.g., “You should be more careful”) are also considered PF. This is because they are trying to fix the problem in the future. Using what happened as an example to change the behavior in the future.

Note: *Consider the child's tone of voice, facial expression, and context when deciding if a suggestion or statement is actually supportive, or if it was meant to be callous, demanding, or controlling. For example, the phrase "you should be*

more careful" could be considered a negative response if it's taunting, callous, or if the child is ordering E. It could also be considered supportive if delivered in the right way. A statement like "you hit your finger" could be taunting and judgmental, or it could be sympathetic.

If you see a response that you think is supportive and is not included on this list, please tell a coding supervisor and it may be added to the manual.

What to do when a response could be classified as both emotion- AND problem-focused:

By their nature, problem-focused responses are often intended to both fix the problem at hand AND to improve the emotions of E. However, we cannot guess at the intentions of the child and can only use what we see and hear from the child. Therefore, responses intended to fix the problem will only be coded as problem-focused. If, on the other hand, the child explicitly mentions feelings/emotions or says something that shows he/she is thinking about the internal state of E (e.g., "I'm sorry", "it'll be ok", "don't worry", "don't be sad", "are you alright?", "Make you feel better"), then we can code for the presence of an emotion-focused response as well. Therefore, some statements can be double-coded as both problem- and emotion- focused WITHIN THE SAME SENTENCE, as long as both elements are present. For example, if a child says, "it's ok, I can buy you another one", then "it's ok" will be coded as emotion-focused, and "I can buy you another one" will be coded as problem-focused. Another example of both in one sentence is "You can go to the doctor and you will feel better!". The part about going to the doctor is PF, but the "feeling better" part is EF because the child is addressing E's distress and/or feelings. ****** If the action is definitely meant to comfort E but there is no way to know if the action was EF or PF, always default to PF.**

2**. Negative responses:** In general, these responses would typically make the Experimenter feel worse about her situation. Examples include:

- Laughing at E. (If you're not sure whether it's a laugh or not, then code it as though it were not)
- Teasing/taunting/mocking (e.g., while smiling, "you hurt yourself again!"). This is not to be confused for sympathetically restating the problem.
- Callous statements (e.g., "that's what you get", "you suck")
- Statements or "suggestions" that seem controlling or demanding (e.g., "don't spill it anymore!!!") This is not to be confused with helpfully giving advice.
- Scolding (e.g., "Why did you do that, you shouldn't do that").
- Any ambiguous sentence (could be interpreted as nice or mean, such as "you should be more careful") that is said in a negative way, such as yelled or screamed.
- Any sentence that brings all the focus away from E and onto the child, especially if said in a negative tone of voice.
- Intentionally making the situation worse (e.g. ripping or ruining E's paper, dropping the phone). Note: this does not include accidentally ripping the drawing while taking off the stickers on E's paper.

- Also includes intentionally holding back a way to help because of E's emotional state
- Any past tense suggestion (e.g. "You should have been more careful") with another negative response listed above (laughing, mocking, etc.)
- Smiling can also be considered negative if it is followed by or just after yelling, scolding, teasing, etc. Smiling is considered negative if it occurs in the interval before or after the negative event.

  Consider the child's tone of voice, facial expression, and context when deciding if a suggestion is helpful, or if it was meant to be callous, demanding, or negative. There should be no doubt when coding negativity. The phrase "you should be more careful" could be considered a negative response if it's taunting, callous, or if the child is ordering E. It could also be considered supportive if delivered in the right way. ***CONTEXT IS KEY.***

If you see a response that you think is negative and is not included on this list, please tell a coding supervisor and it may be added to the manual.

3. **Distress / arousal**: Sometimes, a child becomes upset when another person is upset. This is always self-focused. Examples of personal distress include:

- Crying, whining, or whimpering because child is distressed. If there are other cues that point to a different motivation (e.g. child can't reach across the table, child is being impatient), these would not be coded as personal distress
- Very obvious facial distress (e.g., face falls and looks like about to cry). This does not include anything that could be confused with concerned attention; it must be clearly distress. This expression can also be instantaneous as well.
- Physical self-soothing (e.g., thumb-sucking, hand wringing, touching eyes/face) for at least three second
- Verbal statements of personal distress (e.g., "I wanna go home", "I don't like this").
- Speaking in a strained, upset-sounding way.
- Upset about own thing they messed up
- Defensiveness (e.g. "It's not MY fault").
- Active disengagement is distress. The child does everything in their power to not pay attention to E's problem or pai

If you see a response that you think shows personal distress and is not included on this list, please tell a coding supervisor and it may be added to the manual.

4. **Concerned attention (CA):** Only if a response cannot be classified as any of the three categories above, then it may be considered for concerned attention. Please understand what CA is before attempting to code it. This is because often, you will just have to use your best intuitive judgment in deciding whether the child is showing CA "in spirit". We think of CA as an outward sign that the child is concerned about E: the child's thoughts are tuned into E's distress and the child has entered E's mental world. The child is allowing him/herself to enter E's "zone of distress" by acknowledging the situation. The child could express this concern in two ways: overtly or through non-verbal means.

What is NOT considered CA?

- NODDING HEAD OR SAYING YES IN RESPONSE TO E'S QUESTION IN SEGMENT.
- If the child is in the midst of an EF or PF solution, child cannot also get credit for CA. Be sure to watch out for non-verbal EF or PF (e.g., child goes to cabinet to get a book for E, brings book back, and is holding it up for E to see, child is holding out her drawing for E to take), because that whole block of time cannot be considered CA.
- If the sentence child says qualifies for overt CA (below) but is also part of the EF or PF solution, then it is not CA (because it's already considered part of the comforting solution).
- ANY CARRYOVER

Overt (verbal) CA: If a child says something that does not qualify as comforting, yet shows that he/she is acknowledging the situation or that something bad happened, then it's CA. This could include something showing that they are thinking about E's plight, but without explicitly offering a solution or comfort.

It is overt (verbal) CA if: Child says or does any of the bullet points listed below (for any length of time, even a second or two), AND does one of the following:

- shows reduced/minimal play for at least 3 seconds during or very near to the time the statement was made

- or shows very obvious facial concern for any length of time (i.e., is not simply acknowledging the situation, but is CONCERNED about the situation)

- "I can't help you," if said in a tone that suggests the child is sympathetic.
- "I have bandaids at home." Again, consider tone of voice and facial expression. This is not problem focused because the child does not related the suggestion to the Experimenter.
- Seeking more information about the situation (e.g., "what happened?", "are you hurt?", "does it hurt?")
- Reflecting on a personal experience similar to E's problem, in which the ending was neutral, negative, or doesn't have an end (e.g., "I went to the phone store when I broke it, and it cost a lot of dollars"). Basically, this includes any ending that is not positive, because a positive ending implies that it will also turn out OK for E (in which case, this is EF comforting).
- Sympathetic restatement of what happened (e.g., "you hurt your finger??", "your drawing!") Consider the child's tone of voice, facial expression, and other cues of sympathy to determine if the statement is truly concerned. We include these types of statements into CA because it is a way of connecting sympathetically with E's plight, entering her zone of distress, and acknowledging that something bad has happened to her, but it does not qualify as comforting.
    - But, getting more information about E's emotional state **is** considered emotional focused response. And example of this would be "are you sad right now?" or "you okay?"

"Let me see…" (or showing other obvious signs of "thinking" about what to do for at least 3 sec, such as looking up and tapping chin or saying, "hmmmmmm", or looking around the room for something).

If you're not sure what child says, but child is clearly oriented to the situation (and you can't give them credit for any other code), then code as CA (see nonverbal CA section below).

Anything that is a past tense suggestion (e.g. "You should have been more careful"). Unless paired with any negativity (e.g. smiling, laughing or a scolding tone).

Any miscellaneous stories or thoughts THAT RELATE even in the slightest TO THE CURRENT PROBLEM but do not end well are also considered Overt Ca.

Child is thinking about the problem.

Non-verbal CA: Even though the child is not saying or doing anything, we can tell that he/she is concerned about the situation or about E. We can tell because the child becomes focused on the scene, often stops playing and talking, and stares at E with a concerned expression. Sometimes, the child shows momentary gaze aversions from E (1 second or less), because the situation is hard to look at, and so the child quickly glances away and looks back again.

To be coded as concerned attention, the child must be doing the following things **simultaneously for at least 3 continuous seconds**:

- MUST be oriented toward the scene, which includes looking at E or the object (i.e., turned toward her and paying attention to what is happening with her). If, during this time, the child momentarily looks away from E (i.e., 1 second or less) and then looks back again, that is ok. This is simply a gaze aversion, and can happen during CA.
- MUST have a neutral/concerned face (i.e., not smiling or crying or very obviously distressed)
- MUST be playing/doing an activity less than he/she was moments before the task began (e.g., reduced energy in play, stopped swinging legs or arms as much, stopped play altogether). This is because reduced play indicates that the child is "tuned into" E's pain and is paying more attention to E's situation than to previous play. If the child wasn't playing at all before the scene began, then reduced play will simply be not playing at all. It is, however, possible for the child to be walking or moving closer to E while showing concerned attention.
- Cannot overlap with words or actions that have already been classified as comforting, negative, or personal distress.
- The child could be listening to something E is saying or listening to E respond to him/her as part of an ongoing conversation. If the child is having a conversation with E, they MAY get codes for CA only while listening to E, as long as they otherwise meet all the criteria for CA.

5. Proximity increasing/maintaining: This code is for any physical movement towards E. This only includes steps, so leaning forward does not count. The ONLY exceptions are:

- Child is on a mission to reach another location in the room and just passes by E, and does not stop. If child stops for any reason, and looks at E or the situation (for at least 2 seconds), then it's proximity.
- Child must clear the table in order to get proximity for (drawing and phone task). They must go at least around the bend in order for the movement to be considered a new destination.
- Once at their destination, if child turns around and looks at E/situation (for at least 2 seconds), this is proximity (IF the destination is closer/as close to E than the child's original position, such as by the box of sand toys). If the destination is farther than original position (such as the cabinet or the nickels by the door), turning around to look at E/situation is NOT proximity.
- Once at the destination, any movement toward E is proximity and is subject to the same rules that applied to movement toward E from the original position (behind the sandtable).
- What if the child moves to ANOTHER destination (i.e., has a goal/place in mind and doesn't stop): see the first bullet point. Once at this new destination, see the second bullet point. In this case, "original position" refers to child's FIRST position (when the task started; not the previous destination).
- Side to side stepping does not count if the child stays behind the sand table. Child must come out around the table (if seated) to get proximity (or be on her way out from behind sand table plus on her way directly over to E).
- If the only proximity in a given interval is carry-over from the previous interval, child must hold that position for at least one whole second to count as proximity in that interval.

If the child is wandering around the room, pacing, or appears to have no particular destination or goal in mind, you cannot use the "destination" rule stated above. If this happens, the child is increasing/maintaining proximity whenever he/she is CLOSER to E than when child first started to wander.

6. Ignoring E's Distress: This code will capture any response that cannot be coded into any of the above 5 categories. As a result, this code will not reflect the child ignoring E or the entire situation, but rather it should reflect the child ignoring SPECIFICALLY E's distress. Examples include:

- Keeping attention focused on activity
- Smiling at E (i.e., not concerned attention because not neutral/concerned)
- Making irrelevant conversation (e.g., "my birthday is tomorrow")
- Staring at the floor
- Statements about the child's own property not being damaged (e.g., "MY phone isn't broken", "MY drawing isn't wet")

- Statements about the child's play or activity that he/she has been occupied with (e.g., "look, I finished the puzzle!")
- Statements about a toy/activity that aren't meant to cheer E up (e.g., "I wanna keep playing dinosaurs with you.")
- When E asks, "is there anything you can do to help me feel better?", if the child simply says, "yes" or nods head (or says "no" or shakes head), without actually saying or doing anything in addition to this, this will mostly likely be coded as Ignoring E's distress. That is because it is not supportive, negative, personal distress, or CA.
- Any response that cannot be classified

Coding setup

1. Open the INTERACT program (you will need to close and reopen between every task).

2. Select "Open existing data file" and select the template of the child/task you are coding. Each task has its own file, but you want to **always code the tasks in the order they were presented to the child.** Some children will start with Phone, and others will start with Drawing. Clipboard will always be last (unless there are unusual circumstances, such as child did not cooperate and a task had to be skipped, fire drill, etc). Start with the task that happened first, then code the second task, then the last task.

3. Double click "Set 1" on the lefthand side of the screen, and several green pencils should appear below it. These are the 10-second timeslices.

4. Click on the small manila folder at the top left corner of the small Control Panel window. Select the correct video to open. The video should appear in a separate window.

5. To jump straight to the task, double click on the white space to the left of the first green pencil. If you want to view the task from beginning to end without breaks, use the Control Panel (press the righthand green arrow to play it through). If you want to view the task with the 10-second breaks, use the green pencils (double click the white space next to the timeslice you want to view).

6. Open the transcript (if available). It will be located on the U: drive. Use this to help you understand speech when you're not 100% certain of what the child is saying. Always have it open in the background.

7. Get the correct post lab notes from the Wave 1 or Wave 2 outcome drawer (located in the very back of the cabinet).

8. Get a blank paper coding sheet of the correct task, and fill in the basic information at the top. USE THE START AND STOP TIMES SPECIFIED IN INTERACT (the first and last times, located next to Set 1).

9. Now that you have everything in front of you, BE VERY SURE YOU ARE CODING THE CORRECT CHILD. Play the video from the very beginning until the white board

reveals the subject (e.g., S1) and participant number (e.g., 4011). Verify that it matches the INTERACT template you have open, the video you opened, the transcript you have open, and the post lab notes in front of you.

10. If they all match, then write the participant number at the top of EVERY PAGE OF your paper coding sheet. Now you are ready to follow the coding procedure below.

11. You may also want to have a blank sheet of paper or Word document open to jot down any questions/comments for the group that arise during coding that you can bring to the next coding meeting.

Coding Procedure

1. **Make general notes on your paper coding sheet.** Before you begin, take out the post-lab notes sheet for this participant and read the Prosocial Notes section for any relevant details about this task. First, write the physical description of the child, and verify that it matches the child in the video you have open. Then, write all relevant notes in the "Notes" section of your coding sheet. This could include notes specifically about this particular task (phone, Clipboard, or drawing) OR about comforting tasks in general OR about the entire lab visit (whatever is relevant to this task). If there is nothing, write "None". Keep these notes in mind while coding.

2. **Watch the entire 2 minute task all the way through. Again verify that you are coding the correct child by making sure the physical description matches what you see. While watching, get a feel for this child's behavior and become familiar with the task. Also take note of when you think the Experimenter moved from one segment to the next. Then code the following items:**

- If phone task: Did E say "the screen is broken! It's all cracked!", or something similar? If clipboard task: Did E say, "Oh my finger!", or something similar? If drawing task, did E say, "oh no, my drawing", or something similar? (1=yes, 0=no). IF NO, WHAT DID E SAY? Write it verbatim. IF YES, MARK AN X.
    - Also, the prompt can happen anytime after the initial 15 seconds. **If 15 seconds have past since the start and there has not been a prompt, list what E said, and indicate there was a segment error.**

  Did E make any errors with regard to segments? This could include (but is not limited to): stating the problem or looking at the child during segment 1 (other than the initial prompt or in response to a direct question from child), looking at the child during segment 2, NOT looking at the child during segment 3, NOT stating the problem during segment 2, asking "is there anything you can do...?" during segment 3, NOT asking 2 questions during segment 4, NOT looking at the child during segment 4. It can also happen if one segment is > 45 seconds or <20 seconds (if a segment is =45 or 20 seconds, then there is no error.) (circle Y or N)

  During which segment(s) did the errors occur? As an example, if E accidentally looked at the child at the very beginning of segment 2 (the transition INTO segment 2), mark the error as occurring in segment 2. Circle all that apply (1, 2, 3, or 4). IF YES, DESCRIBE THE ERROR.

During which segment of the task did the child first physically comfort E? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not physically comfort).

Note: Code this as the segment within which the first moment of physical contact was made to soothe E.

Physical comforting includes: any touching that was made as the result of a PF or EF comforting strategy (e.g., hugging, placing a hand on E, putting a pretend bandaid on E's finger). It does not include touches that happened as the result of some other, non-comforting goal, or accidental touch, or cases in which E touched the child and not the other way around.

- During which segment of the task did the child first physically TOUCH E in a NON-comforting way? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not physically touch in a non-comforting way).

  Note: Code this as the segment within which the first moment of physical contact was made. Examples include: Incidental touch, like brushing against E's arm while doing something else, pulling E toward the door because child wants to play outside, bumping into E.

  Physical touch includes incidental or accidental touches or those in service of a non-comforting goal. It does not includes touches that the experimenter initiated. If there is any ambiguous situation where a touch might have happen, then look at the lab notes. If the experimenter mentioned a touch then there is a touch. If not, then always side with no physical touch.

3. Now, you will break the task up into 10-second intervals ("timeslices") in order to see how frequently the child shows each of the five types of response (i.e., supportive, negative, personal distress, concerned attention, and proximity increasing/maintaining). Because all comforting tasks were approximately 2 minutes long, each task will have approximately 12 timeslices, but the number may vary as individual tasks may have lasted slightly longer or shorter than 2 minutes. ADD THE TOTAL FREQUENCY OF EACH RESPONSE ON YOUR CODING SHEET, BUT DO NOT INCLUDE THE FINAL INTERVAL IF IT IS LESS THAN 8 SECONDS LONG. You do not even need to code final intervals that are less than 8 seconds. The only exception is when E stops the task due to physical comforting. In this case, we want 1 and only 1 interval to capture that comforting behavior. Do not throw it out, even if it's less than 8 seconds long. The entire interval will be coded and included in the totals for all codes in this case. If the child physically comforts and E does not stop the task, or if the child physically TOUCHES (i.e., would not get an EF score), then stick to the regular rules.

Step 1. COMFORTING: Watch each 10-second timeslice (one at a time) to code for the presence of an emotion-focused and/or problem-focused supportive response in that timeslice.

- Does any portion of the given timeslice contain any portion of an emotion-focused response that is at least 1-second long OR that contains at least 1 full word? (1=yes, 0=no)
- Does any portion of the given timeslice contain any portion of a problem-focused response that is at least 1-second long OR that contains at least 1 full word? (1=yes, 0=no).

Step 2. NEGATIVE RESPONSES: Watch each 10-second timeslice (one at a time) to code for the presence of a negative response OR personal distress in that timeslice.

- Does any portion of the given timeslice contain any portion of a negative response that is at least 1-second long OR that contains at least 1 full word? (1=yes, 0=no).
- Does any portion of the given timeslice contain any personal distress that is at least 1-second long OR that contains at least 1 full word? (1=yes, 0=no).

Step 3. CONCERNED ATTENTION: Watch each 10-second timeslice (one at a time) to code for the presence of concerned attention in that timeslice.
Does any portion of the given timeslice contain overt CA or AT LEAST 3 FULL SECONDS of non-verbal CA? (1=yes, 0=no). *Please remember that concerned attention cannot occur AT THE SAME MOMENTS as any of the above 3 types of response. However, a given 10-second timeslice may contain codes for supportive response AND concerned attention (or negative and concerned attention, or personal distress and concerned attention), but these codes must have happened at different moments within that timeslice (e.g., supportive response ended within the first 3 seconds, and concerned attention began immediately after it). CA* ***can't*** *carry over.*
NOTE TO CODERS: If it's non-verbal CA, a timeslice must contain within it a full continuous 3 seconds as a stand-alone interval to be coded as having concerned attention.

Step 4. PROXIMITY: Watch each 10-second timeslice **one more time** (one at a time) in order to code for the child increasing OR maintaining proximity to E.
At any point during the given timeslice, did the child exhibit proximity increasing/maintaining for at least 2 seconds? (1=yes, 0=no).

Step 5. IGNORING: After you have coded all 5 types of response in all 10-second timeslices, code for the lack of any response in each timeslice (i.e., ignoring E's distress). You don't need to watch the timeslices again to do this.
For each timeslice: Were there NO types of response coded for in this timeslice? (1=yes, there were no coded responses, 0=no, there was at least one coded response).

Step 6: Enter the number of intervals that were calculated in your total. This won't include rows with 999 (missing data), or intervals of less than 8 seconds long (unless child physically comforted and E ended the task early because of this - then you WILL include that interval in the total).

Note for if the pre-made template gives you the wrong number of segments and does not end at the correct time: Calculate the number of seconds in the "real" final interval to the best of your ability. If it's close to the cut-off point (7 or 8 seconds), then consider it being only 7 seconds.

4. **After coding the timeslices, answer the following questions on your coding sheet. Go back to view the video as many times as needed:**

- During which segment of the task did the child first begin an EMOTION-FOCUSED supportive response? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not display an emotion-focused supportive response).
    Note: Code this as the segment within which the child first begins to say or do the emotion-focused supportive response.
- During which segment of the task did the child first begin a PROBLEM-FOCUSED supportive response? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not display a problem-focused supportive response).
    Note: Code this as the segment within which the child first begins to say or do the problem-focused supportive response.
- During which segment of the task did the child first begin a negative response? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not display a negative response).
    Note: Code this as the segment within which the child first begins to say or do the negative response.
- During which segment of the task did the child first begin to show personal distress? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not display a negative response).
    Note: Code this as the segment within which the child first begins to show the personal distress.
- During which segment of the task did the child first begin to increase proximity to E? (1= before E has stated the problem, 2=E has already stated problem but has not yet looked at the child, 3=E has already looked at the child but has not yet asked if there's anything he/she can do to help, 4=E has already asked if there's anything child can do to help, but task has not yet ended, 0=child did not increase proximity).
- Did the child mention his/her/anyone's mom/dad/grandparent for any reason?
  <u>Also mark on the coding sheet the timestamp for when the mention BEGAN, as well as copy verbatim what the child said.</u>

5. Global Score - Watch the task 1 more time from beginning to end. Mark quick bullet point notes about the types of things the child said or did during the task. Rate each bullet point in terms of its quality of comforting. Count the total number of unique strategies.

Use these bullet points to help you code the global score.

What is your overall impression of how comforting this child was toward E? *Note: this code should be done immediately after the other codes were entered, so the child is fresh in the coder's mind.*

All previous scores have only considered frequency and latency of the response, leaving us unable to differentiate between a child who gives away their own possessions from a child who simply gives advice. This global score will capture the diversity, quality, and activity of child's attempts to comfort. Consider the number of DISTINCT attempts, including the creativity seen in the diversity. A child who suggests the same thing over and over will not be treated the same as a child who suggests the same number of things but which are all distinct and creative. Also consider the quality of attempts, especially sweet statements or offers, big gestures, and offers to give E the child's OWN possessions (e.g., nickels, balloon, drawing). Also, the quality of a persistent attempt will be higher than that of an attempt made just once. Also consider the activity of the child's attempts (e.g., a child who goes to the shelf to get something, or to the door to look for help, is not the same as a child who sits in her chair and continues playing while simply saying suggestions). You will also inevitably consider the frequency of comforting, amount of concerned attention, proximity, ignoring, attitude, general demeanor, negativity, etc. The amount of proximity is also the deciding factor if wavering between two scores.

1 - Not at all comforting. To get this score, a child may:

- Show no sign of being concerned about the experimenter's distress and make no effort to comfort her
- Show concerned attention within the first 15 seconds of the task, but subsequently shows no concerned attention and no comforting behaviors
- Make one or two brief and minimal efforts to comfort, with very little to no concerned attention
- Make a few half-hearted attempts to comfort, but largely ignores or acts negatively toward E
- Child is personally distressed for much of the time and unable to focus on E's needs

2 - In between a 1 and 3. (for ex: at least 70% CA but no attempts to comfort, not engaging E much or at all, and no proximity; or at least 50% CA with 1 minimal attempt to comfort)

3 - Somewhat/moderately comforting. To get this score, a child may:

- Attempt at least 3 or 4 distinct mid-quality ways to comfort, with concerned attention for ≥ 33%
- Attempt at least 2 distinct and mid- to high-quality ways to comfort with concerned attention for ≥ 50%
- Display concerned attention for more than 75% of the task, with one mid-high or high-quality attempt to comfort.

4 - In between a 3 and a 5.

5 - Very comforting. To get this score, a child may:
- show ANY large display of physical comfort (e.g., a hug) at any point
- physically comfort with a handshake, rub, or pat within the first 30 sec, or in addition to trying at least 3 other comforting strategies
- attempt to comfort for more than 75% of the duration of the task, MOSTLY mid- to high-quality comforting; when child wasn't comforting there was CA or Proximity.
- Attempt at least 7 distinct mid-quality ways to comfort.

NOTE: If any CLEARLY negative responses or some OBVIOUS OR PERSISTANT physical distress (e.g. almost crying)(distress in 3 or more time slices) responses are present, knock the global score down one point

6. Once you've finished filling out the paper coding sheets for ALL 3 TASKS, open your SPSS document located in your folder on the U:drive. Carefully transfer the codes into the SPSS document, verifying that you're on the right row, and are starting at the correct column. REMEMBER that when you add up the timeslice totals, DO NOT INCLUDE THE FINAL TIMESLICE IF IT'S LESS THAN 8 SECONDS.

7. Save your SPSS document twice, so that you always have 2 copies. Save in between every child.
- Sometimes, you are unable to code an event or an entire situation. If this is the case, then input the number “999” into the excel sheet. The best example is when an entire video of a situation, like Clipboard, is missing. Before marking "999", be sure to code whatever you can based on the post-lab notes.

8. After all 3 tasks have been coded and entered into SPSS, go back and double check that all codes were transferred correctly from paper to SPSS.

9. Clip all 3 paper coding sheets together and file them in your folder. Store the folder on the wall behind the door and bring to every coding meeting. Put completed packets into your file folder in the cabinet.

Appendix L: Coding Sheets; Adult Tasks

PHONE TASK CODING SHEET

1:ID 3 __ __ __

Start time _____ Stop Time_____

3:CoderName_____ 4: Coder #: _____

A. General Notes/visual description:

B. 1st WATCH - ORIENTATION, CHECK FOR EXPERIMENTER ERRORS, TOUCHING

Did the experimenter give the prompt at the beginning?
28: Phone_Prompt Yes=1 No=0

If no, what did E say?

_____

Did the Experimenter make a segment error?
29: Phone_SegError Yes=1 No=0

Circle all segments where error occurred 1 2 3 4 None

Describe the error:

_____

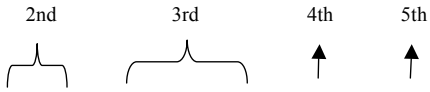
During which segment did the child first provide physical comfort to E? (5=did not ever)
30: Phone_PhysComfort_seg 1 2 3 4 5

During which segment did the child first touch E in a non-comforting way? (5=did not ever)
32: Phone_PhysTouch_seg 1 2 3 4 5

1

ID 3 ___ ___ ___

C. 2nd THROUGH 5th WATCHES - FREQUENCY OF RESPONSE TYPES



Final timeslice (# secs)	Timeslice	EF	PF	Negativity	Distress	CAs	Proximity	Ignore
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
TOTALS (not including timeslice of <8 seconds)								

34: Phone_EF 35: Phone_PF 36: Phone_Neg 37: Phone_Distress 38: Phone_CA 39: Phone_Proximity 40: Phone_Ignore

41: Number of timeslices included in totals count:_____

Summary of child's actions and attempts to comfort:

2

ID 3 ___ ___ ___

D. LATENCY OF RESPONSES (DERIVED FROM BOX C) - Watch segments again as needed

During which segment did the child first show an emotion-focused response (circle 5 if never)?
42: Phone_EF_Seg 1 2 3 4 5

During which segment did the child first show a problem-focused response (circle 5 if never)?
43: Phone_PF_Seg 1 2 3 4 5

During which segment did the child first show a negative response (circle 5 if never)?
44: Phone_Neg_Seg 1 2 3 4 5

During which segment did the child first show a personal distress response (circle 5 if never)?
45: Phone_Distress_Seg 1 2 3 4 5

During which segment did the child first begin to increase proximity to E (circle 5 if never)?
46: Phone_Proximity_Seg 1 2 3 4 5

Was a "mom or mother", "dad or father", or grandparent mentioned?

47: Phone_Caregiver Yes=1 No=0

Timestamp of start of phrase:_____

Record verbatim phrase:

E. FINAL WATCH - GLOBAL CODE

What is your overall impression of how comforting this child was toward E?
Consider diversity, quality, and activity of child's attempts

48: Phone_Global 1 2 3 4 5

1:ID 3 __ __ __

Start time _____ Stop Time_____

3:CoderName_____ 4: Coder #: _____ 5: DrawOrder: 1 2

A. General Notes/visual description:

B. 1st WATCH - ORIENTATION, CHECK FOR EXPERIMENTER ERRORS, TOUCHING

Did the experimenter give the prompt at the beginning?
6: Draw_Prompt Yes=1 No=0

If no, what did E say?

_____

Did the Experimenter make a segment error?
7: Draw_SegError Yes=1 No=0

Circle all segments where error occurred 1 2 3 4 None

Describe the error:

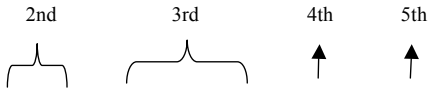
_____

During which segment did the child first provide physical comfort to E? (5=did not ever)
8: Draw_PhysComfort_seg 1 2 3 4 5

During which segment did the child first touch E in a non-comforting way? (5=did not ever)
10: Draw_PhysTouch_seg 1 2 3 4 5

ID 3 ___ ___ ___

C. 2nd THROUGH 5th WATCHES - FREQUENCY OF RESPONSE TYPES



Final timeslice (# secs)	Timeslice	EF	PF	Negativity	Distress	CAs	Proximity	Ignore
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
TOTALS (not including timeslice of <8 seconds)								

12: Draw_EF 13: Draw_PF 14: Draw_Neg 15: Draw_Distress 16: Draw_CA 17: Draw_Proximity 19: 18: Draw_Ignore

Number of timeslices included in totals count:_____

Summary of child's actions and attempts to comfort:

2

ID 3 ___ ___ ___

D. LATENCY OF RESPONSES (DERIVED FROM BOX C) - Watch segments again as needed

During which segment did the child first show an emotion-focused response (circle 5 if never)?
20: Draw_EF_Seg 1 2 3 4 5

During which segment did the child first show a problem-focused response (circle 5 if never)?
21: Draw_PF_Seg 1 2 3 4 5

During which segment did the child first show a negative response (circle 5 if never)?
22: Draw_Neg_Seg 1 2 3 4 5

During which segment did the child first show a personal distress response (circle 5 if never)?
23: Draw_Distress_Seg 1 2 3 4 5

During which segment did the child first begin to increase proximity to E (circle 5 if never)?
24: Draw_Proximity_Seg 1 2 3 4 5

Was a "mom or mother", "dad or father", or grandparent mentioned?

25: Draw_Caregiver Yes=1 No=0

Timestamp of start of phrase:_____

Record verbatim phrase:

E. FINAL WATCH - GLOBAL CODE

What is your overall impression of how comforting this child was toward E?
Consider diversity, quality, and activity of child's attempts

26: Draw_Global 1 2 3 4 5

Comforting Task Coding Manual – Infant Cry Task

Developed by: Bonnie Brett, adapted from a manual developed in collaboration with Jackie Gross, Jonathan Beier, and Jude Cassidy
The University of Maryland

Unpublished Coding Manual

General Coding Notes

This manual codes the variety of behaviors shown by preschool children in response to a crying infant.

Before you begin coding, please understand that capturing children's nuanced behavior from videotape is difficult to do with a series of strict rules. We have developed these coding rules to help capture the "spirit" of the children's intentions and attitudes, but there will always be cases that aren't covered by the existing rules.

Sometimes, we will need to make exceptions to the rules or create NEW rules that more accurately reflect reality. As a coder, part of your job is to recognize when the existing rules need to be changed or added to in order to better reflect reality. These rules are no substitute for human reason. Therefore, always keep in mind the spirit of WHAT exactly you are coding and the underlying reasons for WHY. Always be alert and ask yourself what you think is really happening in the task, and whether the codes you enter are accurate reflections of reality. In other words, take into consideration both the "spirit" and the "letter" of the law.

Throughout this manual, we have included explanations for what the code is and why you are coding it, but if you ever feel like you don't fully understand the codes or their reasons, please ask a coding supervisor. It is important that you are fully informed about the construct you are coding.

Sometimes, the manual will specify how many times to watch a task. If, however, you need to watch a task or a portion of a task more times to fully understand what is happening or to hear something more clearly, please watch it as MANY TIMES AS NEEDED. Never guess at what you see or hear. Take the time to replay the segment or task until you fully understand. It is better to be accurate than quick.

It also may seem as though you are watching the task too many times, and it's becoming repetitive and boring, especially when it comes to coding the comforting tasks. However, the more you watch the task, the better you "get to know" the child and coding becomes easier. It is also very easy to miss some subtle behavior, especially if you don't watch it as many times as the manual specifies!

Never code with another coder in the room. It is very important that your actions not influence any other coder. This includes you both

CODING SILENTLY BUT TOGETHER. ONLY DURING GROUP MEETINGS MAY YOU SHARE ANY INFORMATION ABOUT CODING (OTHER THAN ASKING FOR HELP WITH UNDERSTANDING A CHILD'S UTTERANCES).

Basic Coding Rules for Comforting Tasks

- Watch the video as many times as needed to determine what was what is happening. If you can't understand the child, keep watching as many times as needed. Do not guess at what the child said! If you still cannot understand what is happening or what was said, then do the following (in this order):

  1) Check the transcript.

  2) Open the file in VLC media player and turn up the volume all the way. Wear headphones, as this may also make it louder and clearer-sounding.

  3) Ask other people in the lab to come in and listen. Ask other RAs and graduate students, whoever is around.

  4) If no one can understand, then put a large star at the top of the coding sheet, with a note about which interval you could not understand. Bring it to the next coding meeting and we will all listen.

  5) If no one can understand at the meeting, the starred interval will remain on the coding sheet. Code that interval as though the child said nothing at all - this means the child may get all 0's, or you may be able to code non-verbal behaviors, such as concerned attention.

  6) THE ONLY EXCEPTION TO THIS: If the child is CLEARLY being comforting – singing or speaking in a soothing, quiet, calm manner to the baby, we can assume this is a comforting response.

- Code each 10-second timeslice as a stand-alone segment. Meaning, for example, if a response begins in the first timeslice and continues into the second timeslice, both timeslices would receive a code of 1 for that type of response. Even if only 1 second of a response extends into a certain timeslice, that timeslice would get a code of 1 for that type of response. Anything less than 1 second does not count. If it's a full word, it counts, even if less than 1 second.

- When coding timeslices, watch out for behavior and/or verbal statements that carry over into the next timeslice, or began in the previous timeslice. It's very easy to miss the

codeable response that only occurred for a second in a particular timeslice - this is especially true of behavior!

- You may have to watch an timeslice before or after the one you are coding in order to determine whether something is part of a supportive/negative/distress / arousal response or not. Context is important.

- When in doubt of the subjective meaning or intent behind a child's response, then go with the literal wording. We cannot guess at child's intent when it is unclear.

- As a general rule, never have any blank spaces on your coding sheet. If a certain blank space on the coding sheet is not applicable, then mark it with an X or NA.

- Intervals that are less than 8 seconds long are not included in your total response count. Instead, it will be included as part of the preceding interval. For example, if the last interval is 3 seconds long, it will be added to the previous 10-second interval, to create a 13-second final interval. Code both intervals separately, but then collapse the numbers across both intervals (i.e., if one or both intervals contain a certain behavior, then the 13-second combined interval will get a "1" for that behavior.

Description of Task

In this task, children have been convinced that there is a baby in the lab and have been taught to use a baby monitor. They have been led to believe that we are "watching" the baby who is currently sleeping. Soon after the training, the experimenter leaves the room to "retrieve a toy."

The task begins as soon as the infant cry comes over the monitor and lasts until an RA enters the room. In general, this will be about 1 minute long.
During the one minute period in which the child is alone with the crying infant, we will record every interpretable behavior the child engages in in relation to the baby cry.

Types of Responses

There are a variety of ways that children can respond when someone (in this case, a baby) is in need of comfort. The goal of coding these tasks is to capture the diversity of responses that a child can display, as well as to capture the frequency and duration of responses. To do this, we have divided possible responses into 4 categories: (1) comforting responses, (2) negative responses, (3) distress or arousal, and (4) ignoring the cries. All other responses will be coded as "Other."

Every codeable moment of the baby cry task can be classified into ONE AND ONLY ONE of these categories. Some responses may seem to fit into more than one category or

none of them at all. To determine which category a response is, you will use a decision hierarchy.

- First, consider whether the response is supportive OR negative OR distress / arousal. It can only be one of these.
- Negativity trumps distress (i.e. a child is crying and screaming at the monitor – we would get a score of negativity for the screaming, even though he was simultaneously distressed and negative). Distress trumps comforting (i.e., a child is crying and tries to sing to the baby – he would get a score of distress, not comforting).
- If it is not one of these, consider whether the child is ignoring the baby. If the monitor is off, in general the child is ignoring but see the description below to be certain.
- If the behavior of the child does not fit into any of these categories, he or she will receive a mark in the "Other" category. This reflects that the child was doing something other than comforting, engaging in negative responding, becoming distressed, or ignoring.

Use the following guidelines to decide which category a response fits into:

1. **Comforting responses**: In general, these responses are intended to make the baby feel better or fall back to sleep.
A child can get a comforting response score in each timeslice where they engage in comforting responding for at least 1 second. This means that if a child sings to the baby for 7 seconds, and that 7 seconds straddles two timeslices (e.g., 3 seconds in one, 4 seconds in the other), they will get a score for BOTH timeslices.
Supportive responses include things like:

- Speaking to the baby in a soothing way.
  - It is important to remember that 4-yr-olds don't have the vocal control of an adult, and may not always SOUND particularly soothing. In these cases, use the child's words to decide. For example, a child saying "It's ok baby" would likely be coded as comforting, whereas a child saying "Shut up" or "Stop it" would likely be coded as negative – even if they both have similar intonations. Screaming or yelling are always negative.
- Singing to the baby.
- Saying "shhhhhhh" into the monitor.

IN ALL CASES: even if the child is not using the monitor correctly (pressing the button on the side), we will assume that verbalizations directed toward the baby are meant for the baby.

2**. Negative responses:** In general, these responses would typically make the baby feel worse or scare the baby.
A child can get a negative response score in each timeslice where they engage in negative responding for at least 1 second. This means that if a child yells at the baby for 7 seconds,

and that 7 seconds straddles the time slices (e.g., 1 seconds in one, 6 seconds in the other), they will get a negative response score for BOTH timeslices.

- Laughing at the baby (If you're not sure whether it's a laugh or not, then code it as though it were not)
- Teasing/taunting/mocking
- Callous statements (e.g., "shut up")
- Scolding (e.g., "Stop making noise baby!").
- Throwing the monitor
- Screaming into the monitor

If you see a response that you think is negative and is not included on this list, please tell a coding supervisor and it may be added to the manual.

3. **Distress / arousal**: Sometimes, a child becomes upset when another person is upset. Examples of distress / arousal include:

- Crying, whining, or whimpering because child is distressed. If there are other cues that point to a different motivation (e.g. child can't reach across the table, child is being impatient), these would not be coded as distress / arousal
- Very obvious facial distress (e.g., face falls and looks like about to cry). This does not include small frowns, blank faces, or surprise when the cry starts; it must be clearly distress. The expression can last for any length of time, even 1 second, to be counted.
- Physical self-soothing (e.g., thumb-sucking, chewing on fingers, biting lip, chewing on inside of mouth, stroking selves, hand wringing or folding, touching eyes or mouth) for at least three seconds. We are considering this distress as these behaviors are generally reflective of the child trying to calm him or herself.
- Verbal statements of distress / arousal (e.g., "I wanna go home", "I don't like this").
- Speaking in a strained, upset-sounding way.
- Defensiveness (e.g. "It's not MY fault").
- Stopping play entirely. This is does not include momentary pauses, which often occur when the baby starts crying or periodically when the child is trying to ignore the crying. Stopping play due to distress is usually accompanied by facial distress or self-soothing behaviors.

If you see a response that you think shows distress / arousal and is not included on this list, please tell a coding supervisor and it may be added to the manual.

4. Ignoring the Baby: This code will capture any response that clearly reflects the child ignoring the cry. By definition, if the child is engaging any of the above, he or she is not ignoring.

- Keeping attention focused on activity without any apparent signs of distress
- Smiling but not engaging with the monitor
- A glance to the monitor or door now and then does not preclude this code. A child may become curious and briefly look toward the source of the sound, but if they return to play quickly (i.e., before three seconds have passed), this can still be coded as ignoring.

- If a child takes a moment (< 5 seconds) to respond to the cry, this is NOT necessarily ignoring or other. Some kids take a few moments to register the cry but will eventually go over to it. If, however, this initial pause lasts more than 5 seconds, it will be coded as ignoring if the child is playing and other if the child is looking at the monitor but not doing anything.

5. Other: This is where we will record any other behavior that cannot be classified. Most often, this will be the child manipulating the monitor, but not saying anything. Since we cannot determine whether he or she was trying to turn it off or to "help" the baby, we will call it "other." This may also include the child stopping and looking at the monitor (for more than 3 seconds) but not showing overt signs of distress or arousal.

Children CAN receive this code in conjunction with other codes. For example, if a child was manipulating the monitor for an entire interval, but only spoke once ("shhh baby"), he or she could receive a code for both "Comforting" and "Other."

Coding setup

1. Open the INTERACT program (you will need to close and reopen between every task).

2. Select "Open existing data file" and select the template of the child you are coding.

3. Double click "Set 1" on the lefthand side of the screen, and several green pencils should appear below it. These are the 10-second timeslices.

4. To open the video: Click on the small manila folder at the top left corner of the small Control Panel window. Select the correct video to open. The video should appear in a separate window.

5. To jump straight to the task, double click on the white space to the left of the first green pencil. If you want to view the task from beginning to end without breaks, use the Control Panel (press the righthand green arrow to play it through). If you want to view the task with the 10-second breaks, use the green pencils (double click the white space next to the timeslice you want to view).

6. Open the transcript (if available). It will be located on the U: drive. Use this to help you understand speech when you're not 100% certain of what the child is saying. Always have it open in the background.

7. Get the correct post lab notes from the purple binder.

8. Get a blank paper coding sheet of the correct task, and fill in the basic information at the top. USE THE START AND STOP TIMES SPECIFIED IN INTERACT (the first and last times, located next to Set 1).

9. Now that you have everything in front of you, BE VERY SURE YOU ARE CODING THE CORRECT CHILD. Check the post-lab notes for a description of the child and ensure that (s)he matches. If there is ANY doubt: play the video from the very beginning until the white board reveals the participant number (e.g., 3011). Verify that it matches the INTERACT template you have open, the video you opened, the transcript you have open, and the post lab notes in front of you.

10. If you are certain you are coding the correct child, write the participant number at the top of EVERY PAGE OF your paper coding sheet. Now you are ready to follow the coding procedure below.

11. You may also want to have a blank sheet of paper or Word document open to jot down any questions/comments for the group that arise during coding that you can bring to the next coding meeting.

Coding Procedure

1. **Make general notes on your paper coding sheet.** Before you begin, take out the post-lab notes sheet for this participant and read the Infant Cry section for any relevant details about this task. First, write the physical description of the child, and verify that it matches the child in the video you have open. If the post-lab notes reveal anything important about the child or the task (i.e., anything that would influence their behavior – the baby cry was too loud; they seemed to hear something before the cry started; etc.), write them in the **Notes** space below the physical description. Keep these notes in mind while coding.

2. **Watch the entire task all the way through. Again verify that you are coding the correct child by making sure the physical description matches what you see. While watching, get a feel for this child's behavior and become familiar with the task. Then code the following item:**

- € Was there a timing error? The task should be 60s (+/- 5s)?. If it is not, this is considered a timing error.
    - o Be sure the INTERACT template begins right when the baby cry starts and ends right when the “mom” enters the room.
        - If it does, this is the length of the task.
        - If it doesn’t, please recreate the template. This way, you can see how long the task. is simply by looking at the template.
    - o Determine if there is an error. If the template is less than 55 seconds or more than 65 seconds, there is an error.
        - Circle 0 for no, 1 for yes.
        - If there was an error, record the exact amount of seconds the task lasted.

3. Now, you will break the task up into 10-second intervals ("timeslices") in order to see how frequently the child shows each of the four types of response (i.e.,

comforting responses, negative responses, distress / arousal, and ignoring). Because the baby cry task is approximately 1 minute long, each task will have approximately 6 timeslices, but the number may vary as individual tasks may have lasted slightly longer or shorter than 1 minute. If the final slice is less than eight seconds long, you will collapse it into the slice before it. For example, if the task was 63 seconds long, you will have seven slices. The seventh slice, which is three seconds long, will be coded as if it were part of the sixth slice, and you will record that the total number of slices is "6." If it was 58 seconds long, you would code the final 8-second timeslice as its own slice, and would still record that there were 6 slices.

Step 1. COMFORTING RESPONSES: Watch each 10-second timeslice (one at a time) to code for the presence of comforting responses in that timeslice.

- Does any portion of the given timeslice contain any portion of a comforting response that is at least 1-second long (1=yes, 0=no)?

Step 2. NEGATIVE / DISTRESS RESPONSES: Watch each 10-second timeslice (one at a time) to code for the presence of a negative response OR distress / arousal in that timeslice.

- Does any portion of the given timeslice contain any portion of a negative response that is at least 1-second long? (1=yes, 0=no).

- Does any portion of the given timeslice contain any distress / arousal that is at least 1-second long? (1=yes, 0=no).

Step 3. IGNORING: After you have coded the other three types of responses in all 10-second timeslices, code for the presence of ignoring in each timeslice.
For each timeslice: Was the child actively ignoring the baby's distress (1=yes, 0=no).

Throughout: Other Responses : If, in the course of your coding, you come across another response that does not fit into one of the above categories, mark it in the "other" column. Be sure to think through before marking it as "other"… does it really not fit into one of the other categories?

For each timeslice: Was the child engaging gin a behavior that is not captured by the comforting, negative, distress / arousal, or ignoring categories? ((1 = yes, 0 = no).

Step 4: Enter the number of intervals that were calculated in your total. This won't include rows with 999 (missing data), or intervals of less than 8 seconds long.

4. **After coding the timeslices, answer the following questions on your coding sheet. Go back to view the video as many times as needed:**

- During which timeslice did the child first begin a comforting response? (Record the timeslice number in which the child first comforted.)

- During which timeslice did the child first begin a negative response? (Record the timeslice number in which the child first responded negatively.)

- € During which timeslice did the child show distress / arousal? (Record the timeslice number in which the child first showed distress / arousal.)

- € Did the child call for help (1 = yes, 0 = no)? In which timeslice did they do so? (Record the timeslice number in which the child first called for help.)

- € Did the child attempt to leave the room? (1 = yes, 0 = no)? In which timeslice did they do so? (Record the timeslice number in which the child first tried to leave the room.)

5. Global Comforting Score - Watch the task 1 more time from beginning to end. Mark quick bullet point notes about the types of things the child said or did during the task. Use these bullet points to help you code the global score.

What is your overall impression of how comforting this child was toward the baby?

Note: this code should be done immediately after the other codes were entered, so the child is fresh in the coder's mind.

All previous scores have only considered individual behaviors. We will now assign a score depicting how comforting the child was overall. Use the following bullet points to help you decide.

1: Not at all comforting– child immediately turns off the monitor and/or ignores it for the duration of the task; or child is too distressed to continue the task; or child only speaks harshly to the baby.

2: Child briefly attempts to speak to the baby (i.e., gets a "comforting" score in one or two timeslices) but then either turns it off or ignores it.

3: Moderately comforting – Child attempts to speak to baby for about half the time (i.e., gets a "comforting" score in half the timeslices) in a comforting manner but then either turns it off or ignores it

4: Child speaks to the baby for more than half of the time in a comforting tone of voice (i.e., gets a "comforting" in 4 – 5 timeslices), but eventually turns it off or ignores it.

5: Very comforting– Child speaks to the baby in a comforting tone of voice for most of the time (i.e., gets a score for "comforting" in every timeslice) the cry is playing.

NOTE: If any CLEARLY negative responses are present, knock the global score down one point

6. Once you've finished filling out the paper coding sheets open your SPSS document located in your folder on the U:drive. Carefully transfer the codes into the SPSS document, verifying that you're on the right row, and are starting at the correct column.

REMEMBER that when you add up the timeslice totals, DO NOT INCLUDE THE FINAL TIMESLICE IF IT'S LESS THAN 8 SECONDS.

7. Save your SPSS document twice, so that you always have 2 copies. Save in between every child.

- Sometimes, you are unable to code an event or an entire situation. If this is the case, then input the number “999” into the excel sheet. The best example is when an entire video of a situation, like Clipboard, is missing. Before marking "999", be sure to code whatever you can based on the post-lab notes.

8. After all tasks have been coded and entered into SPSS, go back and double check that all codes were transferred correctly from paper to SPSS.

9. Clip all coding sheets together and file them in your folder. Store the folder in a secret location and bring to every coding meeting. Put completed packets into your file folder in the cabinet.

Appendix N: Coding Sheet; Infant Cry Task

INFANT CRY TASK CODING SHEET

1:ID 3 __ __ __ 2. CoderName_____

A. General Notes/visual description:

B. 1st WATCH - ORIENTATION, CHECK FOR TIMING ERRORS, CALLING FOR HELP, AND ATTEMPTS TO LEAVE

Start time _____ Stop Time_____

Total time for baby cry: _____

Was there an error (BabyError)? 1 (YES) 2 (NO)

C. WATCH AS MANY TIMES AS NEEDED: FREQUENCY OF RESPONSE TYPES

1st 2nd 3rd throughout

Final timeslice (# secs)	Timeslice	Comforting	Negativity	Distress / Arousal	Ignoring	Other
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
TOTALS (not including timeslice of <8 seconds)		BabyComf	BabyNeg	BabyDis	BabyIgnore	BabyOther

Number of timeslices included in totals count:_____ (BabySlices)

Summary of child's actions and attempts to comfort:

1

ID 3 ____ ____ ____

D. LATENCY OF RESPONSES - Watch segments again as needed

Did the child show a COMFORTING response (BabyComfPres)?

1 (YES) 0 (NO)

During which segment did the child first show a comforting response? (write 0 if never)?

BabyComfLat _____

Did the child show a NEGATIVE response (BabyNegPres)?

1 (YES) 0 (NO)

During which segment did the child first show a negative response? (write 0 if never)?

BabyNegLat _____

Did the child show a DISTRESSED / AROUSED response (BabyDisPres)?

1 (YES) 0 (NO)

During which segment did the child first show a distress / aroused response? (write 0 if never)?

BabyDisLat _____

Did the child CALL FOR HELP (BabyHelpPres)?

1 (YES) 0 (NO)

During which segment did the child first call for help? (write 0 if never)?

BabyHelpLat _____

Did the child ATTEMPT TO LEAVE THE ROOM (BabyLeavePres)?

1 (YES) 0 (NO)

During which segment did the child first attempt to leave the room? (write 0 if never)?

BabyLeaveLat _____

E. FINAL WATCH - GLOBAL CODE

What is your overall impression of how comforting this child was toward the baby?
Consider diversity, quality, and activity of child's attempts

26: Baby_Global	1	2	3	4	5

2

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