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The Influence of Person Familiarity on Children's Social Information Processing

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THE INFLUENCE OF PERSON FAMILIARITY ON CHILDREN'S SOCIAL INFORMATION PROCESSING

by

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ABSTRACT

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This study examined the influence person familiarity has on children's social information processing (SIP) choices and emotion recognition. Children in grades 2nd through 5th watch a videotaped expression of a familiar or unfamiliar individual while listening to a hypothetical social interaction. Following the video clip, children responded to open-ended questions and prompted questions designed to assess their strategies and goals in the social interaction. Children also selected from two choices (either 'on purpose' or 'by accident') for their attribution of the individual's intent. Last, children identified the emotion that they believed the individual in the video was experiencing the most. For children's open-ended response strategies, females were more likely to provide a relational response (i.e., a response that helps to maintain or strengthen the social relationship) compared to males when viewing an unfamiliar person. For the prompted response strategies, males were more likely to provide a relational response for a familiar compared to unfamiliar person. Children were also more likely to attribute purposeful intent to the unfamiliar than familiar person. The 2nd and 3rd grade children were more likely to make relational responses for the open-ended questions compared to the 4th and

5th grade children. Familiarity did not significantly influence children's emotion recognition accuracy. Results add to the existing literature by showing that personal familiarity and children's gender impact multiple aspects of SIP. Results also demonstrate that the way in which researchers assess children's social decisions (i.e., asking spontaneous vs. prompted questions) can influence their strategy responses.

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CHAPTER 1

INTRODUCTION

Humans crave social interactions. Human behavior, as a result, is often influenced by our desire to affiliate (Fox, 1985). Deciding who to interact with in our social environment, therefore, becomes a perpetual goal. To help with this social decision making process, individuals rely on the cues of others. The most fundamental cue is that of the human face (Ekman, 1993). Interpreting facial cues involves determining a person's social category, identity, and physical and psychological traits (Zebrowitz, 2006). The process of facial perception also involves the discernment of emotional expressions, which can provide insight into a person's mood, temperament, and motivation (Ceschi & Scherer, 2003; Ekman, 1993).

The ability to perceive facial expressions has been used as a measurement of children's emotional and social development (Campos, 1984; Custrini & Feldman, 1989; Gross & Ballif, 1991; Hunter, Buckner, & Schmidt, 2009; Izard et al., 2001; Leppänen & Hietanen, 2001; Nowicki & Mitchell, 1998; Saarni, 1990; Saarni, Campos, Camras, & Witherington, 2006; Thomas, De Bellis, Graham, & LaBar, 2007). Children's social adjustment, for example, has been linked to their emotion recognition ability (Barth & Bastiani, 1997; Leppänen & Hietanen, 2001). Specifically, school-aged girls' (i.e., 7-10-year olds) ability to correctly recognize the emotional expression of others is positively correlated with their social adjustment (e.g., adjustment scores provided by their teachers) (Leppänen & Hietanen, 2001). Results suggest that emotion recognition accuracy can be used to predict children's social competence. Investigating the intricacies involved in

facial perception, therefore, becomes an important component in understanding how children interact with others within their social environments and begin to form successful social relationships.

The Ecological Theory of Social Perception (ETSP) has been used to study face perception (McArthur & Baron, 1983). Specifically, ETSP outlines how emotional expressions serve as affordances (i.e., properties of an object or environment that permit social actions) to direct human behavior. The interpretation of others' facial displays is also guided by the perceived quality (i.e., qualities that may benefit survival) of the expression. Individuals recognize expressions of anger faster and more accurately than expressions of happiness because angry expressions are most likely to indicate harm (Fox et al., 2000). The affordance of an emotional expression is also dependant on the perceiver's level of attunement to the facial expression. For example, infants are better able to discriminate the emotional expressions of their mothers' faces than strangers' faces, a result that is most likely due to infants' greater exposure to their mothers' facial displays (Barrera & Maurer, 1981). ETSP provides a valuable framework to help direct an investigation for how others' facial expressions influence children's emotion recognition because it implies that face perception is not equal across all social situations. Children's level of attunement to an individual, for example, may differ based on their familiarity with that person, which is likely to impact their perception of affordances.

The perception of others' facial expressions also influences social decision making processes (Dodge & Somberg, 1987; Lemerise & Arsenio, 2000; Orobio de Castro, Slot, Bosch, Koops, & Veerman, 2003), helping humans predict and explain the

behaviors of others (Mitchell, 1997). The Social Information Processing (SIP) model offers an explanation for how children encode and interpret cues in a social situation (e.g., others' facial expressions) and formulate a response that facilitates their understanding of the social environment (e.g., formation of strategies, goals and attributions concerning others' behavior; Crick & Dodge, 1994; Dodge, 1986; Lemerise & Arsenio, 2000; Lemerise, Fredstrom, Kelley, Bowersox, & Waford, 2006; Lemerise, Gregory, & Fredstrom, 2005). For example, when others' emotional displays are angry or sad, socially rejected, aggressive children are more likely to make social-problem solving responses that are more hostile (e.g., more likely to rate a revenge goal as important) compared to non-aggressive and non-socially rejected children (Lemerise et al., 2006).

ETSP is useful when examining children's SIP because it helps to determine how children use the emotional expressions of others to select strategies, goals and attributions that are the most advantageous for each social interaction. For example, if children perceive a novel adult's emotional display as angry (i.e., facial expression that may signal threat), children will select a response strategy that most benefits their survival (e.g., forming a strategy that allows them to avoid the adult). ETSP provides a guiding, theoretical framework to help determine how children's social decisions are formed and enacted.

Research examining how familiarity influences children's perception is needed because children's ability to decode others' emotions and discern their identity is important to children's successful cognitive and social development (Izard et al., 2001). Additionally, understanding how others' cues influence children's social decision making

may provide insight into how children form and maintain relationships with others (Crick & Dodge, 1994; Goodfellow & Nowicki, 2009). Successfully maintaining social relationships is essential to children's peer acceptance and academic performance (Ladd, 1990).

Only a few studies have examined the influence of person familiarity on children's emotion recognition (e.g., Herba et al., 2008; Nummenmaa, Peets, & Salmivalli, 2008; Shackman & Pollak, 2005) and even fewer studies have examined the influence of emotional expression on children's social information processing (e.g., Lemerise et al., 2005, 2006). To date, no study has explored how emotional expression, familiarity, and social information processing interact. The purpose of this research, therefore, is to examine how person familiarity (i.e., interaction with a familiar or unfamiliar individual) influences children's emotion recognition and social information processing choices (e.g., formation of strategies, goals and attributions). An investigation into this research question may help researchers to determine how familiarity directs and guides children's behaviors within social interactions.

CHAPTER 2

LITERATURE REVIEW

An Ecological Approach to Facial Perception

The Ecological Theory of Social Perception (ETSP) has been used to examine the development of facial perception (McArthur & Baron, 1983). The four distinguishing components of ETSP are 1) perception serves an adaptive function that guides human behavior; 2) information concerning adaptive functions is revealed in dynamic environmental events; 3) the perceptual information obtained from these events provides affordances; and 4) the perception of affordance depends on the level of attunement to the stimuli. For the present study, ETSP will provide the framework for outlining how facial perception influences children's emotional and social processing.

Adaptive function of facial perception. Following the first tenet of ETSP, facial perception, specifically the discernment of emotional expressions, has a specific adaptive value (McArthur & Baron, 1983). From an evolutionary standpoint, a person who has an ability to quickly and correctly identify the emotional expression of others has an advantage in survival (e.g., avoiding others who intend to harm him/her). Expressions of anger, for example, may indicate threat. Expressions of happiness, on the other hand, may indicate safety. The ability to correctly perceive emotions serves as an advantage because it elicits the appropriate interpersonal behaviors (McArthur & Baron, 1983). As an example, humans have a tendency to orient their attention towards potentially threatening faces. Participants maintain faster response times and show more accurate detection of threatening than nonthreatening faces, suggesting that emotion expressions can influence

attention and assist in perceptual processing (Lundqvist & Öhman, 2005; Mogg & Bradley, 1999; Schupp et al., 2004; Young & Claypool, 2010). Likewise, adults identify angry facial expressions more quickly than happy or neutral facial expressions, suggesting that adults recognize some emotions faster because of their adaptive functions (Fox et al., 2000).

Dynamic environmental events. According to the second tenet of ETSP, an environmental event (e.g., static and/or dynamic display) may provide information concerning individuals' structural invariants (i.e., properties of a person that remain constant) as well as their transformational invariants (i.e., properties of a person that change over time; McArthur & Baron, 1983). A person's facial expression can communicate his or her structural features (e.g., gender, race, and identity) as well as his or her transformational features (e.g., internal emotional state; Calder & Young, 2005). Obtaining transformational features, however, is difficult when there is only a static display presented (e.g., a picture of a person smiling). Through the use of dynamic displays (e.g. video clips of a person's emotional expression), additional visual information is offered, facilitating the process of social and emotional perception (McArthur & Baron, 1983). For example, an individual's facial expression can fluctuate in intensity and speed throughout a dynamic display, which may help communicate emotional cues (Ekman, Friesen, & Ancoli, 1980). Perceivers can also acquire information regarding an individual's transition of emotional states (i.e., observing the change from a neutral facial expression to a happy emotional expression) (Bould, Morris, & Wink, 2008). Facial movements also assist in age, gender and identity recognition

(Berry, 1990, 1991; Hill & Johnston, 2001; O'Toole, Roark, & Abdi, 2002). Dynamic displays also aid in the recognition of familiar/famous individuals, even when the videos are degraded or distorted (Lander, Christie, & Bruce, 1999; Lander, Bruce & Hill, 2001). By incorporating dynamic displays, researchers may gain a better understanding of social and emotional perception.

Affordances of facial expressions. Following the third tenet of ETSP, perceptual information can provide affordances. The information gained from the perception of another's face, in other words, can directly influence one's behavior. For example, infants are more likely to approach a novel toy after having seen a positive, joyous facial expression of their caretaker as opposed to a negative, fearful expression of their caretaker (Camras & Sachs, 1991; Zarbatany & Lamb, 1985). Twelve-month-old infants are also more likely to cross a visual cliff when the parent is smiling as opposed to frowning (Sorce, Emde, Campos, & Klinnert, 1985). Similarly, when an adult perceives an unfamiliar individual's facial expression as attractive or fearful, they are likely to indicate more approach responses than avoidant responses (Marsh, Ambady, & Kleck, 2005). When adult participants perceive an unfamiliar person's face as disfigured or angry, on the other hand, participants are likely to provide more avoidant responses than approach responses. Additionally, when participants perceive an unfamiliar face as nonthreatening (e.g., happy or sad emotional expression), it attracts more visual attention as compared to a neutral facial expression (Williams, Moss, Bradshaw, & Mattingley, 2005). Individuals also have more difficulty disengaging their attention when shown novel threatening faces as compared to novel nonthreatening faces (Fox, Russo, Bowles,

& Dutton, 2001; Fox, Russo, & Dutton, 2002). Clearly, familiar and unfamiliar individuals' facial expressions can direct one's behavior.

A person's face provides a wealth of information concerning identity, sex, race, emotional state, attractiveness and eye gaze. Each of these components may combine with other information to influence behavior in different ways (Spangler, Schwarzer, Korell, & Maier-Karius, 2010; Vuilleumier, George, Lister, Armony, & Driver, 2005). For example, a person's emotional expression can combine with his or her identity (i.e., personally familiar or unfamiliar individual) to provide specific affordances. When presented with an uncertainty-provoking event (e.g., the presence of a novel toy spider), 14-month-old infants are more likely to reference their mother's happy facial expression as opposed to an unfamiliar adult's happy facial expression when deciding to approach the object, a result that remains consistent even when the unfamiliar adult has a more expressive emotional display (Zarbatany & Lamb, 1985). Additionally, adults rate the neutral emotional expressions of familiar faces as having more joyful expressiveness with less anger than the neutral facial expressions of unfamiliar faces (Claypool, Hugenberg, Housley, & Mackie, 2007). Personally familiar faces, therefore, may produce a different affordance than unfamiliar faces. Clearly, the way in which faces are identified can influence the perception of affordances.

Attunement to facial expressions. The fourth tenet of ETSP indicates that the perception of affordance depends on an individual's level of attunement to the stimuli. Attunement is determined by the degree of the perceiver's sensitivity to the given stimuli, which helps to affirm specific affordances (Zebrowitz, 2006). Adults are more efficient at

remembering and recalling same-race faces than other-race faces, which are likely due to greater experience with same-race than other-race faces (Meissner & Brighman, 2001).

Attunement may vary according to the perceiver's goal. For example, a person looking for a familiar individual in a crowded room is less likely to be attuned towards the emotional expression of others' compared to a person who is in a novel environment with novel people and determining who to approach. Attunement may also vary according to the perceived utility of the stimuli. From a very early age, infants begin to rely heavily on the facial cues of familiar adults (e.g., parents, caretakers) with whom they have a close relationship to direct and guide their behaviors (Camras & Sachs, 1991; Sorce et al., 1985). From an evolutionary standpoint, it is likely that infants will pay attention to the cues of a familiar adult (i.e., become more "attuned") because that adult is likely to provide care, a benefit that aids infants' survival.

As children mature, they continue to use the cues of adults as important sources of information. Given the influence teachers have on children's moral, social and emotional development on an almost daily basis (e.g., Ahn, 2005; Ashiabit, 2000; Downer, Sabol, & Hamre, 2010; Ray & Smith, 2010), children may become attuned to nuances in the facial expressions of their classroom teachers. Many of the cues provided by children's teachers (e.g., teacher's use of verbal reinforcements and encouragement of student's positive emotional displays) assist in the expansion of children's emotion understanding (Ahn, 2005). Additionally, through the process of modeling, teachers provide direct and indirect influences for how children express and regulate their emotions (Ashiabi, 2000). Determining how children's attitudes towards their teacher (i.e., like or dislike of their

teacher) combines with emotional expressions to influence the perception of affordances, however, requires additional research. Children's aversion to an individual can negatively influence an interpretation for that person's behavior (e.g., children are more likely to rate disliked peers as having more hostile intent in a provocation scenario than liked peers; Peets, Hodges, & Salmivalli, 2008). It is likely, therefore, that children's negative attitude towards their teacher may also negatively influence the perceived level of affordance for their teacher's emotional expression (i.e., children may dismiss or ignore the facial cues of teachers they do not like), thereby interfering with facial perception.

ETSP and the present research. Applying the tenets of ETSP to the current study should facilitate an examination of the influence familiarity has on children's emotional and social processing. Specifically, by integrating dynamic video displays of familiar and unfamiliar adult emotional expressions, I assessed children's emotion recognition abilities and social information processing choices. By examining how children perceive personally familiar and unfamiliar facial expressions, researchers may gain a better understanding of how affordances guide facial perception.

Children's Emotion Recognition Abilities

In humans there are basic emotions associated with specific facial expressions. Each of these expressions is recognized across cultures (Ekman, 1992; Ekman, 1993; Elfenbein & Ambady, 2002; Matsumoto, Kudoh, Scherer, & Wallbott, 1988). From a very early age, humans begin to recognize the emotional expressions of others and begin to realize that these expressions carry significance (Montague & Walker-Andrews, 2002). At 5-months of age, infants can categorize smiling faces and recognize an individual even

when there are changes in the person's emotional expression (Bornstein & Arterberry, 2003). By 7-months, infants can distinguish positive (e.g., happy and surprised) from negative (e.g., sad and fearful) facial expressions (Ludemann, 1991). And by 10-months, infants can distinguish between facial expressions that are similarly valenced (e.g., happy and surprised; Ludemann, 1991). Past 10 months of age, infants' ability to detect configurations of emotionally expressive features continues to develop and strengthen.

At 2-years, toddlers can group facial expressions into categories of physical states (e.g., pleasure and arousal; Bullock & Russell, 1985; Russell & Bullock, 1985, 1986). For example, when researchers show toddlers three emotional expressions (e.g., picture of a happy, excited, and angry face), and ask them to judge which two photographs are most similar, toddlers correctly choose the happy and excited faces (photographs expressing pleasure). At 3-years, children can match emotionally descriptive words (e.g., happy) to photographs of adult's emotional expressions, although inaccuracies are fairly common (e.g., using the word "surprised" for all pleasant expressions; Bullock & Russell, 1984). At 3-years, children can also successfully identify another child's happy, surprised, angry, fearful, and disgusted emotional expressions, although their level of accuracy is significantly lower than that of 5-year-olds' scores (Boyatzis, Chazan, & Ting, 1993).

Studies examining children's accuracy in the recognition of others' emotional expressions have demonstrated that as children age, recognition scores typically improve (Boyatzis, et al., 1993; Bullock & Russell, 1985; Ekman, 1992, 1993; Gitter, Mostofsky, & Quincy, 1971; Gross & Ballif, 1991; Harrigan, 1984; MacDonald, Kirkpatrick, & Sullivan, 1996; Odom & Lemond, 1972; Philippot & Feldman, 1990; Tremblay, Kirouac,

& Dore, 1987; Zuckerman & Przewuzman, 1979). Differences between children's and adults' emotion recognition skills were evident when they were both given a task that involved matching faces on the basis of facial expression (Mondloch, Geldart, Maurer, & Le Grand, 2003). Researchers first showed children and adults a target face displaying one of four emotional expressions (i.e., neutral, surprise, happy or disgust) before showing them a series of novel faces, each with a different facial expression. Researchers then asked participants to point or signal with a joystick when the novel facial expression matched the target's facial expression. Younger children (6- and 8-year-olds) made significantly more errors than adults on this task (Mondloch et al., 2003). Dramatic improvements in accuracy were seen between 8- and 10-year-olds; 10-year-olds' accuracy was more similar to that of adults' (Mondloch et al., 2003). Children's emotion recognition accuracy may begin to resemble that of adults around the age of 10-11 because there are increases in children's experiences with complex social interactions during these years (Tonks, Williams, Frampton, Yates, & Slater, 2007). For example, there are changes in their psychosocial development (i.e., adolescents become more concerned with how others view them) and improvements in their personal and social communication skills (i.e., adolescents develop better expressive language skills; Turkstra, 2000). Adolescents, therefore, may become more proficient at understanding what an emotional expression may mean due to their sophisticated understanding how emotional expressions are used during social interactions.

Emotion recognition skills are also likely to improve with age because children begin to form more specific emotion categories (Widen & Russell, 2008). In an emotion

recognition experiment, researchers gave 2-5-year-old children photographs of another child's happy, surprised, excited, content, sad, disgusted, angry, and fearful facial expressions. Researchers then asked children to choose the faces that were expressing a specific target emotion (e.g., fear) and to place these photographs into a box. Younger children (2-3-year-olds) were more likely to choose nontarget emotional expressions (i.e., disgust, angry, and contentment) for the task than older children (i.e., 4-5-year-olds; Widen & Russell, 2008). Additionally, when older children did make a mistake, they were more likely to choose nontarget emotional expressions that were similar in valence (e.g., choosing surprised and excited for a happy target question) than younger children.

Results from the Widen and Russell (2008) experiment, along with others (e.g., Bormann-Kischkel, Hildebrand-Pascher, & Stegbauer, 1990; Denham & Couchoud, 1990; Russell & Widen, 2002; Widen & Russell, 2003) demonstrate that emotion categories continue to narrow as children mature. When children's emotion categories are more specific, they are less likely to confuse emotional expressions. Older children's accuracy for surprised and happy emotional expressions, for example, are higher than younger children's accuracy for these emotions because older children are better able to distinguish between these two similar emotions and correctly apply the label for each. Younger children, who have less specific emotion categories, are more likely to confuse the two emotions and incorrectly label each expression, thus resulting in lower recognition accuracy.

Factors Influencing Children's Emotion Recognition Abilities

Gender. Numerous studies have examined the influence of sex differences in children's emotion recognition (e.g., Brody, 1985; Gross & Ballif, 1991). The majority of research studies support the idea that females are more adept and skilled at emotion recognition tasks compared to males (McClure, 2000). This finding is demonstrated for both children and adults (Hall, 1978; Reichenbach & Masters, 1983; Stoddart & Turiel, 1985). One possible explanation for these findings is that from a very early age, mothers are more expressive towards their infant daughters compared to their infant sons (Fogel, Toda, & Kawai, 1988; Malatesta, Culver, Tesman, & Shepard, 1989). These differences may then allow female infants to better detect subtle emotional displays. For example, in a study examining 12-month-olds' social referencing, researchers asked mothers to display a happy or fearful face when interacting with a novel toy (e.g., an owl robot with blinking eyes; Rosen, Adamson, & Bakeman, 1992). Results indicated that mothers sent more intense fearful expressions to their infant sons compared to their infant daughters; however, only the mother's fearful facial expression was associated with the female's willingness to approach the toy. In other words, compared to the males, females were better able to respond to their mother's cues, even when the expressions were less obvious.

Another possible explanation for the gender differences seen in emotion recognition abilities is that females may be more efficient at visually processing faces compared to males (Rennels & Cummings, 2013). When examining visual scanning patterns of faces, females show a trend toward more shifts between internal facial features than males. These types of visual shifts may indicate second-order relational

processing (i.e., sequential eye fixation shifts between internal facial features only). Second-order processing is required in order to interpret others' emotional expressions (Deruelle & de Schonen, 1998). Females' advantage in the discrimination of emotional expression, therefore, may be due to a greater scanning of relations between internal facial features (Heisz, Pottruff, & Shore, 2013; Rennels & Cummings, 2013).

Gender differences seen in emotional expression recognition tasks are evident in childhood. When researchers compare pre-school and third-grade children's performance on an emotion identification task, females significantly outperform males when identifying the expressions of anger and sadness (Reichenbach & Masters, 1983; Stoddart, 1985). Research studies, however, show that female's advantage does not apply to all emotional expressions (Camras & Allison, 1985; Gross & Ballif, 1991; Hall, 1978). One possible explanation for the gender differences seen in school-aged children's emotion recognition skills is that mothers emphasize emotions more in conversations with their daughters than with their sons (Fivush, 1991). Specifically, mothers talk more with their daughters than sons about the emotion of sadness and its potential causes (Fivush, 1991). With this additional training, females may become more adept at understanding the environmental causes for others' emotions, thereby improving their ability to recognize those specific expressions. Researchers, therefore, should carefully consider the influence gender has on children's emotion recognition ability.

Affect display. There are specific factors other than age and gender that may influence children's accuracy in the recognition of emotions. The affective display of an individual can increase or decrease children's emotion recognition accuracy (Camras &

Allison, 1985; Herba & Phillips, 2004; MacDonald et al., 1996). It can also facilitate or hinder children's speed of processing (Cummings & Rennels, in press; Herba, Landau, Russell, Ecker, & Phillips, 2006).

Five year-old children typically recognize happy and sad facial expressions most accurately compared to other facial expression, indicating that an understanding of these emotions is established early (Batty & Taylor, 2006; Boyatzis et al., 1993; Camras & Allison, 1985; Holder & Kirkpatrick, 1991; Izard, 1971; MacDonald et al., 1996). There are only modest gains in accuracy for these expressions as children age (Gao & Maurer, 2009). Other facial expressions, such as fear and disgust, are more challenging for 5-year-old children to interpret, indicating that an understanding of these emotions are slower to develop (Gross & Ballif, 1991; Herba & Phillips, 2004). Children's recognition of anger and surprise is less predictable. For 5 to 7-year-olds, some studies have shown a high level of accuracy (e.g., Camras & Allison, 1985; Markham & Adams, 1992) whereas other studies reported only moderate levels of accuracy for these emotions (e.g., Bullock & Russell, 1984; Reichenbach & Masters, 1983; Tremblay et al., 1987). One possible reason for the inconsistency in results may be due to children confusing these emotions for other emotions (e.g., confusing surprised for a happy expression; Bullock & Russell, 1984). Children's recognition for fear, disgust, anger and surprise does improve with age (Gagnon, Gosselin, Hudon-ven der Buhs, Larocque, & Milliard, 2010; Gao & Maurer, 2009; Tremblay et al., 1987).

The influence affect display has on emotion processing is also evident from neuroimaging studies. When conducting ERP studies, researchers typically focus on

participant's N170, a posterior negative potential that occurs around 170 ms after stimulus onset. The N170 is thought to reflect a deep, structural encoding of a face, which aids emotion identification (Batty & Taylor, 2003; Bentin et al., 1996; Eger et al., 2003; Pizzagalli, Regard, & Lehmann, 1999; Righart & de Gelder, 2006). Brain imaging with adults reveals that the N170 is evoked more rapidly for positive emotions (e.g., happy and surprised facial expressions) than for certain negative emotions (e.g., fear, disgust, and sadness; Batty & Taylor, 2003). The negative emotional expression of anger, on the other hand, evoked the N170 faster than the fear, disgust, or sad facial expressions, such that the processing speed for angry facial expressions resembled that of positive emotions (Batty & Taylor, 2003). The rapid processing of angry faces is predictable because it serves an adaptive purpose (e.g., avoiding threatening situations) (Ohman, Flykt, & Esteves, 2001; Ohman, Flykt, & Lundqvist, 2000).

There are relatively few ERP studies conducted with children. Based on the limited research studies, evidence suggests that the N170 may not be sensitive to emotional expressions until the age of 14-15 years (for a review see Batty & Taylor, 2006; Dennis, Malone, & Chen, 2009). As a result, researchers focus primarily on children's P1 component, a posterior positive potential that occurs around 100 ms after stimulus onset. The P1 is thought to reflect selective attention and aid in the detection of emotional expressions (Batty & Taylor, 2003; Eimer & Holmes, 2007; Itier & Taylor, 2004; Pourtois, Grandjean, Sander, & Vuilleumier, 2004; Taylor, Batty & Itier, 2004). Brain imaging studies show that 4-6 year olds produce larger P1 latencies for negative emotions, compared to neutral or positive emotions, but older children (i.e.,10-11-year-

olds) and adults do not show differences in their P1 latencies across emotions (Batty & Taylor, 2006). Contrastingly, other research indicates that the presence of negative expressions does not influence children's (i.e., 4-6-year-olds') P1 latencies (Todd, Lewis, Meusel, & Zelazo, 2008). Five- to 9-year-old children, however, demonstrate shorter P1 latencies for fearful facial expressions as compared to sad facial expressions (Dennis et al., 2009). Shorter P1 latencies are thought to reflect a facilitated visual processing of stimuli (Batty & Taylor, 2003).

These studies, although mixed in their participant age ranges, results and methodology (e.g., Batty and Taylor's use of six basic emotional displays compared to Todd et al.'s use of only two emotional displays), indicate that emotional expressions can influence children's emotion recognition accuracy and the brain systems responsible for emotion processing (Batty & Taylor, 2006; Dennis et al., 2009; Vuilleumier & Pourtois, 2007). Additionally, research indicates that younger children's P1 may be sensitive to differences in emotional displays (e.g., happy vs. angry facial expression), whereas the latencies of adults' P1s are not (Batty & Taylor, 2003, 2006).

Children's environment. Children's exposure to positive and negative emotions within their social environments (e.g., interactions with family members and peers) may explain some of the differences seen in their emotion recognition accuracy (Bennett, Bendersky & Lewis, 2005; Boyatzis et al., 1993; Edwards, Manstead, & MacDonald, 1984). Eight- to 11-year-olds, who were raised in low socioeconomic (SES) households, displayed lower levels of emotion knowledge (as measured by their emotion recognition skills) than children raised in higher SES households (Edwards et al., 1984). Differences

in recognition abilities between high and low SES children may be due to the quality of interaction between the parent and child. Parents in high SES households, for example, talk to and encourage their infants and preschoolers more, offering them opportunities to explore. When their children are older, parents in high SES families also use more warmth, explanations, and verbal praise whereas parents in low SES families use more commands, criticism, and physical punishment (Bradley & Corwyn, 2003). Parenting style may therefore strengthen children's understanding of others' emotions. By parents providing an explanation for the behavior of others (which is more likely in high SES families), children can form a better understanding for causes of others' emotions. High SES students may also be more popular with their peers, thereby maintaining more social interactions and increased emotional expression exposure as compared to low SES students. Peer status is commonly used to predict emotion recognition abilities (e.g., Denham, 1986; Denham & Couchoud, 1990; Field & Walden, 1982; Izard, Ackerman, Schoff, & Fine, 2000; Sroufe & Rutter, 1984).

Further evidence for the role environment plays in children's emotion recognition abilities is demonstrated in studies examining children who were maltreated. For instance, 9-year-old children who were raised in an abusive household more easily detect transitions to facial expressions of anger compared to non-abused children (Pollak, Messner, Kistler, & Cohn, 2009). Likewise, abused children, ranging in age from 8 to 15-years of age, more quickly label negative facial expressions, especially fearful faces, as compared to non-abused children (Masten et al., 2008). Abused children may be highly attuned to negative facial expressions, such as fear, because of their experiences with

identifying threatening situations. Recognizing angry or fearful expressions, which may indicate a threat in the immediate environment, would become highly adaptive (Masten et al., 2008). Results from these studies highlight the importance of the environment on children's ability to correctly identify the emotional expression of others.

Methodological Considerations: Children's Emotion Recognition Studies

To examine how accurately children identify and interpret others' emotions, researchers primarily rely on 'recognition studies' in which participants associate an emotion label with a facial expression. If participants match an emotional label (i.e., happy) with the correct facial expression of that emotion (e.g., an open, intense smile), researchers indicate that participants successfully 'recognized' the emotion. Variations in this general methodology, however, may account for differences seen in emotion recognition accuracy across experiments.

Studies exploring emotion recognition accuracy typically rely on the use of static facial expressions (see Adolphs, 2002; Murphy, Nimmo-Smith, & Lawrence, 2003 for a review). Some studies, however, have utilized dynamic facial expressions to test emotion recognition accuracy (e.g., Ambadar, Schooler, & Cohn, 2005; Bassili, 1979; Harwood, Hall, & Shinkfield, 1999). The basis for using dynamic faces is that they are considered more ecological valid than static faces (Harwood et al., 1999). In addition, dynamic faces can convey additional information about the temporal and structural properties of a face (Sato & Yoshikawa, 2004). Dynamic displays also allow for an opportunity to gain multiple perspectives of the person's face, which can facilitate emotion recognition (Knight & Johnston, 1997; Sato & Yoshikawa, 2004).

Ambadar et al. (2005) and Basili (1979) demonstrated that compared to static photographs, dynamic faces (i.e., video recordings of facial movements) produced higher levels of recognition accuracy for the expressions of happiness, sadness, fear, surprise, anger, and disgust for adult participants. Harwood et al. (1999), however, showed that compared to static photographs, dynamic faces improved adult's recognition for the emotional expressions of sad and angry only. Dynamic facial expressions did not facilitate adults' recognition accuracy for happy, disgusted, fearful, and surprised expressions. Additionally, Kätsyri and Sams (2008) found no significant differences between recognition accuracy for natural static and dynamic facial expressions. Although there are methodological differences in the presentation of static and dynamic faces across studies (e.g., Basili's use of a point-light displays vs. Harwood et al.'s use of videotaped emotional expressions), it appears that dynamic facial displays can positively influence emotional expression recognition accuracy.

Studies that utilize both static and dynamic facial presentations with children are extremely limited. One study found that children aged 6-7 and 10-11 years old are more accurate at recognizing the identity of a face when presented in a dynamic display compared to a static display (Skelton & Hay, 2008). No study, however, has directly examined how static vs. dynamic displays affect children's emotion recognition accuracy. Researchers have utilized dynamic facial expressions in a limited number of research experiments involving infants and children. Infants as young as 4-months-old can distinguish and affectively respond (i.e., display a change in their emotional expression) to the basic dynamic emotional expressions of sadness, anger, and fear (Montague &

Walker-Andrews, 2001). Similar to children's recognition of static faces, children's recognition of dynamic emotional expressions typically improves with age, but the emotional category of the expression often influences accuracy. For instance, Herba et al. (2008) utilized the dynamic facial expressions of happiness, sadness, anger, fear, and disgust posed by adults to test children's (i.e., 4-15-year-olds) emotion recognition accuracy. Results indicated that older children (e.g., 13-15-year-olds) significantly outperformed younger children (e.g., 4-6-year-olds) for the emotional expressions of happiness, sadness and fear; accuracy for anger and disgust was not influenced by age. Similarly, other researchers demonstrated developmental improvements in accuracy for children's recognition of happiness, fear, sadness and anger in dynamic facial displays (Montirosso, Peverelli, Frigerio, Crespi, & Borgatti, 2010). Despite the limited number of studies that utilized dynamic facial expressions with children, research has indicated that children as young as 4-years-of age can successfully identify basic (e.g., happy and sad) emotional expressions.

Providing children with situational information during the emotion recognition task (e.g., allowing children to witness an environmental event that preceded the emotional expression) can also influence emotion recognition accuracy (e.g., Fabes, Eisenberg, Nyman, & Michealieu, 1991). When identifying emotions (e.g., happy, sad, and disgusted), the use of situational information may help to produce high levels of emotion recognition accuracy (Ribordy, Camras, Stefani, & Spaccarelli, 1988). Compared to a task where an emotional label is clearly provided, however, relying only on situational information may result in lower emotion recognition accuracy. For

example, when researchers asked children to identify the emotional expression of a face that was presented with only a label or with only a contextual vignette, children were more accurate with the labeling task (Cummings & Rennels, in press). When only contextual information is available, children need to infer the correct emotional expression, which is more challenging. The use of situational information, therefore, can serve as an important resource when identifying the emotional expression of others (e.g. Carroll & Russell, 1996; Fabes et al., 1991; Ribordy et al., 1988), but compared to a task where emotion labels are clearly provided, it can result in more recognition errors (Cummings & Rennels, in press; MacDonald et al., 1996).

Variations in research methodologies may account for differences seen in children's emotion recognition accuracy across research experiments. In order to assess children's emotion recognition abilities accurately, researchers should consider an emotion recognition task that is not only effective, but also ecologically valid. For example, to accurately assess how person familiarity influences children's emotion recognition, researchers should use dynamic displays of emotion because these are the types of expressions children most often experience in their social environments. Consequently, one goal of the present study was to construct facial stimuli that more closely resembled children's real-world interactions, so as to increase the applicability and generalizability of results.

Familiarity and Children's Emotion Recognition Abilities

Person familiarity affects infant's discrimination, intermodal matching abilities and visual preferences. For example, infants as young as 3-months of age are better at

discriminating between the facial expressions of familiar adults than unfamiliar adults (Barrera & Maurer, 1981). Three-month-old infants also more accurately match a familiar person's facial expression (e.g., happy or sad expression of their mother's face) to the correct corresponding voice (e.g., vocal expression of the infant's mother) than the facial and vocal expressions of unfamiliar individuals (Kahana-Kalman & Walker-Andrews, 2001). Additionally, infants visually prefer the happy expressions of familiar adults as compared to their sad emotional expressions; this pattern of looking did not generalize to unfamiliar adults' facial expressions (Kahana-Kalman & Walker-Andrews, 2001). From a very early age, infants show a preference for and more proficient discrimination of facial expressions of familiar adults as compared to unfamiliar adults.

There have been very few research studies that have directly examined the role of familiarity on the perception of emotional expressions for children. Studies attempting to answer this question have typically relied on emotion recognition tasks. One experiment, which examined 4-15-year-olds' ability to recognize the dynamic, posed facial expressions of personally familiar (e.g., parents and teachers) and unfamiliar individuals, demonstrated that person familiarity decreased accuracy for certain emotion-category expressions (e.g., anger, fear and disgust; Herba et al., 2008). Children's recognition of other emotions (e.g., happy and sad) was not influenced by person familiarity. Likewise, for abused and non-abused 7-12-year-olds, children were more accurate in recognizing unfamiliar individuals' facial expressions (e.g., happy, sad, and angry) than familiar individuals' facial expressions (Shackman & Pollak, 2005).

It is surprising, especially given children's level of attunement to the faces of their parents and teachers, that the dynamic facial expression of a familiar person did not facilitate children's emotion recognition for all expressions. The dynamic, posed emotional expression displayed by a familiar individual may appear simulated due to children being highly attuned to an individual's 'natural' expressions, which may rarely be negative (i.e., angry, fearful, or disgusted; Herba et al., 2008). A difference in the emotional expression children expected to see and what they actually observed, therefore, may have negatively influenced their recognition abilities. Additionally, because the faces used in the Herba et al. (2008) study were posed, rather than naturally occurring, it is possible that the faces appeared unfamiliar to the children; this difference may help to explain why familiarity did not facilitate children's emotion recognition. Results from these studies demonstrate that person familiarity can affect children's emotion recognition. Further research is needed, however, to fully explore how the emotional expression of familiar and unfamiliar individuals facilitates (or inhibits) children's emotion recognition and social decision making processes.

Familiarity and Event-Related Potential (ERP) studies. ERP studies have revealed that adults can determine the familiarity of a face as quickly as 160-250 ms after stimulus onset (Barrett, Rugg & Perrett, 1988; Caharel et al., 2002). Likewise, adult's ability to detect the emotional expression of a face occurs rapidly and automatically (Batty & Taylor, 2003). Adults can determine the difference between a neutral and an emotionally expressive face as early as 110-250 ms after stimulus onset (Krolak-Salmon, Fischer, Vighetto, & Mauguiere, 2001; Marinkovic & Halgren, 1998; Pegna, Landis, &

Khateb, 2008). Adults can then distinguish differences between each emotional expression (e.g., difference between fear, happiness, disgust & surprise) as quickly as 550-750 ms after stimulus onset (Krolak-Salmon et al., 2001).

Information concerning the speed at which adults process facial expressions and facial familiarity is useful because it indicates a possibility of the processes working in a simultaneous, mutually interacting fashion (Calder & Young, 2005; Vuilleumier & Pourtois, 2007). ERP research supports the idea that facial expression and familiarity recognition interact to influence adult's cognitive processing (Baudouin, Sansone, & Tiberghien, 2000; Schweinberger & Soukup, 1998; Wild-Wall, Dimigen, & Sommer, 2008). For an emotion discrimination task, researchers showed participants personally familiar (i.e., photographs of familiar college instructors) and unfamiliar faces and asked them to determine if a facial expression was happy or disgusted (Wild-Wall et al., 2008; Experiment 1). Participant's response times were faster for the familiar faces when they had to identify the happy facial expressions compared to the disgusted facial expressions (Wild-Wall et al., 2008; Experiment 1). Likewise, in a separate task in which participants had to determine if a happy, disgusted or neutral facial expression was familiar or unfamiliar, adult's classification was quicker when the facial expressions were happy, especially for the familiar individuals' faces (Wild-Wall et al., 2008; Experiment 2). Adult's classification was not facilitated by any of the emotional expressions, however, when the faces were unfamiliar. The results from this study are important because it demonstrates that the influence of familiarity on emotional expression discrimination is bi-directional; happy facial expressions can facilitate the identification of familiar faces,

and familiar faces can facilitate the discrimination of happy emotional expressions. Results from this study align with other research that demonstrates adult's recognition of personally familiar faces is facilitated by happy facial expressions (e.g., Baudouin et al., 2000).

ERP studies examining the influence of familiarity and emotional expressions on children's cognitive processing are extremely limited. Four- to 6-year-olds process familiar faces (e.g., pictures of their mothers) more rapidly than pictures of unfamiliar faces, an effect that is especially salient for angry emotional expressions followed by happy emotional expressions (Todd et al., 2008). Results are important because they demonstrate that familiarity and emotional expressions interact to affect children's face processing. Clearly, further research is needed to investigate the role familiarity plays in children's emotion recognition abilities to compare how children's responses resemble or contrast to those of adults.

Summary

Children's emotion recognition ability is dependent on the affect of an emotional expression, their experiences with different emotional expressions, whether the presentation is dynamic or static, and the use of personally familiar or unfamiliar individuals during the task. It is evident that as children develop, they become more competent in identifying emotions and recognizing the meaning of emotions (Denham & Couchoud, 1990; Mondloch et al., 2003). Further research that incorporates the use of dynamic emotional displays to test children's emotion identification may help to expand knowledge concerning children's emotion understanding. Additionally, the use of

dynamic displays may help to explore how naturally occurring facial expressions facilitate children's emotion recognition.

Children's Social Information Processing

As children mature, they become increasingly proficient at developing plans and using problem-solving strategies prior to performing an action, especially for situations involving interpersonal problems (Capage & Watson, 2001; Dodge, Pettit, McClaskey, & Brown, 1986; Dodge & Price, 1994). Discovering ways in which children construct responses to their social worlds has been an area of research interest. One such model that attempts to explain the processes involved is the Social Information Processing (SIP) model (Crick & Dodge, 1994). The SIP model offers an explanation for how children encode and interpret cues in a social situation and formulate a response that facilitates their understanding of the social environment (Crick & Dodge, 1994; Dodge, 1986; Lemerise & Arsenio, 2000). For any social interaction, children utilize their past experiences in order to rapidly assess the situation (Crick & Dodge, 1994).

The SIP model is organized into specific problem solving steps (Crick & Dodge, 1994). For example, in a situation involving conflict with another child (e.g., a child gets pushed down at the playground by another classmate), children must first encode the social cues (both internal and external) to determine what happened and why it happened. Children begin to formulate an interpretation (e.g., was this done by accident or on purpose?). In the third step, children clarify their goals (e.g., goal is to show others he/she won't tolerate the behavior). In steps four and five, children form possible reactions (i.e., strategies) in terms of the most probable outcomes. Children also develop strategies in

relation to how their actions will influence their goals (Lemerise & Arsenio, 2000). Finally, children enact a response. Some children may choose to retaliate in response to the other child's actions or they may choose not to retaliate for fear of the situation escalating (Lemerise & Arsenio, 2000). The majority of children, however, generally choose the most positively evaluated response before the behavior is enacted (e.g., the child ignores the push and walks away; Crick & Dodge, 1994; Lemerise & Arsenio, 2000).

Research examining children's social information processing skills has typically focused on how children formulate strategies, goals, and attributions for hypothetical situations involving conflict with another individual (e.g., Crick & Dodge, 1996; Dodge & Price, 1994; Feldman & Dodge, 1987; Rah & Parke, 2008). Children's strategies for obtaining a goal include thoughts about how they should behave in the situation and what consequences their actions may produce (Crick & Dodge, 1994). Children's goals are described as focused motivational states that orient behaviors towards the most favorable outcomes (Chung & Asher, 1996; Crick & Dodge, 1994). Children's strategies and goals can include aggressive, relational, or avoidant responses (Rah & Parke, 2008). Children's attributions are considered integral to the interpretation process of the SIP and involve children synthesizing possible explanations for why an event occurred (Crick & Dodge, 1994). Each of these components has been well established in the SIP model (Crick & Dodge, 1994; Gifford-Smith & Rabiner, 2004; McDowell, Parke, & Spitzer, 2002). There are specific factors, however, that may influence children's choices within the social

problem-solving process. Each of these factors should be considered when examining children's SIP.

Factors Influencing Children's Social Information Processing

Age. Significant improvements in children's social problem solving skills are evident as they progress through their preschool and early school years (Chen, Fein, & Tam, 2001). Children move away from physical acts of aggression in a conflict situation (e.g., grabbing and hitting), and begin to deal with social dilemmas in calmer ways, such as using persuasion or compromise to resolve disagreements (Mayeux & Cillessen, 2003). As children mature, they are also more likely to use strategies to reach resolutions with peers without relying on adult intervention (Mayeux & Cillessen, 2003). During the early school years, children also engage in cooperative play as they learn to maintain positive peer relationships and successfully manage conflicts (Howes, 1988). By the age of 5, most children can successfully navigate through each of the social problem solving steps, which is an important indicator for successful social skills (Dodge et al., 1986).

To assess children's social information processing skills, researchers typically rely on hypothetical provocation scenarios that are presented as video or audio recordings. Before children hear the scenarios, researchers ask the children to imagine themselves as the protagonist in the story. Immediately following the story, researchers ask the children how they would respond to the situation and record children's verbal and behavioral responses. Developmental differences are evident in the quality of children's responses. For example, in a study that utilized 6- to 9-year olds, older children (i.e., 8- and 9-year-olds) produced more behavioral responses to situations involving a

problematic interaction between a child and another individual (i.e., child or teacher) than younger children (i.e., 6- and 7-year-olds) (Dodge & Price, 1994). Older children were also more skilled in their processing (e.g., more accurate at identifying hostile and non-hostile cues) than younger children. Compared to first and second-grade children, fifth-grade children produce a higher number of quality responses to peers' intentions for situations involving being teased, ambiguously provoked, and entering into a new group of peers (Feldman & Dodge, 1987). Differences in the number of behavioral responses generated and the complexity of processing strategies are important because these variables have been used as an indicator of children's social competence (e.g., Mize & Cox, 1990; Spivack & Shure, 1974). Results from these studies indicate that as children mature, there are increases in social competence and an improvement in social problem solving skills (Mayeux & Cillessen, 2003).

Gender. Besides assessing age differences in children's formation of social information processing skills, gender differences are also an important factor to consider. In one study, researchers presented first-, third-, and fifth-grade children with hypothetical scenarios (i.e., researchers asked children to imagine being teased, ambiguously provoked, and having to enter a new peer group; Feldman & Dodge, 1987). Researchers compared the responses of socially rejected children to that of socially neglected children. The relationship between these two groups was different for males than for females: socially rejected males generated fewer possible response strategies and attributed more hostile intent to the situations compared to neglected males (Feldman & Dodge, 1987). The reverse pattern was found for females; neglected females generated

fewer possible response strategies and attributed more hostile intent to the situations compared to rejected females (Feldman & Dodge, 1987). Gender differences are also evident when researchers ask children to respond to the behaviors of peers. When researchers assessed third- through sixth grade-children's social behaviors, females were more likely to provide relationally aggressive responses (e.g., a response that results in social exclusion) towards their peers compared to males (Crick & Grotpeter, 1995). Male students, however, were more likely to provide overtly aggressive responses (e.g., a response that results in another student being physically hit) towards their peers compared to females (Crick & Grotpeter, 1995). Clearly, gender is an important factor to consider, especially because it may help to predict the likelihood of children providing aggressive strategies, goals, and attributions.

Internal emotions. The SIP model, as outlined by Crick and Dodge (1994), has been useful in assessing how children encode and interpret social situations. The model, however, does not explicitly demonstrate how an individual's internal emotions affect the processing strategy. Lemerise and Arsenio (2000) argue that it is possible to expand the original model's explanatory power by further integrating emotion processing within children's SIP. For example, children who experience high levels of emotions may not properly assess responses to a social situation (steps 4 and 5). Children with intense emotions may react negatively to a social situation (e.g., becoming easily upset and running away), thereby reducing the probability that they will interpret and encode the situation from the perspective of all parties (Lemerise & Arsenio, 2000). Children's internal emotions play a substantial role in social decision making.

The role of emotions in the SIP model has been demonstrated with studies involving children and adolescents (Dodge & Somberg, 1987; Orobio de Castro et al., 2003; Orobio de Castro, Merk, Koops, Veerman, & Bosch, 2005). Seven to 13-year-old boys heard a series of vignettes about peer provocation and answered questions concerning their social information processing, including their own emotional feelings, the emotions of others, and emotion regulation (Orobio de Castro et al., 2005). Aggressive boys reported higher levels of hostile intent in others' actions, reported less guilt concerning their own actions, and were less likely to use positive emotion-regulation strategies (i.e., prosocial responses to the provocation) than non-aggressive boys (Orobio de Castro et al., 2005). Anger attributions significantly influenced aggressive boys' interpretation step of the SIP model (Orobio de Castro et al., 2005). An inability to regulate one's own emotion (a characteristic of aggressive boys) can negatively influence the attributions of intent for others' behaviors (Orobio de Castro et al., 2005). Clearly, internal emotions can impact specific steps within children's SIP.

Others' emotional displays. To date, there have been only two studies that examined the influence others' emotional display has on children's SIP (e.g., Lemerise et al., 2005, 2006). In both experiments, researchers first classified first to fifth graders' social adjustment (i.e., classification of the child as popular-nonaggressive, average-nonaggressive, rejected-nonaggressive, or rejected-aggressive) based on social status and aggression level (Dodge & Somberg, 1987). Researchers then presented children with videotaped social interactions involving two characters. During each social interaction, one character would provoke the other character (e.g., one child would destroy the other

child's painting), but the intent of the 'provocateur' was unclear. For each ambiguous provocation scenario, the provocateur's emotional display was happy, angry, or sad.

In Lemerise et al. (2005), experimenters asked children immediately following each story to 1) explain what happened during the story, 2) identify the emotional display of the provocateur, 3) attribute intent (e.g., either on purpose or by accident) of the 'provocateur', and 4) explain what they would do in the situation. Researchers did not ask half of the participants, however, to identify the provocateur's emotional display (i.e., question 2). Regardless of social adjustment categories, children were most accurate in recognizing happy emotional displays as compared to angry or sad emotions. Furthermore, children were more likely to assign hostile attributions to provocateurs displaying angry emotional expressions as compared to provocateurs displaying happy or sad emotional expressions. Additionally, children indicated more friendly attributions of intent for provocateurs who displayed sad emotional expressions as compared to angry or happy expressions.

Asking vs. not asking children about the emotional display of the provocateur also influenced the results. When children identified the emotional display of the provocateur, children's ratings of the hostile attribute were reduced for the happy and sad provocateurs. Furthermore, when children did not identify the emotional display of the provocateur, rejected aggressive children's ratings of the hostile attribute were higher than the average-nonaggressive and popular nonaggressive children's ratings. Differences seen in asking vs. not asking may be due to the task interfering with the automatic processing of children's goal selection and response decisions (Lemerise et al., 2005,

2006). When researchers ask children to reflect on what emotion they think the person is experiencing, it may allow children time to form a more cognizant response. Additionally, for children who may not always rely on others' emotional expressions to form their social decisions (e.g., rejected aggressive children), identifying a person's emotional expression may distort their normal response decisions.

Immediately following each story in Lemerise et al. (2006), experimenters asked children to 1) explain what happened during the story, and 2) rate their social goals on a 5-point scale (1 = *not at all important*, 5 = *most important of all*). The social goals included: a) dominance (e.g., "get own way, look strong"), b) revenge (e.g., "get back at the provocateur"), c) avoid trouble (e.g., "avoid any kind of problems or trouble"), d) avoid provocateur (e.g., "stay away from the provocateur"), e) problem focus (e.g., "fix the problem in the story"), and f) social relational (e.g., "be friends/stay friends with the provocateur") (p. 562). Researchers scored children's responses for each goal on a hostility/friendliness and passivity/assertiveness scale. Children's social adjustment significantly influenced their goals and response strategies. Socially rejected children's goals and strategies were dependent on the emotional display of the provocateur. When the emotional displays were angry or sad, socially rejected children provided higher ratings to the hostile/instrumental goals (e.g., avoid provocateur, revenge goals) and lower ratings to the prosocial goals (e.g., social relational). Additionally, when the provocateur's emotional display was angry or sad, socially rejected children were more likely to make social-problem solving choices that were hostile as compared to other children.

Results from these two studies clearly demonstrate that the emotional displays of others can impact children's SIP. Results from these studies also indicate that specific factors (e.g., children's social adjustment and asking vs. not asking children to identify the emotional expression) can influence children's social goals and problem solving choices. Researchers should carefully assess each of these factors when examining the influence others' emotional displays has on children's SIP. For instance, if researchers ask children to identify the emotional expression of a provocateur, it should be done after children provide their reactions to the social situation to avoid interference with the automatic processing of their social information processing choices (Lemerise et al., 2005, 2006).

Familiarity, Friendship, and Children's Social Information Processing

According to the authors of SIP, it is important to consider social context when examining children's social information processing (Crick & Dodge, 1994; Dodge & Feldman, 1990; Dodge et al., 1986). Children's attributions and emotional reactions, for example, are different in social interactions involving a personally familiar peer as compared to social interactions involving an unfamiliar peer (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006). To determine if children's attributions, emotional reactions and coping strategies are influenced by friendship, researchers provided children with a hypothetical vignette (e.g., a scenario in which another student spills milk on the child and the other student is either an unfamiliar peer or a friend). Ten to -11-year-old children attributed more prosocial intentions to familiar peers than to unfamiliar peers (i.e., more likely to give the familiar peer the 'benefit of the doubt')

(Burgess et al., 2006). Likewise, children felt more embarrassed when the situation involved an unfamiliar than a familiar peer. When the situation involved familiar peers, children were more likely to report feeling 'alright' (Burgess et al., 2006).

Friendships are emotionally and socially supportive for children. The quality of a friendship can influence children's perspective-taking abilities and social skills, which is related to children's social competence (Clayton, 2007; Linsey, 2002). The affective nature of the relationship, therefore, is likely to influence children's SIP (Lemerise & Arsenio, 2000). For example, adolescents are more likely to agree with their friends when choosing targets for their aggression (i.e., victims) than non-friends (Card & Hodges, 2006). Children also rate liked peers as having less hostile intentions as compared to disliked peers (Peets, Hodges, Kikas, & Salmivalli, 2007; Peets et al., 2008). Additionally, 7- to 11-year-olds evaluate disliked peers more critically in provocation situations, attributing them with more responsibility for their negative behaviors than liked peers (Goldstein, Tisak, Persson, & Boxer, 2006; Hymel, 1986). This is an important area of research because not only does it show that friendship can work as a moderator for social adjustment (e.g., Hodges, Boivin, Vitaro, & Bukowski, 1999; Ladd & Burgess, 2001), but it can also serve to influence how children think, feel and respond to others in a social interaction.

Children's SIP may be influenced differently for situations involving liked peers as compared to disliked peers because children have developed representations that are specific to each relationship and individual (Nummenmaa et al., 2008). Children's relational schemas for familiar individuals contain a script (based on previous

experiences) that helps children to determine how the person will behave during a social interaction (Baldwin, 1992). Children will also rely on their affective attitude towards the familiar individual (i.e., feelings of like or dislike) to evaluate the social interaction. When children encounter a liked or disliked peer, relational schemas and affective attitudes automatically activate, which help children to quickly process social cues and form social decisions (Nummenmaa et al., 2008). For example, if a child had a bad past experience with a peer and also holds hostile feelings towards that peer, then the child's representation of that peer will be highly negative. The child is therefore likely to quickly judge the actions and behaviors of the peer as being hostile.

Support for the relationship between relational schemas and the processing of social information comes from studies conducted with adolescents. To examine the relationship, researchers first showed 13-year-old participants a photograph of a peer they liked, disliked, or did not know (i.e., prime-stimulus; Nummenmaa et al., 2008, Experiment 1). Researchers then showed participants a picture of a person displaying an emotional expression (i.e., probe-stimulus; photographs taken from Ekman & Friesen, 1976) and asked participants to categorize the expression as happy or angry. Participant's reaction times for identifying the emotional category of the probe-stimulus was faster for congruent prime-probe pairs (i.e., a face they liked as the prime stimulus and a happy face as the probe stimulus) than for incongruent prime-probe pairs (i.e., a face they disliked as a prime stimulus and a happy face as the probe stimulus; Nummenmaa et al., 2008).

In another experiment, researchers first showed participants a photograph of a peer they liked, disliked or did not know before providing them with a hypothetical provocation vignette (Nummenmaa et al., 2008, Experiment 3). When shown disliked peers as a prime-stimulus, participants attributed more anger and hostility to the disliked peers and were more willing to retaliate as compared to liked primes (Nummenmaa et al., 2008). Results are significant because they demonstrate that relational schemas can influence a person's perception of others' emotional displays and subsequent social information processing choices.

Summary

Children's social problem solving ability improves with age (Chen et al., 2001; Dodge & Price, 1994; Feldman & Dodge, 1987; Mayeux & Cillessen, 2003). Older children generate more responses and higher quality responses when evaluating situations involving social conflict. Researchers, however, need to carefully examine the roles of emotions (i.e., internal emotions and the emotions of others) and person familiarity on children's formation of goals, strategies and attributions because these are all important components in children's problem solving abilities (Crick & Dodge, 1994). Examining these factors may allow researchers to gain a better perspective for how emotions facilitate children's social information processing.

ETSP and SIP: Forming an Integrated, Theoretical Framework

The Ecological Theory of Social Perception (ETSP) assumes that facial characteristics guide human behavior because such cues convey affordances, information that directs adaptive behaviors (McArthur & Baron, 1983, Zebrowitz, 2006). Following

this framework, emotional cues can provide social affordances of knowing what others are thinking and feeling, thus aiding in a decision to approach or avoid familiar and unfamiliar individuals. People can also use affordances to determine how to interact with another individual. In order to reach a decision concerning this interaction, one must encode and interpret cues in a social situation and formulate responses that facilitate an understanding of the social environment (Crick & Dodge, 1994). The perception of affordances is closely associated with the Social Information Processing (SIP) model.

By utilizing the tenets of ETSP, researchers can examine how children's emotional understanding (e.g., perception and experience of others' emotions) influences their social information processing choices (e.g., formation of strategies, goals and attributions) and emotion recognition abilities. Specifically, by manipulating familiarity, researchers may further understand how the tenets of ETSP (e.g., children's level of attunement to an individual and children's perception of affordances) guides children's interpretations, inferences, and perception of others' emotions and behaviors. For example, children should exhibit rapid response times and high emotion recognition accuracy for unfamiliar threatening faces (e.g., angry faces; Lundqvist & Öhman, 2005; Mogg & Bradley, 1999; Schupp et al., 2004) because these facial expressions indicate potential harm. Unfamiliar threatening facial expression, therefore, maintain high adaptive value. For familiar faces, on the other hand, children should demonstrate lower emotion recognition accuracy for certain emotion-category expressions (e.g., anger, fear, and disgust) because children are highly attuned to the identity of the face; facial identity may be distracting for children when labeling certain emotional displays (e.g., Herba et

al., 2008). Additionally, these emotional expressions may result in lower recognition accuracy because children may rarely see familiar individuals (e.g., teachers) displaying these negative expressions.

Following the tenets of ETSP, others' facial expressions should also direct children's social decisions based on their perceived affordances. When children see an unfamiliar angry face, for example, they should make social information processing choices that most benefit their survival (e.g., choosing a goal that allows them to avoid the person). Contrastingly, when children see the face of a familiar individual, identity should be more salient than the emotional expression because relational schemas (i.e., interpersonal experiences associated with the familiar person) are automatically and rapidly activated before emotion recognition occurs (Baldwin, 1992; Batty & Taylor, 2003; Barrett et al., 1988; Caharel et al., 2002; Krolak-Salmon et al., 2001; Nummenmaa et al., 2008). As a result, children's social decisions should be based more on their prior experiences with the individual instead of the person's emotional expression. Children should rate the actions of liked individuals as having more relational goals and responses (i.e., responses that indicate a positive interaction with the other person, which may include helping, sharing, or cooperative behavioral responses; Jackson & Tisak, 2001) than aggressive or avoidant goals and responses, regardless of emotional expression (Burgess, 2006). Children should also rate disliked peers as having more aggressive goals and responses than relational or avoidant goals and responses. Children are also more likely to attribute prosocial intentions to liked individuals than to disliked individuals (i.e., more likely to give the liked person the benefit of the doubt) (Burgess et al., 2006).

To fully explore how the tenets of ETSP guide emotion recognition and children's social decisions, however, further research is needed.

The Present Study

The purpose of the present study was to examine how children's social information processing choices (i.e., formation of strategies, goals, and attributions) and emotion recognition accuracy are influenced by the emotional expressions of familiar and unfamiliar individuals. Studies have examined the influence of familiarity on children's emotion recognition accuracy (e.g., Herba et al., 2008; Nummenmaa et al., 2008; Shackman & Pollak, 2005) and even fewer studies have examined the influence of dynamic emotional expression on children's social information processing (e.g., Lemerise et al., 2005, 2006). To date, no study has explored how dynamic emotional expressions, personal familiarity, and social information processing interact.

Additionally, researchers have rarely used children (e.g., 7- to 11-year-olds) to examine the influence of personal familiarity on emotion recognition and social information processing. By examining this age range, investigators can begin to highlight specific developmental changes in children's emotion understanding. Children transition through significant emotional and cognitive developments as they mature (Batty & Taylor, 2006). For example, early emotional processing in young children (4- to 6-year-olds) differs from that observed in adolescents (e.g. 12- to 15-year-olds) (Batty & Taylor, 2006). Children's accuracy in identity recognition and emotion recognition also dramatically increases between 7 and 11 years of age (Carey, Diamond & Woods, 1980; Herba et al., 2008; Mondloch et al., 2003). Including 7- to 11-year-olds may help

researchers to understand how children use social cues (e.g., facial expressions) to facilitate their emotion recognition and institute relational strategies and goals.

For the present study, an experimenter tested each child individually. The experimenter first asked the children to complete two sociometric scales; the experimenter used one scale to ask the children how much they liked their teacher and another scale to ask how much they thought the teacher liked them. This technique helped to assess children's initial preference or dislike for their teachers. Children's preferences were important to obtain because they may rate liked individuals as having less hostile intentions as compared to disliked individuals (e.g., Peets, Hodges, Kikas, & Salmivalli, 2007; Peets, Hodges, & Salmivalli, 2008) and evaluate disliked individuals more critically in provocation situations than liked individuals (e.g., Goldstein, Tisak, Persson, & Boxer, 2006; Hymel, 1986).

Following completion of the two scales, each child listened to a vignette about a social situation involving the child and a familiar teacher or unfamiliar adult. The child viewed the individual's expression via video-tape while listening to the vignette. The facial expressions of teachers were used because teachers serve an important role in children's social, emotional, and academic development (Ahn, 2005; Ashiabit, 2000; Downer, Sabol, & Hamre, 2010; Ray & Smith, 2010). Following each video clip, the researcher asked the child to respond to questions that investigated response strategies, goals, and interpretations of the other person's intent for the ambiguous provocation scenario. Researchers recorded the child's responses for each vignette. Immediately following the child's SIP responses, the researcher asked the child to provide a label for

an emotion that he or she believed the adult was experiencing the most. Children's responses served as a measure of their emotion recognition accuracy.

The present study predicted that children's social decisions concerning unfamiliar individuals' behavior would depend on the person's emotional display. The hypotheses for the present study were: children are most likely to indicate avoidant strategies and goals for angry expressions, aggressive strategies and goals for happy expressions, and relational strategies and goals for sad and surprised expressions. Further, children's social decisions for their teacher's behavior should depend on children's preferences for that individual: children will evaluate liked teachers with more relational strategies and goals than disliked teachers, regardless of the emotional expression. In contrast, children should indicate more negative attributions of intent for unfamiliar individuals' behavior when shown angry and happy emotional displays than sad or surprised emotional displays. Moreover, children should indicate more negative attributions of intent for teachers they do not like compared to teachers they do like.

In regard to emotion recognition, the younger grade level children (i.e., 7- to 8-year-olds) should most accurately identify the emotional expression of happy and sad, regardless of person familiarity. Children's accuracy for the identification of angry emotional expressions will be influenced by children's preference for their teachers. Specifically, children should be more accurate in identifying the angry emotional expressions of unfamiliar individuals and disliked teachers than liked teachers. Differences in performance based on children's ages were also expected. Older grade

level children (i.e., 4th and 5th grades) should respond more accurately than the younger grade level children (i.e., 2nd and 3rd grades) in the emotion recognition task.

CHAPTER 3

METHODOLOGY

Participants

Research assistants actively recruited participants through local private elementary schools. 70 children from grades 2-5 were included in the analysis: Grade 2 (*n* = 17); Grade 3 (*n* = 16); Grade 4 (*n* = 21); Grade 5 (*n* = 16). Table 1 contains the age and gender distribution for each grade level. The race/ethnicity of the children was Caucasian (*n* = 47); Pacific Islander (*n* = 8); African American (*n* = 3); Hispanic/ Latino/Spanish (*n* = 1); and multi-racial or other (*n* = 11). Data were collected from one additional child, but were excluded because the child was off-task (i.e., not watching the videos as instructed). Additionally, two trials for one child's data were excluded because the child chose to stop the study early.

Table 1

Gender and Age Distribution for Children

Grade	N	Min Age	Max Age	Mean Age	Females	Males
2nd	17	7	8	7.72	6	11
3rd	16	8	10	8.74	12	4
4th	21	9	11	9.51	14	7
5th	16	10	11	10.43	6	10
Total	70				38	32

Apparatus

Children's ratings of teachers. To assess children's pre-existing preferences and/or dislikes for their teachers, children completed two sociometric scales: teacher ratings (i.e., how much they like their teacher) and expected ratings (i.e., how much they think the teacher likes them) (MacDonald & Cohen, 1995). Pre-existing preferences or dislikes could impact children's responses. Researchers used a rating scale represented with stars. The first anchor was designated as 'like very little' and was marked with one star. The anchors labeled 2 through 5 increased correspondingly in the amount of stars. The highest value represented 'like very much' and was marked with six stars. For the expected ratings, children utilized the same sociometric scale.

Video stimuli. To create the videos for the test trials, a researcher first showed elementary school teachers (n = 15) short film clips designed to induce discrete emotions (e.g., happiness, sadness, anger, and surprise) (see Gross & Levenson, 1995; Rottenberg, Ray, & Gross, 2007). Each film segment was approximately 2 minutes in length. The orders for the emotion inducing clips were randomized across participants. A researcher recorded teachers' shoulders and faces while they watched the mood inducing clips (Dunsmore, Her, Halberstadt, & Perez-Rivera, 2009). Following each film clip, the teachers provided a label for the emotion that they believed they experienced the most (i.e., happiness, sadness, anger, surprise, or no emotion).

To create the videos children saw during the ambiguous provocation scenarios, researchers selected 15 seconds of recorded video from each teacher for all four emotions (i.e., segments that best represented a teacher's happy, sad, angry, and surprised emotional reactions were chosen). The videos provided visual cues only (e.g., facial

expressions/shoulder movements); auditory cues were muted. For instances where the teacher's labeled emotion did not match the intended emotion of the clip (e.g., if a teacher reported feeling happy, but was watching a sad video clip), these segments were not selected. To validate the expression of each of these video segments, 10 undergraduate students categorized the teacher's face as showing happiness, sadness, anger, or surprise, or being indiscernible (Dunsmore et al., 2009; Matsumoto et al. 2002). The order for the video segments was randomized across participants. Using this same procedure, a researcher also obtained the ratings from at least five individuals who were familiar with the teachers (e.g., teacher's co-workers).

The majority of clips were chosen based on the ratings from the familiar raters (n = 32); the remaining clips were reliably rated by the unfamiliar raters. A chi-square test of independence was performed to examine the relation between the ratings from individuals who were familiar with the teachers and the ratings from the undergraduate students who were unfamiliar with the teachers. A chi-square test is often used to determine if two variables are significantly related to one another. The relation between these variables was significant, X^2 (1, N = 46) = 8.7, p < .01. In other words, the ratings provided by the persons who were familiar with the teacher were similar to the ratings provided by the persons who were unfamiliar with the teachers. Researchers, therefore, chose clips with the highest interrater agreement from either the familiar raters' and/or undergraduates' ratings to comprise the final stimuli (N = 35 clips; 10 happy, 9 sad, 7 surprised, and 9 angry). Agreement for the facial expression ratings maintained at least a 70% criterion, meaning that at least 70% of the observers judged the emotion as matching

that of the teachers' self-reports. The average ratings of agreement for the video expressions were: happy (*M* = .99, *SD* = .03); sad (*M* = .88, *SD* = .15); surprised (*M* = .85, *SD* = .16); and angry (*M* = .70, *SD* = .10).

To create the videos children saw during the positive social interaction vignettes, researchers used a 15-second segment of each teacher's neutral expression (i.e., video segments taken from the time in-between the teacher watching the emotion inducing clips). To validate the neutral expressions, 10 undergraduate students viewed each segment (which were intermixed with at least one happy, sad, surprised, and angry facial expression) and then scored the videos for expressiveness on a 5-point scale (*1* = very negative emotional expression, *3* = neutral emotional expression, *5* = very positive emotional expression). The final neutral clips selected (N = 12 clips) ranged in score from 2.1 to 3.1 (*M* = 2.58, *SD* = .35).

Social information processing task. While viewing an excerpt of the recorded video clips of adults' facial expressions (each lasting 15 seconds), children's social information processing choices were assessed using four hypothetical vignettes (adopted from Harwood & Farrar, 2006; Peets et al., 2007; and Rah & Parke, 2008) that evaluated children's strategies, goals, and attributions in ambiguous provocation situations (see Appendix A). The vignettes consisted of a social interaction that involved conflict with an unfamiliar individual or with a familiar teacher, but the intent of the character was unclear. Two additional vignettes were used that involved a positive interaction with the teacher and the unfamiliar adult (See Appendix B). The positive vignette scenarios were

used after every two ambiguous provocation vignettes to help alleviate children showing a potential negative mood bias.

Two research assistants who did not participate in the data collection process coded children's spontaneous strategy and goal responses into one of six categories: an aggressive response or goal (e.g., spill coffee on something of the teacher's; try to get back at teacher); a relational response or goal (e.g., ask teacher why he/she spilled coffee on child's project; try to work things out peacefully); an avoidant response or goal (e.g., avoid being near teacher when working on a project in the future; try to stay away from teacher); a self-focused response or goal (i.e., only individual goals and needs are addressed, e.g. "I would go home and change my clothes.") (adapted from Rabiner & Gordon, 1992; Rah & Parke, 2008); no response or goal provided (i.e., the child did not verbalize a response or chose not to answer the question); or as unclassified (i.e., the child's response did not fall into any of the assigned categories). For children's prompted responses, the same two research assistants coded children's prompted strategy and goal responses into one of four categories: an aggressive response or goal, a relational response or goal, an avoidant response or goal, or as no response or goal provided. Due to the limited choices researchers presented to the children, the students did not indicate any self-focused or unclassified responses. Lastly, the same two independent researchers coded children's attributions of intent into one of two categories: on purpose or on accident. Agreement between the two raters ranged from .81 to .96 for each response category, with an average of .88. For instances where the two independent coders disagreed, another researcher, who did participate in the actual experiment, helped to

judge the classification of the child's response; all three coders discussed these disagreements before reaching a consensus.

Emotion recognition. Children's emotion recognition accuracy was obtained by scoring children's correct or incorrect response for each of the four emotional displays for the four ambiguous provocation vignettes. A value of 1 was assigned for each correct score and a value of 0 for each incorrect score.

Setup and equipment. Participants were tested individually and were seated approximately 45 cm away from a Dell laptop computer with a 38 cm monitor that displayed the stimulus videos. The experimenter used Windows Media Player to display each set of trials. An audio recorder was used to record children's responses. Researchers also wrote down children's strategies, goals, and attributions for each vignette.

Procedure

Testing procedures were carried out in elementary school classrooms. The experimenter first obtained authorization from two local elementary schools to conduct the study. Before the experiment began, children's parents provided informed consent and demographic information for each child. A researcher also obtained written assent from all children who were 7-years of age or older. Following the completed paperwork, the experimenter and child went into a room separate from the child's classmates and teacher to complete the study. All children were tested after being in school for 9-10-months; all children were familiar with their teacher for a similar length of time.

Children first completed the teacher ratings and expected ratings scales. Immediately following the completion of the sociometric scales, the experimenter

provided instructions to each child concerning the procedure for the study. This process helped to clarify any confusion the child may have had about the procedure and served as a distractor task (i.e., provided time between completing the sociometric scales and the start of the experiment so that teacher ratings did not prime the child's performance).

For each of the six trials, children viewed a 15 second video clip of their teacher's or an unfamiliar individual's facial expressions on a computer monitor. The familiar individual used in the video was each student's teacher, and the unfamiliar person used in the video was an elementary school teacher that was from a different school than the child. The unfamiliar adult used in the video was matched to the familiar adult on the basis of gender and race. While viewing each video clip, children simultaneously heard an audio recording of an experimenter reading one of six hypothetical scenarios that involved either the child's teacher or an unfamiliar individual as the target character. The person shown in the video clip corresponded to the person in the vignette. Experimenters asked children to imagine themselves as the main character in the story.

Following each vignette, an experimenter first asked each child to recall what happened in the story (i.e., "What happened to you in the story?). If the child was unable to recall the details of the story, the video clips were played a second-time (n = 19 clips replayed). Next, the researcher asked the child an open-ended question to assess the child's spontaneous response strategy (i.e., "What would you say or do if this really happened to you?"). If a child was unable to answer this question or provided a self-focused response (e.g., "I would go home and change my clothes."), the researcher then prompted the child by asking a second open-ended question to allow the child to focus on

the provocateur in the vignette (i.e., “What would you say or do to this person (your teacher) the next time you saw her?”). If a child was unable to answer this question, the researcher then asked the child a forced-choice question (i.e., “Would you yell at this person (your teacher); ask this person (your teacher) why she did this; stay away from this person (your teacher) in the future; or do/say something else?”).

The researcher then asked the child an open-ended question to assess the child’s spontaneous goal responses for the situation (i.e., “Why would you do that?”). If the child did not provide an answer for this question or provided a self-focused response, the researcher then prompted the child with a forced-choice question (i.e., “Would you do this because: you want to get back at this person (your teacher); you want to get along with this person (your teacher); you wanted to stay away from this person (your teacher); or because of something else?”). Next, the researcher asked the child a forced-choice question to assess their attribution of intent (i.e., “Did this person (your teacher) do this by accident or on purpose?”).

After recording a child’s responses to the vignette, the researcher then asked the child to indicate a label for the affective display they saw during the video (i.e., “How do you think the person in the video was feeling?”). If the child did not answer the open-ended question or did not choose one of the four emotional labels, the researcher then asked a forced-choice question (i.e., “Does she feel happy, sad, surprised, angry, or something else?”). Children verbally indicated their responses and the experimenter audio recorded their responses. Researchers scored children’s responses as either correct (i.e., the child’s choice matched the emotional display of the target) or as incorrect (i.e.,

the child's choice did not match the emotional display of the target). Children's percentage of correct responses served as a measure of their emotion recognition accuracy.

Children completed a total of six trials. Two trials involved the teacher's emotional expression video paired with an ambiguous provocation involving the teacher, and two trials involved an unfamiliar individual's emotional expression video paired with an ambiguous provocation involving the unfamiliar individual. The two additional vignettes involved one positive interaction with the teacher and one positive interaction with the unfamiliar adult; both vignettes were paired with a neutral emotional expression. Children heard one positive vignette after every two ambiguous provocation scenarios to help alleviate a negative mood bias. Researchers counter-balanced the order in which children saw the familiar and unfamiliar individuals (e.g., familiar, unfamiliar, familiar, etc. or unfamiliar, familiar, unfamiliar, etc.) to prevent order effects. The vignettes and the emotions paired with the vignettes were randomized across participants. The emotions used in the ambiguous provocation vignettes were also randomized across participants to avoid order effects (e.g., participants always getting the happy expression first). Children saw all four emotional expressions throughout the four ambiguous provocation scenarios. Children also saw an equal number of clips from the familiar and unfamiliar individual throughout the six trials. The entire procedure lasted approximately 20 minutes.

CHAPTER 4

RESULTS

Data Analyses

Children's ratings of teachers. An examination of children's responses revealed a relatively high level of "like" responses from the students. For the teacher ratings, 69/70 children reported a value of 4 or higher ($M = 5.54$, $SD = 0.86$). For the expected ratings, 62/70 children reported a value of 4 or higher ($M = 5.02$, $SD = 1.11$). We had originally intended to assess how children's social decisions regarding their teacher's behavior was influenced by their preferences for that individual, but due to a lack of variance for these responses, the teacher ratings and expected ratings were not included in the final analysis.

Binary logistic regression. For the main statistical analysis, a binary logistic regression analysis with a hierarchical entry method was performed. Based on the two independent researcher's codings, the majority of children's spontaneous response strategies and goals were classified as self-focused or relational; children had few responses that were classified as aggressive or avoidant. See Table 2. The researchers classified the remaining responses as no spontaneous strategy provided or as unclassified. Due to the limited number of aggressive, avoidant, non-responses, and unclassified responses, these variables were omitted from the final analysis. Only the self-focused and relational responses were included, therefore creating one dependent variable with two possible outcomes (self-focused vs. relational) for the child's spontaneous strategy and goal responses.

Table 2

Children's Strategy and Goal Classifications

Spontaneous Responses

	2nd Grade		3rd Grade		4th Grade		5th Grade		Totals	
Response	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal
Self-focused	17	12	31	14	43	24	37	14	128	64
Relational	37	35	27	38	31	49	19	41	114	163
Aggressive	0	0	0	1	3	2	1	1	4	4
Avoidant	0	9	0	4	0	6	2	5	2	24
No Response	12	10	6	7	5	3	5	3	28	23
Unclassified	0	0	0	0	2	0	0	0	2	0
Total									278	278

Prompted Responses

	2nd Grade		3rd Grade		4th Grade		5th Grade		Totals	
Response	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal	Strat[a]	Goal
Self-focused	61	47	57	53	70	56	50	48	238	204
Relational	0	3	1	1	5	3	2	1	8	8
Aggressive	4	12	5	6	8	12	9	9	26	39
No Response	1	6	1	4	1	11	3	6	6	27
Total									278	278

[a]Refers to children's strategy responses

Based on the two independent researcher's codings, the majority of children's prompted response strategies and goals were classified as relational. Children had few

responses that were classified as aggressive, avoidant, or no prompted strategy provided. See Table 2. Due to the limited number of aggressive, avoidant, and non-responses, these variables were combined into one category (non-relational response). As a result, the dependent variable had two possible outcomes: non-relational response or relational response.

For all analyses, a binary logistic regression analysis with a hierarchal entry method was used. The order of entry for the predictors were: person familiarity [unfamiliar, familiar]; grade level [younger (grades 2-3), older (grades 4-5)]; gender [male, female]; and the interactions between the three variables [person familiarity x grade level x gender].

The predictor variables of emotional expression [adult's expression of happy, sad, surprised, or angry]; emotional expression match [children's correct answers, children's incorrect answers]; and emotional expression choice [children's indication of whether the emotion was happy, sad, surprised, or angry] were to be used in the binary logistic regression. None of these predictor variables, however, demonstrated any significant main effects or interactions when predicting children's strategy, goal, or attribution responses, nor did these variables significantly improve the fit of the model (i.e., did not decrease the -2 Log Likelihood value). As a result, these variables were not included in any of the subsequent analyses.

Children's Spontaneous Response Strategies

Before the entry of any predictors, the intercept only model had an overall success rate of 52.9%. The final model fit the data significantly better than the intercept-only

model, $\chi^2(6, N = 242) = 20.21, p < .01$; the model obtained an overall success rate of 63.2%. Grade level had a significant effect. Younger children were 4.58 times more likely to make a relational response than the older children. A univariate analysis confirmed this result, indicating that younger children were significantly more likely to provide a relational response (57.00%) than were older children (37.60%), $\chi^2(1, N = 242) = 9.40, p < .01$.

There was also a significant familiarity x gender interaction in which a gender difference was found for unfamiliar faces only. When the vignette involved an unfamiliar person, females were 3.09 times more likely to provide a relational response than males. A univariate analysis confirmed this result, indicating that females were more likely to provide a relational response (60.60%) than were males (34.60%), $\chi^2(2, N = 242) = 4.05$, $p < .05$, when the vignette involved an unfamiliar person. There were no significant gender differences when children viewed a familiar person, $p > .05$. A summary of this binary logistic regression analysis is presented in Table 3, which includes the logistic regression coefficient, Wald test, and odds ratio for each of the predictors.

Table 3

Binary Logistic Regression: Children's Spontaneous Responses

Children's Spontaneous Strategy Responses

Variables	B	Odds Ratio	-2LL	Δ -2LL	Wald χ^2	p	% Correct
Step 1			314.46	20.21		.003	63.2
Familiarity	-0.24	0.79			0.22	.638	
Grade Level	1.52	4.58			9.29	.002	
Gender	0.34	1.40			0.56	.454	
Familiarity x Grade Level	-0.66	0.52			1.47	.225	
Familiarity x Gender	1.13	3.09			4.21	.040	
Grade Level x Gender	-.74	0.48			1.81	.179	

Children's Spontaneous Goal Responses

The intercept-only model had an overall success rate of 71.8% for classifying children's responses. An analysis revealed that the final model did not fit the data significantly better than the intercept-only model, $\chi^2(6, N = 242) = 1.92, p = .93$; none of the predictor variables significantly contributed to the model.

Children's Prompted Response Strategies

The final model fit the data significantly better than the intercept-only model, $\chi^2(6, N = 278) = 15.73, p < .05$; the final model maintained an overall success rate of 85.6%. Person familiarity had a significant main effect. When viewing a familiar face, children were .24 times more likely to provide a relational response than when seeing an unfamiliar face. A univariate analysis confirmed this result, indicating that when viewing

a familiar face, children were more likely to provide a relational response (90.6%) than when viewing an unfamiliar face (81.1%), $\chi^2(1, N = 278) = 5.21, p < .05$.

There was also a significant familiarity x gender interaction in which a difference was found for the males' prompted strategy responses. When the vignette involved a familiar person, males were 5.41 times more likely to provide a relational response than when the vignette involved an unfamiliar person. A univariate analysis confirmed this result, indicating that males were more likely to provide a relational response for the familiar person (93.84%) than for the unfamiliar person (75.38%), $\chi^2(2, N = 242) = 4.88$, $p < .05$. A summary of this binary logistic regression analysis is presented in Table 4, which includes the logistic regression coefficient, Wald test, and odds ratio for each of the predictors.

Table 4

Binary Logistic Regression: Children's Prompted Responses

Children's Prompted Strategy Responses

Variables	B	Odds Ratio	-2LL	Δ	-2LL	Wald χ^2	p	% Correct
Step 1			213.32		15.73		.003	85.6
Familiarity	-1.45	0.24				5.19	.023	
Grade Level	1.55	4.72				2.96	.086	
Gender	-0.79	0.45				1.49	.222	
Familiarity x Grade Level	-0.75	0.47				0.77	.380	
Familiarity x Gender	1.69	5.41				4.63	.031	
Grade Level x Gender	-0.37	0.69				0.21	.644	

Children's Prompted Goal Responses

The intercept-only model had an overall success rate of 77.9% for classifying children's responses. An analysis revealed that the final model did not fit the data significantly better than the intercept-only model, $\chi^2(6, N = 262) = 7.35$, $p = .29$; none of the predictor variables significantly contributed to the model.

Children's Attribution of Intent

The final model fit the data significantly better than the intercept-only model, $\chi^2(6, N = 278) = 17.95$, $p < .01$; the final model maintained an overall success rate of 86.3%. Person familiarity had a significant main effect. When viewing an unfamiliar face, children were 7.84 times more likely to provide an attribution that the event was done on purpose than when seeing a familiar face. A univariate analysis confirmed this result, indicating that when viewing an unfamiliar face, children were more likely to provide an attribution that the event was done on purpose (20.6%) than when viewing a familiar face (6.7%), $\chi^2(1, N = 278) = 11.67$, $p < .01$. A summary of the binary logistic regression analysis is presented in Table 5, which includes the logistic regression coefficient, Wald test, and odds ratio for each of the predictors.

Table 5

Binary Logistic Regression: Children's Attribution of Intent

Children's Attribution of Intent

Variables	B	Odds Ratio	-2LL	Δ -2LL	Wald χ^2	p	% Correct
Step 1			203.85	17.95		.006	86.3
Familiarity	2.06	7.84			4.86	.028	
Grade Level	1.61	5.01			2.94	.086	
Gender	0.31	1.37			0.12	.734	
Familiarity x Grade Level	-1.38	0.25			2.24	.135	
Familiarity x Gender	0.26	1.30			0.10	.757	
Grade Level x Gender	-0.24	0.79			0.10	.751	

Emotion Recognition Accuracy

To examine the influence of person familiarity on children's emotion recognition accuracy we conducted a 2 x 2 x 2 x 4 (person familiarity [unfamiliar, familiar] x gender [female, male] x grade level [younger (grades 2-3) and older (grades 4-5)] x emotional expression [happy, sad, angry, surprised]) SAS proc mixed analyses with repeated measures. Post hoc analyses were conducted using differences in least squares means with Tukey-Kramer adjustments. Table 6 shows the means and standard deviations for children's accuracy for the emotion recognition tasks based on familiarity and emotional expression.

Table 6

Means and Standard Error for Children's Accuracy for the Emotion Recognition Task Based on Grade Level and Emotional Expression

Accuracy (% correct)

	2nd and 3rd Graders			4th and 5th Graders		
Condition	Mean	SE	Incorrect	Mean	SE	Incorrect
Happy	.72	.08	9/32	.49	.08	19/37
Sad	.69	.08	10/32	.60	.08	15/37
Surprised	.21	.08	26/33	.51	.08	18/37
Angry	.15	.08	28/33	.43	.08	21/37

There was a significant two-way interaction between emotional expression and grade level, $F(3, 180) = 4.21$, $p < .01$, $\omega^2 = .68$ (Figure 1). There were no significant differences in the older grade level children's identification of the four emotional expressions, *ps* > .05.

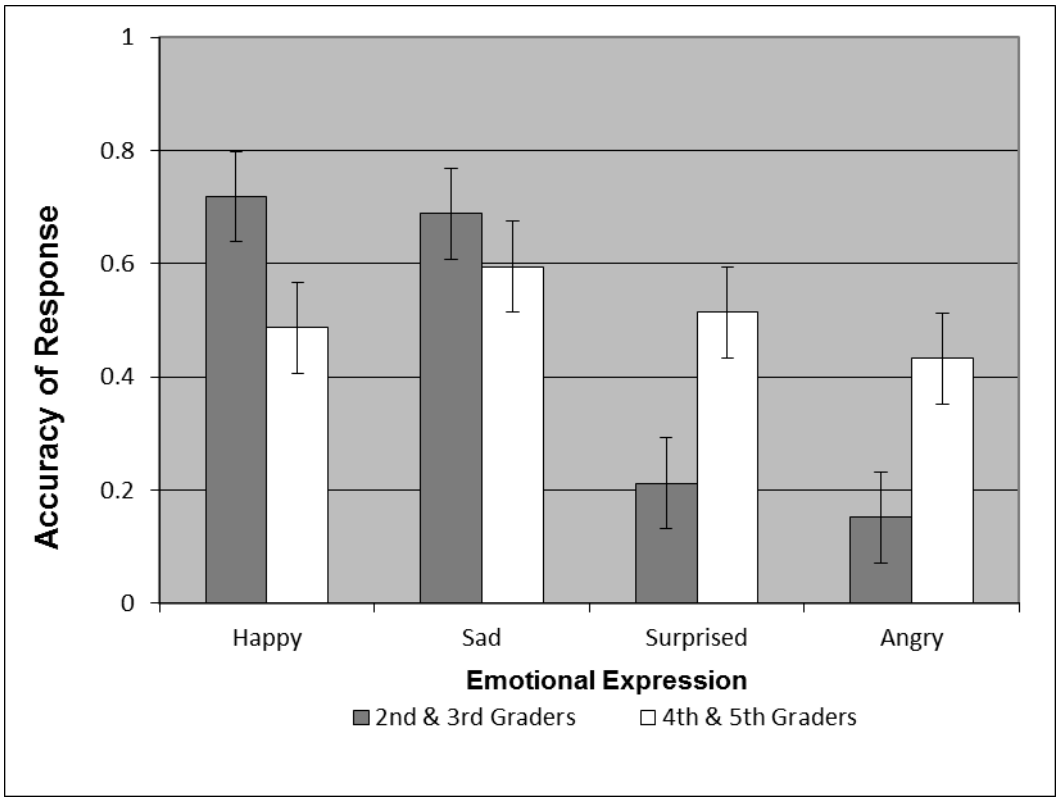

Figure 1. Mean Accuracy Rates and Standard Error for Children's Emotion Recognition Accuracy Based on Grade Level and Emotional Expression.

Post hoc analyses revealed that the younger grade level children were more accurate at identifying the happy and sad emotional expressions compared to the surprised and angry emotional expressions, $p < .05$. In addition, the younger grade level children were less accurate at identifying the angry emotional expression compared to the older grade level children identifying the happy, sad, and surprised emotional expressions, $p < .05$. Lastly, the younger grade level children were less accurate at identifying the surprised emotional expressions compared to the older grade level children identifying the sad emotional expressions, $p < .05$. Although the younger and older grade level children did not significantly differ in their identification of the same

emotion, there was a trend for the older grade level children to be more accurate at the surprised emotional expression compared to the younger grade level children, $p = 06$.

CHAPTER 5

DISCUSSION

The purpose of the present study was to examine how children's social information processing choices and emotion recognition accuracy are influenced by the emotional expressions of personally familiar and unfamiliar individuals. Contrary to our hypotheses, emotional expression had no impact on children's strategies, goals, and attributions of intent. Consistent with our hypotheses, person familiarity did influence children's social strategies and their attributions of intent. Girls spontaneously provided more relational strategies than boys when the vignette involved an unfamiliar individual, but showed no sex differences when the vignette involved a familiar individual. When prompted for a response strategy, however, boys provided more relational responses when the vignette involved a familiar relative to unfamiliar individual. Results add to the existing literature by demonstrating that both gender and question format (i.e., spontaneous vs. prompted) influence children's social decisions. For children's attribution of intent, children more often stated that the event was done on purpose when the vignette involved an unfamiliar relative to familiar individual. Results are important because they facilitate our understanding of how personal familiarity affects children's attributions of intentionality.

Unexpectedly, age also influenced children's strategies. For the spontaneous strategy responses, 2nd and 3rd grade children were more likely to make relational responses compared to the 4th and 5th grade children. Results highlight an important age

difference wherein children in older grades utilize a greater range of strategy responses compared to children in younger grades.

Consistent with our hypotheses, children's grade level and type of emotional expression interacted to influence their emotion recognition accuracy. The 2nd and 3rd grade children were better at recognizing the emotional expressions of happy and sad compared to the surprised and angry expressions, regardless of familiarity. The 4th and 5th grade children, however, did not demonstrate any significant differences in their identification of the four emotional expressions. These results are important because they demonstrate that older children may possess more proficient emotion recognition abilities than younger children when identifying complex expressions (i.e., surprised and angry). Results also support the research showing that children's recognition for surprised and angry expressions improves with age (Gagnon, Gosselin, Hudon-ven der Buhs, Larocque, & Milliard, 2010; Gao & Maurer, 2009; Tremblay et al., 1987).

Influence of Person Familiarity, Children's Gender, and Methodology

Results revealed interesting sex differences when assessing children's spontaneous strategy responses. When assessing children's spontaneous responses to the unfamiliar faces, females were more likely to provide a relational response compared to that of males. Given the research investigating children's social development, it is not too surprising that females responded differently than males when presented with a conflict situation involving an unfamiliar person. Young females are more likely than young males to provide prosocial responses, especially when interacting with an adult (Eisenberg & Fabes, 1998; Kochanska & Aksan, 1995). These gender differences become

even more evident as children enter adolescence (Beutel & Johnson, 2004; Eisenberg, Miller, Shell, McNalley, & Shea, 1991). One possible explanation for these results is that role taking and sympathetic reasoning abilities may emerge earlier for females than for males (Eisenberg et al., 1987). It is therefore likely that females would choose to provide responses most beneficial to the social interaction during an ambiguous provocation scenario because females have advanced perspective taking skills. Further, this tendency may be especially common for females' immediate responses when they are in a situation with an unfamiliar instigator because these types of responses may provide as an advantage in avoiding potentially threatening situations.

When examining children's prompted responses, there was also an interaction between familiarity and gender. Boys indicated more relational strategies in the ambiguous provocation scenario when it involved their teacher compared to when it involved a stranger. This finding is similar to Burgess et al. (2006) research, which found that 10- to -11-year-old boys are more likely to indicate positive social strategies for situations involving liked peers as opposed to disliked peers, but it extends their finding by demonstrating that boys may also be inclined to provide familiar adults with more positive responses compared to that of unfamiliar adults. The current results also expand this line of research by demonstrating that young children (i.e., 7-year-olds) are similar to older children (i.e., 10-11-year-olds) in their likelihood of providing positive strategy responses for familiar adults.

In similar studies, researchers often present children with only prompted, forced-choice questions. For these studies, some researchers have found gender differences in

children's responses (e.g., Burgess et al., 2006; Rah & Parke, 2008), whereas others have not (Crick & Dodge, 1996; Goldstein et al., 2006). One possible explanation for the gender difference found in the present study (i.e., males' prompted strategy responses were influenced by the familiarity of the individual whereas females' prompted strategy responses were not) is because males need a list of possible solutions to the social interaction in order to generate prosocial responses. Young females typically possess greater perspective taking skills than young males (Eisenberg et al., 1987) and may be more adept than males at generating socially beneficial responses with no prompts (i.e., spontaneous response questions). Males may be as adept as females at providing socially beneficial answers only when an adult provides appropriate cues (i.e., prompted response questions). In the real-world, children are not always given prompts for how to respond to social situations. One implication for these results, therefore, is an understanding that when faced with a real-life social encounter, young females may be more likely to provide spontaneous relational responses than young males. A higher likelihood of providing spontaneous relational responses may, in turn, help girls to form and maintain more successful social relationships than boys.

Results from the present study also showed that when children saw an unfamiliar person, they were more likely to say that the action was done on purpose compared to when they saw a familiar person. Similar research demonstrates that children evaluate disliked peers more critically in provocation situations compared to liked peers (Goldstein, et al., 2006; Hymel, 1986). Results from the present study expand on this result, showing that children may evaluate an unfamiliar person in a manner similar to

how they evaluate someone who they do not like. In relation to children's SIP, children may encode the ambiguous actions of unfamiliar adults as deliberate and may form subsequent impressions that these individuals engage in directed, potentially threatening behaviors. As a result, it is unlikely that children would engage in behaviors that strengthen or maintain these types of social relationships.

For the present study, it was surprising that certain factors (e.g., gender, grade level, and familiarity) influenced children's response strategies but not their response goals. One possible explanation for this result could be that children's strategies are independent from their goals in an ambiguous provocation social interaction. Specifically, children's strategies may have included only their thoughts about how they should behave in the situation and what consequences their actions may produce (Crick & Dodge, 1994). Children's goals, on the other hand, may have focused only on their motivational states (Chung & Asher, 1996; Crick & Dodge, 1994). Given that the present study demonstrated no significant correlation between these two variables, it is possible that children's behavioral responses did not match their actual motivations for engaging in these behaviors. Further research examining the distinction between children's strategies and goals may help to further the understanding of this result.

Influence of Children's Grade Level

For the spontaneous strategy responses, 2nd and 3rd graders were more likely to make relational responses compared to 4th and 5th graders. One possible explanation for this result may be due to older children (i.e., 10-year-olds) possessing greater social competence and social problem solving skills than younger children (i.e., 7-year-olds;

Dodge & Price, 1994; Mayeux & Cillessen, 2003). Compared to younger children, older children should be more likely to generate multiple solutions when presented with a conflict situation. For example, Dodge and Price (1994) demonstrated that as children age, they begin to produce more behavioral responses to situations involving a problematic interaction between a child and another individual (i.e., child or teacher). A higher number of generated responses to these types of social interactions may indicate children's greater social information processing competence (Dodge & Price, 1994). Additionally, older children (i.e., 5th grade children) produce higher quality and more varied responses for situations that involve entering into a new group of peers compared to younger (i.e., 1st grade) children (Feldman & Dodge, 1987).

It is possible that as children mature, they rely less on relational strategies for situations involving conflict because they possess a greater understanding for the social consequences of their decisions. In order for children to maintain successful social relationships, children need to have an understanding that both positive and negative interactions with others may occur; it is with experience and maturity that children learn how best to navigate these situations. As a result, older children may begin to realize that they can utilize many different strategy responses (i.e., strategies that may be positive or negative) when engaging in a social encounter. As children age, therefore, it is likely that they will provide more complex and varied strategy responses, which may be seen as an indicator of their higher level of social competence (e.g., Mize & Cox, 1990; Spivack & Shure, 1974).

Influence of Emotional Expression

The hypothesis that the younger grade level children would most accurately identify the emotional expression of happy and sad, regardless of person familiarity, was supported. The 2nd and 3rd graders were most accurate at identifying the happy and sad emotional expressions, which supports the research showing that an understanding of happy and sad is established early (Batty & Taylor, 2006; Boyatzis et al., 1993; Camras & Allison, 1985; Holder & Kirkpatrick, 1991; Izard, 1971; MacDonald et al., 1996).

The hypothesis that children's accuracy for the identification of angry emotional expressions would be influenced by personal familiarity was not supported. Although children were slightly more accurate at identifying the angry expression for unfamiliar adults, the difference was not significant. It is important to note that for the present study, children had relatively low levels of accuracy for all four emotions. Specifically, the 4th and 5th grade children obtained only moderate levels of accuracy for the happy expression (M = .49), regardless of familiarity. Similar research shows that children typically have a level of accuracy between .75 and .97 for dynamic displays of happy expressions, depending on the children's age and the intensity of the expression (Herba et al., 2008; Montirosso et al., 2008). It is possible that the four provocation vignettes used in the present study provided children with a context for what the emotional expression of the adult should look like. The actual expression of the adult (i.e., what the children saw in the video), therefore, was not an important cue for the children. Additionally, children's emotion recognition accuracy may have been negatively impacted because the researchers asked these questions after assessing children's strategies, goals, and intentions for the vignettes. It is possible that by asking children to reflect on these

decisions, it may have interfered with how they viewed the emotional expressions for both familiar and unfamiliar adults.

Given children's relatively low emotion recognition accuracy scores, it is not surprising that children's social information processing choices were not impacted by the expressions of the familiar and unfamiliar adults. Preliminary analyses showed emotional expression did not significantly predict children's spontaneous or prompted strategies and goals. Similar research shows that dynamic emotional expressions can influence the way in which children respond (Herba et al., 2008; Lemerise et al., 2005; Montirosso et al., 2008). Lemerise et al. (2005), for example, found that the dynamic expressions of children in an ambiguous provocation scenario influenced responses: child participants were more likely to assign hostile attributions to a peer posing an angry expression compared to a happy or sad emotional expression. Unlike previous research, however, the present study demonstrated that emotional expressions did not influence children's SIP choices. One possible explanation for this result is that in the Lemerise et al., (2005) study, researchers used children's facial expressions instead of adults' facial expressions. Additionally, researchers instructed the children on how to pose for the emotional expressions; researchers did not use the target's naturally occurring expressions. Compared to posed facial expressions, spontaneous facial expressions can be more difficult for participants to correctly identify (Motley & Camden, 1988). Lastly, in the Lemerise et al., (2005) study, the ambiguous scenarios depicted the actual provocation (i.e., participants saw a video of two children interacting before one child spills water on another child's painting), whereas in the present study, researchers required children to

listen to and visualize the hypothetical provocation scenario. It is possible that an interaction between familiarity and emotional expression (as well as higher levels of emotion recognition accuracy) is more likely when researchers utilize posed dynamic expressions in provocation scenarios that clearly convey the intended emotion.

The hypothesis that older grade level children would respond more accurately than younger grade level children in the emotion recognition task was not fully supported. Compared to the 4th and 5th grade children, however, the 2nd and 3rd grade children did have more difficulty recognizing the expressions of surprise and anger. Similar to previous research, young children typically display low to moderate levels of accuracy for these emotions (e.g., Bullock & Russell, 1984; Reichenbach & Masters, 1983; Tremblay et al., 1987). Children's recognition accuracy for surprise and anger did increase with age, but the difference was not significant. One possible explanation for the lack of significant improvement may be that there are only modest gains in accuracy for these expressions as children age, resulting in low statistical power (Gao & Maurer, 2009).

Influence of Question Format

To evaluate children's social decisions in the present study, researchers first asked children open-ended questions to assess their strategies and goals for each ambiguous provocation scenario. The purpose of asking children open-ended questions was to try to capture children's immediate responses tendencies and to avoid prompting children with possible solutions for each social situation. A high percentage of children's initial strategy and goal responses were classified as self-focused (46% of responses for

children's strategies and 23% of responses for children's goals). The finding that children have a high likelihood of making self-focused responses is important because researchers do not typically provide children with this response option (e.g., Burgess et al., 2006; Crick & Dodge, 1996; Goldstein et al., 2006; Rah & Parke, 2008). An examination of the literature concerning children's emotional self-understanding may provide a possible explanation for why children provide self-focused responses. Between the ages of 8-10 years, children's self-conscious emotions (e.g., feelings of embarrassment, pride, shame, guilt) are not contingent on how others react to or evaluate them, but how children *believe* others evaluate them (Bennett, 1989). For example, in one study researchers provided children with hypothetical short stories (i.e., children imagined a scenario in which they accidently knocked over a shelf of cans) and then asked the children how they would feel if the event had actually happened to them (Bennett & Gillingham, 1990). The researchers also told children to imagine that another person had watched them perform this action, but that the person was supportive (e.g., provided encouraging verbal remarks). Eight-year-olds reported high levels of embarrassment in the presence of a supportive audience. The authors suggested that 8-year-olds reacted strongly because they are highly publicly self-conscious.

In the present study, perhaps children were also reacting strongly to the ambiguous provocation scenarios because the events were seen as publicly embarrassing (e.g., getting mud splashed on their clothes). A common response, therefore, would be for children to try to remedy the embarrassing incident by changing the factors that they can control, which are responses that focus on the self (e.g., responding by saying that they

would go home and change their clothes if their teacher splashed mud on them). Often times, researchers present children with only forced-choice options (i.e., prompted questions), which can clearly influence how children respond. In the present study, for example, gender differences were present when the researcher asked the spontaneous questions, but these gender differences disappeared when the researcher asked the prompted questions.

The difference in prompting vs. not prompting children with potential responses may be that prompting interferes with the automatic processing of children's strategy and goal decisions (Lemerise et al., 2005, 2006). When researchers provide a list of potential options, it affords children with the time to reflect on what option may be the most socially acceptable and desirable. For the present study, this additional time to reflect on and evaluate possible options may help to explain why males were likely to provide relational responses to the familiar compared to unfamiliar adults when prompted with follow-up questions. If children are given less information on how to evaluate a socially ambiguous situation (i.e., spontaneous response questions), on the other hand, it is likely that females will choose a more socially acceptable response than males because they possess greater perspective taking skills at this age (Eisenberg et al., 1987). Findings from the present study provide evidence for how the format of a question can influence how children respond to a socially ambiguous interaction. Results also demonstrate that when researchers afford children with an opportunity to provide spontaneous responses, there is a strong likelihood that children will indicate a self-focused response. Researchers, therefore, should not limit the responses children can make when assessing

their SIP choices because this method may not provide an accurate depiction of how children typically respond to a provocation scenario.

Limitations

Based on children's self-reports, children generally favored their teachers and provided them with relatively high "like" ratings. It is possible that children's favorable report of their teachers was due to a social desirability bias. Children's social desirability response tendencies are common in interviews with adult researchers and can be related to a number of demographic variables (Crandall, Crandall, & Katovsky, 1965). For example, compared to males, girls typically score higher on social desirability scales, younger children score higher than older children, the scores of young black children are significantly higher than those of their white peers, and children with low IQs score higher than that of other children (Crandall et al., 1965). For the present experiment, all testing took place at the child's school during normal school hours. Although children were in a separate room from that of their teacher or classmates, it is possible that children still maintained a desire to respond in a way that their teacher would see as favorable. A favorable response tendency may have been particularly evident for the relatively young sample of students selected for this study. For future experiments, including social desirability measures to assess children's response tendencies before the testing phase may provide useful insight into this potential explanation.

One other limitation to the present study is that the videos used in the provocation scenario did not depict an actual provocation scenario. Although the videos did contain adult's naturally occurring facial expressions, the videos did not display a real-life

ambiguous provocation involving the teacher/unfamiliar adult. It is possible that attending to both the hypothetical story and the video display of emotion was too taxing for children's working memory capabilities. Children's limited working memory may also help to explain their relatively low levels of emotion recognition accuracy. The goal of the present study was to try to capture adult's natural expressions instead of creating artificial scenarios that required the use of posed expressions. However, suggestions for future research include researchers trying to capture and utilize naturally occurring ambiguous provocation scenarios to examine their influence on children's SIP choices.

Conclusions

The present study was the first to explore how emotional expression, familiarity, and social information processing choices interact. Results from the present study add to the existing literature by demonstrating that the way in which researchers assess children's SIP (i.e., asking spontaneous vs. prompted questions) can influence children's verbal responses. Specifically, when researchers do not provide children with response cues (i.e., spontaneous questions), children are likely to provide a high percentage of self-focused responses and girls are more likely than boys to provide a relational strategy when a provocation scenario involves an unfamiliar adult. When children are prompted with response options, however, there are no significant gender differences; in addition, males are more likely to provide relational strategy responses to familiar than unfamiliar adults. Clearly, the format in which researchers assess children's responses can influence multiple aspects of SIP.

The present study also contributed to the literature by demonstrating that children rely more heavily on familiarity cues than emotional expression cues when assessing their strategy responses and attributions of intent during a provocative social encounter. For children's prompted responses, males were more likely to indicate relational strategies in the ambiguous provocation scenario when it involved their teacher compared to when it involved a stranger. Children were also less likely to attribute purposeful intent to the actions of familiar adults compared to unfamiliar adults. In relation to ETSP, it appears that personally familiar faces produced a different affordance than unfamiliar faces. The emotional expression of the adult, however, was not an important component in children's evaluations. In the presence of a familiar teacher, children may form more relational responses and provide attributions of intent that are more accidental. Results are important because they show that children may rely solely on their affective attitude towards an adult to generate SIP choices.

APPENDIX A: AMBIGUOUS PROVOCATION SCENARIOS

Four hypothetical ambiguous provocation situations

(1) Imagine that you have finished a project for school. You've worked on it a long time and you're really proud of it. This person (your teacher) is holding a cup of coffee. S/he comes over to look at your project. You turn away for a minute. When you look back, this person (your teacher) has spilled their coffee all over your project.

(2) Imagine that you bought a new set of LEGOs. You saved up to buy the LEGOs and you are really excited to play with them. While you're building a huge castle with your new LEGOs, this person (your teacher) walks by and steps on your LEGOs. You realize your castle is now ruined.

(3) Imagine that there is a gingerbread competition at school. You have brought your own gingerbread house. You have been building the house for days. When you are putting the gingerbread house on the table, this person (your teacher) suddenly bumps you. Your house falls down and breaks into pieces.

(4) Imagine that you are walking home after school. It is rainy and there are mud puddles everywhere. Suddenly, this person (your teacher) drives by you in their (his/her) car and hits a puddle, and mud splashes all over you. All of your clothes are now dirty and wet, and you are cold.

APPENDIX B: POSITIVE SOCIAL INTERACTION SCENARIOS

Two positive social interaction situations

(1) Imagine that you just arrived at school and you were really in a rush. When you get to the classroom you realize that you left your book bag outside. Just then you turn around and this person (your teacher) hands you the bag.

(2) Imagine that you just finished playing a game of soccer. It was a really long game and now you feel really tired. You see this person (your teacher) sitting on a bench nearby. This person (your teacher) says to you "good work."

REFERENCES

Adolphs, R. (2002). Recognizing emotion from facial expressions: Psychological and neurological mechanisms. *Behavioral and Cognitive Neuroscience Reviews*, *1*(1), 21-62. doi:10.1177/1534582302001001003

Ahn, H. (2005). Child care teachers' strategies in children's socialization of emotion. *Early Child Development and Care*, *175*(1), 49-61. doi:10.1080/0300443042000230320

Ambadar, Z., Schooler, J., & Cohn, J. (2005). Deciphering the enigmatic face: The importance of facial dynamics in interpreting subtle facial expressions. *Psychological Science*, *16*(5), 403-410. doi:10.1111/j.0956-7976.2005.01548.x

Ashiabi, G. (2000). Promoting the emotional development of preschoolers. *Early Childhood Education Journal*, *28*(2), 79-84. doi:10.1023/A:1009543203089

Baldwin, M. W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, 112(3), 461-484. doi:10.1037/0033-2909.112.3.461

Barrera, M., & Maurer, D. (1981). The perception of facial expressions by the three-month-old. *Child Development*, *52*(1), 203-206. doi:10.2307/1129231

Barrett, S., Rugg, M., & Perrett, D. (1988). Event-related potentials and the matching of familiar and unfamiliar faces. *Neuropsychologia*, *26*(1), 105-117. doi:10.1016/0028-3932(88)90034-6

Barth, J., & Bastiani, A. (1997). A longitudinal study of emotion recognition and preschool children's social behavior. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, *43*(1), 107-128

Bassili, J. (1979). Emotion recognition: The role of facial movement and the relative importance of upper and lower areas of the face. *Journal of Personality and Social Psychology*, *37*(11), 2049-2058. doi:10.1037/0022-3514.37.11.2049

Batty, M., & Taylor, M. (2003). Early processing of the six basic facial emotional expressions. *Cognitive Brain Research*, *17*(3), 613-620. doi:10.1016/S0926-6410(03)00174-5

Batty, M., & Taylor, M. (2006). The development of emotional face processing during childhood. *Developmental Science, 9*(2), 207-220. doi:10.1111/j.1467-7687.2006.00480.x

Baudouin, J., Sansone, S., & Tiberghien, G. (2000). Recognizing expression from familiar and unfamiliar faces. *Pragmatics & Cognition*, *8*(1), 123-146. doi:10.1075/pc.8.1.07bau

Bennett, M. (1989). Children's self-attribution of embarrassment. *British Journal Of Developmental Psychology*, *7*(3), 207-217. doi:10.1111/j.2044-835X.1989.tb00801.x

Bennett, D., Bendersky, M., & Lewis, M. (2005). Antecedents of emotion knowledge: Predictors of individual differences in young children. *Cognition and Emotion*, *19*(3), 375-396. doi:10.1080/02699930441000201

Bennett, M., & Gillingham, K. (1990). The role of self-focused attention in children's attributions of social emotions to the self. *The Journal of Genetic Psychology: Research and Theory, 152*(3), 303-309. doi: 10.1080/00221325.1991.9914688

Bentin, S., Allison, T., Puce, A., & Perez, E. (1996). Electrophysiological studies of face

perception in humans. *Journal of Cognitive Neuroscience*, 8(6), 551-565. doi:10.1162/jocn.1996.8.6.551

Berry, D. (1990). What can a moving face tell us?. *Journal of Personality and Social Psychology*, *58*(6), 1004-1014. doi:10.1037/0022-3514.58.6.1004

Berry, D. (1991). Child and adult sensitivity to gender information in patterns of facial motion. *Ecological Psychology*, *3*(4), 349-366. doi:10.1207/s15326969eco0304_3

Beutel, A. M., & Johnson, M. (2004). Gender and prosocial values during adolescence: A research note. *The Sociological Quarterly, 45*(2), 379-393. doi:10.1111/j.1533-8525.2004.tb00017.x

Bormann-Kischkel, C., Hildebrand-Pascher, S., & Stegbauer, G. (1990). The development of emotional concepts: A replication with a German sample. *International Journal of Behavioral Development*, *13*(3), 355-372. doi:10.1016/0163-6383(90)90040-F

Bornstein, M., & Arterberry, M. (2003). Recognition, discrimination and categorization of smiling by 5-month-old infants. *Developmental Science*, *6*(5), 585-599. doi:10.1111/1467-7687.00314

Bould, E., Morris, N., & Wink, B. (2008). Recognising subtle emotional expressions: The role of facial movements. *Cognition and Emotion*, *22*(8), 1569-1587. doi:10.1080/02699930801921156

Boyatzis, C., Chazan, E., & Ting, C. (1993). Preschool children's decoding of facial emotions. *Journal of Genetic Psychology*, *154*(3), 375-382

Bradley, R., & Corwyn, R. (2003). Age and ethnic variations in family process mediators

of SES. *Socioeconomic status, parenting, and child development* (pp. 161-188). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers

Bullock, M., & Russell, J. (1984). Preschool children's interpretation of facial expressions of emotion. *International Journal of Behavioral Development*, *7*(2), 193-214. doi:10.1016/S0163-6383(84)80255-6

Bullock, M., & Russell, J. (1985). Further evidence in preschoolers' interpretation of facial expressions. *International Journal of Behavioral Development*, *8*(1), 15-38. doi:10.1016/S0163-6383(85)80013-8

Burgess, K., Wojslawowicz, J., Rubin, K., Rose-Krasnor, L., & Booth-LaForce, C. (2006). Social information processing and coping strategies of shy/withdrawn and aggressive children: Does friendship matter?. *Child Development*, *77*(2), 371-383. doi:10.1111/j.1467-8624.2006.00876.x

Caharel, S., Poiroux, S., Bernard, C., Thibaut, F., Lalonde, R., & Rebai, M. (2002). ERPs associated with familiarity and degree of familiarity during face recognition. *International Journal of Neuroscience*, *112*(12), 1499-1512. doi:10.1080/00207450290158368

Calder, A., & Young, A. (2005). Understanding the recognition of facial identity and facial expression. *Nature Reviews Neuroscience*, *6*(8), 641-651. doi:10.1038/nrn1724

Campos, J. (1984). A new perspective on emotions. *Child Abuse & Neglect*, *8*(2), 147-156. doi:10.1016/0145-2134(84)90004-8

Camras, L., & Allison, K. (1985). Children's understanding of emotional facial

expressions and verbal labels. *Journal of Nonverbal Behavior*, *9*(2), 84-94. doi:10.1007/BF00987140

Camras, L., & Sachs, V. (1991). Social referencing and caretaker expressive behavior in a day care setting. *Infant Behavior & Development*, *14*(1), 27-36. doi:10.1016/0163-6383(91)90052-T

Capage, L., & Watson, A. (2001). Individual differences in theory of mind, aggressive behavior, and social skills in young children. *Early Education and Development*, *12*(4), 613-628. doi:10.1207/s15566935eed1204

Card, N., & Hodges, E. (2006). Shared targets for aggression by early adolescent friends. *Developmental Psychology*, *42*(6), 1327-1338. doi:10.1037/0012-1649.42.6.1327.

Card, N., & Hodges, E. (2007). Victimization within mutually antipathetic peer relationships. *Social Development*, *16*(3), 479-496. doi:10.1111/j.1467-9507.2007.00394.x

Carey, S., Diamond, R., & Woods, B. (1980). Development of face recognition: A maturational component?. *Developmental Psychology*, 16(4), 257-269. doi:10.1037/0012-1649.16.4.257

Carroll, J., & Russell, J. (1996). Do facial expressions signal specific emotions? Judging emotion from the face in context. *Journal of Personality and Social Psychology*, *70*(2), 205-218. doi:10.1037/0022-3514.70.2.205

Crandall, V. C., Crandall, V. J., & Katkovsky, W. (1965). A children's social desirability questionnaire. *Journal of Consulting Psychology, 29*(1), 27-36. doi:10.1037/h0020966

Ceschi, G., & Scherer, K. (2003). Children's ability to control the facial expression of laughter and smiling: Knowledge and behaviour. *Cognition and Emotion*, *17*(3), 385-411. doi:10.1080/02699930143000725

Chen, D., Fein, G., & Tam, H. (2001). Peer conflicts of preschool children: Issues, resolution, incidence, and age-related patterns. *Early Education and Development*, *12*(4), 523-544. doi:10.1207/s15566935eed1204_3

Chung, T., & Asher, S. (1996). Children's goals and strategies in peer conflict situations. *Merrill-Palmer Quarterly*, *42*(1), 125-147

Claypool, H. M., Hugenberg, K., Housley, M. K., & Mackie, D. M. (2007). Familiar eyes are smiling: On the role of familiarity in the perception of facial affect. *European Journal of Social Psychology*, *37*(5), 856-866. doi:10.1002/ejsp.422

Clayton, J. (2007). Friendship quality: A factor analysis and effects on life satisfaction and the development of social competence in adolescence. *Dissertation Abstracts International*, 67.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115*, 74–101. doi:10.1037/0033-2909.115.1.74.

Crick, N., & Dodge, K. (1996). Social information-processing mechanisms on reactive and proactive aggression. *Child Development, 67*(3), 993-1002. doi:10.2307/1131875

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-

psychological adjustment. *Child Development*, *66*(3), 710-722. doi:10.2307/1131945

Cummings, A. & Rennels, J. (in press). How mood influences children's recognition of others' emotions. *Social Development.*

Custrini, R., & Feldman, R. (1989). Children's social competence and nonverbal encoding and decoding of emotions. *Journal of Clinical Child Psychology, 18*(4), 336-342. doi:10.1207/s15374424jccp1804_7

Denham, S. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development*, *57*(1), 194-201. doi:10.2307/1130651

Denham, S., & Couchoud, E. (1990). Young preschoolers' understanding of emotions. *Child Study Journal*, *20*(3), 171-192.

Dennis, T., Malone, M., & Chen, C. (2009). Emotional face processing and emotion regulation in children: An ERP study. *Developmental Neuropsychology*, *34*(1), 85-102. doi:10.1080/87565640802564887

Denham, S., McKinley, M., Couchoud, E., & Holt, R. (1990). Emotional and behavioral predictors of preschool peer ratings. *Child Development, 61*(4), 1145-1152. doi:10.2307/1130882

Deruelle, C., & de Schonen, S. (1998). Do the right and left hemispheres attend to the same visuospatial information within a face in infancy? *Developmental Neuropsychology, 14(4),* 535-554. doi: 10.1080/87565649809540727

Dodge, K.A. (1986). A social information processing model of social competence in children. In M. Perlmutter (Ed.), Minnesota Symposium in Child Psychology

(Vol. 18, pp.77-125). Hillside, NJ:Erlbaum.

Dodge, K. A., & Feldman, E. (1990). Issues in social cognition and sociometric status. In S. R. Asher, J. D. Coie, S. R. Asher, J. D. Coie (Eds.) , *Peer rejection in childhood* (pp. 119-155). New York, NY US: Cambridge University Press.

Dodge, K., Pettit, G., McClaskey, C., & Brown, M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development*, *51*(2), 1-85. doi:10.2307/1165906

Dodge, K., & Price, J. (1994). On the relation between social information processing and socially competent behavior in early school-aged children. *Child Development*, *65*(5), 1385-1897. doi:10.2307/1131505

Dodge, K. A., & Somberg, D. R. (1987). Hostile attributional biases among aggressive boys are exacerbated under conditions of threats to the self. *Child Development, 58*, 213 – 224. doi:10.2307/1130303

Downer, J., Sabol, T. J., & Hamre, B. (2010). Teacher-child interactions in the classroom: Toward a theory of within- and cross-domain links to children's developmental outcomes. *Early Education and Development*, *21*(5), 699-723. doi:10.1080/10409289.2010.497453

Dunsmore, J., Her, P., Halberstadt, A., & Perez-Rivera, M. (2009). Parents' beliefs about emotions and children's recognition of parents' emotions. *Journal of Nonverbal Behavior, 33*(2), 121-140. doi:10.1007/s10919-008-0066-6

Edwards, R., Manstead, A., & MacDonald, C. (1984). The relationship between

children's sociometric status and ability to recognize facial expressions of emotion. *European Journal of Social Psychology*, *14*(2), 235-238. doi:10.1002/ejsp.2420140212

Eger, E. E., Jedynak, A. A., Iwaki, T. T., & Skrandies, W. W. (2003). Rapid extraction of emotional expression: Evidence from evoked potential fields during brief presentation of face stimuli. *Neuropsychologia*, *41*(7), 808-817. doi:10.1016/S0028-3932(02)00287-7

Eimer, M., & Holmes, A. (2007). Event-related brain potential correlates of emotional face processing. *Neuropsychologia*, *45*(1), 15-31. doi:10.1016/j.neuropsychologia.2006.04.022

Eisenberg, N., & Fabes, R. A. (1998). Prosocial development. In N. Eisenberg (Ed.) *Handbook of child psychology, 5th ed.: Vol 3. Social, emotional, and personality development* (pp. 701-778). Hoboken, NJ US: John Wiley & Sons Inc.

Eisenberg, N., Miller, P. A., Shell, R., McNalley, S., & Shea, C. (1991). Prosocial development in adolescence: A longitudinal study. *Developmental Psychology, 27*(5), 849-857. doi:10.1037/0012-1649.27.5.849

Eisenberg, N., Shell, R., Pasternack, J., Lennon, R., Beller, R., & Mathy, R. M. (1987). Prosocial development in middle childhood: A longitudinal study. *Developmental Psychology, 23*(5), 712-718. doi:10.1037/0012-1649.23.5.712

Ekman, P. (1992). Are there basic emotions?. *Psychological Review*, *99*(3), 550-553. doi:10.1037/0033-295X.99.3.550

Ekman, P. (1993). Facial expression and emotion. *American Psychologist. 48*(4), 384-

392. doi:10.1037/0003-066X.48.4.384

Ekman, P., & Friesen, W. (1976). *Pictures of facial affect*. Palo Alto, CA: Consulting Psychology Press.

Ekman, P., Freisen, W., & Ancoli, S. (1980). Facial signs of emotional experience. *Journal of Personality and Social Psychology*, *39*(6), 1125-1134. doi:10.1037/h0077722

Elfenbein, H., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, *128*(2), 203-235. doi:10.1037/0033-2909.128.2.203

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments & Computers, 28*(1), 1-11.

Fabes, R., Eisenberg, N., Nyman, M., & Michealieu, Q. (1991). Young children's appraisals of others' spontaneous emotional reactions. *Developmental Psychology*, *27*(5), 858-866. doi:10.1037/0012-1649.27.5.858

Feldman, E., & Dodge, K. (1987). Social information processing and sociometric status: Sex, age, and situational effects. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology, 15*(2), 211-227. doi:10.1007/BF00916350

Field, T., & Walden, T. (1982). Production and discrimination of facial expressions by preschool children. *Child Development*, *53*(5), 1299-1311. doi:10.2307/1129020.

Fivush, R. (1991). Gender and emotion in mother-child conversations about the past. *Journal Of Narrative & Life History*, *1*(4), 325-341.

Fogel, A., Toda, S., & Kawai, M. (1988). Mother-infant face-to-face interaction in Japan and the United States: A laboratory comparison using 3-month-old infants. *Developmental Psychology*, *24*(3), 398-406. doi:10.1037/0012-1649.24.3.398

Fox, E., Lester, V., Russo, R., Bowles, R., Pichler, A., & Dutton, K. (2000). Facial expressions of emotion: Are angry faces detected more efficiently?. *Cognition and Emotion*, *14*(1), 61-92. doi:10.1080/026999300378996

Fox, E., Russo, R., Bowles, R., & Dutton, K. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety?. *Journal of Experimental Psychology: General, 130*(4), 681-700. doi:10.1037/0096-3445.130.4.681

Fox, E., Russo, R., & Dutton, K. (2002). Attentional bias for threat: Evidence for delayed disengagement from emotional faces. *Cognition and Emotion, 16*(3), 355-379. doi:10.1080/02699930143000527

Fox, S. (1985). Situational influences on the desirability of different objects of affiliation. *Current Psychological Research & Reviews*, *4*(1), 28-33. doi:10.1007/BF02686564

Gagnon, M., Gosselin, P., Hudon-ven der Buhs, I., Larocque, K., & Milliard, K. (2010). Children's recognition and discrimination of fear and disgust facial expressions. *Journal of Nonverbal Behavior*, *34*(1), 27-42. doi:10.1007/s10919-009-0076-z

Gao, X., & Maurer, D. (2009). Influence of intensity on children's sensitivity to happy, sad, and fearful facial expressions. *Journal of Experimental Child Psychology*, 102(4), 503-521. doi:10.1016/j.jecp.2008.11.002

Garner, P., Jones, D., & Miner, J. (1994). Social competence among low-income

preschoolers: Emotion socialization practices and social cognitive correlates. *Child Development, 65*(2), 622-637. doi:10.2307/1131405

Gifford-Smith, M., & Rabiner, D. (2004). Social information processing and children's social adjustment. *Children's peer relations: From development to intervention* (pp. 61-79). Washington, DC US: American Psychological Association. doi:10.1037/10653-004

Gitter, A., Mostofsky, D., & Quincy, A. (1971). Race and sex differences in the child's perception of emotion. *Child Development*, *42*(6), 2071-2075. doi:10.2307/1127609

Goldstein, S., Tisak, M., Persson, A., & Boxer, P. (2006). Children's evaluations of ambiguous provocation by relationally aggressive, physically aggressive and prosocial peers. *British Journal of Developmental Psychology*, *24*(4), 701-708. doi:10.1348/026151005X64055

Goodfellow, S., & Nowicki, S. (2009). Social adjustment, academic adjustment, and the ability to identify emotion in facial expressions of 7-year-old children. *Journal of Genetic Psychology*, *170*(3), 234-243. doi:10.1080/0022132090321828

Gross, A., & Ballif, B. (1991). Children's understanding of emotion from facial expressions and situations: A review. *Developmental Review*, *11*(4), 368-398. doi:10.1016/0273-2297(91)90019-K

Gross, J., & Levenson, R. (1995). Emotion elicitation using films. *Cognition and Emotion*, 9(1), 87-108. doi:10.1080/02699939508408966

Hall, J. A. (1978). Gender effects in decoding nonverbal cues. *Psychological Bulletin*,

85(4), 845-857. doi:10.1037/0033-2909.85.4.845

Harrigan, J. (1984). The effects of task order on children's identification of facial expressions. *Motivation and Emotion*, *8*(2), 157-169. doi:10.1007/BF00993071

Harwood, M., & Farrar, M. (2006). Conflicting emotions: The connection between affective perspective taking and theory of mind. *British Journal of Developmental Psychology*, *24*(2), 401-418. doi:10.1348/026151005X50302

Harwood, N., Hall, L., & Shinkfield, A. (1999). Recognition of facial emotional expressions from moving and static displays by individuals with mental retardation. *American Journal on Mental Retardation*, *104*(3), 270-278. doi:10.1352/0895-8017(1999)104<0270:ROFEEF>2.0.CO;2

Heisz, J. J., Pottruff, M. M., & Shore, D. I. (2013). Females scan more than males: A potential mechanism for sex differences in recognition memory. *Psychological Science*. doi: 10.1177/0956797612468281

Herba, C., Benson, P., Landau, S., Russell, T., Goodwin, C., Lemche, E., et al. (2008). Impact of familiarity upon children's developing facial expression recognition. *Journal of Child Psychology and Psychiatry*, *49*(2), 201-210. doi:10.1111/j.1469-7610.2008.01900.x

Herba, C. M., Landau, S., Russell, T., Ecker, C., & Phillips, M. L. (2006). The development of emotion-processing in children: effects of age, emotion, and intensity. *Journal of Child Psychology and Psychiatry*, *47*(11), 1098-1106. doi:10.1111/j.1469-7610.2006.01652.x

Herba, C., & Phillips, M. (2004). Annotation: Development of facial expression

recognition from childhood to adolescence: Behavioural and neurological perspectives. *Journal of Child Psychology and Psychiatry*, *45*(7), 1185-1198. doi:10.1111/j.1469-7610.2004.00316.x

Hill, H., & Johnston, A. (2001). Categorizing sex and identity from the biological motion of faces. *Current Biology*, *11*(11), 880-885. doi:10.1016/S0960-9822(01)00243-3

Hodges, E., Boivin, M., Vitaro, F., & Bukowski, W. (1999). The power of friendship: Protection against an escalating cycle of peer victimization. *Developmental Psychology*, *35*(1), 94-101. doi:10.1037/0012-1649.35.1.94

Holder, H., & Kirkpatrick, S. (1991). Interpretation of emotion from facial expressions in children with and without learning disabilities. *Journal of Learning Disabilities*, *24*(3), 170-177

Howes, C. (1988). Peer interaction of young children. *Monographs of the Society for Research in Child Development, 53*(1), doi:10.2307/1166062

Hunter, L., Buckner, J., & Schmidt, N. (2009). Interpreting facial expressions: The influence of social anxiety, emotional valence, and race. *Journal of Anxiety Disorders*, *23*(4), 482-488. doi:10.1016/j.janxdis.2008.10.004

Hyde, J. S. (1984). How large are gender differences in aggression? A developmental meta-analysis. *Developmental Psychology*, *20*(4), 722-736. doi:10.1037/0012-1649.20.4.722

Hymel, S. (1986). Interpretations of peer behavior: Affective bias in childhood and adolescence. *Child Development*, *57*(2), 431-445. doi:10.2307/1130599

Itier, R. J., & Taylor, M. J. (2004). N170 or N1? Spatiotemporal differences between

object and face processing using ERPs. *Cerebral Cortex*, *14*(2), 132-142. doi:10.1093/cercor/bhg111

Izard, C.E. (1971) *The face of emotion.* East Norwalk, CT, US: Appleton-Century-Crofts. 468-482.

Izard, C., Ackerman, B., Schoff, K., & Fine, S. (2000). Self-organization of discrete emotions, emotion patterns, and emotion–cognition relations. *Emotion, development, and self-organization: Dynamic systems approaches to emotional development* (pp. 15-36). New York, NY US: Cambridge University Press.

Izard, C., Fine, S., Schultz, D., Mostow, A., Ackerman, B., & Youngstrom, E. (2001). Emotion knowledge as a predictor of social behavior and academic competence in children at risk. *Psychological Science*, *12*(1), 18-23. doi:10.1111/1467-9280.00304

Jackson, M., & Tisak, M. S. (2001). Is prosocial behaviour a good thing? Developmental changes in children's evaluations of helping, sharing, cooperating, and comforting. *British Journal Of Developmental Psychology*, *19*(3), 349-367. doi:10.1348/026151001166146

Kahana-Kalman, R., & Walker-Andrews, A. (2001). The role of person familiarity in young infants' perception of emotional expressions. *Child Development*, *72*(2), 352-369. doi:10.1111/1467-8624.00283

Kätsyri, J., & Sams, M. (2008). The effect of dynamics on identifying basic emotions from synthetic and natural faces. *International Journal of Human-Computer Studies*, *66*(4), 233-242. doi:10.1016/j.ijhcs.2007.10.001

Knight, B., & Johnston, A. (1997). The role of movement in face recognition. *Visual Cognition*, *4*(3), 265-273. doi:10.1080/713756764

Krolak-Salmon, P., Fischer, C., Vighetto, A., & Mauguière, F. (2001). Processing of facial emotional expression; Spatio-temporal data as assessed by scalp event-related potentials. *European Journal of Neuroscience*, *13*(5), 987-994. doi:10.1046/j.0953-816x.2001.01454.x

Ladd, G. (1990). Having friends, Keeping friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment?. *Child Development*, *61*(4), 1081-1100. doi:10.2307/1130877

Ladd, G., & Burgess, K. (2001). Do relational risks and protective factors moderate the linkages between childhood aggression and early psychological and school adjustment?. *Child Development*, *72*(5), 1579-1601. doi:10.1111/1467-8624.00366

Lander, K., Bruce, V., & Hill, H. (2001). Evaluating the effectiveness of pixelation and blurring on masking the identity of familiar faces. *Applied Cognitive Psychology*, *15*(1), 101-116. doi:10.1002/1099-0720(200101/02)15:1<101::AID-ACP697>3.0.CO;2-7

Lander, K., Christie, F., & Bruce, V. (1999). The role of movement in the recognition of famous faces. *Memory & Cognition*, *27*(6), 974-985.

Lemerise, E., & Arsenio, W. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development, 71*, 107-118. doi:10.1111/1467-8624.00124

Lemerise, E. A., Fredstrom, B. K., Kelley, B. M., Bowersox, A. L., & Waford, R. N. (2006). Do Provocateurs' Emotion Displays Influence Children's Social Goals and Problem Solving?. *Journal of Abnormal Child Psychology*, *34*(4), 559-571. doi:10.1007/s10802-006-9035-x

Lemerise, E. A., Gregory, D. S., & Fredstrom, B. K. (2005). The influence of provocateurs' emotion displays on the social information processing of children varying in social adjustment and age. *Journal of Experimental Child Psychology*, *90*(4), 344-366. doi:10.1016/j.jecp.2004.12.003

Leppänen, J., & Hietanen, J. (2001). Emotion recognition and social adjustment in school-aged girls and boys. *Scandinavian Journal of Psychology*, *42*(5), 429-435. doi:10.1111/1467-9450.00255

Linsey, E. (2002). Preschool children's friendships and peer acceptance: Links to social competence. *Child Study Journal*, *32*(3), 145-156.

Ludemann, P. (1991). Generalized discrimination of positive facial expressions by seven- and ten-month-old infants. *Child Development*, *62*(1), 55-67. doi:10.2307/1130704

Lundqvist, D., & Öhman, A. (2005). Emotion regulates attention: The relation between facial configurations, facial emotion, and visual attention. *Visual Cognition*, *12*(1), 51-84. doi:10.1080/13506280444000085

MacDonald, C., & Cohen, R. (1995). Children's awareness of which peers like them and which peers dislike them. *Social Development*, *4*(2), 182-193. doi:10.1111/j.1467-9507.1995.tb00059.x

MacDonald, P., Kirkpatrick, S., & Sullivan, L. (1996). Schematic drawings of facial expressions for emotion recognition and interpretation by preschool-aged children. *Genetic, Social, and General Psychology Monographs*, *122*(4), 373-388.

Malatesta, C. Z., Culver, C., Tesman, J. R., & Shepard, B. (1989). The development of emotion expression during the first two years of life. *Monographs Of The Society For Research In Child Development*, *54*(1-2), 1-104.

Marinkovic, K., & Halgren, E. (1998). Human brain potentials related to the emotional expression, repetition, and gender of faces. *Psychobiology*, *26*(4), 348-356.

Markham, R., & Adams, K. (1992). The effect of type of task on children's identification of facial expressions. *Journal of Nonverbal Behavior*, *16*(1), 21-39. doi:10.1007/BF00986877

Marsh, A., Ambady, N., & Kleck, R. (2005). The effects of fear and anger facial expressions on approach- and avoidance-related behaviors. *Emotion*, *5*(1), 119-124. doi:10.1037/1528-3542.5.1.119

Masten, C., Guyer, A., Hodgdon, H., McClure, E., Charney, D., Ernst, M., et al. (2008). Recognition of facial emotions among maltreated children with high rates of post-traumatic stress disorder. *Child Abuse & Neglect*, *32*(1), 139-153. doi:10.1016/j.chiabu.2007.09.006

Matsumoto, D., Kudoh, T., Scherer, K., & Wallbott, H. (1988). Antecedents of and reactions to emotions in the United States and Japan. *Journal of Cross-Cultural Psychology*, *19*(3), 267-286. doi:10.1177/0022022188193001

Matsumoto, D., Consolacion, T., Yamada, H., Suzuki, R., Franklin, B., Paul, S., et al.

(2002). American-Japanese cultural differences in judgements of emotional expressions of different intensities. Cognition and Emotion, *16*(6), 721-747. doi:10.1080/02699930143000608

Mayeux, L., & Cillessen, A. (2003). Development of social problem solving in early childhood: Stability, change, and associations with social competence. *Journal of Genetic Psychology*, *164*(2), 153-173. doi:10.1080/00221320309597975

McArthur, L.S. & Baron, R.M. (1983). Toward an ecological theory of social perception. *Psychological Review, 90*(3), 215-238. doi:10.1037/0033-295X.90.3.215

McClure, E. B. (2000). A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. *Psychological Bulletin*, *126*(3), 424-453. doi:10.1037/0033-2909.126.3.424

McDowell, D., Parke, R., & Spitzer, S. (2002). Parent and child cognitive representations of social situations and children's social competence. *Social Development*, *11*(4), 469-486. doi:10.1111/1467-9507.00211

Meissner, C. A., & Brigham, J. C. (2001). Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review. *Psychology, Public Policy, and Law*, *7*(1), 3-35. doi:10.1037/1076-8971.7.1.3

Mitchell, P. (1997). *Introduction to theory of mind: Children, autism and apes*. London England: Edward Arnold Publishers.

Mize, J., & Cox, R. (1990). Social knowledge and social competence: Number and quality of strategies as predictors of peer behavior. *Journal of Genetic Psychology*, *151*(1), 117-127.

Mogg, K., & Bradley, B. (1999). Orienting of attention to threatening facial expressions presented under conditions of restricted awareness. *Cognition and Emotion*, *13*(6), 713-740. doi:10.1080/026999399379050

Mondloch, C., Geldart, S., Maurer, D., & Le Grand, R. (2003). Developmental changes in face processing skills. *Journal of Experimental Child Psychology*, *86*(1), 67-84. doi:10.1016/S0022-0965(03)00102-4

Montague, D., & Walker-Andrews, A. (2001). Peekaboo: A new look at infants' perception of emotion expressions. *Developmental Psychology*, *37*(6), 826-838. doi:10.1037/0012-1649.37.6.826

Montague, D., & Walker-Andrews, A. (2002). Mothers, fathers, and infants: The role of person familiarity and parental involvement in infants' perception of emotion expressions. *Child Development*, *73*(5), 1339-1352. doi:10.1111/1467-8624.00475

Montirosso, R., Peverelli, M., Frigerio, E., Crespi, M., & Borgatti, R. (2010). The development of dynamic facial expression recognition at different intensities in 4- to 18-year-olds. *Social Development*, *19*(1), 71-92. doi:10.1111/j.1467-9507.2008.00527.x

Motley M. T., & Camden C. T. (1988). Facial expression of emotion: A comparison of posed expressions versus spontaneous expressions in an interpersonal communication setting. *Western Journal Of Speech Communication*, *52*(1), 1-22 1988. doi:10.1080/10570318809389622.

Murphy, F., Nimmo-Smith, I., & Lawrence, A. (2003). Functional neuroanatomy of

emotions: A meta-analysis. *Cognitive, Affective & Behavioral Neuroscience*, *3*(3), 207-233. doi:10.3758/CABN.3.3.207

Nowicki, S., & Mitchell, J. (1998). Accuracy in identifying affect in child and adult faces and voices and social competence in preschool children. *Genetic, Social, and General Psychology Monographs*, *124*(1), 39-59.

Nummenmaa, L., Peets, K., & Salmivalli, C. (2008). Automatic activation of adolescents' peer-relational schemas: Evidence from priming with facial identity. *Child Development*, *79*(6), 1659-1675. doi:10.1111/j.1467-8624.2008.01217.x

Odom, R., & Lemond, C. (1972). Developmental differences in the perception and production of facial expressions. *Child Development*, *43*(2), 359-369. doi:10.2307/1127541

Öhman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: Detecting the snake in the grass. *Journal of Experimental Psychology: General*, *130*(3), 466-478. doi:10.1037/0096-3445.130.3.466

Öhman, A., Flykt, A., & Lundqvist, D. (2000). Unconscious emotion: Evolutionary perspectives, psychophysiological data and neuropsychological mechanisms. In R. D. Lane, L. Nadel, R. D. Lane, L. Nadel (Eds.), *Cognitive neuroscience of emotion* (pp. 296-327). New York, NY US: Oxford University Press.

Orobio de Castro, B., Merk, W., Koops, W., Veerman, J., & Bosch, J. (2005). Emotions in social information processing and their relations with reactive and proactive aggression in referred aggressive boys. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 105-116. doi:10.1207/s15374424jccp3401

Orobio de Castro, B., Slot, N. W., Bosch, J. D., Koops, W., & Veerman, J. W. (2003). Negative feelings exacerbate hostile attributions of intent in highly aggressive boys. *Journal of Clinical Child and Adolescent Psychology, 32*, 57–66. doi:10.1207/S15374424JCCP3201

O'Toole, A., Roark, D., & Abdi, H. (2002). Recognizing moving faces: A psychological and neural synthesis. *Trends in Cognitive Sciences*, *6*(6), 261-266. doi:10.1016/S1364-6613(02)01908-3

Peets, K., Hodges, E., Kikas, E., & Salmivalli, C. (2007). Hostile attributions and behavioral strategies in children: Does relationship type matter?. *Developmental Psychology*, *43*(4), 889-900. doi:10.1037/0012-1649.43.4.889

Peets, K., Hodges, E., & Salmivalli, C. (2008). Affect-congruent social-cognitive evaluations and behaviors. *Child Development*, *79*(1), 170-185. doi:10.1111/j.1467-8624.2007.01118.x

Pegna, A., Landis, T., & Khateb, A. (2008). Electrophysiological evidence for early non-conscious processing of fearful facial expressions. *International Journal of Psychophysiology*, *70*(2), 127-136. doi:10.1016/j.ijpsycho.2008.08.007

Philippot, P., & Feldman, R. (1990). Age and social competence in preschoolers' decoding of facial expression. *British Journal of Social Psychology*, *29*(1), 43-54.

Pizzagalli, D., Regard, M., & Lehmann, D. (1999). Rapid emotional face processing in the human right and left brain hemispheres: An ERP study. *NeuroReport: For Rapid Communication of Neuroscience Research*, *10*(13), 2691-2698. doi:10.1097/00001756-199909090-00001

Pollak, S., Messner, M., Kistler, D., & Cohn, J. (2009). Development of perceptual expertise in emotion recognition. *Cognition*, *110*(2), 242-247. doi:10.1016/j.cognition.2008.10.010

Pourtois, G., Grandjean, D., Sander, D., & Vuilleumier, P. (2004). Electrophysiological correlates of rapid spatial orienting towards fearful faces. *Cerebral Cortex*, *14*(6), 619-633. doi:10.1093/cercor/bhh023

Rabiner, D. L., & Gordon, L. V. (1992). The coordination of conflicting social goals: Differences between rejected and nonrejected boys. *Child Development*, 63(6), 1344-1350. doi:10.2307/1131560

Rah, Y., & Parke, R. (2008). Pathways between parent-child interactions and peer acceptance: The role of children's social information processing. *Social Development*, *17*(2), 341-357. doi:10.1111/j.1467-9507.2007.00428.x

Ray, K., & Smith, M. C. (2010). The kindergarten child: What teachers and administrators need to know to promote academic success in all children. *Early Childhood Education Journal*, *38*(1), 5-18. doi:10.1007/s10643-010-0383-3

Reichenbach, L., & Masters, J. (1983). Children's use of expressive and contextual cues in judgments of emotion. *Child Development*, *54*(4), 993-1004. doi:10.2307/1129903

Rennels, J. L., & Cummings, A. J. (2013). Sex differences in facial scanning: Similarities and dissimilarities between infants and adults. *International Journal Of Behavioral Development*, *37*(2), 111-117.

Ribordy, S., Camras, L., Stefani, R., & Spaccarelli, S. (1988). Vignettes for emotion

recognition research and affective therapy with children. *Journal of Clinical Child Psychology*, *17*(4), 322-325. doi:10.1207/s15374424jccp1704_4

Righart, R., & de Gelder, B. (2006). Context Influences Early Perceptual Analysis of Faces--An Electrophysiological Study. *Cerebral Cortex*, *16*(9), 1249-1257. doi:10.1093/cercor/bhj066

Rosen, W. D., Adamson, L. B., & Bakeman, R. (1992). An experimental investigation of infant social referencing: Mothers' messages and gender differences. *Developmental Psychology*, *28*(6), 1172-1178. doi:10.1037/0012-1649.28.6.1172.

Rottenberg, J., Ray, R., & Gross, J. (2007). *Emotion elicitation using films. Handbook of emotion elicitation and assessment* (pp. 9-28). New York, NY US: Oxford University Press.

Russell, J., & Bullock, M. (1985). Multidimensional scaling of emotional facial expressions: Similarity from preschoolers to adults. *Journal of Personality and Social Psychology*, *48*(5), 1290-1298. doi:10.1037/0022-3514.48.5.1290

Russell, J., & Bullock, M. (1986). On the dimensions preschoolers use to interpret facial expressions of emotion. *Developmental Psychology*, *22*(1), 97-102. doi:10.1037/0012-1649.22.1.97

Russell, J., & Widen, S. (2002). A label superiority effect in children's categorization of facial expressions. *Social Development*, *11*(1), 30-52. doi:10.1111/1467-9507.00185

Saarni, C. (1990). Emotional competence: How emotions and relationships become

integrated. *Nebraska Symposium on Motivation, 1988: Socioemotional development* (pp. 115-182). Lincoln, NE US: University of Nebraska Press.

Saarni, C. (1999). *The development of emotional competence*. New York, NY US: Guilford Press.

Saarni, C., Campos, J., Camras, L., & Witherington, D. (2006). Emotional development: Action, communication, and understanding. *Handbook of child psychology: Vol. 3, Social, emotional, and personality development (6th ed.)* (pp. 226-299). Hoboken, NJ US: John Wiley & Sons Inc.

Sato, W., & Yoshikawa, S. (2004). The dynamic aspects of emotional facial expressions. *Cognition and Emotion*, *18*(5), 701-710. doi:10.1080/02699930341000176

Schweinberger, S., & Soukup, G. (1998). Asymmetric relationships among perceptions of facial identity, emotion, and facial speech. *Journal of Experimental Psychology: Human Perception and Performance*, *24*(6), 1748-1765. doi:10.1037/0096-1523.24.6.1748

Schupp, H., Öhman, A., Junghöfer, M., Weike, A., Stockburger, J., & Hamm, A. (2004). The facilitated processing of threatening faces: An ERP analysis. *Emotion*, *4*(2), 189-200. doi:10.1037/1528-3542.4.2.189

Shackman, J., & Pollak, S. (2005). Experiential influences on multimodal perception of emotion. *Child Development*, *76*(5), 1116-1126. doi:10.1111/j.1467-8624.2005.00901.x

Skelton, F., & Hay, D. (2008). Do children utilize motion when recognizing faces?. *Visual Cognition*, *16*(4), 419-429. doi:10.1080/13506280701577496

Sorce, J., Emde, R., Campos, J., & Klinnert, M. (1985). Maternal emotional signaling: Its effect on the visual cliff behavior of 1-year-olds. *Developmental Psychology*, *21*(1), 195-200. doi:10.1037/0012-1649.21.1.195

Spangler, S. M., Schwarzer, G., Korell, M., & Maier-Karius, J. (2010). The relationships between processing facial identity, emotional expression, facial speech, and gaze direction during development. *Journal of Experimental Child Psychology*, *105*(1-2), 1-19. doi:10.1016/j.jecp.2009.09.003

Spivack, G., & Shure, M. (1974). *Social adjustment of young children: A congitive approach to solving real-life problems*. Oxford England: Jossey-Bass.

Sroufe, L., & Rutter, M. (1984). The domain of developmental psychopathology. *Child Development*, *55*(1), 17-29. doi:10.2307/1129832

Stoddart, T., & Turiel, E. (1985). Children's concepts of cross-gender activities. *Child Development*, *56*(5), 1241-1252. doi:10.2307/1130239

Taylor, M. J., Batty, M. M., & Itier, R. J. (2004). The faces of development: A review of early face processing over childhood. *Journal of Cognitive Neuroscience*, *16*(8), 1426-1442. doi:10.1162/0898929042304732

Thomas, L., De Bellis, M., Graham, R., & LaBar, K. (2007). Development of emotional facial recognition in late childhood and adolescence. *Developmental Science*, *10*(5), 547-558. doi:10.1111/j.1467-7687.2007.00614.x

Todd, R., Lewis, M., Meusel, L., & Zelazo, P. (2008). The time course of social-

emotional processing in early childhood: ERP responses to facial affect and personal familiarity in a go-nogo task. *Neuropsychologia*, *46*(2), 595-613. doi:10.1016/j.neuropsychologia.2007.10.011

Tonks, J., Williams, W., Frampton, I., Yates, P., & Slater, A. (2007). Assessing emotion recognition in 9-15-years olds: Preliminary analysis of abilities in reading emotion from faces, voices and eyes. *Brain Injury*, *21*(6), 623-629. doi:10.1080/02699050701426865

Tremblay, C., Kirouac, G., & Dore, F. (1987). The recognition of adults' and children's facial expressions of emotions. *Journal of Psychology: Interdisciplinary and Applied*, *121*(4), 341-350.

Turkstra, L. (2000). Should my shirt be tucked in or left out? The communication context of adolescence. *Aphasiology*, *14*(4), 349-364. doi:10.1080/026870300401405

Vuilleumier, P., George, N., Lister, V., Armony, J., & Driver, J. (2005). Effects of perceived mutual gaze and gender on face processing and recognition memory. *Visual Cognition*, *12*(1), 85-101. doi:10.1080/13506280444000120

Vuilleumier, P., & Pourtois, G. (2007). Distributed and interactive brain mechanisms during emotion face perception: Evidence from functional neuroimaging. *Neuropsychologia*, *45*(1), 174-194. doi:10.1016/j.neuropsychologia.2006.06.003

Widen, S., & Russell, J. (2003). A closer look at preschoolers' freely produced labels for facial expressions. *Developmental Psychology*, *39*(1), 114-128. doi:10.1037/0012-1649.39.1.114

Widen, S., & Russell, J. (2008). Children acquire emotion categories gradually. *Cognitive*

Development, *23*(2), 291-312. doi:10.1016/j.cogdev.2008.01.002

Wild-Wall, N., Dimigen, O., & Sommer, W. (2008). Interaction of facial expressions and familiarity: ERP evidence. *Biological Psychology*, *77*(2), 138-149. doi:10.1016/j.biopsycho.2007.10.001

Williams, M., Moss, S., Bradshaw, J., & Mattingley, J. (2005). Look at me, I'm smiling: Visual search for threatening and nonthreatening facial expressions. *Visual Cognition, 12*(1), 29-50. doi:10.1080/13506280444000193

Young, S., & Claypool, H. (2010). Mere exposure has differential effects on attention allocation to threatening and neutral stimuli. *Journal of Experimental Social Psychology*, *46*(2), 424-427. doi:10.1016/j.jesp.2009.10.015

Zarbatany, L., & Lamb, M. (1985). Social referencing as a function of information source: Mothers versus strangers. *Infant Behavior & Development*, *8*(1), 25-33. doi:10.1016/S0163-6383(85)80014-X

Zebrowitz, L. A. (2006). Finally, faces find favor. *Social Cognition, 24,* 657–701. doi:10.1521/soco.2006.24.5.657

Zuckerman, M., & Przewuzman, S. (1979). Decoding and encoding facial expressions in preschool-age children. *Environmental Psychology & Nonverbal Behavior*, *3*(3), 147-163. doi:10.1007/BF01142589

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