UC Riverside
UC Riverside Electronic Theses and Dissertations

Title

Children's Challenge and Threat Appraisals: The Bridge Between Individual Differences and Social Problem-Solving Behavior

Permalink

https://escholarship.org/uc/item/89x7643h

Author

Pankratz, Kasey Nicole

Publication Date

2024

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA
RIVERSIDE

Children's Challenge and Threat Appraisals: The Bridge Between Individual Differences
and Social Problem-Solving Behavior

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

Kasey Nicole Pankratz

September 2024

Dissertation Committee:
      Dr. Elizabeth Davis, Chairperson
      Dr. Kate Sweeny
      Dr. Kalina Michalska

The Dissertation of Kasey Nicole Pankratz is approved:

_____

_____

_____

Committee Chairperson

University of California, Riverside

DEDICATION

To Liz, for taking a chance

To Mom and Dad, for loving me beyond measure

To Spencer, for believing in me before I believed in myself

To the universe, for providing

ABSTRACT OF THE DISSERTATION

Children's Challenge and Threat Appraisals: The Bridge Between Individual Differences
and Social Problem-Solving Behavior

by

Kasey Nicole Pankratz

Doctor of Philosophy, Graduate Program in Psychology
University of California, Riverside, September 2024
Dr. Elizabeth Davis, Chairperson

Children frequently experience social ambiguity, where the context and

expectations for an interaction are unclear. Responses to ambiguity can vary greatly,

potentially due to children's differing challenge and threat appraisals. Although we know

children use information from their environments in the process of making appraisals,

what specific information children use to inform their challenge and threat appraisals is

still an open question. My dissertation aimed to examine factors that may contribute to

children's challenge and threat appraisals and subsequent social problem-solving

behavior in ambiguous social contexts. These included the tendency to make challenge

appraisals across discrete emotion contexts, emotion regulation ability, and different

social motivations. To address these aims, I utilized an existing dataset from a larger

study of children's physiology and emotion regulation. The focus of this dissertation was

on several tasks, including an interview about children's previous experiences of different

emotions, and three ambiguous social interactions in which (1) the experimenter wore a

scary Halloween mask, (2) the child and experimenter took turns playing a game, and (3) the experimenter gave the child an unwanted prize. Interval coding (10-s intervals) captured the extent to which children used 4 social problem-solving behaviors: expressed positive affect, speech, laughter, and approach. Children's appraisal tendencies were derived from their responses during the interview. Parent reports were used to characterize children's emotion regulation abilities, shyness, and social disinterest. Data analysis included hierarchical multiple regression, Cox regression, and binary logistic regression. Results indicated that children's challenge appraisals may relate to their social problem-solving behavior in some emotion contexts, but not others. This relationship was shown to be further qualified by the social nature of the appraisal made. Children's emotion regulation, shyness, and social disinterest were not related to children's appraisals, but were related to social problem-solving. Greater emotion regulation and shyness predicted quicker social problem-solving during the ambiguous scary task, whereas greater social disinterest predicted slower social problem-solving during the same task. In addition, shyness was related to less social problem-solving in general and in the ambiguous frustration task, and slower social problem-solving in the ambiguous frustration task. Finally, social disinterest was associated with less social problem-solving in general and in the ambiguous frustration task as well. This dissertation's contributions are both methodological and theoretical. Novel methods included asking children to recall personally meaningful experiences in which they felt different emotions, and examining children's in-vivo responses to ambiguous social situations. Overall, this dissertation contributes to our understanding how variations in children's regulatory

abilities and social motivations relate to the cognitive appraisal process and subsequent

behavior, providing more insight into the long-term impacts of children's earlier life

experiences.

Table of Contents

List of Tables

Children's Challenge and Threat Appraisals: The Bridge Between Individual

Differences and Social Problem-Solving Behavior

Children are constantly faced with ambiguous social situations and need to be able to respond to them without becoming emotionally overwhelmed. Ambiguity occurs when it is unclear what is happening or what will happen next, like when children interact with new peers or adults in school, join sports teams, or go to a friend's birthday party. In all of these contexts, children must be able to quickly interpret the actions of others and implement socially appropriate, situation-specific behaviors to maintain social harmony. However, not all children will have the necessary skills, experience, or confidence to navigate social ambiguity successfully. Difficulty in navigating social ambiguity can be a sign of challenges with social information processing and may eventually result in a maladaptive social interaction style (Boseovski et al., 2013). Therefore, children's responses to social ambiguity may be a litmus test for social difficulties that are still to come.

Children's variable responses to ambiguous social situations are informed by cognitive appraisals. The appraisal process gives rise to different emotional and behavioral responses as a function of how personally relevant the information is perceived to be and how that information relates to the status of one's personal goals (Lazarus, 1991; Moors et al. 2013). More precisely, children will appraise any given situation as a "challenge" that they have the resources to manage or a "threat" that is beyond their ability to manage (Lazarus, 1991; Seery, 2013). Making threat appraisals of ambiguous, but otherwise benign, contexts has been associated with negative

consequences such as excessive worry and distress, impulsivity, psychosis, and anxiety (Koerner & Dugas, 2008; Thompson et al. 2014; Underwood et al. 2016). Social problem-solving behaviors could be leveraged to help researchers better understand underlying cognitive processes such as appraisal. This is because social problem-solving may be one way that children attempt to navigate ambiguity, as it is the process of noticing potential social conflicts, generating and implementing possible solutions, and identifying when a social problem has been resolved (Stewart & Rubin, 1995). A lack of social problem-solving behaviors in an ambiguous context could indicate underlying threat appraisals, as threat appraisals often result in children withdrawing, avoiding, or fleeing situations they do not have the ability to cope with. In contrast, the presence of social problem-solving behaviors could indicate challenge appraisals, as challenge appraisals often result in children trying to navigate, manage, or solve the problem they are experiencing.

Children's appraisals and subsequent behavior may be impacted by their unique experiences managing their own emotions and interacting with social partners. Children with poor regulatory abilities may make more threat appraisals as they perceive themselves to have a limited ability to cope with the negative emotions that can accompany novel situations. Social withdrawal may also impact children's appraisals of new social environments, as they have typically felt overwhelmed by the fear of interacting with others (as is common with shyness) or underwhelmed by the potential rewards of affiliation (as is common with social disinterest).

My dissertation aims to make a theoretical contribution by examining the relationships of appraisals, children's regulatory and social experiences and behavior and provide insight into which children may be at risk for making threat appraisals of otherwise benign contexts. I will examine factors that may contribute to children's challenge and threat appraisals and subsequent behavior, such as the tendency to make challenge appraisals across discrete emotion contexts, emotion regulation ability, and different social motivations. Together, these insights will help further the goal of improving our understanding of children's social and emotional well-being.

Children's Appraisals of Ambiguous Social Contexts Impact Their Behavioral Responding

As mentioned above, appraisal is the set of cognitive processes that guide how environmental information is perceived and assessed for its relevance to the individual (Lazarus, 1991; Moors et al., 2013). Primary appraisals occur first and focus on the personal relevance of new information (Chang, 1998). Initially, some environmental change will occur, such as a new person entering the coffee shop where someone is working. When this happens, the individual will receive the new environmental information through their senses, such as hearing the door open. The new sensation will lead the individual to notice the change in environment and perceive the meaning behind the sensation (Ellsworth & Scherer, 2003). This means the sound is heard and the individual identifies that the sound of the door opening means someone has entered or exited the room. They then may orient themselves to gain more information by turning and looking toward the sound. This will allow them to see that a new person has entered

the room, enabling them to fully understand the change to the environment, and ascribe meaning to the situation (Ellsworth & Scherer, 2003; Lowe et al., 2003). From there, the individual will make an appraisal of personal relevance of the situation and either direct attentional resources toward or away from the environmental information (Lazarus, 1991; Zohar & Dayan, 1999). What is "personally relevant" can vary substantially, but personal relevance generally suggests that the new information will impact the person's goals in some way and, therefore, needs the person's attention. In this example, who the new person is matters as well as what they are doing. The individual will use salient information, like the nature of their relationship, to determine if the environmental change (i.e., the new person entering the coffee shop) is personally relevant. If it is someone they do not know, they may appraise the arrival as not personally relevant and turn back to their work. If it is someone they love, they may appraise the arrival as personally relevant and focus their attention on the new person, perhaps by getting up to greet them. If it is someone they dislike, they still may appraise the arrival as personally relevant but may need to make a secondary appraisal to determine what action to take next.

Secondary appraisals occur when information is appraised to be personally relevant and are typically assessments of the person's ability to cope with the given circumstance, although researchers often conceptualize this in a variety of ways (Chang, 1998). For example, some researchers have examined secondary appraisals in the form of how an individual perceives the outcome of a negotiation to be a success or failure due to their own actions or the actions of others (Butt & Choi, 2006), how intensely negatively

participants rated pictures when trying to follow specific emotion regulation strategies (Kobylinska et al., 2022), and the degree to which children blame themselves for their parents' conflict (Siffert & Schwarz, 2011), to name a few. Secondary appraisals, however, are also referred to as challenge and threat appraisals as they motivate the deployment of cognitive, physiological, and behavioral resources to either address the situation directly (as a challenge) or avoid/escape the situation (as a threat) (Lazarus, 1991; Zohar & Dayan, 1999). Challenge appraisals are made when the person assesses that they have the resources to cope with the situation, whereas threat appraisals are made when the situation is appraised as being beyond the person's coping resources.

Functionalist theories of emotion suggest that the appraisal process gives rise to differing emotions within the individual and is informed by both the emotions the person experiences and those they witness from others (Bretherton et al. 1986; Campos et al., 1994; Keltner et al., 2022; Lazarus, 1991). Based on the personal significance of an event and the perception of one's goal status, different emotions will arise, and those emotions then motivate behaviors that will either forfeit, perpetuate, or replace one's goal (Campos et al., 1994; Ellsworth & Scherer, 2003). For instance, anger is thought to occur when one's goal is blocked, fear when the goal status is in question, sadness when the goal is irrevocably lost, and happiness when the goal is progressing (Lazarus, 1991). These emotions then motivate behavior with various action tendencies (Fontaine et al., 2013; Frijda et al., 1989). Anger and happiness both promote action or approach, while sadness promotes withdrawal, and fear is related to fight or flight depending on one's current coping resources (Lazarus, 1991). Together, appraisal allows people to take in

information from the environment to better understand their goals and their ability to cope with the status of their goals. The emotions that arise and the secondary challenge or threat appraisals motivate action within the individual to try to create the best possible outcomes for their goals.

Ambiguity is a special affective case that is experienced when it is unclear what is happening, what will happen next, or other important contextual information is missing, such as when something will happen (Curley et al.,1986; Ikink et al., 2023). It is neither inherently positive nor negative as much as it is a lack of clarity about the emotional tone of a situation, although people vary greatly in their tolerance for ambiguity (Hitsuwari & Nomura, 2022). Ambiguity can stem from a variety of sources in interpersonal contexts, such as social partners having different expectations for the interaction, differing levels of comfort in expressing or interpreting various emotions, or lack of communication (Neta et al., 2021). People's appraisals and subsequent responses to ambiguous situations may depend on a variety of factors such as their tolerance for ambiguity (Hitsuwari & Nomura, 2022; Osmont & Cassotti, 2023), the illusion of control in the situation (Berger & Tymula, 2022), or emotion regulation abilities (Harp et al., 2023). In social contexts, the affective experience of ambiguity can be particularly uncomfortable as other people may evaluate the situation differently and reject someone who does not behave in a situationally appropriate way (Mathews, 2012; Neta et al., 2021; Parmley & Cunningham, 2014).

One way to reduce ambiguity is to seek out more information that may help clarify the nature of the interaction. According to Crick and Dodge (1994), children

engage in social information processing where they take in information from the environment, process it for personal relevance, generate potential responses, evaluate the potential consequences of the possible response, implement one of the responses, and then wait for feedback to iteratively restart the cycle (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). This process begins when children attend to new social information within the environment, such as noticing when someone walks into the room or a peer begins speaking. Next, children interpret the social information's possible meaning by interpreting the partner's motives and intentions, and reflecting on their own previous experiences. Children must also clarify their own goals for the interaction, as this informs the response options they generate. Finally, children enact their chosen response as some form of behavior, perpetuating the social interaction.

Emotion is one form of social information that can be highly informative for understanding the nature of a social context (Lemerise & Arsenio, 2000; Van Kleef, 2010). As such, Lemerise and Arsenio (2000) expanded on Crick and Dodge's Social Information Processing model by integrating emotion as a key piece of the process at every step of the model. Lemerise and Arsenio argued that emotion aids in processing and contextualizing incoming social information by providing an additional channel for motivation, communication, and regulatory processing. Consider an example: if a child comes home from school and has received a C on an exam, their parent's emotional reaction can inform the child's subsequent behavior. If the parent is angry, the child may feel attacked and then lash out. If the parent is disappointed, the child may feel embarrassed or ashamed, leading them to withdraw. If the parent is excited for the child,

the child may feel proud and continue to work hard to improve their grades. In this case, the consequence of the middling grade is a bit ambiguous, but the parent's emotional response provides context to the interaction which informs the child's own emotional and behavioral response.

Modern experimental work supports the validity of social information processing theories. In a book chapter by Rubin and colleagues (2015), the authors review the experimental work that has emerged from this theory and found that children's social information processing impacts overall social functioning in a variety of ways. For example, children who are "aggressive" or have experienced peer rejection tend to interpret other people's intentions more negatively, even in contexts where the person's intentions are ambiguous or unclear. Socially withdrawn children tend to have more difficulty understanding or interpreting other people's perspectives and generating a variety of appropriate responses to a social problem, such as needing to retrieve a toy from another child. Additionally, they highlighted that children tend to befriend others with similar social information processing abilities to themselves, such that children who interpret help-giving and help-seeking behaviors positively will befriend other children who view those behaviors positively.

Ziv (2013) examined the link between children's social information processing and their school readiness by preschool age, as social information processing is considered an important element of children's social competence. Children were interviewed about their social information processing abilities by responding to vignettes about peer exclusion or provocation that were either intentional or unintentional actions

by the perpetrator. The interviewer asked the child specific questions throughout the vignettes intended to probe the different steps of social information processing. In general, results indicated that children who displayed better social cognition during the social information processing vignettes also displayed more socially competent behaviors in the classroom and were better prepared for preschool academically. The author suggested that these connections may be due to children with better social information processing being better able to produce more positive responses to uncertain or ambiguous situations, aiding them in navigating uncertainty in a more competent way.

How then might some children be better at social information processing than others? Some children may utilize social problem-solving to gain clarity in ambiguous contexts and produce situationally appropriate responses. Social problem-solving is the process of noticing social problems, such as conflicts or violations of social norms, attempting to resolve the problem, and recognizing when a resolution has been reached (Daunic et al., 2006; Nezu, 2004; Stewart & Rubin, 1995). While some components of social problem-solving are cognitive and unobservable, children's outward behaviors can provide insight into their attempts to solve social problems (Daunic et al., 2006; Merrill et al., 2017). In a review by Merrill and colleagues (2017) examining social problem-solving interventions, the authors identified that a crucial component of social competence is displaying situationally appropriate behaviors in order to achieve goals and maintain social harmony. Social problem-solving is a purposeful and iterative process that gives rise to those situationally appropriate behaviors through 5 steps: identifying and defining the problem, generating solutions, evaluating solutions, enacting

a solution, and finally assessing the outcome (Daunic et al., 2006). When children enact possible solutions to the problem at hand, it provides researchers with an opportunity to observe social problem-solving in action. Behaviors such as speech, laughter, approach, and expressed positive affect demonstrate a child's attempts to set a positive tone for the interaction or gain more information from the social partner to better understand what is required of them in the situation. Children who struggle with social problem-solving typically show poor social competency, lack awareness of social cues, display deficits in self-control, and can even be diagnosed with emotional and behavioral disorders (Merrill et al., 2017).

Social problem-solving is, therefore, a crucial component of children's social competence and development. Little is known about how appraisals relate to social problem-solving, but, theoretically, they should be intertwined processes. Children cannot attempt to solve a problem unless they first believe they possibly could solve it. Observable social problem-solving behaviors could be used to index challenge appraisals, as these behaviors suggest that the child has assessed that they have the resources to attempt to cope with or take on the problem. In contrast, a lack of these social problem-solving behaviors could indicate that a threat appraisal has been made, as threat responses are often characterized by withdrawal or conflict. Either way, withdrawing from the event or engaging in conflict with social partners are behaviors that stand in contrast to attempting to resolve a social problem in a way that preserves social harmony.

Children's Emotion Regulation Abilities and Social Motivations may Impact their Responses to Ambiguous Social Contexts

Emotion Regulation

Emotions are specific positive and negative affective states that arise as a response to experienced events and motivate different behavioral responses (Gross, 2015; Lazarus, 1993). Emotion regulation, therefore, is the process of changing or maintaining one's emotional experience, such as when and how emotions are experienced or expressed (Gross, 1998, 2015). Gross' Process Model of Emotion

Regulation asserts that there are a variety of strategies that can be deployed to regulate emotions before, during, and after an event occurs (1998, 2015). For example, situation selection can involve avoiding contexts the agent suspects will lead to negative emotions or pursuing contexts they believe will lead to positive emotions. For children, this could look like avoiding the bully's table at lunch and choosing to sit with friends instead. Once an event starts, attentional deployment can be used to mentally avoid what is happening, such as ignoring the bully when they begin teasing others in the cafeteria. When an event cannot be avoided or ignored, cognitive change can be utilized to help the agent think differently about the situation. The agent may be able to look on the "bright side" of a situation by thinking that even if the bully teasing other children is upsetting, at least they are not having to experience the teasing themselves. Response modulation can be used to employ different behaviors that may change or maintain the event. The agent can continue eating their lunch, quickly finish and leave the cafeteria, go tell an adult

about the bully's action, or a myriad of other behavioral responses which will all impact both the situation and their emotional experience.

Children learn emotion regulation strategies primarily through emotion socialization processes, with parents being particularly important socializers during childhood (Eisenberg et al., 1996; Hajal & Paley, 2020). For example, the tripartite model of emotion socialization explains how parents act as socializers in children's lives (Morris et al., 2007, 2017). Parents establish an emotional climate in the home, explicitly coach their children, and model emotion regulation strategies, all of which communicate key information about emotions and their management to the children. From early life experiences with their parents and in their household, children learn what emotion regulation strategies are appropriate to use for various emotions and contexts. If a child's dad always yells in response to anger, the child may also routinely yell in response to anger, even if they were never explicitly told that this is how they should behave. If a child is told or shown that it is inappropriate to discuss negative emotions with their family, that child will likely feel uncomfortable discussing negative emotions in other contexts as well.

Overall, previous research suggests that children can identify and use a variety of emotion regulation strategies from early childhood and that these strategies may vary in their effectiveness, depending on the context or emotion (Gross & Cassidy, 2019; Quinones-Camacho & Davis, 2020; Sanchis-Sanchis et al., 2020). Davis and colleagues (2010) examined children's knowledge of emotion regulation strategies in response to both narratives and autobiographical memories of negative emotional experiences. The

authors identified that children as young as 5 or 6 could describe meta-cognitive emotion regulation strategies, such as changing goals or thoughts about a situation. Additionally, these young children acknowledged that these metacognitive strategies could be effective for reducing negative emotions and they may be more effective in some situations compared to others.

Parsafar and colleagues (2019) investigated children's emotion regulation strategy use and flexibility in response to watching emotionally negative film clips. In this study, children were assigned to one of two movie clips (The Land Before Time, Bluth et al., 1988; The Secret of NIMH, Bluth, 1982) and one of three emotion regulation instruction conditions (distraction, reappraisal, or control which did not reference emotions or regulation). One key finding from this study was that although children in the distraction and reappraisal conditions used the instructed strategies, children in all three conditions used uninstructed strategies and switched emotion regulation strategies depending on their emotions. This suggests that children have their own repertoire of emotion regulation strategies and will use them flexibly to meet differing emotional needs. For example, the use of cognitive distraction was more common for children who reported feeling negative emotions. Additionally, children in the control condition, who were not given explicit regulatory instructions, reported switching emotion strategies, but this was not related to reported negative emotions. The authors suggest that this could be due to the children in the control condition having the freedom to select strategies they find personally effective from the beginning, potentially reducing their experience of negative emotions from the beginning.

Together, these findings suggest that children are aware of a variety of emotion regulation strategies, that these strategies are meant to influence emotional experience and may be differentially effective, and that they can be flexibly used. Children's unique emotion socialization experiences, strategy knowledge, and practice flexibly using emotion regulation strategies may impact their appraisals of ambiguous social contexts and provide insight into why different children appraise the same situation in different ways. Some scholars have even argued that individual differences and early life experiences help to "tune" personal appraisals of the environment (Davis et al., 2023). In childhood, emotion regulation ability will relate to how children process and respond to ambiguous social contexts as it may influence their perception of their ability to manage the social and emotional demands of the situation, as well as their ability to tolerate the discomfort that comes with ambiguity. Consider how, if a child feels angry, but does not explicitly or implicitly know what emotion regulation strategy is functional for managing anger, they may be more likely to appraise anger as a threat that is beyond their ability to manage.

Children who have difficulty managing their emotions may also have difficulty engaging in social problem-solving behaviors. Emotion regulation is a crucial skill for social interactions because children are expected to comply with societal norms of "appropriate" behavior. Children vary in their ability to independently manage their own emotions, meaning that even if two children feel the same way, one child may be able to effectively manage that emotion to enable context-appropriate behaviors, while the other child may be so overwhelmed by the emotion that they cannot change or hide it to

effectively respond to the environment. If children are overwhelmed by negative

emotions such as fear, anger, or sadness, they may not be able to generate or implement

possible behavioral responses, such as speech, laughter, approach, or expressions of

positive affect to successfully solve the social problem ostensibly created by ambiguity.

Social Motivation

Previously, social withdrawal was thought to be an overarching form of children's

social motivation, characterized by a lack of interaction with peers (both familiar and

unfamiliar) or spending a significant amount of time alone (Rubin et al., 2009). Research

suggests that socially withdrawn children may be more likely to experience a variety of

negative outcomes compared to their more socially oriented counterparts. For example,

childhood social withdrawal has been associated with reduced social competence (Wei &

Chen, 2008), social anxiety (Ladd, 2006), peer rejection (Almeida et al., 2021; Killen et

al., 2012), and depression (Katz et al., 2011).

However, all socially withdrawn children may not be the same. If we further parse

apart this construct, some socially withdrawn children may be shy while others are

socially disinterested. Coplan and colleagues (2004) suggest that children high in shyness

may lack confidence in their ability to navigate social situations, despite wanting to have

social relationships. Their uncertainty of themselves and their fear of the social

consequences keep them from interacting with peers as frequently as other children. This

means shyer children may avoid social activities even when they include peers they

would like to interact with or activities that they enjoy. In contrast, social disinterest is

characterized by a lack of interest in the benefits that come from social interactions such

as social acceptance. Socially disinterested children are often socially competent but do not choose to engage in every social opportunity unless the "reward" of the interaction outweighs the effort. For example, a child who is more socially interested may opt to play video games with peers if they typically enjoy video games but may forfeit playing board games with peers if they are less interested in that activity. Children with more typical social motivation may be more willing to engage in an activity that is not their most preferred, simply to enjoy social interaction and inclusion.

In a 2004 study, Coplan and colleagues investigated the distinctions between shyness and social disinterest, while developing a parent report measure that captures the extent to which children exhibit shy or socially disinterested behaviors (Coplan et al., 2004). Parents of 3- to 5-year-old children completed the Child Social Preference Scale as well as a measure of child temperament. Children's behavior was observed 6 months into their preschool year during a free play period at school for a total of 20 minutes of observation across 4 separate days. Finally, teachers reported on children's school adjustment and social competence. Results suggested that these different forms of social withdrawal were uniquely related to different outcomes such as temperament, play behaviors, and perceived social competence. Shyness was related to higher temperamental fearful shyness and higher negative emotionality, whereas social disinterest was related to a higher attention span and lower negative emotionality. During play, shyness was associated with reticent behavior and parallel play, while social disinterest was not related to any of the solitary-passive play behaviors. Teachers rated shyer children as more socially withdrawn but more socially disinterested children as

making a reduced number of social initiations and as being excluded by peers. This research not only validated the Child Social Preference Scale but underscored the need to investigate shyness and social disinterest as unique forms of social withdrawal.

In terms of processing socially ambiguous contexts, we may see an even greater divergence between shyness and social disinterest, although research is lacking in this area. The discomfort of social ambiguity may be especially uncomfortable to shy children who are already concerned that they will not behave in appropriate ways and face social rejection. Children higher in social disinterest may be ambivalent about social ambiguity because they are less concerned by negative social consequences and there may not be an apparent "reward" for engaging with social partners in socially ambiguous situations.

Similarly, shyness may impact children's appraisals of social contexts. Recall that shyness is characterized by a lack of confidence in one's ability to manage social situations and a fear of the consequences of behaving incorrectly. Shyness, therefore, likely impacts children's appraisals, specifically of ambiguous social contexts. Previous research suggests that youth with high shyness tend to be less tolerant of ambiguity (Sadeghi & Soleimani, 2016) and that shy adults may process both imminent and ambiguous threats differently than adults who are not shy (Tang et al., 2014). Additionally, shyness may be the driving force of the relationship between social withdrawal and anxiety development, as shyness has been linked to increased social anxiety (Blote et al., 2019). Again, this means that when highly shy children are presented with an ambiguous social context, their shyness will inform their appraisal of

the situation and they are more likely to appraise the situation as a threat they cannot manage.

Social disinterest may have a more obscure relationship with appraisal as it is not characterized by any negative self-evaluation but instead a diminished sense of reward associated with social interactions. This means that social disinterest will not relate to challenge or threat appraisals across the board but instead impact children's primary appraisals of relevance. Likely, children with increasing social disinterest will individually determine if ambiguous social contexts are first relevant and worth their attention and then a challenge or threat. The relationship here is substantially less clear, as what children find personally relevant and rewarding to engage with will vary much more among individual children compared to the patterns we would expect to see with shyness.

Shyness and social disinterest may impact children's behaviors in distinct ways, again supporting the idea that they should be viewed as separate, unique forms of social withdrawal. For example, shy children may understand what is needed to successfully navigate an interaction but be fearful that they cannot complete the actions successfully. This means shyness should be related to reduced social problem-solving behaviors, as they may generate possible social problem-solving solutions but have difficulty implementing them. Social disinterest should make children's behaviors more variable because each child will have to determine if each situation is worth the effort of engagement. This means there should not be a relationship between social disinterest and

social problem-solving behaviors across the board, further suggesting the need to parse apart shyness and social disinterest.

Current Study

Although we know children use environmental information in the process of making appraisals, what information children use to inform their challenge and threat appraisals is still an open question (Crick & Dodge, 1994; Lemerise & Arsenio, 2000; Woods, 2010). Previous research on children's appraisals has focused on their responses to hypothetical vignettes or self-reports alone. Unknown is what happens when children are directly faced with ambiguous social problems and need to regulate their emotions, generate possible social problem-solving strategies, and implement those strategies. It is important to better understand how children utilize information about themselves and from their own experiences to inform their challenge and threat appraisals, as making threat appraisals of otherwise benign situations has been linked to negative mental health outcomes such as excessive worry and distress, impulsivity, psychosis, and anxiety (Koerner & Dugas, 2008; Thompson et al. 2014; Underwood et al. 2016). In contrast, making challenge appraisals has been linked to better adjustment and coping, creativity, productivity, as well as academic achievement (Martin et al. 2021; Ohly & Fritz, 2010; Thompson et al. 2014).

My dissertation aims to examine factors that may contribute to children's challenge and threat appraisals and subsequent behavior. These include the tendency to make challenge appraisals across discrete emotion contexts, emotion regulation ability, and different social motivations (Coplan et al. 2004; Kershner et al. 2014; Moors et al.

2013; Sillars & Davis, 2018; So et al. 2016). This investigation will provide insight into which children may be at risk for making threat appraisals of ambiguous social contexts, which are not objectively threatening or dangerous. To clarify, making threat appraisals is not inherently bad–it is often accurate and helpful for keeping children safe. Making threat appraisals over challenge appraisals is only a cause for concern when the situation is otherwise harmless, and children still appraise the situation as beyond their ability to manage. This investigation will also provide insight into who has difficulty implementing social problem-solving behaviors, while contributing to our theoretical understanding of what information is used to generate challenge appraisals and functional behavioral responses when faced with ambiguous social problems.

To address these aims, I utilized an existing dataset from a larger study of children's physiology and emotion regulation. The focus of this dissertation is on several tasks, including an interview about children's previous experiences of different emotions, and three ambiguous social interactions in which (1) the experimenter wore a scary Halloween mask, (2) the child and experimenter played the game "Jenga", and (3) the experimenter gave the child their least preferred prize that was broken beyond use. Children's appraisal tendencies were derived from their responses during the interview, and their social problem-solving behaviors were assessed during the three ambiguous tasks. Parent reports characterized children's emotion regulation abilities, shyness, and social disinterest.

Please note that age is not of specific interest for this dissertation. Although age can be useful for understanding what is typically expected of children at any given time

when phenomena have clear developmental norms for timing and acquisition of skills, chronological age itself is only a measurement of time and used as a proxy for other variables (Bergman et al., 2002; Rutter, 1989; Hedge et al., 2012). In my sample, children may vary in their appraisals and social problem-solving behaviors as they get older, but I believe this will be due to children gaining more experience navigating a wider variety of social problems, developing a wider variety of emotion regulation skills, or having gained confidence in their ability to navigate social interactions successfully. I will describe any pattern of correlation that emerges between age and the variables of interest to clarify where age may be related to changes in children's social problem-solving behavior and appraisals, as well as their emotion regulation abilities and social withdrawal. I will then covary age in any model where age is correlated with the outcome variable, allowing me to show that my variables of interest go above and beyond the effects of age.

Research Questions & Hypotheses

RQ 1: How does the tendency to make challenge appraisals (as opposed to threat appraisals) in general and in discrete emotion contexts (i.e., fear, anger, sadness) relate to children's behavioral responses to ambiguous social problems?

Children who tend to make challenge appraisals more often than threat appraisals may be better able to handle new situations. Social problem-solving behaviors show that a child is attempting to navigate an ambiguous social situation by obtaining more information about the nature of the interaction and/or engaging the social partner in familiar, socially appropriate ways. Therefore, children with experience making challenge appraisals may be better positioned to navigate a variety of emotional situations

such as ambiguous social contexts. The relationship between previous experience making challenge appraisals and the appraisals children make when experiencing ambiguity may depend on the discrete emotion context. Differing emotions are associated with distinct action tendencies and, therefore, may make some negative emotions easier to appraise as a challenge than others. This may be especially true when children have been able to make challenge appraisals of such emotional experiences in the past. For instance, children who have previously appraised a sad context as a challenge may again appraise an ambiguous sad context as a challenge because they have experience managing that emotion successfully, building emotional self-efficacy. In contrast, if a child previously appraised a sad context as a threat, they will likely again appraise the ambiguous sad context as a threat because they may find that emotion particularly difficult to manage or beyond their ability to manage. While the interview in this study only captures one instance where children appraised each emotion, children's remembered appraisals may be indicative of how children typically respond to each discrete emotion in their daily life.

Based on this rationale, I hypothesized that children who tend to make more extensive challenge appraisals of recalled events would spend more time engaged in social problem-solving behaviors. Additionally, children who make challenge appraisals of recalled discrete emotion contexts would spend more time and engage more quickly in social problem-solving behaviors when faced with similarly emotionally evocative (i.e., fear, anger, sadness), ambiguous social problems.

RQ 2: Will the relationship between the tendency to make challenge appraisals (in general and in discrete emotion contexts) and children's behavioral responses to ambiguous social problems be moderated by the social nature of previous appraisals (i.e., whether the recalled memory did or did not include a social partner as part of the negative emotional experience)?

The relationship between making past challenge appraisals and engaging in social problem-solving in a new, ambiguous social context may be qualified by whether the recalled events were themselves of a social nature. This is because both emotions and ambiguity can be interpreted differently when there is a social component to the experience compared to being experienced alone (Haller et al., 2017; Mumenthaler & Sander, 2012; Van Kleef et al., 2016). If the recalled events included social partners, the appraisals children make of the recalled events will better predict children's social problem-solving behavior in social contexts than if the recalled events did not include a social partner. The same may be true when considering the social nature of discrete emotion contexts. How children appraise novel social contexts that induce anger may be better predicted by past appraisals of anger that included a social partner compared to past appraisals of anger that did not include a social partner. Therefore, children's social problem-solving behaviors may be better predicted by past experiences of successfully navigating their emotions in a social context.

I hypothesized that the relationship between previous challenge appraisals and social problem-solving behavior in ambiguous social contexts would be moderated by whether the events being appraised were social in nature. Therefore, previous challenge

appraisals that were made in social contexts (compared to those made in non-social contexts) would predict more (and more prompt) social problem-solving behavior in ambiguous social contexts. I expected this to be the case both in general, and in fear, anger, and sadness emotion contexts.

RQ 3: How do children's emotion regulation abilities and social motivations relate to their tendency to make challenge appraisals in general and in discrete emotion contexts?

Children with better emotion regulation ability should be able to better manage a variety of emotions and, therefore, be likely to make a challenge appraisal of each emotional context. Inversely, children with increased shyness may be more likely to evaluate their past abilities in a negative light, as one aspect of shyness is negative self-evaluation and increased self-consciousness (Carducci & Conkright, 2020). This means shyer children would be more likely to make threat appraisals compared to challenge appraisals in general and in each emotional context. Children may be most able to make challenge appraisals of negative emotional contexts if skilled in emotion regulation and not particularly shy. This interaction would represent an increased capacity to manage negative emotions and a lack of negative self-evaluations about one's social or emotional abilities. Social disinterest mainly pertains to children's motivations to engage in social interactions. This means social disinterest should not be related to reports of how children appraised past emotional experiences.

As such, I hypothesized that as emotion regulation ability increased, children would tend to make challenge appraisals more often than threat appraisals in general and

be more likely to have made a challenge appraisal of each recalled emotional context. As shyness increased, children would make more threat appraisals overall and be more likely to make a threat appraisal of each recalled emotional context. Children with a combined pattern of high emotion regulation ability and low shyness would make the most challenge appraisals overall and be the most likely to make a challenge appraisal in discrete emotional contexts. I predicted that social disinterest would be unrelated to children's challenge and threat appraisals.

RQ 4: How do children's emotion regulation abilities and social motivations relate to children's social problem-solving behaviors in response to ambiguous social problems in general and in discrete emotion contexts (i.e., fear, anger, sadness)?

Children with greater emotion regulation abilities are better able to cope with the ambiguity of various emotional contexts and may be more flexible when their first attempt to fix a social problem does not work. Therefore, children with better emotion regulation ability will spend more time engaging in different social problem-solving behaviors during ambiguous social interactions. As previously mentioned, shyness is characterized by negative self-evaluation and increased self-consciousness (Carducci & Conkright, 2020). This may result in children with increased shyness feeling that they are not able to "solve" social problems or being more affected if they try to solve a social problem and their first attempt does not work. Together, the consequences of shyness may result in less social problem-solving behavior during ambiguous social situations. Children may spend the most time engaging in social problem-solving when they are skilled in emotion regulation and not particularly shy since they will not have a negative

perception of their social abilities and will be able to manage any negative emotions that arise from ambiguous situations.

Children high in social disinterest still have the social skills to successfully navigate a variety of social situations. Each child, however, will evaluate whether the situation is worth their time and effort differently, unlike shy children who will more consistently feel a sense of pressure to engage with social partners. As such, social disinterest was not expected to relate to social problem-solving alone. However, children may spend the least time engaging in social problem-solving when they are skilled in emotion regulation and are especially socially disinterested. This is because children with better emotion regulation can cope with the ambiguity of various emotional contexts, while children high in social disinterest are not motivated to engage with social partners. The combination of being able to manage any negative emotions that may arise from the ambiguity, while not being motivated by any possible social rewards of "solving" the problem and restoring social harmony, should result in less social problem-solving.

Overall, I hypothesized that as emotion regulation ability increases, children would engage in more social problem-solving behaviors and engage in them more quickly. I hypothesized that children would spend less time engaged in social problem-solving behaviors as shyness increased, whereas social disinterest would be unrelated to time engaged in social problem-solving behaviors. I also hypothesized that children with high emotion regulation ability and low shyness will spend more time engaged in social problem-solving behaviors. In contrast, I hypothesized that children with high emotion

regulation ability and high social disinterest would spend less time engaged in social problem-solving behaviors.

Methods

Participants

Data for this study were drawn from an existing dataset that includes 184 children and one parent, recruited from the Inland Empire region of Southern California. The children ranged from 3 to 11 years of age (M = 7.70 years, SD = 2.30). The gender breakdown was roughly even between girls and boys (50.5% girls). The participants were racially and ethnically diverse; children's race and ethnicity were reported as multi-racial (36.1%), Hispanic (30.1%), White (18.6%), African American (10.9 %), Asian American (2.2%), and Other (2.2%). The sample was also economically diverse with annual family income reported as $30,000 or less (38.3%), $31,000 to $60,000 (32.5%), $61,000 to $90,000 (11.7%), and $91,000 or more (17.5%). The families participated in this single-visit lab study between 2013 and 2015.

Procedure

Copies of all procedures are included in Appendices A - D. The university's IRB approved all study procedures before any research began (HS#12-0008). Upon arrival at the lab, a researcher explained the study procedures to the parent and child, the parent consented, and the child assented to participate in a larger study that examined the physiology and emotion regulation of children. The parent and child participated in a series of individual and dyadic tasks at the Emotion Regulation Lab on UCR's campus

for approximately 3.5 hours. The tasks consisted of children remembering and experiencing a variety of discrete emotions, such as fear, frustration, sadness, and happiness. Children completed tasks independently, with their parent, or with an experimenter. Parents completed several questionnaires including measures of their child's social and emotional functioning. The focus of this dissertation is on several tasks, including an interview about children's previous experiences of different emotions and three ambiguous social interactions in which (1) the experimenter wore a scary Halloween mask, (2) the child and experimenter played the game "Jenga", and (3) the experimenter gave the child an unwanted prize that was broken. At the end of the lab visit, the children watched a happy film to alleviate any lingering negative emotions. Then, the families were debriefed and compensated for their participation. Parents received a $65 cash honorarium and children chose 1-2 small prizes to take home.

Autobiographical Emotion Interview

Children were interviewed about their past experiences with different discrete emotions: sadness, fear, anger, and happiness. For this dissertation, only the three negative emotions were considered. Children were interviewed by the main experimenter, who asked them to remember an instance when they felt very sad/scared/angry in turn and then gave them a minute to color while they thought of a specific memory for each emotion. After the minute, the experimenter prompted the child to tell everything they could remember about the event. The experimenter asked up to two prompting questions such as, "What else happened?" when the child stopped speaking. Then, the experimenter asked the child, "When you felt this way, what did you do to make yourself feel less

sad/scared/angry?" Once again, the experimenter asked two follow-up questions. Next, the experimenter asked if the strategy the child described had made them feel better. The following question was asked to index children's challenge and threat appraisal for each emotion (see Sillars & Davis, 2018): "When that happened to you, did you feel like it was something you could handle, or something that was just too much?" Challenge and threat appraisals were derived from this question for each negative emotion.

Scary Mask (Fear)

The task started with the lead experimenter guiding the child into one of the lab rooms. The room, which the child had been in for prior tasks, contained a couch and a television. The experimenter told the child to wait while they went to get other things ready. As the lead experimenter left the room and closed the door, an unfamiliar second experimenter was revealed to be standing behind the door, where she had been previously obscured from the child's view. When the door closed, the experimenter turned to face the child but then did not move or speak. This experimenter was always female and wore a black hooded sweatshirt with the hood up and a grotesque Halloween mask over her face. She remained still and unresponsive for 15 seconds, then took one large step toward the child, remaining silent. After another 15 seconds, she said, "Hi, my name is Jamie," in a low but neutral voice. Then, the experimenter remained still for another 15 seconds before finally removing the mask and hood (marking the start of a "recovery" phase). She then verbally assured the child that she was just playing with Halloween masks. From that point, the experimenter moved and responded naturally as she interacted with the child. She asked the child questions such as, "Would you like to touch the mask?",

"Would you like to put the mask on?", and "Have you worn a mask before?" The experimenter and the child spent 1-3 minutes discussing the incident and masks, then she excused herself, and the primary experimenter returned to guide the child through the next tasks. Only the child's behavior during the portion of the episode when the experimenter was wearing the mask was considered in the current study. This task was designed to be a modified version of the middle childhood Laboratory Temperament Assessment Battery (Lab -TAB; Goldsmith et al., 1995; Goldsmith et al., 2010) fear task in which children are faced with an unfamiliar experimenter who wears a mask, approaches the child, and tries to interact with them. Past research has demonstrated that similar Lab-TAB tasks induce a sense of fear, unease, or discomfort in children of varying ages (Faísca et al., 2021; Gunther et al., 2021; Planalp et al., 2017).

Tower of Patience (Anger)

This task consisted of the lead experimenter and the child playing a game of "Jenga" with different colored blocks. The experimenter asked the children if they had ever played this game before, then explained that they would take turns pulling one block at a time from the tower of blocks to earn the most points without knocking down the tower. After the child and the experimenter each took their first turn, however, the experimenter progressively took longer and longer to play their next move and would look away, distracted, until they finally played. There were seven trials in total: trial 1 the experimenter played immediately with no pause, trial 2 the experimenter paused for 10 seconds before playing, trial 3 included a 20 second pause, trial 4 included a 30 second pause, trial 5 the experimenter played immediately with no pause, trial 6 included a 40

second pause, and finally trial 7 included a 60 second pause. If the child tried to talk to the experimenter, the experimenter would minimally respond by saying, "mm-hmm." If the child tried to skip the experimenter's turn, they would be reminded one time that the rule of the game was to take turns. After the 7 rounds required to complete the time trials, the child and experimenter resumed playing at a normal pace.

Disappointing Gift (Sadness)

At the beginning of the study, the child was shown 6 small toys and asked to identify which was their favorite, next favorite, and so on until ranking their least favorite toy. The experimenter verbally confirmed the child's most and least favorite prizes and then told the child they would get their most favorite prize after completing all the games and activities during their visit. Toward the end of the lab visit, the experimenter told the child that they had done such a good job participating that the experimenter would now give them their prize. The experimenter left the room for approximately one minute and returned to the room with a wrapped gift for the child. When the child opened the gift, they saw that the gift was the one they ranked as their least favorite and it was broken beyond use. For one minute, the experimenter stayed in the room with the child, generally acting busy, but occasionally looking at the child. If the child tried to talk to the experimenter, the experimenter maintained a neutral tone, repeated or rephrased the child's remarks, and nodded. The experimenter left the room at the end of the minute. The child was then left alone with their gift for approximately one minute until their parent entered the room. This dissertation will only consider the first phase of the task, with the child and the experimenter in the same room. This is because this portion of the

task is the most socially ambiguous for the child, as it is unclear if the experimenter gave the incorrect and broken prize on purpose, on accident, or as a joke.

Measures

Copies of all measures are included in Appendix E - F.

Child Social Preference Scale (CSPS)

Parents filled out a variety of survey measures during the lab visit, including the Child Social Preference Scale (CSPS; Coplan et al., 2004.) The CSPS aims to delineate two distinct forms of social withdrawal characterized by differing social motivations: shyness and social disinterest. First, the shyness subscale consists of 7 parent-report items that identify the extent to which children are interested in engaging with social partners but may feel scared or overwhelmed by attempting to make social connections. Some items from this subscale include, "My child seems to want to play with other children, is sometimes nervous to," and, "My child 'hovers' near where other children are playing, without joining in." The social disinterest subscale consists of 4 parent-report items that identify the extent to which children have adequate social skills but do not feel motivated or rewarded by social interactions. This subscale includes items such as, "My child often seems content to play alone," and "My child is just happy to play quietly by him/herself rather than to play with a group of children." Parents rated how much their child liked the description on a 1-5 scale (1 = not at all, 5 = a lot like the description). Internal consistencies for both subscales in this sample were adequate (Cronbach's alphas = 0.82 for Shyness and 0.68 for Social Disinterest).

Emotion Regulation Checklist (ERC)

Parents also reported on their children's emotion regulation abilities using the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). The ERC consists of two subscales: Emotion Regulation and Negative Lability. This dissertation will only consider the 8-item Emotion Regulation subscale, as better emotion regulation ability may be indicative of children's ability to manage the emotional discomfort that accompanies ambiguity. Each item presented a description of a way children can respond to emotions, and parents rated how often their child responds that way on a 1-4 scale (1 = Rarely/Never, 4 = Almost Always). Some items from this subscale include: "Can say when s/he is feeling sad, angry or mad, fearful or afraid," and "Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by others." Internal consistency for the Emotion Regulation subscale in this sample was adequate after removing one question from the subscale [Cronbach's alpha = 0.62; Question 23, "Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by peers," was removed from the emotion regulation subscale as its removal improved the subscale's initial Cronbach's alpha = 0.47].

Behavioral Coding

Social problem-solving behaviors in this study consisted of expressed positive affect, speech, laughter, and approach (Appendix G). Expressed positive affect consisted of positive or happy facial expressions. These could include facial features such as smiling or raised eyebrows. Speech consisted of any instance of the child producing

comprehensible language or filler words. For example, "What are you doing?" or "Uhm, hi." Laughter ranges from full "HA HA!" out-loud laughter to quiet giggles, but the laughter code required an audible sound (and not just a smile). Approach behavior consisted of moving toward the experimenter with their full body (e.g., stepping toward the experimenter), or part of their body (e.g., pointing, leaning). Expressed negative affect consisted of negative, sad, angry, or scared facial expressions, which could include features such as frowning or furrowed eyebrows.

Scary Mask (Fear).

The episode began at the first moment the child's gaze was directed toward the unfamiliar experimenter's location (toward the door of the room). From that point, intervals of 10 seconds were constructed until the point in the episode when the novel experimenter exited the room. For each interval, each behavior was given a score of 0, 1, or 2 to indicate the presence and duration of the behavior. A code of "0" indicated that the behavior did not occur at all during the 10-second interval. A code of "1" indicated that the behavior occurred for less than 5 seconds of the 10-second interval. A code of "2" indicated that the behavior occurred for 5 seconds or more of the 10-second interval (i.e., most of the interval). Approach was coded by intensity instead of duration where a code of "0" meant there was no approach, a code of "1" meant there was a partial approach, and a code of "2" meant there was a full-bodied approach. After the videos were coded, the behavior codes of a little (1) and a lot (2) were collapsed, so for each 10-s interval the behavior was either present (indicated by a code of 1 or 2) or absent (indicated by a code of 0).

Coders were extensively trained in these procedures and reliably coded the behaviors. Inter-rater reliabilities using ICC estimates and their 95% confidence intervals were calculated using SPSS statistical package version 28 (SPSS Inc, Chicago, IL), absolute-agreement, 2-way random-effects model for each of the four behaviors. The ICC for inter-rater reliability, computed on approximately 20% of the files, was excellent for expressed positive affect 0.96 (0.91 - 0.98), speech 0.96 (0.93 - 0.98), and laughter 0.92 (0.85 - 0.96), and was good for approach 0.83 (0.67 - 0.91) (Koo & Li, 2016).

Tower of Patience (Anger).

The time trials began once the child pulled their first block from the "Jenga" tower and placed it in a box in front of them. Therefore, for coding purposes, the episode began the second the child's block fully entered the box. After the 7 timed trials, the child and the experimenter each took two more turns, with the experimenter playing immediately. After the experimenter removed the block for their last turn, they "accidentally" knocked over the Jenga tower and said, "Oh no, I knocked it over – you win! Wow, you sure are good at that game!" For coding purposes, the episode ended the second the experimenter finished saying, "Wow, you sure are good at that game." This task was coded continuously for positive facial expression (expressed positive affect), laughter/giggling (laughter), talking (speech), and motor behavior toward the experimenter (approach) using Noldus Observer XT 17 (Noldus Information Technology BV, Leesburg, VA). After coding, the data were organized into 10 second intervals and each behavior was categorized as absent (0) or present (1) in each interval. Only a single

round of coding has been completed at this time, but double-coding is currently underway.

Disappointing Gift (Sadness).

The experimenter prefaced this interaction by telling the child, "You did a great job! And because you did such a great job, I am going to give you a prize. But, I need to go to the other room and get it, so I'll be right back. [Parent's name], you can come with me, we'll be back in just a little bit! Be sure to sit in your chair while I'm gone." When the experimenter returned, they gave the child the gift in a box with a lid on it and said, "You can go ahead and open it." For coding purposes, this episode began the second the experimenter finished saying, "You can go ahead and open it." For approximately one minute, the experimenter stayed in the room and pretended to be busy doing paperwork on their clipboard while the child opened the box to find the broken prize. Then, the experimenter said, "I forgot something, I'll be right back. Be sure to stay in your chair while I'm gone." The episode ended the second the experimenter finished speaking this phrase. Intervals of 10 seconds were constructed from the episode start to the episode end, as described above. For each interval, each behavior was given a score of 0, 1 to indicate whether the behavior was absent (0) or present (1).

The ICC for inter-rater reliability was excellent for expressed positive affect 0.94 (0.88 - 0.97), speech 0.98 (0.97 - 0.99), good for laughter 0.80 (0.61 - 0.90), and moderate for approach 0.71 (0.42 - 0.84), (Koo & Li, 2016).

Social Problem-Solving Composites.

Social problem-solving composites were calculated for each of the discrete emotion tasks and for overall social problem-solving. I used the interval coding to compute proportion scores (i.e., the proportion of the episode the child spent engaging in a specific behavior) by dividing the number of intervals that each coded behavior was present by the total number of intervals the episode lasted (i.e., if a child exhibited laughter for 3 out of 12 total intervals, the proportion score for laughing would be 0.25, suggesting that the child exhibited laughter for a quarter of the episode). Partial intervals (i.e., less than 10-seconds) were excluded from analyses.

The four proportion scores (one for each behavior) were added together, then z-scored to create a social problem-solving duration composite within each task. To calculate the total social problem-solving composite, the proportion scores for each of the 4 behaviors for each task (12 proportion scores total) were added together, then z-scored. Of note, z-scoring these sums resulted in a variable that indicated whether the child demonstrated more or less than the sample average amount of social problem-solving behaviors.

Latency Coding

Latencies to any of the four behaviors were computed to capture how much time passed before the child initially engaged in any one of the social problem-solving behaviors (i.e., expressed positive affect, speech, laughter, and approach). The latency period was computed from the episode start time and ended at the precise moment when the child initiated the first of the social problem-solving behaviors. Coders were

37

extensively trained in these procedures and reliably coded the behaviors. Inter-rater reliability, computed on approximately 20% of the files, was excellent for the Scary Mask task, with a rounded value of 1.00 (0.999 - 1.00) and good for the Disappointing Gift task, 0.76 (0.54 - 0.86) (Koo & Li, 2016). As previously mentioned, only a single round of coding has been completed for the Tower of Patience task at this time.

Interview Coding

The Autobiographical Emotion Interview was coded for child-reported challenge and threat appraisals across the 3 discrete negative emotion contexts. The question, "When that happened to you, did you feel like it was something you could handle, or something that was just too much?" was used to index the child's self-reported challenge and threat appraisals of past emotional experiences. When children identified that an event was "just too much," that was coded as a threat (0), and when the event was identified as something the child "could handle," that was coded as a challenge (1). Children's previous experience navigating different emotions may depend on whether these experiences involved social partners. Therefore, the presence of a social partner in children's free response emotional memories was coded as absent (0) or present (1). This dissertation will consider both children's challenge and threat appraisals of the individual discrete emotional contexts as well as children's tendency to make challenge appraisals across emotion contexts. Children's tendency to make challenge appraisals across emotion contexts was calculated by summing the challenge and threat codes for the three emotion contexts (sadness, fear, anger), meaning children's scores could range from 0 - 3, with higher scores indicating more extensive challenge appraisals. Children's tendency

to include social partners in their emotional memories across emotion contexts was calculated by summing the social partner codes for the three emotion contexts (sadness, fear, anger), again resulting in scores ranging from 0 - 3. The ICC or inter-rater reliability, computed on approximately 20% of the files, was excellent for children's challenge appraisals 0.99 (0.99 - 1.00) and inclusion of social partners 0.92 (0.82 - 0.95) (Koo & Li, 2016).

Results

The results are organized into two sections. First, I present preliminary analyses including descriptive statistics for all study variables, correlations, and gender differences. In the second section, I present tests of my 4 research questions.

Preliminary Analyses

Table 1 describes how many of the 184 children exhibited each behavior for each task. The majority of children displayed at least one social problem-solving behavior during the Scary Mask (92%), Tower of Patience (92%), and Disappointing Gift (89%) tasks.

I examined challenge appraisals and presence of a social partner for each of the emotional events children described during the Autobiographical Emotion Interview. For the recalled scary event, 42% of children made challenge appraisals and 65% of the events included a social partner. More than half (51%) of the children made challenge appraisals of the recalled angry event, and 82% of the angry events included a social partner. For the recalled sad event, 39% of children made challenge appraisals and 77% of the events included a social partner.

After investigating these raw descriptives, missing data were evaluated using Little's MCAR test (Little, 1988), which indicated no significant pattern to the missingness ($\chi 2(2898) = 2367.957$, $p = 1.000$). Thus, the expectation-maximization (EM) algorithm was used to single-impute missing data values based on existing information about each participant. Imputation has been supported as an effective alternative to mean substitution and is less biasing than listwise deletion (Musil et al., 2002). All subsequent results are based on the imputed dataset.

The only gender differences detected had to do with whether children reported social partners in their recalled emotional events (Table 2). Girls ($M = 2.495$, $SD = 0.701$) mentioned social partners in their recalled events more often than boys overall ($M = 2.253$, $SD = 0.754$); $t(182) = -2.254$, $p = .025$, $d = -0.332$. In particular, girls ($M = 0.731$, $SD = 0.446$) were more likely than boys to include a social partner in their recall of a scary event ($M = 0.593$, $SD = 0.494$); $t(182) = -1.987$, $p = .048$, $d = -0.201$. Gender will thus be covaried in analyses examining social partners to account for its influence.

Means, standard deviations, and correlations for variables of interest are shown in Table 3. Of note, each social problem-solving behavior (expressed positive affect, speech, laughter, and approach) showed positive correlations with the other behaviors within the same task and across tasks (all rs > 0.145, ps < 0.050). These correlations support the use of the social problem-solving composite, as these behaviors seem to appear together in children's navigation of social ambiguity. Additionally, each z-scored social problem-solving composite positively correlated with the social problem-solving composites from the other two tasks (all rs > 0.207, ps < 0.005). As previously

mentioned, z-scoring these sums indicated whether the child demonstrated more or less than the average amount of social problem-solving behaviors for the sample.

Shyness and social disinterest were not correlated. Shyness was positively associated with children's Tower of Patience latency to engage in social problem-solving ($r = 0.159$, $p = 0.031$) and negatively associated with children's expressed positive affect ($r = -0.153$, $p = 0.039$), speech ($r = -0.233$, $p = 0.001$), and approach ($r = -0.240$, $p = 0.001$) during the Tower of Patience task. Shyness was also negatively associated with children's total social problem-solving behavior ($r = -0.206$, $p = 0.005$) and emotion regulation ($r = -0.270$, $p < 0.001$). Social disinterest was negatively related to children's expressed positive affect ($r = -0.153$, $p = 0.039$) and approach ($r = -0.182$, $p = 0.014$) in the Tower of Patience task and associated with not using any social problem-solving behavior during the Scary Mask task ($r = -0.172$, $p = 0.019$). These divergent patterns of association further support the assumption that shyness and social disinterest are unique forms of children's social withdrawal and may contribute to children navigating social ambiguity in unique ways.

Although age was not intended to be a variable of interest in this study, age correlated with a variety of the study variables. Age will be covaried in analyses to account for its influence.

Hypothesis Testing

RQ 1: How does the tendency to make challenge appraisals (as opposed to threat appraisals) in general and in discrete emotion contexts (i.e., fear, anger, sadness) relate to children's behavioral responses to ambiguous social problems?

I hypothesized that children who tended to make more extensive challenge appraisals of recalled events would spend more time engaged in social problem-solving behaviors. Additionally, children who made challenge appraisals of recalled discrete emotion contexts would spend more time and engage more quickly in social problem-solving behaviors when faced with similarly emotionally evocative (i.e., fear, anger, sadness), ambiguous social problems. Four hierarchical regression models and three Cox regression models were used to investigate these hypotheses. Covariates were entered in the first step of the model, and predictors were entered in step two for all hierarchical regression models.

The first model (Table 4) examined the relationship between total challenge appraisals and total social problem-solving behavior duration. The model was not significant at either step, and neither age (β = -0.134, p = 0.101) nor total challenge appraisals (β = 0.033, p = 0.687) predicted children's overall social problem-solving behavior.

Scary Mask. Next, I examined the relationship between children's appraisals of a recalled scary event and social problem-solving behavior duration in the Scary Mask task (Table 5). Though the model was significant at both steps, only age (β = 0.216, p = 0.004) was a significant predictor of social problem-solving behavior, such that as age

increased, children spent more time engaged in social problem-solving behaviors during the Scary Mask task. Children's challenge appraisals of the recalled scary event ($\beta =$ 0.097, $p =$ 0.193) was not a significant predictor.

A Cox regression (Table 6) examined the relationship between children's appraisals of a recalled scary event and the latency to social problem-solving behavior in the Scary Mask task. The model was not significant, and neither age (HR = 0.982, 95% CI = 0.920 to 1.048, $p =$ 0.583) nor children's appraisals of a recalled scary event (HR = 0.938, 95% CI = 0.688 to 1.279, $p =$ 0.686) related to children's latency to social problem-solving during the Scary Mask episode.

Tower of Patience. My next analyses examined the relationship between children's appraisals of a recalled angry event and social problem-solving behavior duration in the Tower of Patience task (Table 7). Though the model was significant at both steps, again only age ($\beta =$ -0.379, $p =$ 0.001) was a significant predictor of social problem-solving behavior, such that as age increased, children spent less time engaged in social problem-solving behaviors during the Tower of Patience task. Children's challenge appraisal of the recalled angry event ($\beta =$ 0.008, $p =$ 0.915) was not a significant predictor.

I then examined the relationship between children's appraisals of a recalled angry event and latency to social problem-solving behavior in the Tower of Patience task (Table 8). The model was not significant, and neither age (HR = 0.958, 95% CI = 0.899 to 1.021, $p =$ 0.184) nor children's appraisals of a recalled angry event (HR = 0.839, 95%

CI = 0.621 to 1.134, p = 0.253) were associated with children's latency to social problem-solving during the Tower of Patience episode.

Disappointing Gift. The last linear regression model I ran for this research question examined the relationship between children's appraisals of a recalled sad event and social problem-solving behavior duration in the Disappointing Gift task (Table 9). The model was significant at both steps. Age was significant at the first step (β = -0.194, p = 0.008), but not the second (β = -0.116, p = 0.126). Children's challenge appraisals of the recalled sad event was negatively associated with children's social problem-behavior (β = -0.231, p = 0.003), such that making a threat appraisal of a sad event was associated with more social problem-solving behavior during the Disappointing Gift task.

A Cox regression (Table 10) examined the relationship between children's appraisals of a recalled sad event and latency to social problem-solving behavior in the Disappointing Gift task. The model was not significant, and neither age (HR = 1.029, 95% CI = 0.959 to 1.105, p = 0.492) nor children's appraisals of a recalled sad event (HR = 0.806, 95% CI = 0.583 to 1.115, p = 0.193) related to children's latency to social problem-solving during the Disappointing Gift task.

Overall, age tended to be associated with children's social problem-solving across contexts, with some exceptions. Contrary to my expectations, children's threat appraisal of a recalled sad event predicted more social problem-solving in the Disappointing Gift task. Unexpectedly, children's appraisals in general and of scary and angry events did not relate to social problem-solving.

RQ 2: Will the relationship between the tendency to make challenge appraisals (in general and in discrete emotion contexts) and children's behavioral responses to ambiguous social problems be moderated by the social nature of previous appraisals (i.e., whether the recalled memory did or did not include a social partner as part of the negative emotional experience)?

I hypothesized that the relationship between previous challenge appraisals and social problem-solving behavior in ambiguous social contexts would be moderated by whether the events being appraised were social in nature. Therefore, previous challenge appraisals that were made in social contexts (compared to those made in non-social contexts) would predict more (and more prompt) social problem-solving behavior in ambiguous social contexts. This would be the case both in general, and in fear, anger, and sadness emotion contexts. Four hierarchical regression models and three Cox regression models were used to investigate these hypotheses. Covariates were entered in the first step of the model, predictors were entered in the second step, and interaction terms were entered in the third step for all hierarchical regression models.

The first regression model (Table 11) examined the relationship between total challenge appraisals and total social problem-solving behavior duration while accounting for the social nature of the events children were appraising. The model was not significant at any step and no significant effects emerged [age ($\beta = -0.147$, $p = 0.086$), gender ($\beta = -0.056$, $p = 0.471$), total challenge appraisals ($\beta = 0.043$, $p = 0.607$), total social partners ($\beta = 0.035$, $p = 0.677$), and the challenge appraisal by social partner interaction ($\beta = 0.059$, $p = 0.457$)].

Scary Mask. The next linear regression (Table 12) examined the relationship between children's appraisals of a recalled scary event and the duration of social problem-solving behavior in the Scary Mask task while accounting for the social nature of the scary event being appraised. The model was significant at all three steps, because age ($\beta = 0.185$, $p = 0.018$) was positively related to social problem-solving behavior. However, gender ($\beta = 0.018$, $p = 0.808$), children's appraisals of the scary event ($\beta = 0.096$, $p = 0.446$), the presence of a social partner in the recalled scary event ($\beta = 0.124$, $p = 0.222$), and the challenge appraisal by social partner interaction ($\beta = 0.011$, $p = 0.937$) were not related to children's social problem-solving behavior during the Scary Mask task.

A Cox regression (Table 13) examined the relationship between children's appraisals of a recalled scary event and latency to social problem-solving behavior in the Scary Mask task while accounting for the social nature of the scary event being appraised. Though the overall model was not significant, the predicted effects of children's appraisal of a recalled scary event (HR = 0.562, 95% CI = 0.330 to 0.959, $p = 0.035$) and the challenge appraisal by social partner interaction (HR = 2.174, 95% CI = 1.135 to 4.163, $p = 0.019$) significantly related to children's latency to social problem-solving during the Scary Mask episode. Children who appraised the scary event to be a challenge were 44% less likely to engage in social problem-solving behavior during the Scary Mask task compared to children who appraised the event to be a threat. Children who appraised the scary event to be a challenge and for whom the scary event involved a social partner were 117% more likely to engage in social problem-solving behavior

46

during the Scary Mask task compared to all other children. Age (HR = 0.975, 95% CI = 0.909 to 1.047, $p = 0.362$), gender (HR = 0.952, 95% CI = 0.690 to 1.312, $p = 0.763$), and the presence of a social partner in the recalled scary event (HR = 0.715, 95% CI = 0.459 to 1.113, $p = 0.137$) were not related to children's latency to social problem-solving during the Scary Mask episode.

Tower of Patience. The next model (Table 14) examined the relationship between children's appraisals of a recalled angry event and social problem-solving behavior duration in the Tower of Patience task, while accounting for the social nature of the angry event being appraised. The model was significant at all three steps, and age ($\beta = -0.377$, $p = 0.001$) was a significant *negative* predictor of social problem-solving behavior, such that children spent less time engaged in social problem-solving behaviors during the Tower of Patience task as age increased. Gender ($\beta = -0.069$, $p = 0.321$), children's appraisals of the angry event ($\beta = -0.357$, $p = 0.087$), the presence of a social partner in the recalled angry event ($\beta = -0.083$, $p = 0.356$), and the challenge appraisal by social partner interaction ($\beta = 0.412$ $p = 0.064$) were not related to children's social problem-solving behavior in the Tower of Patience task.

A Cox regression (Table 15) examined the relationship between children's appraisals of a recalled angry event and latency to social problem-solving behavior in the Tower of Patience task, while accounting for the social nature of the angry event being appraised. The model was not significant and age (HR = 0.963, 95% CI = 0.902 to 1.028, $p = 0.257$), gender (HR = 1.086, 95% CI = 0.810 to 1.456, $p = 0.581$), children's appraisals of a recalled angry event (HR = 0.629, 95% CI = 0.258 to 1.535, $p = 0.308$),

47

the presence of a social partner in the recalled angry event (HR = 0.909, 95% CI = 0.504 to 1.642, p = 0.752), and the challenge appraisal by social partner interaction (HR = 1.380, 95% CI = 0.538 to 3.540, p = 0.503) were not related to children's latency to social problem-solving during the Tower of Patience episode.

Disappointing Gift. I next (Table 16) examined the relationship between children's appraisals of a recalled sad event and social problem-solving behavior duration in the Disappointing Gift task, while accounting for the social nature of the sad event being appraised. The model was significant at all three steps. Age was significant at the first step (β = -0.209, p = 0.005), but not the second (β = -0.128, p = 0.101) or third (β = -0.128, p = 0.102). Children's appraisals of the recalled sad event (β = -0.353, p = 0.047) negatively predicted social problem-behavior, such that children's threat appraisals of a sad event were associated with more social problem-solving behavior during the Disappointing Gift task. Gender (β = -0.060, p = 0.414), the presence of a social partner in the recalled sad event (β = -0.064, p = 0.501) and the challenge appraisal by social partner interaction (β = 0.154, p = 0.406) were not related to children's social problem-solving behavior in the Disappointing Gift task.

A Cox regression (Table 17) examined the relationship between children's appraisals of a recalled sad event and latency to social problem-solving behavior in the Disappointing Gift task, while accounting for the social nature of the sad event being appraised. The model was not significant, and age (HR = 1.031, 95% CI = 0.965 to 1.112, p = 0.422), gender (HR = 0.873, 95% CI = 0.637 to 1.196, p = 0.397), children's appraisals of a recalled sad event (HR = 1.230, 95% CI = 0.594 to 2.544, p = 0.577), the

presence of a social partner in the recalled sad event (HR = 0.939, 95% CI = 0.558 to

1.579, p = 0.812), and the challenge appraisal by social partner interaction (HR = 0.615,

95% CI = 0.278 to 1.358, p = 0.204) were not related children's latency to social

problem-solving during the Disappointing Gift task.

In line with one of my hypotheses, children who both appraised the scary event to

be a challenge and described a scary event that involved a social partner were more likely

to engage in social problem-solving behavior during the Scary Mask task compared to all

other children. Otherwise, my hypotheses were generally not supported overall or for

Tower of Patience and Disappointing Gift tasks.

RQ 3: How do children's emotion regulation abilities and social motivations relate to their tendency to make challenge appraisals in general and in discrete emotion contexts?

I hypothesized that as emotion regulation ability increased, children would tend to

make challenge appraisals more often than threat appraisals in general and be more likely

to have made a challenge appraisal of each recalled emotional context. As shyness

increased, children would make more threat appraisals overall and be more likely to have

made a threat appraisal of each recalled emotional context. Children with a combined

pattern of high emotion regulation ability and low shyness would make the most

challenge appraisals overall and be the most likely to make a challenge appraisal in

discrete emotional contexts. I predicted that social disinterest would be unrelated to

children's challenge and threat appraisals. One linear regression model and three binary

logistic regression models were used to investigate these hypotheses. Covariates were

entered in the first step of the model, predictors were entered in the second step, and interaction terms were entered in the third step for all hierarchical regression models.

The first model (linear regression, Table 18) examined the relationship between children's emotion regulation ability, shyness, social disinterest and their total number of challenge appraisals (out of 3 possible). The model was significant at all three steps, but this was driven by age ($\beta = 0.424$, $p = 0.001$); as age increased, the number of challenge appraisals increased. Emotion regulation ($\beta = 0.007$, $p = 0.920$), shyness ($\beta = 0.070$, $p = 0.335$), social disinterest ($\beta = 0.002$, $p = 0.983$), and the emotion regulation by shyness interaction ($\beta = 0.048$, $p = 0.492$) were not associated with children's challenge appraisals overall.

Fear. The first binary logistic regression (Table 19) examined the relationship between children's emotion regulation ability, shyness, social disinterest and whether they made a challenge appraisal of a recalled scary event. The model was significant at the first step, but not the second or third step. Age ($B = 0.221$, $p = 0.002$) was a significant predictor of children's total challenge appraisals, such that with each 1-unit (one year) increase in age, the odds of children making a challenge appraisal of the recalled scary event increased by 25%. No other effects emerged: Emotion regulation ($B = 0.009$, $p = 0.982$), shyness ($B = 0.003$, $p = 0.928$), social disinterest ($B = 0.028$, $p = 0.590$), and the emotion regulation by shyness interaction ($B = 0.084$, $p = 0.220$) were not associated with children's challenge appraisal of a recalled scary event.

Anger. The next binary logistic regression (Table 20) examined the relationship between children's emotion regulation ability, shyness, social disinterest and whether

they made a challenge appraisal of a recalled angry event. The model was significant at the first step only. Age ($B = 0.204$, $p = 0.004$) was a significant predictor of children's total challenge appraisals, meaning with each 1-unit increase in age the odds of children making a challenge appraisal of the recalled scary event increased by 23%. Emotion regulation ($B = 0.120$, $p = 0.754$), shyness ($B = 0.004$, $p = 0.896$), social disinterest ($B = 0.052$, $p = 0.322$), and the emotion regulation by shyness interaction ($B = 0.044$, $p = 0.519$) were not associated with children's challenge appraisals of a recalled angry event.

Sadness. The final binary logistic regression (Table 21) examined the relationship between children's emotion regulation ability, shyness, social disinterest and whether they made a challenge appraisal of a recalled sad event. The model was significant at all three steps and age ($B = 0.315$, $p = 0.001$) was a significant predictor of children's total challenge appraisals; with each 1-year increase in age the odds of children making a challenge appraisal of the recalled scary event increased by 38%. Emotion regulation ($B = -0.073$, $p = 0.855$), shyness ($B = 0.049$, $p = 0.130$), social disinterest ($B = -0.090$, $p = 0.109$), and the emotion regulation by shyness interaction ($B = -0.057$, $p = 0.434$) were not associated with children's challenge appraisals of a recalled sad event.

Social disinterest was not related to children's appraisals, which aligned with my hypothesis. Surprisingly, emotion regulation and shyness were unrelated to children's appraisals, contrary to my hypotheses. Increasing age was consistently associated with more challenge appraisals in general and increased odds of making a challenge appraisal in each discrete emotion context.

RQ 4: How do children's emotion regulation abilities and social motivations relate to children's social problem-solving behaviors in response to ambiguous social problems in general and in discrete emotion contexts (i.e., fear, anger, sadness)?

I hypothesized that as emotion regulation ability increased, children would engage in more social problem-solving behaviors and engage in them more quickly. I hypothesized that children would spend less time engaged in social problem-solving behaviors as shyness increased, whereas social disinterest would be unrelated to time engaged in social problem-solving behaviors. I also hypothesized that children with high emotion regulation ability and low shyness would spend more time engaged in social problem-solving behaviors. In contrast, I hypothesized that children with high emotion regulation ability and high social disinterest would spend less time engaged in social problem-solving behaviors. Four hierarchical regression models and three Cox regression models were used to investigate these hypotheses. Covariates were entered in the first step of the model, predictors were entered in the second step, and interaction terms were entered in the third step for all hierarchical regression models.

A linear regression (Table 22) examined the relationship between children's emotion regulation ability, shyness, social disinterest and children's total social problem-solving behavior duration. This model was significant only at the second step. Shyness (β = -0.218, p = 0.004) significantly predicted children's total social problem-behavior, such that as shyness increased, children exhibited less social problem-solving behavior across the three tasks. Age (β = -0.142, p = 0.062), emotion regulation (β = -0.085, p = 0.292), social disinterest (β = -0.033, p = 0.670), the emotion regulation by shyness interaction (β

= 0.028, p = 0.706), and the emotion regulation by social disinterest interaction (β = 0.063, p = 0.425) were not related to children social problem-solving behavior.

Scary Mask. Another linear regression (Table 23) examined the relationship between children's emotion regulation ability, shyness, social disinterest and children's social problem-solving behavior duration during the Scary Mask task. The model was significant at all three steps and age (β = 0.230, p = 0.003) was the sole significant predictor of children's social problem-solving behavior. Emotion regulation (β = -0.014, p = 0.864), shyness (β = -0.121, p = 0.124), social disinterest (β = 0.056, p = 0.462), the emotion regulation by shyness interaction (β = -0.071, p = 0.338), and the emotion regulation by social disinterest interaction (β = 0.085, p = 0.277) were not related to children's social problem-solving behavior during the Scary Mask task.

A Cox regression (Table 24) examined the relationship between children's emotion regulation ability, shyness, social disinterest and children's latency to social problem-solving behavior during the Scary Mask task. The model was significant, and emotion regulation (HR = 1.568, 95% CI = 1.040 to 2.364, p = 0.032), shyness (HR = 1.035 95% CI = 1.005 to 1.066, p = 0.023), and social disinterest (HR = 0.932, 95% CI = 0.877 to 0.991, p = 0.025) were all associated with children's latency to social problem-solving behavior during the Scary Mask Task. With every 1-unit increase in emotion regulation, children were 57% more likely to engage in social problem-solving behavior during the Scary Mask task, while with every 1-unit increase in shyness children were 4% more likely to engage in social problem-solving behavior during the Scary Mask task. Social disinterest revealed a contrary pattern, where with every unit increase in social

disinterest, children were 7% less likely to engage in social problem-solving behavior during the Scary Mask task. Age (HR = 0.991, 95% CI = 0.925 to 1.062, p = 0.803), the emotion regulation by shyness interaction (HR = 0.984, 95% CI = 0.918 to 1.055, p = 0.644), and the emotion regulation by social disinterest interaction (HR = 0.991, 95% CI = 0.874 to 1.125, p = 0.891) were not associated with children's social problem-solving during the Scary Mask task.

Tower of Patience. A linear regression (Table 25) examined the relationship between children's emotion regulation ability, shyness, social disinterest and social problem-solving behavior duration during the Tower of Patience task. The model was significant at all three steps. Age (β = -0.402, p = 0.001) significantly negatively predicted children's social problem-solving behavior, such that as age increased children engaged in less social problem-solving behavior during the Tower of Patience task. Shyness (β = -0.232, p = 0.001) significantly predicted children's social problem-solving behavior, such that as shyness decreased, children engaged in more social problem-solving behavior during the Tower of Patience task. Social Disinterest (β = -0.155 p = 0.027) significantly predicted children's social problem-solving behavior, such that as social disinterest decreased, children engaged in more social problem-solving behavior during the Tower of Patience task. Emotion regulation (β = -0.076, p = 0.294), the emotion regulation by shyness interaction (β = 0.097, p = 0.153), and the emotion regulation by social disinterest (β = 0.011, p = 0.872) interaction were not related to children's social problem-solving behavior during the Tower of Patience task.

Another Cox regression (Table 26) examined the relationship between children's emotion regulation ability, shyness, social disinterest and children's latency to engage in social problem-solving behavior during the Tower of Patience task. The model was significant and shyness (HR = 0.972, 95% CI = 0.944 to 1.001, p = 0.056) was marginally associated with children's latency to social problem-solving behavior during the Tower of Patience task. With every 1-unit increase in age, children were 3% less likely to engage in social problem-solving behavior during the Tower of Patience task, whereas with every 1-unit increase in shyness, children were 3.2% less likely to engage in social problem-solving behavior during the Tower of Patience task. Age (HR = 0.929, 95% CI = 0.866 to 0.996, p = 0.039), emotion regulation (HR = 0.878, 95% CI = 0.598 to 1.287, p = 0.504), social disinterest (HR = 1.025, 95% CI = 0.973 to 1.080, p = 0.354), the emotion regulation by shyness interaction (HR = 1.012, 95% CI = 0.952 to 1.076, p = 0.705), and the emotion regulation by social disinterest interaction (HR = 0.910, 95% CI = 0.811 to 1.022, p = 0.112) were not associated with children's social problem-solving during the Tower of Patience task.

Disappointing Gift. A linear regression (Table 27) examined the relationship between children's emotion regulation ability, shyness, social disinterest and social problem-solving behavior duration during the Disappointing Gift Task. The model was significant at the first and second step, but not the third. Age (β = -0.214, p = 0.005) significantly predicted children's social problem-solving behavior, such that as age increased children engaged in less social problem-solving behavior during the Disappointing Gift task. Emotion regulation (β = -0.109, p = 0.176), shyness (β = -0.146,

$p = 0.065$), social disinterest ($\beta = 0.009$, $p = 0.905$), the emotion regulation by shyness interaction ($\beta = 0.057$, $p = 0.450$), and the emotion regulation by social disinterest interaction ($\beta = 0.035$, $p = 0.657$) were not significant predictors of children's social problem-solving during the Disappointing Gift task.

A final Cox regression (Table 28) examined the relationship between children's emotion regulation ability, shyness, social disinterest and children's latency to social problem-solving behavior during the Disappointing Gift Task. The model was not significant. Age (HR = 1.024, 95% CI = 0.957 to 1.095, $p = 0.489$), emotion regulation (HR = 1.156, 95% CI = 0.783 to 1.707, $p = 0.393$), shyness (HR = 0.993, 95% CI = 0.962 to 1.025, $p = 0.651$), social disinterest (HR = 1.014, 95% CI = 0.959 to 1.073, $p = 0.614$), the emotion regulation by shyness interaction (HR = 1.023, 95% CI = 0.955 to 1.097, $p = 0.513$), and the emotion regulation by social disinterest interaction (HR = 1.037, 95% CI = 0.921 to 1.167, $p = 0.548$) were all unrelated to children's latency to social problem-solving during the Disappointing Gift task.

My hypotheses regarding emotion regulation, shyness, and social disinterest were thus all at least partially supported while my interaction hypotheses were not. Emotion regulation was only associated with children's latency to social problem-solving during the Scary Mask episode, with increasing emotion regulation predicting quicker social problem-solving. The hypothesis regarding shyness was partially supported, as increasing shyness was associated with reduced social problem-solving behavior in general and in the Tower of Patience task. Shyness was also related to children's latency to social problem-solving, such that increasing shyness resulted in an increased likelihood of

56

engaging in social problem-solving behaviors during the Scary Mask task and a reduced likelihood of engaging in social problem-solving behaviors during the Tower of Patience task. Social disinterest revealed an interesting contrary pattern, where increasing social disinterest predicted a decreased likelihood of engaging in social problem-solving behaviors during the Scary Mask task. Additionally, children engaged in less social problem-solving during the Tower of Patience task with increasing social disinterest.

Discussion

My dissertation aimed to examine factors that may contribute to children's challenge and threat appraisals and subsequent behavior. These included the tendency to make challenge appraisals across discrete emotion contexts, emotion regulation ability, and different social motivations. I additionally aimed to provide insight into which children may be at risk for making threat appraisals of ambiguous, yet benign, social contexts or have difficulty implementing social problem-solving behaviors, and contribute to our theoretical understanding of what information is used to generate challenge appraisals and functional behavioral responses in ambiguous social problems. These aims informed four research questions and several hypotheses. Each set of results will be discussed below, along with the limitations of the current study and suggestions for future research**.**

Challenge appraisals and children's responses to ambiguity

Overall, age was associated with children's social problem-solving across contexts, with some exceptions. Contrary to my expectations, making a threat appraisal of a recalled sad event was associated with more social problem-solving in the

Disappointing Gift task. Also unexpectedly, children's appraisals in general and of scary and angry events did not relate to children's social problem-solving.

These findings reveal that children's appraisals relate to their social problem-solving in some emotional contexts, but not others. To my knowledge, this dissertation is one of the first attempts to examine the relationship between children's appraisals and social problem-solving, so little is known about the information children use to inform these processes. Emotion is thought to be a highly informative type of social information; experienced or witnessed emotion can provide context for what is expected in any given situation (Lemerise & Arsenio, 2000; Van Kleef, 2010). Different emotions may prompt differing patterns of appraisal and behavior as differing emotions arise depending on one's goal status. It is plausible that when children's goal status is clear, an appraisal then prompts social problem-solving behavior. However, when a goal's status is unclear, children may need to use social problem-solving behavior to investigate the situation, gather more information, and clarify the status of their goal before making secondary challenge and threat appraisals. Sadness may be one such emotional context that prompts children to investigate their goal status fully, as misunderstanding one's goal status would prompt an inappropriate behavioral response and unnecessary goal forfeiture.

Sadness typically occurs when a goal is irrevocably lost and promotes withdrawal behavior (Fontaine et al., 2013; Frijda et al., 1989; Lazarus, 1991). In the Autobiographical Emotion Interview, children were asked to recall a time when they felt "very sad," and whether it was something they could handle (challenge) or something that was just too much (threat). Children's answers could have reflected not only their

perceived ability to manage the event emotionally but also how actionable or fixable they

perceived the event to be. It would be logical then, that many children made a threat

appraisal of the event they described as their goal would be ostensibly lost or

unactionable. While making threat appraisals of ambiguous, but otherwise benign,

contexts has been associated with negative consequences such as excessive worry and

distress, impulsivity, psychosis, and anxiety (Koerner & Dugas, 2008; Thompson et al.

2014; Underwood et al. 2016), threat appraisals are also adaptive and functional in

certain contexts. Threat appraisals are functional in high demand situations in which the

individual has limited available resources to cope (Seery, 2013). This is because the

threat appraisal will help mobilize protective bodily responses, such as the sympathetic

nervous system (SNS), which will support the individual's survival (Seery, 2013). For

example, when a small child sees a big, scary dog, appraising the situation as a threat will

prompt SNS activation that supports the child in quickly running away.

When children's goals are irrevocably lost, as is the case with sadness, a threat

appraisal may promote the withdrawal from the situation that allows children to seek help

or begin processing the loss. Lench and colleagues (2016) explain that withdrawing from

a sadness-eliciting event may help reduce distraction from other, attainable goals, prompt

reflection to learn from the loss, and allow physiological calming to begin. This suggests

that it would be functional, and potentially adaptive, for children to appraise sad events as

threatening, or as something that is beyond their ability to manage, so they can move on

from the loss and focus their attention and resources toward other goals still in play.

Why, then, is there a connection between the threat appraisals of recalled sad events, and more social problem-solving behavior in the "sad" context?

Because threat appraisals and sadness together promote the withdrawal of physical and cognitive resources, misunderstanding one's goal status in a sad context may carry a higher cost than other negative emotional contexts. Children may need to investigate a potentially sad situation thoroughly before making a costly threat appraisal and unnecessarily forfeiting a goal that could still, potentially, be attained. The same type of investigation may not be necessary in angry or scary contexts, as trying to unblock or maintain a goal that is still attainable is a lesser consequence than abandoning a goal that could still be attained. Simply put, children may have displayed substantial social problem-solving behavior in the Disappointing Gift task despite making a threat appraisal of a prior sad event, because it was not immediately clear if their goal of obtaining their preferred prize was irrevocably lost. Additionally, children's appraisals were made of a *recalled* event, whereas the Disappointing Gift task was an ambiguous, unfolding interaction. The recalled event had been investigated when the child experienced it, and the identification of the event as being "very sad" per the interview, suggests that the child held some level of certainty that their goal had been lost. Children may have been motivated to investigate the unfolding, ambiguous situation of the Disappointing Gift task to gain clarity on the status of their goal (Curley et al.,1986; Ikink et al., 2023), and only when it was made apparent that their goal was truly lost would children make a threat appraisal, feel sad about the situation, and withdraw. Withdrawing prematurely could result in an unnecessary goal forfeiture, that children would ostensibly be motivated to

avoid. Children would have wanted to be certain that their preferred prize was completely lost before beginning to give up on the prospects of attaining it.

Children's appraisals of recalled scary and angry events did not relate to children's social problem-solving behavior, and this may have been because this risk of misunderstanding one's goal status for these emotions does not carry the same weight as with sadness. Anger is thought to occur when one's goal is blocked and typically promotes action or approach, whereas fear is thought to occur when the goal status is in question and is related to fight or flight depending on one's coping resources (Lazarus, 1991). Because these emotions promote action, they may enable children to more easily iteratively adapt to challenge and threat as a context continues to evolve and more information becomes available. This means, in angry and scary contexts, children may quickly appraise an event as personally relevant and estimate their goal status as being blocked or in question, and then contingently appraise the event as a challenge or threat and adjust their behavior as new information emerges. The behavior seen in the ambiguous tasks may not have related to children's appraisals, again because the appraisals were made of a *recalled* event. The question of whether the event was something they could handle (challenge) or something that was just too much (threat), encapsulates children's general appraisal of the event and not the dynamic, iterative nature of the appraisal process that occurs *in vivo*.

In sad contexts, children may quickly appraise an event as personally relevant, but be hesitant to estimate their goal as being irrevocably lost unless there is substantial evidence, as a threat appraisal would be the most functional response if their goal is truly

61

lost. It may additionally be more difficult for children to re-engage if they discover their goal is still possibly attainable. Simply put, in angry or scary contexts, children may appraise, act, and revise, whereas in sad contexts children may need to investigate, appraise, then act. While more research is needed to clarify the temporal unfolding of children's investigation and appraisal of potentially sad citations, existing research suggests that sad stimuli may be processed more slowly compared to scary stimuli (Quinones-Camacho, et al., 2018), and lessens one's arousal (Droit-Volet et al., 2011).

Is the relationship between challenge appraisals and children's behavioral responses qualified by the social nature of previous appraisals?

In line with my hypothesis, children who both appraised their recalled scary event to be a challenge and described that scary event as involving a social partner were more likely to engage in social problem-solving behavior during the Scary Mask task compared to all other children. Otherwise, my hypotheses for my second research question were not supported.

Social partners may provide a wealth of rich information to aid in children's appraisal and navigation of different events. Children engage in social information processing which allows them to attend to, interpret, reflect on, and clarify new information with their own perception, experience, and goals (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). Emotion has been argued to be a particularly useful form of social information that aids in processing and contextualizing incoming information by providing an additional channel for motivation, communication, and regulatory processing (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). The presence of social

partners may provide crucial information that allows children to understand new contexts more easily, but at the same time creates greater task demands as children have to consider their social partner's thoughts and feelings as well as their own. Additionally, the presence of social partners inherently changes the way someone processes and regulates their own emotional experience (Van Kleef, 2010). For example, Fischer and colleagues (2003) have argued that when alone, one's emotions may be informing the individual about their own physical and mental well-being, whereas emotions in social contexts may be most informative of one's social well-being. This means that both the information available and the meaning of the available information are changed by the presence of social partners. That being said, the impact of social partners may be qualified by the emotional nature of the context.

As discussed above, it may be functional for children to quickly appraise an event as personally relevant and estimate their goal status as being in question, so fear and subsequent challenge or threat appraisals can engage cognitive and physical resources that will promote safety. Fear learning is an important part of children's emotional development and overall well-being, as children will make important associations that can keep them safe. Research suggests fear stimuli, such as fearful facial expressions, can be recognized and contingently responded to from infancy (Leppanen & Nelson, 2012), may be processed more quickly than other emotions (such as sadness and happiness) (Quinones-Camacho, et al., 2018) and children may even be more sensitive than adults to fear learning associations, resulting in greater fear generalization (Schiele, et al., 2016). A greater sensitivity to fear-related stimuli may explain why children's appraisal of a

recalled scary event that was social in nature predicted children's social problem-solving, while the other recalled social and emotional experiences did not. Children may be able to more easily or more quickly relate their previous scary social experiences to new scary situations because these associations promote their well-being and survival. The Scary Mask task in particular may have facilitated children's quick identification of the task as "scary" because the experimenter was unfamiliar to the child and wore a Halloween mask. Oddly behaving strangers and/or Halloween masks could easily constitute fear stimuli that children have experienced before. This experience was also contrary to everything else children experienced in the lab as the other tasks had a consistent, pleasant (although sometimes indifferent) experimenter.

Anger and sadness may not need to be processed as quickly as fear or build the same associations between prior experience, as these emotions may not play the same role in children's immediate safety. Children's goals can be blocked in a variety of ways, with social partners sometimes acting as helpers and other times acting as hinderers. Research suggests that children can identify different intentions for people's actions, prefer social partners who help, and respond differentially depending on the intentions they believe people to have (Lee & Warneken, 2020). It may be advantageous for children to quickly appraise the situation as personally relevant and identify that their goal is blocked, but then children can adjust their course of action depending on how they think the social partner is impacting that goal. This need to better understand social partners' intentions on a case-by-case basis to identify their role in affecting one's goal

status could explain why previous appraisals of social contexts did not relate to children's behavior in the Tower of Patience and Disappointing Gift tasks.

Children's perceptions of the experimenter's actions in the Tower of Patience task could vary greatly, especially since the experimenter sometimes played their turn quickly and other times responded very slowly, and the same person behaved more normally during other interactions in the lab visit. Children may have evaluated the experimenter's actions and intentions independently of previous social experiences playing games with others because of the ambiguity of the experimenter's actions. Had the experimenter made their "intentions" apparent by saying the game was boring, that they were too busy to play, or taunting the child, children may have responded by drawing on previous experiences with a disengaged social partner to help them navigate the situation.

Similarly, children had the opportunity to consider their social partner's intentions, as they investigated their goal status in the Disappointing Gift task. Children need to discern if their social partner is actively trying to thwart their goal or could potentially help reinstate it before taking action in sad contexts. That determination changes the resources, such as potential social support, the child believes they have to help them navigate the potential challenge or threat. The experimenter's actions were not immediately clear during the Disappointing Gift task, but the situation would be substantially easier to navigate if the child being given the wrong prize was a simple mistake that would be resolved if pointed out, compared to an act of aggression or spite. It is more advantageous for children to take their time to explore the potential reasons behind the experimenter's actions, opposed to making the type of quick determinations

associated with fear. Children have the opportunity to investigate their goal's status, potentially restore their goal if they find it is not lost beyond recovery, and maintain social harmony because they have the time to investigate the potentially sad situation. Being able to quickly identify and respond to fear-related stimuli within new, ambiguous contexts may be crucial for children's well-being, as they do not have the same temporal flexibility to investigate a social partner's intentions when that social partner could pose a real threat.

How do emotion regulation, shyness, and social disinterest relate to the tendency to make challenge appraisals?

Surprisingly, emotion regulation and shyness were unrelated to children's challenge and threat appraisals, contrary to my hypotheses. Social disinterest was not related to children's appraisals, as I hypothesized. Age was associated with children's appraisals, where increasing age was associated with more challenge appraisals in general and increased odds of making a challenge appraisal of each discrete emotion context.

As previously mentioned, Davis and colleagues (2023) have suggested that individual differences are thought to "tune" the appraisal process by informing children of what skills and resources they have and how they can be used in different situations. The authors argue that children's early life experiences with emotion socialization from their parents and caregivers provide an abundance of information that can be utilized in the cognitive appraisal process, such as what environmental information is important to attend to, what are "appropriate" responses for a variety of different circumstances, and what coping resources are necessary to manage emotional challenges. This dissertation

investigated children's emotion regulation, shyness, and social disinterest as possible markers of early life emotion socialization experiences, however, none of these variables were related to children's appraisals.

One explanation for the lack of effect could be the model building approach that I adopted, which incorporated age as a covariate, as well as emotion regulation, shyness, and social disinterest, and the emotion regulation by shyness interaction as predictors, creating a relatively stringent test of any single variable's effect. This approach was chosen to reflect the complex nature of children's social and emotional resources, which do not occur in a vacuum. This may have, however, limited my ability to identify any one socioemotional variable as being particularly informative to children's challenge and threat appraisals. Despite the potential limitations of this modeling approach, age was associated with more challenge appraisals in general and increased odds of making a challenge appraisal in each discrete emotion context.

Chronological age itself is only a measurement of time and is often used as a proxy for other variables (Bergman et al., 2002; Rutter, 1989; Hedge et al., 2012). It is likely that this is the case here as well. Age could be representing children's exposure to other social experiences and socializers that children use when reflecting on or retrospectively appraising their experiences. School aged children's social lives are bigger than just their caregivers or families, unlike in early life where children have limited exposure to socializers outside their home. Attending school provides opportunities for children to practice learning, upholding, and revising social rules, as well as adapting to new or unexpected situations, and learning what is considered "age

appropriate". Children may meet peers with different family practices, religions, and cultures, allowing them to better understand that there are myriad ways to approach emotional situations. Additionally, they may be developing a better understanding of action and consequences. For example, when considering retrospectively if they "could handle" a peer taking their game, a shyer 10-year-old may report that they "could handle" it because they understand 1) that they should be sharing as a part of social norms, 2) that other children their age would not make a big deal out of the situation, 3) that there may be a reason the other child did not ask for the game in the way they personally would have, and 4) that other children may reject them if they do not share. The child may still feel bothered by the interaction and in the moment it may have felt overwhelming ("just too much") even if they endorsed being able to handle it.

This means that while children's emotion regulation and social motivations may inform what they understand their coping resources to be, they may have other information to rely on as well. Research suggests that parental warmth (Stavish & Lengua, 2023), negative emotionality (Lengua & Long, 2002), and temperament (Thompson et al., 2013) all inform children's appraisals too. This suggests that to better understand children's appraisals, researchers need to capture both children's social and emotional resources and the experiences in which they have been able to practice using these social and emotional resources. Children may have a variety of emotion regulation skills available to them, but if they have not practiced deploying those skills in a variety of contexts, they may not feel confident using them. Some children may feel shy but have practiced overcoming their hesitation so they can effectively interact with peers. The

effect of age in this study, although cross-sectional, suggests that something is developing that supports children becoming more likely to make challenge appraisals. Realistically, it is probably a holistic sense of one's resources, abilities, and *experience* that allows children to feel more prepared to face a variety of emotional contexts and potential challenges.

How do emotion regulation, shyness, and social disinterest relate to children's behavior?

My hypotheses regarding direct effects of emotion regulation, shyness, and social disinterest were all at least partially supported whereas my moderation hypotheses were not. Emotion regulation was associated with children's latency to social problem-solving only during the Scary Mask episode, with increasing emotion regulation predicting quicker social problem-solving. My hypothesis regarding shyness was partially supported, as increasing shyness was associated with reduced social problem-solving behavior in general and specifically in the Tower of Patience task. Shyness was also related to children's latency to engaging in social problem-solving, such that increasing shyness resulted in quicker social problem-solving behaviors during the Scary Mask task and slower social problem-solving behaviors during the Tower of Patience task. Social disinterest revealed an interesting contrary pattern, where increasing social disinterest predicted slower social problem-solving behaviors during the Scary Mask task. Additionally, children engaged in less social problem-solving during the Tower of Patience task with increasing social disinterest.

While children may be using a whole host of information to inform their retrospective appraisals, their social and emotional resources may be most influential on their *in vivo* responses to social problems. In the ambiguous tasks children experienced in the lab, the social partners did not provide expected emotional or social information, as the experimenters maintained a neutral affect and did not respond contingently to children's questions or actions. When the rich, social information children are accustomed to was removed, they may have needed to rely more heavily on what they understood about their own coping resources as opposed to what others would do or how previous social interactions have unfolded.

For example, the ability to manage one's emotions may have been crucial in the Scary Mask task, as children would need to manage their stress, uncertainty, and fear in order to take functional action. Dysregulated or intense fear during an ambiguous social interaction could prompt children to flee the interaction or cry in outward distress. While escaping and signaling for help are adaptive behaviors when faced with a threat that is truly beyond one's coping resources, such behaviors can be detrimental in new social contexts. Children likely feel nervous, anxious, or afraid in a variety of novel social interactions, especially when other's actions do not cleanly map onto their expectations. It is important that children regulate those emotions long enough to gain a better sense of whether the situation is actually a threat to their well-being. The initial fear children experience in new social situations often subsides when they gain more information about the interaction or social partner, allowing them to generate a more functional response than escaping the situation. Regulating that fear and moving past it allows children the

opportunity to better understand their social partner and potentially make a new social connection. The Scary Mask task did not present a real danger to children, and many probably sensed that as the experimenter's odd behavior occurred within an "odd" context of being in the laboratory. Being able to regulate emotion to investigate the masked experimenter and eventually learn that they meant no harm was ultimately a functional response, as opposed to becoming overly distressed by a benign threat.

Increasing shyness was related to reduced social problem-solving duration in general and in the Tower of Patience task, further suggesting that in ambiguous social situations, children may rely on their understanding of themselves and their typical ability to navigate social situations to gauge their behavioral responses. Specifically, shyness typically involves feeling uncertain, withdrawing, and allowing others to take the lead in social situations. Shyness may have motivated children to withdraw from the game when the experimenter did not behave normally, as shyer children would not want to misinterpret the experimenter's action and themselves break social rules. Alternatively, shyness may have motivated children to simply observe the experimenter to better understand their actions, and potentially learn valuable, new social skills or rules shyer children may believe themselves to be missing. Remarkably, increasing shyness was also related to an increased likelihood of engaging in social problem-solving in the Scary Mask Task. The interaction may have been particularly odd in this episode, allowing shyer children to engage socially in a way that they might normally not be willing to, at least once. It is important to note, however, that shyness was not related to children's duration of social problem-solving within the Scary Mask task. This means that although

shyer children were willing to try to navigate the interaction, the experimenter's denial of their social bids may have created an additional barrier that many shy children could not overcome. It is likely that some shy children were willing to make multiple attempts while others became discouraged and abandoned further attempts. This is unsurprising as shyness typically perpetuates fears of mishandling social situations.

Social disinterest revealed an interesting contrary pattern, where increasing social disinterest predicted a decreased likelihood of engaging in social problem-solving behaviors during the Scary Mask task. This means while shyness was associated with attempting to navigate the Scary Mask task, social disinterest was associated with a rejection of or *disinterest* in the task. This supports Coplan and colleagues' (2004) arguments that shyness and social disinterest are unique forms of social withdrawal. While socially withdrawn children overall show limited engagement with social partners, the *when* and *why* socially withdrawn children choose to engage in some situations may be dependent on their perception of the risks and benefits. Again, social disinterest may have resulted in a rejection of the Scary Mask task, but shyness may have motivated children to take at least an initial risk and attempt to "fix" the interaction.

Even when shy or socially disinterested children show a similar pattern of behavior, it could be based on different motivations. Children engaged in less social problem-solving during the Tower of Patience task with increasing social disinterest, presenting a similar pattern to increasing shyness. The Tower of Patience "Jenga" game may not have presented a clear or lasting goal or incentive to children, as the game was not directly linked to a prize and their partner was not providing any social benefits– the

experimenter acted distracted and mildly uninterested in the game. While I do not know what the children were thinking during the task, it is possible that there are disparate reasons for the similar lack of action. Perhaps shyness was related to a strict adherence to the game rules of taking turns, and not wanting to offend their social partner by rushing their turns. Again, shyness is characterized by a fear of mishandling social situations, so the shyer children were, the more they would have wanted to avoid being perceived as bossy, complaining, or socially incompetent. Social disinterest could have easily been related to a lack of interest in the entire game and the unstimulating experimenter, as again, children may have seen few incentives to keep the game going.

Limitations and Future Directions

This dissertation provides an important first step in trying to understand the interconnected relationship between children's social and emotional resources, cognitive appraisals, and their subsequent behavior. Despite the strengths of the work, there are limitations inherent to this study and many avenues for further research are apparent.

This dissertation utilized novel methods to better understand how children appraise events that are personally relevant and utilize social problem-solving when they are immersed in a context that calls for these skills. First, I attempted to use novel methods of capturing children's appraisals, such as asking children to recall personally meaningful emotional events. Typically, researchers utilize self-report (Cheah et al., 2019; McLoughlin et al., 2024; Zalewski, et al., 2011), or vignettes (Hood et al., 2009; Jones & Rutland, 2020; Zimmer-Gembeck et al., 2009). Additionally, children's social problem-solving has not been previously quantified by the behaviors used in this study

(expressed positive affect, speech, laughter, approach). Researchers have primarily utilized interviews and hypothetical scenarios to evaluate children's social problem solving (Levendosky et al., 1995; Mayeux & Cillessen, 2003; Walker et al., 2002; Walker at al., 2012), though some research has examined children's aggressive, assertive, and withdrawal behaviors (Lahat et al., 2014). It is important to recognize, however, that both cognitive appraisals and much of the social problem-solving process occur within children's minds and often without their conscious awareness. The methods used in this dissertation aided in a more personalized understanding of children's appraisals and social problem-solving but, at the same time, allowed for outside factors to influence children's responses.

In asking children to recall past events, children may have inadvertently been prompted to reframe or broadly summarize the situation. Being temporally removed from the situation may have changed how children evaluated their coping resources in relation to the event (Offer et al., 2000; Sato & Kawahara, 2011). For example, a child may have felt that their brother's bullying was "just too much" in the moment, but since then the brother has apologized. The child may then reflect and assess that the situation was actually something they "could handle" because the event reached a peaceful resolution. Additionally, children may have been selective with which emotional events they were willing to discuss with the experimenter or what they were willing to label as being "too much" for them. Even if a child still felt like their brother's bullying was overwhelming, they may feel embarrassed to admit that to a novel experimenter or assume that the experimenter expects them to be "brave" in describing the situation.

The ambiguous tasks needed to be, by design, somewhat novel to children to create a social "problem" for them to solve, but an oddly behaving adult may be quite different from children's more typical ambiguous interactions with peers. Children may have been less concerned about solving a social problem and more concerned with following instructions in adult-guided activities. Future research should continue to develop new methods of assessing these cognitive processes to more precisely capture children's appraisals and social problem-solving. One such option could be to create novel social problems in classrooms, led by a novel adult acting as a "substitute teacher." Children's classrooms could provide a familiar context in which children do, occasionally, interact with novel adults and need to do so successfully to avoid unwanted consequences. Another option would be to utilize confederate peers to create social problems, such as the ones in this study, so researchers can better understand how children navigate social problems without the adult-child power dynamics that may make children feel limited in their options for behaviors (Lane et al., 2019; Palaiologou, 2014).

Similarly, it is crucial that researchers continue to develop new and various methods of assessing children's emotion regulation abilities and social motivations. This dissertation utilized the limited method of parent report of children's social motivations as opposed to asking or assessing children directly. Parent reports are useful for characterizing children's general tendencies, but parents do not have more access to children's cognitive processes than children themselves. Moreover, parents' perceptions of their children can be easily biased by what they would hope or expect their children to do, instead of focusing on what their child actually does (Ringoot et al., 2015; Runge &

Soellner, 2022; Seifer et al., 2003). Children's perceptions of their own skills and abilities would have been especially informative for this study as challenge and threat appraisals rely on perceived coping resources and not an objective list of skills available. Future research should aim to develop better assessments of children's emotion regulation and social motivations from the child's perspective to further contextualize parent reports. One option would be to ask children to explain what they were thinking and feeling throughout the task, immediately after completing it. This could even be followed up by showing children videos of themselves in the task and asking them to, again, explain their thoughts and feelings throughout the task. This method may allow researchers to better identify children's situation-dependent goals, perceptions of the task, and their perceived ability to manage the social, emotional, and task demands.

Finally, a major limitation of this study is that it utilized cross-sectional data and I controlled for age-related differences. As mentioned in the introduction, very little developmental work has examined children's challenge and threat appraisals or changes in children's social problem-solving behavior. I chose to try to examine the possible relationships between these variables regardless of age, but longitudinal and experimental work is desperately needed. While early life experience may tune young children's appraisals initially, we know very little about how people's personal appraisal process continues to evolve over time. At what points in the lifespan do certain social and emotional abilities become crucial for children's appraisals and subsequent behavior? At what points might these abilities become subordinate to others that may inform children's appraisals and behavior? This is a crucial avenue for future research to better understand

which children may need assistance in making challenge appraisals and appropriately navigating social ambiguity.

Conclusion

This dissertation aimed to make meaningful methodological and theoretical contributions that will help further the goal of improving our understanding of children's social and emotional well-being. The study contributed novel methods to assess children's appraisals, by asking children to recall personally meaningful experiences in which they felt different emotions and examining children's *in vivo* responses to ambiguous social situations. Appraisal processes are notoriously difficult to study, as they typically occur outside of conscious awareness. Utilizing children's social problem-solving behaviors to better understand the dynamic nature of appraisals in ongoing, evolving social interactions is also a unique methodological approach.

A notable conceptual contribution of this work is the finding that children's emotion regulation abilities and differing social motivations uniquely impact children's social problem-solving behavior in discrete ambiguous emotional contexts. A clearer understanding of how emotion regulation ability and different forms of social withdrawal (i.e., shyness and social disinterest) uniquely relate to children's social competence in the form of social problem-solving expands what is known about how what children feel inside impacts how they relate to the world around them.

References

Almeida, T. S., Ribeiro, O., Freitas, M., Rubin, K. H., & Santos, A. J. (2021). Loneliness and Social Functioning in Adolescent Peer Victimization. *Frontiers in Psychology*, *12*, 664079. https://doi.org/10.3389/fpsyg.2021.664079

Andrade, C. (2019). Multiple Testing and Protection Against a Type 1 (False Positive) Error Using the Bonferroni and Hochberg Corrections. *Indian Journal of Psychological Medicine*, *41*(1), 99–100. https://doi.org/10.4103/IJPSYM.IJPSYM_499_18

Berger, A., & Tymula, A. (2022). Controlling ambiguity: The illusion of control in choice under risk and ambiguity. *Journal of Risk and Uncertainty*, *65*(3), 261–284. https://doi.org/10.1007/s11166-022-09399-4

Bergman, Lars R., Studying Individual Development in an Interindividual Context : A Person-Oriented Approach, Taylor & Francis Group, 2002. ProQuest Ebook Central, https://ebookcentral.proquest.com/lib/ucr/detail.action?docID=425236.

Blöte, A. W., Miers, A. C., Van den Bos, E., & Westenberg, P. M. (2019). Negative social self-cognitions: How shyness may lead to social anxiety. *Journal of Applied Developmental Psychology*, *63*, 9–15. https://doi.org/10.1016/j.appdev.2019.05.003

Bluth, D., Goldman, G., & Pomeroy, J. (Producers). (1988). The land before time (D. Bluth, Director) [motion picture]. Universal City, CA: Amblin Entertainment.

Bluth, D. (Producer) (1982). The secret of NIMH (D. Bluth, Director) [motion picture]. New York: Aurora Productions.

Boseovski, J. J., Lapan, C., & Bosacki, S. (2013). Children's trait and emotion attributions in socially ambiguous and unambiguous situations. *The Journal of Genetic Psychology*, *174*(4), 366–386. https://doi.org/10.1080/00221325.2012.685991

Bretherton, I., Fritz, J., Zahn-Waxler, C., & Ridgeway, D. (1986). Learning to Talk about Emotions: A Functionalist Perspective. *Child Development*, *57*(3), 529–548. https://doi.org/10.2307/1130334

Butt, A. N., & Choi, J. N. (2006). The Effects of Cognitive Appraisal and Emotion on Social Motive and Negotiation Behavior: The Critical Role of Agency of Negotiator Emotion. *Human Performance*, *19*(4), 305–325. https://doi.org/10.1207/s15327043hup1904_1

Campos, J. J., Mumme, D., Kermoian, R., & Campos, R. G. (1994). A functionalist perspective on the nature of emotion. THE JAPANESE JOURNAL OF RESEARCH ON EMOTIONS, 2(1), 1–20. https://doi.org/10.4092/jsre.2.1

Carducci, B. J., & Conkright, K. C. (2020). Shyness. *The Wiley Encyclopedia of Personality and Individual Differences*, 417–421. https://doi.org/10.1002/9781119547174.ch248

Chang, E. C. (1998). Dispositional optimism and primary and secondary appraisal of a stressor: Controlling for confounding influences and relations to coping and psychological and physical adjustment. *Journal of Personality and Social Psychology*, *74*(4), 1109–1120. https://doi.org/10.1037/0022-3514.74.4.1109

Cheah, C. S. L., Yu, J., Liu, J., & Coplan, R. J. (2019). Children's cognitive appraisal moderates associations between psychologically controlling parenting and children's depressive symptoms. *Journal of Adolescence*, *76*, 109–119. https://doi.org/10.1016/j.adolescence.2019.08.005

Coplan, R.J., Prakash, K., O'Neil, K., & Armer, M. (2004). Do you 'want' to play? Distinguishing between conflicted-shyness and social disinterest in early childhood. *Developmental Psychology*, *40,* 244-258.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115*(1), 74–101. https://doi.org/10.1037//0033-2909.115.1.74

Curley, S. P., Yates, J. F., & Abrams, R. A. (1986). Psychological sources of ambiguity avoidance. *Organizational Behavior and Human Decision Processes*, *38*(2), 230–256. https://doi.org/10.1016/0749-5978(86)90018-x

Daunic, A. P., Smith, S. W., Brank, E. M., & Penfield, R. D. (2006). Classroom-based cognitive–behavioral intervention to prevent aggression: Efficacy and social validity. *Journal of School Psychology*, *44*(2), 123–139. https://doi.org/10.1016/j.jsp.2006.01.005

Davis, E. L., Levine, L. J., Lench, H. C., & Quas, J. A. (2010). Metacognitive emotion regulation: children's awareness that changing thoughts and goals can alleviate negative emotions. *Emotion*, *10*(4), 498–510. https://doi.org/10.1037/a0018428

Davis, E. L., Parsafar, P., & Brady, S. M. (2023). Early antecedents of emotion differentiation and regulation: Experience tunes the appraisal thresholds of emotional development in infancy. *Infant Behavior & Development*, *70*, 101786. https://doi.org/10.1016/j.infbeh.2022.101786

Droit-Volet, S., Fayolle, S. L., & Gil, S. (2011). Emotion and time perception: effects of film-induced mood. *Frontiers in Integrative Neuroscience*, *5*, 33. https://doi.org/10.3389/fnint.2011.00033

Ellsworth, Phoebe C., co-author. "Appraisal Processes in Emotion." K. R. Scherer, co-author. In the Handbook of Affective Sciences, edited by R. J. Davidson et al, 572-95. Oxford: Oxford Univ. Press, 2003.

Eisenberg, N., Fabes, R. A., & Murphy, B. C. (1996). Parents' reactions to children's negative emotions: relations to children's social competence and comforting behavior. *Child Development*, *67*(5), 2227–2247. https://doi.org/10.1111/j.1467-8624.1996.tb01854.x

Faísca, L., Ferreira, L. I., Fernandes, C. C., Gagne, J. R., & Martins, A. T. (2021). Behavioral Inhibition in Childhood: European Portuguese Adaptation of an Observational Measure (Lab-TAB). *Children*, *8*(2). https://doi.org/10.3390/children8020162

Fischer, A. H., Manstead, A. S. R., & Zaalberg, R. (2003). Social influences on the emotion process. *European Review of Social Psychology*, *14*(1), 171–201. https://doi.org/10.1080/10463280340000054

Fontaine, J.J. R., Scherer, K. R., & Soriano, C. (2013). Components of emotional meaning: A sourcebook. Oxford University Press.

Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. Journal of Personality and Social Psychology, 57(2), 212–228. https://doi.org/10.1037//0022-3514.57.2.212

Goldsmith, H. H., Lemery, K. S., Schmidt, N. L., Schmidt, C. K., Chow, O. K., & Justen, A. A. (2010). Field administration manual for the Laboratory Temperament Assessment Battery: Middle Childhood Version. Psychology Department Technical Report, University of Wisconsin–Madison.

Goldsmith, H. H., Reilly, J., Lemery, K. S., Longley, S., and Prescott, A. (1993). Preliminary manual for the Preschool Laboratory Temperament Assessment Battery (version 1.0). Technical Report, Department of Psychology, University of Wisconsin-Madison.

Goldsmith, H. H. & Rothbart, M. K. (1996). The Laboratory Temperament Assessment Battery (LAB-TAB): Prelocomotor Version 3.0. *Technical manual*, Department of Psychology, University of Wisconsin, Madison, WI.

Gomes, A. R., Faria, S., & Gonçalves, A. M. (2013). Cognitive appraisal as a mediator in

the relationship between stress and burnout. *Work & Stress*, 27(4), 351–367. https://doi.org/10.1080/02678373.2013.840341

Gross, J. J. (2015). Emotion Regulation: Current Status and Future Prospects. *Psychological Inquiry*, 26(1), 1–26. https://doi.org/10.1080/1047840X.2014.940781

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology: Journal of Division 1, of the American Psychological Association*, 2(3), 271–299. https://doi.org/10.1037//1089-2680.2.3.271

Gross, J. T., & Cassidy, J. (2019). Expressive suppression of negative emotions in children and adolescents: Theory, data, and a guide for future research. *Developmental Psychology*, 55(9), 1938–1950. https://doi.org/10.1037/dev0000722

Gunther, K. E., Brown, K. M., Fu, X., MacNeill, L., Jones, M., Ermanni, B., & Pérez-Edgar, K. (2021). Mobile Eye Tracking Captures Changes in Attention Over Time During a Naturalistic Threat Paradigm in Behaviorally Inhibited Children. *Affective Science*, 2(4), 495–505. https://doi.org/10.1007/s42761-021-00077-3

Hajal, N. J., & Paley, B. (2020). Parental emotion and emotion regulation: A critical target of study for research and intervention to promote child emotion socialization. *Developmental Psychology*, 56(3), 403–417. https://doi.org/10.1037/dev0000864

Haller, S. P. W., Doherty, B. R., Duta, M., Kadosh, K. C., Lau, J. Y. F., & Scerif, G. (2017). Attention allocation and social worries predict interpretations of peer-related social cues in adolescents. Developmental Cognitive Neuroscience, 25, 105–112. https://doi.org/10.1016/j.dcn.2017.03.004

Harp, N. R., Gross, J. J., Uusberg, A., & Neta, M. (2023). The role of trait reappraisal in response to emotional ambiguity: A systematic review and meta-analysis. *Emotion*. https://doi.org/10.1037/emo0001316

Hayes, A. F., Little, T. D., & Hayes, A. F. (2022). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. *The Guilford Press.*

Hedge, J. W., Borman, W. C., & Schwall, A. R. (2012). In The Oxford Handbook of Work and Aging (pp. 169–182). essay, *Oxford University Press*.

Hitsuwari, J., & Nomura, M. (2022). Ambiguity tolerance can improve through poetry appreciation and creation. In *Research Square*. https://doi.org/10.21203/rs.3.rs-1354600/v1

Hood, B., Power, T., & Hill, L. (2009). Children's appraisal of moderately stressful situations. *International Journal of Behavioral Development*, *33*(2), 167–177. https://doi.org/10.1177/0165025408098011

Ikink, I., Roelofs, K., & Figner, B. (2023). The effect of time ambiguity on choice depends on delay and amount magnitude. *Journal of Behavioral Decision Making*. https://doi.org/10.1002/bdm.2354

Jones, S. E., & Rutland, A. (2020). Children's Social Appraisal of Exclusion in Friendship Groups. *International Journal of Bullying Prevention*, *2*(2), 129–138. https://doi.org/10.1007/s42380-019-00022-w

Katz, S. J., Conway, C. C., Hammen, C. L., Brennan, P. A., & Najman, J. M. (2011). Childhood social withdrawal, interpersonal impairment, and young adult depression: a mediational model. *Journal of Abnormal Child Psychology*, *39*(8), 1227–1238. https://doi.org/10.1007/s10802-011-9537-z

Keltner, D., Sauter, D., Tracy, J. L., Wetchler, E., & Cowen, A. S. (2022). How emotions, relationships, and culture constitute each other: advances in social functionalist theory. *Cognition & Emotion*, *36*(3), 388–401. https://doi.org/10.1080/02699931.2022.2047009

Killen, M., Mulvey, K. L., & Hitti, A. (2012). Social exclusion in childhood: A developmental intergroup perspective. *Child Development*, *84*(3), 772–790. https://doi.org/10.1111/cdev.12012

Kershner, R., Warwick, P., Mercer, N., & Kleine Staarman, J. (2014). Primary children's management of themselves and others in collaborative group work: "Sometimes it takes patience …." Education 3-13, 42(2), 201–216. https://doi.org/10.1080/03004279.2012.670255

Kobylińska, D., Lewczuk, K., Wizła, M., Marcowski, P., Blaison, C., Kastendieck, T., & Hess, U. (2022). Effectiveness of emotion regulation strategies in dealing with weak and strong negative emotion: Self-report, Heart Rate Variability, and electromyography data. In *Research Square*. https://doi.org/10.21203/rs.3.rs-1376540/v1

Koerner, N., & Dugas, M. J. (2008). An investigation of appraisals in individuals vulnerable to excessive worry: the role of intolerance of uncertainty. *Cognitive Therapy and Research*, 32(5), 619–638. https://doi.org/10.1007/s10608-007-9125-2

Ladd, G. W. (2006). Peer rejection, aggressive or withdrawn behavior, and psychological maladjustment from ages 5 to 12: An examination of four predictive models. *Child Development*, 77(4), 822–846. https://doi.org/10.1111/j.1467-8624.2006.00905.x

Lahat, A., Walker, O. L., Lamm, C., Degnan, K. A., Henderson, H. A., & Fox, N. A. (2014). Cognitive conflict links behavioral inhibition and social problem solving during social exclusion in childhood. *Infant and Child Development*, *23*(3), 273–282. https://doi.org/10.1002/icd.1845

Lane, D., Blank, J.,and Jones, P., "Research with Children: Context, Power, and Representation" (2019). *Teaching and Learning Faculty Publications*. 85. https://digitalcommons.usf.edu/tal_facpub/85

Lazarus, R S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine*, 55(3), 234–247. https://doi.org/10.1097/00006842-199305000-00002

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46(8), 819–834. https://doi.org/10.1037//0003-066x.46.8.819

Lee, Y.E., & Warneken, F. (2020). Children's evaluations of third-party responses to unfairness: Children prefer helping over punishment. *Cognition*, *205*, 104374. https://doi.org/10.1016/j.cognition.2020.104374

Lemerise, E. A., & Arsenio, W. F. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development*, *71*(1), 107–118. https://doi.org/10.1111/1467-8624.00124

Lench, H. C., Tibbett, T. P., & Bench, S. W. (2016). Exploring the toolkit of emotion: What do sadness and anger do for us? *Social and Personality Psychology Compass*, *10*(1), 11–25. https://doi.org/10.1111/spc3.12229

Lengua, L., & Long, A. (2002). The role of emotionality and self-regulation in the appraisal–coping process: tests of direct and moderating effects. *Journal of Applied Developmental Psychology*, *23*, 471–493. https://doi.org/10.1016/S0193-3973(02)00129-6

Leppänen, J. M., & Nelson, C. A. (2012). Early Development of Fear Processing. *Current Directions in Psychological Science*, *21*(3), 200–204. https://doi.org/10.1177/0963721411435841

Levendosky, A. A., Okun, A., & Parker, J. G. (1995). Depression and maltreatment as predictors of social competence and social problem-solving skills in school-age children. *Child Abuse & Neglect*, *19*(10), 1183–1195. https://doi.org/10.1016/0145-2134(95)00086-n

Little, R. J. A. (1988). A Test of Missing Completely at Random for Multivariate Data with Missing Values. *Journal of the American Statistical Association*, 83(404), 1198–1202. doi:10.1080/01621459.1988.10478722

Lowe, R., Vedhara, K., Bennett, P., Brookes, E., Gale, L., Munnoch, K., Schreiber-Kounine, C., Fowler, C., Rayter, Z., Sammon, A., & Farndon, J. (2003). Emotion-related primary and secondary appraisals, adjustment and coping: associations in women awaiting breast disease diagnosis. *British Journal of Health Psychology*, *8*(Pt 4), 377–391. https://doi.org/10.1348/135910703770238257

Martin, A. J., Kennett, R., Pearson, J., Mansour, M., Papworth, B., & Malmberg, L.-E. (2021). Challenge and threat appraisals in high school science: investigating the roles of psychological and physiological factors. *Educational Psychology Review*, *41*(5), 618–639. https://doi.org/10.1080/01443410.2021.1887456

Mathews, A. (2012). Effects of modifying the interpretation of emotional ambiguity. *Journal of Cognitive Psychology* , *24*(1), 92–105. https://doi.org/10.1080/20445911.2011.584527

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

McLoughlin, E., Arnold, R., & Moore, L. J. (2024). The tendency to appraise stressful situations as more of a threat is associated with poorer health and well-being. *Stress and Health: Journal of the International Society for the Investigation of Stress*, *40*(3), e3358. https://doi.org/10.1002/smi.3358

Merrill, K. L., Smith, S. W., Cumming, M. M., & Daunic, A. P. (2017). A Review of Social Problem-Solving Interventions: Past Findings, Current Status, and Future Directions. *Review of Educational Research*, *87*(1), 71–102. https://doi.org/10.3102/0034654316652943

Moors, A., Ellsworth, P. C., Scherer, K. R., & Frijda, N. H. (2013). Appraisal Theories of Emotion: State of the Art and Future Development. *Emotion Review: Journal of the International Society for Research on Emotion*, *5*(2), 119–124. https://doi.org/10.1177/1754073912468165

Morris, A. S., Criss, M. M., Silk, J. S., & Houltberg, B. J. (2017). The impact of parenting on emotion regulation during childhood and adolescence. *Child Development Perspectives*, *11*(4), 233–238. https://doi.org/10.1111/cdep.12238

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The Role of the Family Context in the Development of Emotion Regulation. *Social Development* , *16*(2), 361–388. https://doi.org/10.1111/j.1467-9507.2007.00389.x

Mumenthaler, C., & Sander, D. (2012). Social appraisal influences recognition of emotions. Journal of Personality and Social Psychology, 102(6), 1118–1135. https://doi.org/10.1037/a0026885

Musil, C. M., Warner, C. B., Yobas, P. K., & Jones, S. L. (2002). A comparison of imputation techniques for handling missing data. *Western Journal of Nursing Research*, 24(7), 815–829. https://doi.org/10.1177/019394502762477004

Neta, M., Berkebile, M. M., & Freeman, J. B. (2021). The dynamic process of ambiguous emotion perception. *Cognition & Emotion*, *35*(4), 722–729. https://doi.org/10.1080/02699931.2020.1862063

Nezu, A. M. (2004). Problem solving and behavior therapy revisited. In *Behavior Therapy* (Vol. 35, Issue 1, pp. 1–33). https://doi.org/10.1016/s0005-7894(04)80002-9

Offer, D., Kaiz, M., Howard, K. I., & Bennett, E. S. (2000). The altering of reported experiences. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*(6), 735–742. https://doi.org/10.1097/00004583-200006000-00012

Ohly, S., & Fritz, C. (2010). Work characteristics, challenge appraisal, creativity, and proactive behavior: A multi-level study. *Journal of Organizational Behavior*, *31*(4), 543–565. https://doi.org/10.1002/job.633

Osmont, A., & Cassotti, M. (2023). Development of ambiguity aversion from early adolescence to adulthood: New insights from the Ellsberg paradox. *International Journal of Behavioral Development*, *47*(1), 47–58. https://doi.org/10.1177/01650254221104056

Palaiologou, I. (2014). "Do we hear what children want to say?" Ethical praxis when choosing research tools with children under five. *Early Child Development and Care*, *184*(5), 689–705. https://doi.org/10.1080/03004430.2013.809341

Parsafar, P., Fontanilla, F. L., & Davis, E. L. (2019). Emotion regulation strategy flexibility in childhood: When do children switch between different strategies? *Journal of Experimental Child Psychology*, *183*, 1–18. https://doi.org/10.1016/j.jecp.2019.01.004

Parmley, M., & Cunningham, J. G. (2014). She looks sad, but he looks mad: the effects of age, gender, and ambiguity on emotion perception. *The Journal of Social Psychology*, *154*(4), 323–338. https://doi.org/10.1080/00224545.2014.901287

Planalp, E. M., Van Hulle, C., Gagne, J. R., & Goldsmith, H. H. (2017). The Infant Version of the Laboratory Temperament Assessment Battery (Lab-TAB): Measurement Properties and Implications for Concepts of Temperament. *Frontiers in Psychology*, *8*, 846. https://doi.org/10.3389/fpsyg.2017.00846

Quiñones-Camacho, L. E., & Davis, E. L. (2020). Children's awareness of the context-appropriate nature of emotion regulation strategies across emotions. *Cognition and Emotion*, *34*(5), 977–985. https://doi.org/10.1080/02699931.2019.1687426

Quiñones-Camacho, L. E., Wu, R., & Davis, E. L. (2018). Motivated attention to fear-related stimuli: Evidence for the enhanced processing of fear in the late positive potential. *Motivation and Emotion*, *42*(2), 299–308. https://doi.org/10.1007/s11031-018-9670-x

Ringoot, A. P., Tiemeier, H., Jaddoe, V. W. V., So, P., Hofman, A., Verhulst, F. C., & Jansen, P. W. (2015). Parental depression and child well-being: young children's self-reports helped addressing biases in parent reports. *Journal of Clinical Epidemiology*, *68*(8), 928–938. https://doi.org/10.1016/j.jclinepi.2015.03.009

Rubin, K. H., Bukowski, W. M., & Bowker, J. C. (2015). Children in Peer Groups. In *Handbook of Child Psychology and Developmental Science* (pp. 175–222). unknown. https://doi.org/10.1002/9781118963418.childpsy405

Rubin, K. H., Coplan, R. J., & Bowker, J. C. (2009). Social withdrawal in childhood. *Annual Review of Psychology*, *60*, 141–171. https://doi.org/10.1146/annurev.psych.60.110707.163642

Runge, R. A., & Soellner, R. (2022). Cultural Bias in Parent Reports: The Role of Socialization Goals When Parents Report on Their Child's Problem Behavior. *Child Psychiatry and Human Development*. https://doi.org/10.1007/s10578-022-01464-y

Rutter, M. (1989). Age as an Ambiguous Variable in Developmental Research: Some Epidemiological Considerations from Developmental Psychopathology. *International Journal of Behavioral Development*, *12*(1), 1–34. https://doi.org/10.1177/016502548901200101

Sadeghi, K., & Soleimani, M. (2016). The relationship between anxiety, shyness, ambiguity tolerance, and language learning strategies. *International Journal of Pedagogies and Learning*, *11*(1), 70–87. https://doi.org/10.1080/22040552.2016.1187652

Sanchis-Sanchis, A., Grau, M. D., Moliner, A.-R., & Morales-Murillo, C. P. (2020). Effects of Age and Gender in Emotion Regulation of Children and Adolescents. *Frontiers in Psychology*, *11*, 946. https://doi.org/10.3389/fpsyg.2020.00946

Sato, H., & Kawahara, J.-I. (2011). Selective bias in retrospective self-reports of negative mood states. *Anxiety, Stress, and Coping*, *24*(4), 359–367. https://doi.org/10.1080/10615806.2010.543132

Schiele, M. A., Reinhard, J., Reif, A., Domschke, K., Romanos, M., Deckert, J., & Pauli, P. (2016). Developmental aspects of fear: Comparing the acquisition and generalization of conditioned fear in children and adults. *Developmental Psychobiology*, *58*(4), 471–481. https://doi.org/10.1002/dev.21393

Seery, M. D. (2013). The biopsychosocial model of challenge and threat: Using the heart to measure the mind. Social and Personality Psychology Compass, 7(9), 637–653. https://doi.org/10.1111/spc3.12052

Seifer, R., Sameroff, A., Dickstein, S., Schiller, M., & Hayden, L. C. (2004). Your own children are special: clues to the sources of reporting bias in temperament assessments. *Infant Behavior & Development*, *27*(3), 323–341. https://doi.org/10.1016/j.infbeh.2003.12.005

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. Developmental Psychology, 33(6), 906–916. https://doi.org/10.1037/0012-1649.33.6.906

Sillars, A. A., & Davis, E. L. (2018). Children's challenge and threat appraisals vary by discrete emotion, age, and gender. *International Journal of Behavioral Development*, *42*(5), 506–511. https://doi.org/10.1177/0165025417739178

Siffert, A., & Schwarz, B. (2011). Parental conflict resolution styles and children's adjustment: children's appraisals and emotion regulation as mediators. *The Journal of Genetic Psychology*, *172*(1), 21–39. https://doi.org/10.1080/00221325.2010.503723

So, J., Kuang, K., & Cho, H. (2016). Reexamining Fear Appeal Models from Cognitive Appraisal Theory and Functional Emotion Theory Perspectives. *Communication Monographs*, *83*(1), 120–144. https://doi.org/10.1080/03637751.2015.1044257

Stavish, C. M., & Lengua, L. J. (2023). Parent behaviors as predictors of preadolescent appraisal and coping. *Journal of Applied Developmental Psychology*, 89, 1–11. https://doi.org/10.1016/j.appdev.2023.101599

Stewart, S. L., & Rubin, K. H. (1995). The social problem-solving skills of anxious-withdrawn children. *Development and Psychopathology*, 7(2), 323–336. https://doi.org/10.1017/s0954579400006532

Tang, A., Beaton, E. A., Schulkin, J., Hall, G. B., & Schmidt, LouisA. (2014). Revisiting shyness and sociability: A preliminary investigation of hormone-brain-behavior relations. *Frontiers in Psychology*, 5. https://doi.org/10.3389/fpsyg.2014.01430

Thompson, S. F., Zalewski, M., & Lengua, L. J. (2014). Appraisal and coping styles account for the effects of temperament on preadolescent adjustment. *Australian Journal of Psychology*, *66*(2), 122–129. https://doi.org/10.1111/ajpy.12048

Underwood, R., Kumari, V., & Peters, E. (2016). Cognitive and neural models of threat appraisal in psychosis: A theoretical integration. *Psychiatry Research*, *239*, 131–138. https://doi.org/10.1016/j.psychres.2016.03.016

Van Kleef, G. A. (2010). The emerging view of emotion as social information. *Social and Personality Psychology Compass*, *4*(5), 331–343. https://doi.org/10.1111/j.1751-9004.2010.00262.x

Van Kleef, G. A., Cheshin, A., Fischer, A. H., & Schneider, I. K. (2016). Editorial: The Social Nature of Emotions. Frontiers in Psychology, 7, 896. https://doi.org/10.3389/fpsyg.2016.00896

Walker, O. L., & Henderson, H. A. (2012). Temperament and Social Problem Solving Competence in Preschool: Influences on Academic Skills in Early Elementary School. *Social Development* , *21*(4), 761–779. https://doi.org/10.1111/j.1467-9507.2011.00653.x

Walker, S., Irving, K., & Berthelsen, D. (2002). Gender influences on preschool children's social problem-solving strategies. *The Journal of Genetic Psychology*, *163*(2), 197–209. https://doi.org/10.1080/00221320209598677

Wei, H.-S., & Chen, J.-K. (2008). Social Withdrawal, Peer Rejection, and Peer Victimization in Taiwanese Middle School Students. *Journal of School Violence*, *8*(1), 18–28. https://doi.org/10.1080/15388220802067755

Woods, R. (2010). A Critique of the Concept of Accuracy in Social Information Processing Models of Children's Peer Relations. *Theory & Psychology*, *20*(1), 5 27.https://doi.org/10.1177/0959354309350243

Young, C. M. Y., & Lo, B. C. Y. (2012). Cognitive appraisal mediating relationship between social anxiety and internet communication in adolescents. *Personality and Individual Differences*, *52*(1), 78–83. https://doi.org/10.1016/j.paid.2011.09.001

Zalewski, M., Lengua, L. J., Wilson, A. C., Trancik, A., & Bazinet, A. (2011). Associations of coping and appraisal styles with emotion regulation during preadolescence. *Journal of Experimental Child Psychology*, *110*(2), 141–158. https://doi.org/10.1016/j.jecp.2011.03.001

Zimmer-Gembeck, M. J., Lees, D. C., Bradley, G. L., & Skinner, E. A. (2009). Use of an analogue method to examine children's appraisals of threat and emotion in response to stressful events. *Motivation and Emotion*, *33*(2), 136–149. https://doi.org/10.1007/s11031-009-9123-7

Ziv, Y. (2013). Social information processing patterns, social skills, and school readiness in preschool children. *Journal of Experimental Child Psychology*, *114*(2), 306–320. https://doi.org/10.1016/j.jecp.2012.08.009

Zohar, D., & Dayan, I. (1999). Must coping options be severely limited during stressful events: Testing the interaction between primary and secondary appraisals. *Anxiety, Stress, and Coping*, *12*(2), 191–216. https://doi.org/10.1080/10615809908248329

Table 1

Number of children who displayed each behavior

Task	Expressed Positive Affect	Speech	Laughter	Social Approach	Missing
Scary Mask	159	159	88	109	14
Tower of Patience	166	151	109	169	15
Disappointing Gift	149	146	39	39	14

Note. Based on raw data, N=184

Table 2

Descriptive Statistics and Gender Differences for Study Variables

Variable	Boys		Girls		t(182)	p	Cohen's d
	M	SD	M	SD			
1. Age	8.054	2.292	7.355	2.276	2.077	0.039*	0.306
2. SM Expressed Positive Affect	0.767	0.312	0.750	0.340	0.353	0.725	0.052
3. SM Speech	0.561	0.301	0.521	0.307	0.891	0.374	0.131
4. SM Laughter	0.245	0.298	0.277	0.310	-0.704	0.482	-0.104
5. SM Social Approach	0.220	0.228	0.246	0.255	-0.735	0.463	-0.108
6. SM Social Problem-Solving Behavior[a]	-0.001	1.013	0.001	0.992	-0.008	0.994	-0.001
7. ToP Expressed Positive Affect	0.457	0.224	0.451	0.217	0.207	0.836	0.030
8. ToP Speech	0.430	0.295	0.394	0.301	0.821	0.412	0.121
9. ToP Laughter	0.060	0.070	0.076	0.096	-1.283	0.201	-0.189
10. ToP Social Approach	0.617	0.217	0.637	0.198	-0.666	0.506	-0.098
11. ToP Social Problem-Solving Behavior[a]	0.005	0.995	-0.005	1.010	0.069	0.945	-0.103
12. DG Expressed Positive Affect	0.457	0.326	0.424	0.302	0.711	0.478	0.105
13. DG Speech	0.507	0.355	0.475	0.328	0.625	0.533	0.092
14. DG Laughter	0.057	0.138	0.063	0.135	-0.299	0.766	-0.044
15. DG Social Approach	0.064	0.138	0.041	0.081	1.301	0.195	0.192
16. DG Social Problem-Solving Behavior[a]	0.066	1.076	-0.064	0.921	0.883	0.378	0.130
17. Total Social Problem-Solving Behavior[a]	0.029	1.052	-0.029	0.951	0.395	0.693	0.058
18. SM Latency[b]	15.184	20.029	16.067	19.110	-0.306	0.760	-0.045
19. ToP Latency[b]	8.215	11.412	7.216	11.870	0.582	0.561	0.086
20. DG Latency[b]	11.155	27.562	12.090	27.895	-0.230	0.819	-0.034
21. Scary Challenge Appraisal	0.495	0.503	0.419	0.496	1.021	0.309	0.150
22. Angry Challenge Appraisal	0.560	0.499	0.570	0.498	-0.129	0.898	-0.019
23. Sad Challenge Appraisal	0.374	0.486	0.473	0.502	-1.365	0.174	-0.201
24. Total Challenge Appraisals	1.429	0.933	1.462	0.916	-0.248	0.804	-0.037
25. Scary Social Partner Present	0.593	0.494	0.731	0.446	-1.987	0.048*	-0.293
26. Angry Social Partner Present	0.868	0.340	0.892	0.311	-0.506	0.613	-0.075
27. Sad Social Partner Present	0.791	0.409	0.871	0.337	-1.446	0.150	-0.213
28. Total Social Partners	2.253	0.754	2.495	0.701	-2.254	0.025*	-0.332
29. Emotion Regulation	3.345	0.454	3.402	0.408	-0.897	0.371	-0.132
30. Shyness	13.791	5.527	14.581	5.402	-0.980	0.328	-0.144
31. Social Disinterest	9.484	2.923	9.538	3.098	-0.122	0.903	-0.018

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

[a]Proportion composite z scored, [b]Latency in Seconds

*p < .05. **p < .01.

Table 3

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	1	2	3	4	5
1. Age	7.700	2.304	--				
2. SM Expressed Positive Affect	0.759	0.326	0.407**	--			
3. SM Speech	0.541	0.304	-0.082	0.101	--		
4. SM Laughter	0.261	0.304	0.254**	0.510**	0.081	--	
5. SM Social Approach	0.234	0.242	-0.018	0.1558	0.341**	0.103	--
6. SM Social Problem-Solving Behavior[a]	0.000	1.000	0.238**	0.724**	0.586**	0.685**	0.564**
7. ToP Expressed Positive Affect	0.454	0.220	-0.151*	0.169*	0.198**	0.055	0.094
8. ToP Speech	0.412	0.298	-0.415**	-0.006	0.380**	0.008	0.223**
9. ToP Laughter	0.068	0.085	0.027	0.219**	0.074	0.269**	-0.002
10. ToP Social Approach	0.627	0.208	-0.404**	-0.094	0.109	-0.085	0.082
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000	-0.379**	0.055	0.295**	0.031	0.165*
12. DG Expressed Positive Affect	0.440	0.313	0.022	0.245**	0.135	0.175*	0.082
13. DG Speech	0.491	0.341	-0.360**	-0.047	0.373**	0.106	0.116
14. DG Laughter	0.060	0.136	0.135	0.145*	0.132	0.136	0.059
15. DG Social Approach	0.053	0.121	-0.202**	0.031	0.140	0.098	0.222**
16. DG Social Problem-Solving Behavior[a]	0.000	1.000	-0.194**	0.134	0.327**	0.194**	0.160
17. Total Social Problem-Solving Behavior[a]	0.000	1.000	-0.120	0.447**	0.559**	0.443**	0.423**
18. SM Latency[b]	15.630	19.520	0.057	-0.077	0.125	-0.055	-0.009
19. SM Latency Status	0.930	0.257	-0.052	0.149*	-0.129	0.105	-0.048
20. ToP Latency[b]	7.710	11.620	0.128	0.039	-0.137	-0.001	0.040
21. DG Latency[b]	11.630	27.660	0.069	-0.031	-0.137	-0.077	-0.039
22. DG Latency Status	0.950	0.216	-0.112	-0.024	0.116	0.064	0.056
23. Scary Challenge Appraisal	0.460	0.499	0.230**	0.126	0.111	0.065	0.068
24. Angry Challenge Appraisal	0.570	0.497	0.206**	0.140	-0.027	0.135	0.061
25. Sad Challenge Appraisal	0.420	0.496	0.339**	0.116	-0.061	0.055	0.034
26. Total Challenge Appraisals	1.446	0.922	0.418**	0.206**	0.013	0.138	0.088
27. Scary Social Partner Present	0.660	0.474	0.247**	0.162*	0.073	0.139	0.074
28. Angry Social Partner Present	0.880	0.325	0.127	0.014	0.025	-0.040	-0.156*
29. Sad Social Partner Present	0.830	0.375	0.068	0.001	0.062	0.024	0.018
30. Total Social Partners	2.375	0.736	0.250**	0.111	0.090	0.084	-0.012
31. Emotion Regulation	3.374	0.431	-0.225**	-0.092	0.044	-0.006	0.000
32. Shyness	14.190	5.463	0.006	-0.035	-0.119	-0.017	-0.066
33. Social Disinterest	9.511	3.005	-0.107	-0.124	0.135	-0.120	0.119

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status was excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

*p < .05. **p < .01.

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	6	7	8	9	10
1. Age	7.700	2.304					
2. SM Expressed Positive Affect	0.759	0.326					
3. SM Speech	0.541	0.304					
4. SM Laughter	0.261	0.304					
5. SM Social Approach	0.234	0.242					
6. SM Social Problem-Solving Behavior[a]	0.000	1.000	--				
7. ToP Expressed Positive Affect	0.454	0.220	0.204**	--			
8. ToP Speech	0.412	0.298	0.224**	0.497**	--		
9. ToP Laughter	0.068	0.085	0.231**	0.423**	0.273**	--	
10. ToP Social Approach	0.627	0.208	-0.004	0.544**	0.446**	0.250**	--
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000	0.207**	0.821**	0.831**	0.494**	0.765**
12. DG Expressed Positive Affect	0.440	0.313	0.255**	0.351**	0.146*	0.089	0.159*
13. DG Speech	0.491	0.341	0.209**	0.308**	0.587**	0.167*	0.336**
14. DG Laughter	0.060	0.136	0.188*	0.068	-0.027	0.163*	0.006
15. DG Social Approach	0.053	0.121	0.180	0.108	0.277**	0.094	0.179*
16. DG Social Problem-Solving Behavior[a]	0.000	1.000	0.317**	0.379**	0.441**	0.189	0.299**
17. Total Social Problem-Solving Behavior[a]	0.000	1.000	0.728**	0.609**	0.649**	0.405**	0.446**
18. SM Latency[b]	15.630	19.520	-0.008	-0.042	-0.046	0.075	-0.036
19. SM Latency Status	0.930	0.257	0.039	0.105	0.005	0.027	0.085
20. ToP Latency[b]	7.710	11.620	-0.026	-0.176*	-0.252**	-0.064	-0.254**
21. DG Latency[b]	11.630	27.660	-0.112	-0.223**	-0.275**	-0.185*	-0.163*
22. DG Latency Status	0.950	0.216	0.079	0.207**	0.274**	0.162*	0.163*
23. Scary Challenge Appraisal	0.460	0.499	0.146*	0.125	-0.042	-0.001	-0.072
24. Angry Challenge Appraisal	0.570	0.497	0.123	-0.063	-0.127	0.167*	-0.034
25. Sad Challenge Appraisal	0.420	0.496	0.058	-0.156*	-0.237**	-0.053	-0.178*
26. Total Challenge Appraisals	1.446	0.922	0.177*	-0.050	-0.219**	0.061	-0.153*
27. Scary Social Partner Present	0.660	0.474	0.178*	0.080	-0.105	0.102	-0.051
28. Angry Social Partner Present	0.880	0.325	-0.050	-0.014	-0.137	0.041	0.107
29. Sad Social Partner Present	0.830	0.375	0.041	-0.052	-0.087	-0.068	-0.044
30. Total Social Partners	2.375	0.736	0.114	0.019	-0.173*	0.049	-0.008
31. Emotion Regulation	3.374	0.431	-0.024	-0.008	0.127	0.040	0.104
32. Shyness	14.190	5.463	-0.091	-0.153*	-0.233**	-0.076	-0.240**
33. Social Disinterest	9.511	3.005	-0.009	-0.159*	-0.005	-0.128	-0.182*

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status was excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	11	12	13	14	15
1. Age	7.700	2.304					
2. SM Expressed Positive Affect	0.759	0.326					
3. SM Speech	0.541	0.304					
4. SM Laughter	0.261	0.304					
5. SM Social Approach	0.234	0.242					
6. SM Social Problem-Solving Behavior[a]	0.000	1.000					
7. ToP Expressed Positive Affect	0.454	0.220					
8. ToP Speech	0.412	0.298					
9. ToP Laughter	0.068	0.085					
10. ToP Social Approach	0.627	0.208					
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000	--				
12. DG Expressed Positive Affect	0.440	0.313	0.257**	--			
13. DG Speech	0.491	0.341	0.519**	0.294**	--		
14. DG Laughter	0.060	0.136	0.035	0.354**	0.116	--	
15. DG Social Approach	0.053	0.121	0.240**	0.064	0.382**	0.095	--
16. DG Social Problem-Solving Behavior[a]	0.000	1.000	0.466**	0.751**	0.792**	0.477**	0.454**
17. Total Social Problem-Solving Behavior[a]	0.000	1.000	0.722**	0.553**	0.657**	0.310**	0.383**
18. SM Latency[b]	15.630	19.520	-0.038	0.065	0.067	0.182*	-0.027
19. SM Latency Status	0.930	0.257	0.071	0.072	0.084	0.033	0.076
20. ToP Latency[b]	7.710	11.620	-0.274**	-0.025	-0.140	0.096	-0.014
21. DG Latency[b]	11.630	27.660	-0.287**	-0.345**	-0.319**	-0.122	-0.115
22. DG Latency Status	0.950	0.216	0.278**	0.295**	0.290**	0.100	0.099
23. Scary Challenge Appraisal	0.460	0.499	0.000	0.060	0.002	0.143	-0.057
24. Angry Challenge Appraisal	0.570	0.497	-0.071	0.018	-0.042	0.110	0.063
25. Sad Challenge Appraisal	0.420	0.496	-0.232**	-0.169*	-0.265**	-0.081	-0.119
26. Total Challenge Appraisals	1.446	0.922	-0.163*	-0.049	-0.164*	0.093	-0.061
27. Scary Social Partner Present	0.660	0.474	-0.025	0.080	-0.165*	-0.072	-0.210**
28. Angry Social Partner Present	0.880	0.325	-0.029	-0.031	-0.110	0.004	-0.087
29. Sad Social Partner Present	0.830	0.375	-0.083	-0.075	-0.010	0.077	-0.013
30. Total Social Partners	2.375	0.736	-0.071	-0.001	-0.160*	-0.006	-0.180*
31. Emotion Regulation	3.374	0.431	0.097	-0.034	0.041	-0.100	0.030
32. Shyness	14.190	5.463	-0.253**	-0.115	-0.127	0.049	-0.055
33. Social Disinterest	9.511	3.005	-0.135	-0.040	0.100	-0.071	-0.026

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	16	17	18	19	20
1. Age	7.700	2.304					
2. SM Expressed Positive Affect	0.759	0.326					
3. SM Speech	0.541	0.304					
4. SM Laughter	0.261	0.304					
5. SM Social Approach	0.234	0.242					
6. SM Social Problem-Solving Behavior[a]	0.000	1.000					
7. ToP Expressed Positive Affect	0.454	0.220					
8. ToP Speech	0.412	0.298					
9. ToP Laughter	0.068	0.085					
10. ToP Social Approach	0.627	0.208					
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000					
12. DG Expressed Positive Affect	0.440	0.313					
13. DG Speech	0.491	0.341					
14. DG Laughter	0.060	0.136					
15. DG Social Approach	0.053	0.121					
16. DG Social Problem-Solving Behavior[a]	0.000	1.000	--				
17. Total Social Problem-Solving Behavior[a]	0.000	1.000	0.777**	--			
18. SM Latency[b]	15.630	19.520	0.104	0.024	--		
19. SM Latency Status	0.930	0.257	0.104	0.093	-0.456**	--	
20. ToP Latency[b]	7.710	11.620	-0.071	-0.158*	-0.081	-0.036	--
21. DG Latency[b]	11.630	27.660	-0.396**	-0.344**	-0.067	0.016	0.072
22. DG Latency Status	0.950	0.216	0.347**	0.303**	0.121	-0.063	-0.099
23. Scary Challenge Appraisal	0.460	0.499	0.051	0.096	0.069	-0.003	-0.069
24. Angry Challenge Appraisal	0.570	0.497	0.022	0.042	-0.124	0.143	0.114
25. Sad Challenge Appraisal	0.420	0.496	-0.270**	-0.181*	0.057	-0.150*	0.169*
26. Total Challenge Appraisals	1.446	0.922	-0.105	-0.023	0.001	-0.005	0.115
27. Scary Social Partner Present	0.660	0.474	-0.106	0.035	-0.022	-0.017	-0.008
28. Angry Social Partner Present	0.880	0.325	-0.091	-0.076	0.031	0.029	0.027
29. Sad Social Partner Present	0.830	0.375	-0.029	-0.026	0.021	-0.011	0.027
30. Total Social Partners	2.375	0.736	-0.124	-0.024	0.010	-0.004	0.021
31. Emotion Regulation	3.374	0.431	-0.011	0.024	-0.148*	0.099	-0.060
32. Shyness	14.190	5.463	-0.127	-0.206**	-0.096	0.080	0.159*
33. Social Disinterest	9.511	3.005	0.014	-0.056	0.115	-0.172*	-0.099

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

95

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	21	22	23	24	25
1. Age	7.700	2.304					
2. SM Expressed Positive Affect	0.759	0.326					
3. SM Speech	0.541	0.304					
4. SM Laughter	0.261	0.304					
5. SM Social Approach	0.234	0.242					
6. SM Social Problem-Solving Behavior[a]	0.000	1.000					
7. ToP Expressed Positive Affect	0.454	0.220					
8. ToP Speech	0.412	0.298					
9. ToP Laughter	0.068	0.085					
10. ToP Social Approach	0.627	0.208					
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000					
12. DG Expressed Positive Affect	0.440	0.313					
13. DG Speech	0.491	0.341					
14. DG Laughter	0.060	0.136					
15. DG Social Approach	0.053	0.121					
16. DG Social Problem-Solving Behavior[a]	0.000	1.000					
17. Total Social Problem-Solving Behavior[a]	0.000	1.000					
18. SM Latency[b]	15.630	19.520					
19. SM Latency Status	0.930	0.257					
20. ToP Latency[b]	7.710	11.620					
21. DG Latency[b]	11.630	27.660	--				
22. DG Latency Status	0.950	0.216	-0.923**	--			
23. Scary Challenge Appraisal	0.460	0.499	-0.040	0.056	--		
24. Angry Challenge Appraisal	0.570	0.497	0.034	-0.097	0.100	--	
25. Sad Challenge Appraisal	0.420	0.496	0.114	-0.060	0.119	-0.002	--
26. Total Challenge Appraisals	1.446	0.922	0.058	-0.055	0.660**	0.592**	0.601**
27. Scary Social Partner Present	0.660	0.474	-0.007	0.052	0.007	0.094	0.123
28. Angry Social Partner Present	0.880	0.325	-0.091	0.072	0.170*	0.150*	0.045
29. Sad Social Partner Present	0.830	0.375	0.105	-0.102	0.034	0.045	0.004
30. Total Social Partners	2.375	0.736	0.009	0.013	0.097	0.149*	0.101
31. Emotion Regulation	3.374	0.431	-0.045	0.080	-0.051	-0.031	-0.111
32. Shyness	14.190	5.463	0.023	-0.043	-0.006	0.004	0.115
33. Social Disinterest	9.511	3.005	-0.034	-0.012	0.019	0.051	-0.132

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

96

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	26	27	28	29	30
1. Age	7.700	2.304					
2. SM Expressed Positive Affect	0.759	0.326					
3. SM Speech	0.541	0.304					
4. SM Laughter	0.261	0.304					
5. SM Social Approach	0.234	0.242					
6. SM Social Problem-Solving Behavior[a]	0.000	1.000					
7. ToP Expressed Positive Affect	0.454	0.220					
8. ToP Speech	0.412	0.298					
9. ToP Laughter	0.068	0.085					
10. ToP Social Approach	0.627	0.208					
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000					
12. DG Expressed Positive Affect	0.440	0.313					
13. DG Speech	0.491	0.341					
14. DG Laughter	0.060	0.136					
15. DG Social Approach	0.053	0.121					
16. DG Social Problem-Solving Behavior[a]	0.000	1.000					
17. Total Social Problem-Solving Behavior[a]	0.000	1.000					
18. SM Latency[b]	15.630	19.520					
19. SM Latency Status	0.930	0.257					
20. ToP Latency[b]	7.710	11.620					
21. DG Latency[b]	11.630	27.660					
22. DG Latency Status	0.950	0.216					
23. Scary Challenge Appraisal	0.460	0.499					
24. Angry Challenge Appraisal	0.570	0.497					
25. Sad Challenge Appraisal	0.420	0.496					
26. Total Challenge Appraisals	1.446	0.922	--				
27. Scary Social Partner Present	0.660	0.474	0.120	--			
28. Angry Social Partner Present	0.880	0.325	0.197**	0.056	--		
29. Sad Social Partner Present	0.830	0.375	0.044	0.078	0.103	--	
30. Total Social Partners	2.375	0.736	0.187*	0.709**	0.531**	0.606**	--
31. Emotion Regulation	3.374	0.431	-0.104	0.021	-0.208**	-0.023	-0.090
32. Shyness	14.190	5.463	0.061	-0.045	0.025	0.069	0.017
33. Social Disinterest	9.511	3.005	-0.033	-0.086	-0.038	-0.044	-0.095

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

Table 3 Continued.

Descriptive Statistics and Correlations for Study Variables

Variable	M	SD	30	31	32	33
1. Age	7.700	2.304				
2. SM Expressed Positive Affect	0.759	0.326				
3. SM Speech	0.541	0.304				
4. SM Laughter	0.261	0.304				
5. SM Social Approach	0.234	0.242				
6. SM Social Problem-Solving Behavior[a]	0.000	1.000				
7. ToP Expressed Positive Affect	0.454	0.220				
8. ToP Speech	0.412	0.298				
9. ToP Laughter	0.068	0.085				
10. ToP Social Approach	0.627	0.208				
11. ToP Social Problem-Solving Behavior[a]	0.000	1.000				
12. DG Expressed Positive Affect	0.440	0.313				
13. DG Speech	0.491	0.341				
14. DG Laughter	0.060	0.136				
15. DG Social Approach	0.053	0.121				
16. DG Social Problem-Solving Behavior[a]	0.000	1.000				
17. Total Social Problem-Solving Behavior[a]	0.000	1.000				
18. SM Latency[b]	15.630	19.520				
19. SM Latency Status	0.930	0.257				
20. ToP Latency[b]	7.710	11.620				
21. DG Latency[b]	11.630	27.660				
22. DG Latency Status	0.950	0.216				
23. Scary Challenge Appraisal	0.460	0.499				
24. Angry Challenge Appraisal	0.570	0.497				
25. Sad Challenge Appraisal	0.420	0.496				
26. Total Challenge Appraisals	1.446	0.922				
27. Scary Social Partner Present	0.660	0.474				
28. Angry Social Partner Present	0.880	0.325				
29. Sad Social Partner Present	0.830	0.375				
30. Total Social Partners	2.375	0.736	--			
31. Emotion Regulation	3.374	0.431	-0.090	--		
32. Shyness	14.190	5.463	0.017	-0.270**	--	
33. Social Disinterest	9.511	3.005	-0.095	-0.068	0.125	--

Note. SM = Scary Mask; ToP = Tower of Patience; DG = Disappointing Gift

ToP Latency Status excluded because the variable is constant.

[a]Proportion composite z scored, [b]Latency in Seconds

Table 4

Hierarchical Linear Regression of Variable Prediction of Total Social Problem-Solving Behavior

Effect	*R²*	*F*	Estimate	*SE*	95% CI		*p*
					LL	UL	
Step 1	0.014	2.673					0.104
Age			-0.120	0.032	-0.115	0.011	0.001**
Step 2	0.015	1.412					0.246
Age			-0.134	0.035	-0.128	0.905	0.101
Total Challenge Appraisals			0.033	0.088	-0.138	0.209	0.687

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Total Challenge Appraisals range from 0 - 3

*p < .05. **p < .01.

Table 5

Hierarchical Linear Regression of Variable Prediction of Scary Mask Social Problem-Solving Behavior

Effect	R^2	F	Estimate	*SE*	95% CI		*p*
					LL	*UL*	
Step 1	0.057	10.939					0.001**
Age			0.238	0.031	0.042	0.165	0.001**
Step 2	0.066	6.346					0.002**
Age			0.216	0.032	0.030	0.157	0.004**
Scary Challenge Appraisal			0.097	0.148	-0.098	0.485	0.193

Note. CI = confidence interval; LL = lower limit; UL = upper limit.
Scary Challenge Appraisal: 0 = threat, 1 = challenge
*p < .05. **p < .01.

Table 6

Cox Proportional Hazards Model for Scary Mask Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	0.982	0.920	1.048	0.583
Scary Challenge Appraisal	0.938	0.688	1.279	0.686

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.
Scary Challenge Appraisal: 0 = threat, 1 = challenge
*p < .05. **p < .01.

Table 7

Hierarchical Linear Regression of Variable Prediction of Tower of Patience Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.144	30.536					0.001**
Age			-0.379	0.030	-0.223	-0.106	
Step 2	0.144	15.191					0.001**
Age			-0.381	0.031	-0.225	-0.105	0.001**
Angry Challenge Appraisal			0.008	0.141	-0.264	0.294	0.915

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Angry Challenge Appraisal: 0 = threat, 1 = challenge

*p < .05. **p < .01.

Table 8

Cox Proportional Hazards Model for Tower of Patience Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	0.958	0.899	1.021	0.184
Angry Challenge Appraisal	0.839	0.621	1.134	0.253

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.

Angry Challenge Appraisal: 0 = threat, 1 = challenge

*p < .05. **p < .01.

Table 9

Hierarchical Linear Regression of Variable Prediction of Disappointing Gift Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.038	7.152					0.008**
Age			-0.194	0.032	-0.147	-0.022	0.008**
Step 2	0.085	8.390					0.001**
Age			-0.116	0.033	-0.115	0.014	0.126**
Sad Challenge Appraisal			-0.231	0.153	-0.766	-0.164	0.003**

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Sad Challenge Appraisal: 0 = threat, 1 = challenge

*p < .05. **p < .01.

Table 10

Cox Proportional Hazards Model for Disappointing Gift Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	1.029	0.959	1.105	0.420
Sad Challenge Appraisal	0.806	0.583	1.115	0.193

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.

Sad Challenge Appraisal: 0 = threat, 1 = challenge

*p < .05. **p < .01.

Table 11

Hierarchical Linear Regression of Variable Prediction of Total Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.017	1.545					0.216
Age			-0.128	0.032	-0.119	0.008	0.088
Gender			-0.049	0.149	-0.391	0.196	0.515
Step 2	0.018	0.828					0.509
Age			-0.148	0.037	-0.137	0.009	0.084
Gender			-0.055	0.153	-0.412	0.193	0.476
Total Challenge Appraisals			0.037	0.089	-0.136	0.216	0.655
Total Social Partners			0.015	0.107	-0.19	0.231	0.849
Step 3	0.021	0.772					0.571
Age			-0.147	0.037	-0.137	0.009	0.086
Gender			-0.056	0.154	-0.414	0.192	0.471
Total Challenge Appraisals			0.043	0.090	-0.131	0.223	0.607
Total Social Partners			0.035	0.113	-0.175	0.269	0.677
Total Challenge Appraisals x Total Social Partners			0.059	0.107	-0.131	0.291	0.457

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Total Challenge Appraisals range from 0 - 3, with higher numbers indicating more challenge appraisals

Total Social Partners range from 0 - 3, with higher numbers indicating more challenge appraisals

*p < .05. **p < .01.

Table 12

Hierarchical Linear Regression of Variable Prediction of Scary Mask Social Problem-Solving Behavior

Effect	R²	F	Estimate	SE	95% CI		p
					LL	**UL**	
Step 1	0.058	5.581					0.004**
Age			0.244	0.032	0.043	0.168	
Gender			0.038	0.146	-0.212	0.362	
Step 2	0.082	4.012					0.004**
Age			0.185	0.034	0.014	0.147	
Gender			0.018	0.147	-0.255	0.326	
Scary Challenge Appraisal			0.104	0.148	-0.083	0.500	
Scary Social Partner Present			0.129	0.159	-0.041	0.586	
Step 3	0.082	3.193					0.009**
Age			0.185	0.034	0.014	0.147	
Gender			0.018	0.148	-0.256	0.328	
Scary Challenge Appraisal			0.096	0.252	-0.304	0.689	
Scary Social Partner Present			0.124	0.213	-0.160	0.682	
Scary Challenge Appraisal x Scary Social Partner			0.011	0.305	-0.578	0.626	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Scary Challenge Appraisal: 0 = threat, 1 = challenge
Scary Social Partner Present: 0 = absent, 1 = present

*p < .05. **p < .01.

Table 13

Cox Proportional Hazards Model for Scary Mask Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	UL	
Age	0.975	0.909	1.047	0.490
Gender	0.952	0.690	1.312	0.763
Scary Challenge Appraisal	0.562	0.330	0.959	0.035*
Scary Social Partner Present	0.715	0.459	1.113	0.137
Scary Challenge Appraisal x Scary Social Partner	2.174	1.135	4.163	0.019*

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.

Scary Challenge Appraisal: 0 = threat, 1 = challenge

Scary Social Partner Present: 0 = absent, 1 = present

*p < .05. **p < .01.

Table 14

Hierarchical Linear Regression of Variable Prediction of Tower of Patience Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.148	15.685					0.001**
Age			-0.389	0.030	-0.228	-0.109	0.001**
Gender			-0.064	0.138	-0.401	0.145	0.356
Step 2	0.148	7.792					0.001**
Age			-0.393	0.031	-0.232	-0.109	0.001**
Gender			-0.066	0.140	-0.407	0.144	0.347
Angry Challenge Appraisal			0.007	0.143	-0.267	0.297	0.917
Angry Social Partner Present			0.023	0.216	-0.356	0.496	0.747
Step 3	0.165	7.017					0.001**
Age			-0.377	0.031	-0.225	-0.102	0.001**
Gender			-0.069	0.139	-0.412	0.135	0.321
Angry Challenge Appraisal			-0.357	0.418	-1.543	0.106	0.087
Angry Social Partner Present			-0.083	0.276	-0.800	0.290	0.356
Angry Challenge Appraisal x Angry Social Partner			0.412	0.440	-0.047	1.691	0.064

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Angry Challenge Appraisal: 0 = threat, 1 = challenge

Angry Social Partner Present: 0 = absent, 1 = present

*p < .05. **p < .01.

Table 15

Cox Proportional Hazards Model for Tower of Patience Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	0.963	0.902	1.028	0.257
Gender	1.086	0.810	1.456	0.581
Angry Challenge Appraisal	0.629	0.258	1.535	0.308
Angry Social Partner Present	0.909	0.504	1.642	0.752
Angry Challenge Appraisal x Angry Social Partner	1.380	0.538	3.540	0.503

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.

Angry Challenge Appraisal: 0 = threat, 1 = challenge

Angry Social Partner Present: 0 = absent, 1 = present

*p < .05. **p < .01.

Table 16

Hierarchical Linear Regression of Variable Prediction for Disappointing Gift Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.047	4.466					0.013**
Age			-0.209	0.032	-0.154	-0.028	0.005**
Gender			-0.097	0.146	-0.483	0.095	0.187
Step 2	0.089	4.359					0.002**
Age			-0.128	0.034	-0.122	0.011	0.101
Gender			-0.061	0.147	-0.413	0.168	0.407
Sad Challenge Appraisal			-0.22	0.155	-0.751	-0.138	0.005**
Sad Social Partner Present			-0.013	0.192	-0.413	0.345	0.859
Step 3	0.092	3.621					0.004**
Age			-0.128	0.034	-0.122	0.011	0.102
Gender			-0.06	0.147	-0.411	0.170	0.414
Sad Challenge Appraisal			-0.353	0.357	-1.417	-0.008	0.047*
Sad Social Partner Present			-0.064	0.252	-0.666	0.327	0.501
Sad Challenge Appraisal x Sad Social Partner			0.154	0.386	-0.439	1.082	0.406

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Sad Challenge Appraisal: 0 = threat, 1 = challenge

Sad Social Partner Present: 0 = absent, 1 = present

*$p < .05$. **$p < .01$.*

Table 17

Cox Proportional Hazards Model for Disappointing Gift Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	1.031	0.956	1.112	0.422
Gender	0.873	0.637	1.196	0.397
Sad Challenge Appraisal	1.230	0.594	2.544	0.577
Sad Social Partner Present	0.939	0.558	1.579	0.812
Sad Challenge Appraisal x Sad Social Partner	0.615	0.278	1.358	0.229

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.

Sad Challenge Appraisal: 0 = threat, 1 = challenge

Sad Social Partner Present: 0 = absent, 1 = present

*p < .05. **p < .01.

Table 18

Hierarchical Linear Regression of Variable Prediction for Total Challenge Appraisals

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.175	38.491					0.001**
Age			0.418	0.027	0.114	0.220	0.001**
Step 2	0.178	9.694					0.001**
Age			0.420	0.028	0.112	0.223	0.921
Emotion Regulation			0.007	0.155	-0.290	0.321	0.399
Shyness			0.060	0.012	-0.013	0.034	0.949
Social Disinterest			0.004	0.021	-0.040	0.043	0.920
Step 3	0.180	7.827					0.001**
Age			0.424	0.028	0.114	0.225	0.001**
Emotion Regulation			0.007	0.155	-0.291	0.322	
Shyness			0.070	0.012	-0.012	0.036	
Social Disinterest			0.002	0.021	-0.041	0.042	
Emotion Regulation x Shyness			0.048	0.028	-0.036	0.074	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.

Table 19

Binary Logistic Regression of Variable Prediction for Fear Challenge Appraisal

	Estimate	*SE*	*χ2*	95% CI		*p*
				LL	*UL*	
Age	0.221	0.071	9.790	1.086	1.433	0.002**
Emotion Regulation	0.009	0.380	0.001	0.479	2.125	0.982
Shyness	0.003	0.030	0.008	0.946	1.063	0.928
Social Disinterest	0.028	0.052	0.290	0.929	1.138	0.590
Emotion Regulation x Shyness	0.084	0.068	1.505	0.951	1.243	0.220

Note. CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.*

Table 20

Binary Logistic Regression of Variable Prediction for Anger Challenge Appraisal

	Estimate	SE	χ^2	95% CI		p
				LL	UL	
Age	0.204	0.071	8.276	1.067	1.408	0.004**
Emotion Regulation	0.120	0.382	0.098	0.533	2.384	0.754
Shyness	0.004	0.030	0.017	0.946	1.065	0.896
Social Disinterest	0.052	0.052	0.982	0.951	1.166	0.322
Emotion Regulation x Shyness	0.044	0.068	0.415	0.915	1.193	0.519

Note. CI = confidence interval; LL = lower limit; UL = upper limit.
$*p < .05. **p < .01.$

Table 21

Binary Logistic Regression of Variable Prediction for Anger Challenge Appraisal

	Estimate	SE	χ2	95% CI		p
				LL	UL	
Age	0.315	0.077	16.909	1.179	1.593	0.001**
Emotion Regulation	-0.073	0.399	0.033	0.425	2.033	0.855
Shyness	0.049	0.032	2.293	0.986	1.118	0.130
Social Disinterest	-0.090	0.056	2.568	0.819	1.020	0.109
Emotion Regulation x Shyness	-0.057	0.073	0.612	0.818	1.090	0.434

Note. CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.

Table 22

Hierarchical Linear Regression of Variable Prediction of Total Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	*UL*	
Step 1	0.014	2.673					0.104
Age			-0.120	0.032	-0.115	0.011	0.104
Step 2	0.063	2.993					0.020*
Age			-0.140	0.033	-0.125	0.004	0.064
Emotion Regulation			-0.069	0.179	-0.515	0.193	0.372
Shyness			-0.218	0.014	-0.067	-0.013	0.004**
Social Disinterest			-0.048	0.024	-0.064	0.032	0.514
Step 3	0.067	2.121					0.053*
Age			-0.142	0.033	-0.127	0.003	0.062
Emotion Regulation			-0.085	0.185	-0.562	0.170	0.292
Shyness			-0.220	0.014	-0.069	-0.012	0.006**
Social Disinterest			-0.033	0.026	-0.061	0.040	0.670
Emotion Regulation x Shyness			0.028	0.032	-0.051	0.076	0.706
Emotion Regulation x Social Disinterest			0.063	0.054	-0.063	0.149	0.425

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

*p < .05. **p < .01.

Table 23

Hierarchical Linear Regression of Variable Prediction of Scary Mask Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.057	10.939					0.001**
Age			0.238	0.031	0.042	0.165	0.001**
Step 2	0.066	3.166					0.015*
Age			0.243	0.032	0.042	0.170	0.001**
Emotion Regulation			0.007	0.179	-0.337	0.370	0.927
Shyness			-0.094	0.014	-0.045	0.010	0.215
Social Disinterest			0.029	0.024	-0.038	0.058	0.691
Step 3	0.076	2.439					0.027*
Age			0.230	0.033	0.035	0.164	0.003**
Emotion Regulation			-0.014	0.184	-0.396	0.332	0.864
Shyness			-0.121	0.014	-0.050	0.006	0.124
Social Disinterest			0.056	0.025	-0.032	0.069	0.462
Emotion Regulation x Shyness			-0.071	0.320	-0.094	0.033	0.338
Emotion Regulation x Social Disinterest			0.085	0.053	-0.047	0.163	0.277

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

p < .05. ***p* < .01.

Table 24

Cox Proportional Hazards Model for Scary Mask Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	0.991	0.925	1.062	0.803
Emotion Regulation	1.568	1.040	2.364	0.032*
Shyness	1.035	1.005	1.066	0.023*
Social Disinterest	0.932	0.877	0.991	0.025*
Emotion Regulation x Shyness	0.984	0.918	1.055	0.644
Emotion Regulation x Social Disinterest	0.991	0.874	1.125	0.891

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.

Table 25

Hierarchical Linear Regression of Variable Prediction of Tower of Patience Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.144	30.536					0.001**
Age			-0.379	0.030	-0.223	-0.106	0.001**
Step 2	0.233	13.558					0.001**
Age			-0.410	0.029	-0.236	-0.120	0.001**
Emotion Regulation			-0.073	0.162	-0.490	0.151	0.297
Shyness			-0.251	0.013	-0.071	-0.021	0.001**
Social Disinterest			-0.152	0.022	-0.094	-0.007	0.023
Step 3	0.242	9.400					0.001**
Age			-0.402	0.030	-0.233	-0.116	0.001**
Emotion Regulation			-0.076	0.167	-0.506	0.154	0.294
Shyness			-0.232	0.013	-0.068	-0.017	0.001**
Social Disinterest			-0.155	0.023	-0.097	-0.006	0.027*
Emotion Regulation x Shyness			0.097	0.029	-0.016	0.099	0.153
Emotion Regulation x Social Disinterest			0.011	0.048	-0.088	0.103	0.872

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

p < .05. **p* < .01.

Table 26

Cox Proportional Hazards Model for Tower of Patience Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	0.951	0.887	1.019	0.154
Emotion Regulation	0.890	0.610	1.298	0.545
Shyness	0.972	0.944	1.001	0.056
Social Disinterest	1.013	0.961	1.068	0.628
Emotion Regulation x Shyness	1.012	0.953	1.075	0.691
Emotion Regulation x Social Disinterest	0.932	0.830	1.048	0.240

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.

Table 27

Hierarchical Linear Regression of Variable Prediction of Disappointing Gift Social Problem-Solving Behavior

Effect	R^2	F	Estimate	SE	95% CI		p
					LL	UL	
Step 1	0.038	7.152					0.008**
Age			-0.194	0.032	-0.147	-0.022	0.008**
Step 2	0.062	2.982					0.020*
Age			-0.216	0.033	-0.158	-0.029	0.004**
Emotion Regulation			-0.100	0.179	-0.055	0.121	0.196
Shyness			-0.153	0.014	-0.047	-0.001	0.045*
Social Disinterest			0.003	0.024	0.264	0.049	0.966
Step 3	0.067	2.112					0.054
Age			-0.214	0.033	-0.158	-0.028	0.005**
Emotion Regulation			-0.109	0.185	-0.618	0.014	0.176
Shyness			-0.146	0.014	-0.055	0.002	0.065
Social Disinterest			0.009	0.026	-0.047	0.054	0.905
Emotion Regulation x Shyness			0.057	0.320	-0.039	0.088	0.450
Emotion Regulation x Social Disinterest			0.035	0.054	-0.082	0.130	0.657

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

*p < .05. **p < .01.

Table 28

Cox Proportional Hazards Model for Disappointing Gift Social Problem-Solving Behavior

Effect	HR	95% CI		p
		LL	*UL*	
Age	1.024	0.957	1.096	0.489
Emotion Regulation	1.156	0.783	1.707	0.466
Shyness	0.993	0.962	1.025	0.651
Social Disinterest	1.014	0.959	1.073	0.614
Emotion Regulation x Shyness	1.023	0.955	1.097	0.513
Emotion Regulation x Social Disinterest	1.037	0.921	1.167	0.548

Note. HR = Hazard Ratio; CI = confidence interval; LL = lower limit; UL = upper limit.
*p < .05. **p < .01.

Appendix A

Autobiographical Emotion Interview Procedure

VIII. Autobiographical Emotion Interview (~15 min.)
Overview.

> **E1: "We are interested in how people think and feel about different things. So now I am going to ask you about times that you felt certain ways."**

Part 1A. *Recall of SAD Experience*

> **E1: "First, I'd like to know about a time recently that you felt <u>VERY SAD</u>. Please take a few moments to think about and remember a time recently when you felt <u>VERY SAD</u>. Think about what happened and about all of the little details you can remember about it."**
>
> > *[place paper and writing/drawing utensils in front of C]*
>
> **E1: "Here are some crayons, markers, and paper. You can use them to take notes or draw pictures of things you remember about a time recently when you felt <u>VERY SAD</u>."**
>
> **E1: "While I organize my papers, I'll give you a few moments to think about it, and then I will ask you some questions. Sound good?** *[E1 exits lab room and times 1 minute. After 1 minute, E1 re-enters the room and sits next to C.]*

Part 1B. *Interview about SAD Experience*

> **E1: "Ok,** *(child's name),* **now I'd like you to tell me everything you can about the time you felt <u>REALLY SAD</u>, starting at the beginning."**

E1 listens carefully while C describes. If a child cannot produce a memory, say, "I was talking to your [parent] earlier and s/he told me you felt sad once when [paraphrase parent's comments] happened. Can you tell me about that time you felt sad? When C stops talking, E1 gives two (2) more prompts–one at a time–for more information. For example:

> **"What else happened?"   "What else do you remember?"**
> **"What else did you do to make yourself feel better?"**

> **E1: "When you felt this way, what did you try to do or think about to make yourself feel <u>LESS SAD</u>?"**

E1 listens carefully while C describes. When C stops talking, E1 gives two (2) more prompts–one at a time–for more details. For example:

> **"What else did you do?"   "What other things did you do or think about?"**
> **"What else did you do to make yourself feel better?"**

After E1 has prompted twice for more details about what they did, E1 follows up with each thing s/he said (e.g., If C says s/he thought about hanging out with friends to feel better, E1 would say, "So, you said you thought about hanging out with your friends to feel better. Did thinking about that make you feel less sad?"). <u>Ask about each strategy s/he describes in order, one at a time, asking:</u>

> **E1: "Did _____ make you feel better?"**

After E1 follows up on each strategy C describes, say,

> **E1: So, you told me about** *[paraphrase sad event].* **When that happened to you, did you feel like it was something you could handle, or something that was just too much?"** *[allow C to reply]*

> **E1: "Did you feel that way about it right away, or did it take some time for you to feel like that? Is there anything else you want me to know about this event?"**

Collect any notes they made.

> **E1: "Thank you so much,** (child's name), **for talking with me about that. I really appreciate it!"**

<div align="center">**** **** **** ****</div>

Part 2A. *Recall of **FEARFUL** Experience*

> **E1: "Now, we're going to think about another time you felt a certain way. I'd like for you to tell me about a time that you felt <u>VERY SCARED</u>. Please take a few moments to think about and remember a time recently when you felt <u>VERY SCARED</u>. Think about what happened and about all of the little details you can remember about it."**

> **E1: "While I do some paperwork, I'll give you a few moments to think about it, and then I will ask you some questions. Sound good?"** *[E1 exits lab room and times 1 minute. After 1 minute, E1 re-enters room and sits next to C.]*

Part 2B. *Interview about **FEARFUL** Experience*

> **E1: "Okay,** (child's name), **now I'd like you to tell me everything you can about the time you felt <u>REALLY SCARED</u>, starting at the beginning."**

E1 listens carefully while C describes. If child cannot produce a memory, say, "I was talking to your [parent] earlier and s/he told me you felt scared once when [paraphrase

parent's comments] happened. Can you tell me about that time you felt scared? When C stops talking, E1 gives two (2) more prompts–one at a time–for more information. For example:

> **"What else happened?"**   **"What else do you remember?"**
> **"What else can you tell me about what happened?"**

> **E1: "When you felt this way, what did you try to do or think about to make yourself feel LESS SCARED?"**

E1 listens carefully while C describes. When C stops talking, E1 gives two (2) more prompts–one at a time–for more details. For example:

> **"What else did you do?"**   **"What other things did you do or think about?"**
> **"What else did you do to make yourself feel better?"**

After E1 has prompted twice for more details about what they did, E1 follows up with each thing s/he said (e.g., If C says s/he thought about hanging out with friends to feel better, E1 would say, "So, you said you thought about hanging out with your friends to feel better. Did thinking about that make you feel less scared?"). <u>Ask about each strategy s/he describes in order, one at a time, asking:</u>

> **E1: "Did _____ make you feel better?"**

After E1 follows up on each strategy C describes, say,

> **E1: So, you told me about** *[paraphrase scary event].* **When that happened to you, did you feel like it was something you could handle, or something that was just too much?"** *[allow C to reply]*

> **E1: "Did you feel that way about it right away, or did it take some time for you to feel like that? Is there anything else you want me to know about this event?"**

Collect any notes they made.

> **E1: "Thank you so much,** (child's name), **for talking with me about that. I really appreciate it!"**

> ******   ****   ****   ******

Part 3A. *Recall of ANGRY Experience*

> **E1: "Now, I'd like to know about a time recently that you felt VERY ANGRY. Please take a few moments to think about and remember a time recently when you felt VERY ANGRY. Think about what happened and about all the little details you could remember about it."**

E1: "While I do some paperwork, I'll give you a few moments to think about it, and then I will ask you some questions. Sound good?" *[E1 exits lab room and times 1 minute. After 1 minute, E1 re-enters room and sits next to C.]*

Part 3B. *Interview about ANGRY Experience*

E1: "Okay, *(child's name),* **now I'd like you to tell me everything you can about the time you felt <u>REALLY ANGRY</u>, starting at the beginning."**

E1 listens carefully while C describes. If child cannot produce a memory, say, "I was talking to your [parent] earlier and s/he told me you felt angry once when [paraphrase parent's comments] happened. Can you tell me about that time you felt mad? When C stops talking, E1 gives two (2) more prompts–one at a time–for more information. For example:

"What else happened?"   "What else do you remember?"
"What else can you tell me about what happened?"

E1: "When you felt this way, what did you try to do or think about to make yourself feel <u>LESS ANGRY</u>?"

E1 listens carefully while C describes. When C stops talking, E1 gives two (2) more prompts–one at a time–for more details. For example:

"What else did you do?"   "What other things did you do or think about?"
"What else did you do to make yourself feel better?"

After E1 has prompted twice for more details about what they did, E1 follows up with each thing s/he said (e.g., If C says s/he thought about hanging out with friends to feel better, E1 would say, "So, you said you thought about hanging out with your friends to feel better. Did thinking about that make you feel less angry?"). <u>Ask about each strategy s/he describes in order, one at a time, asking:</u>

E1: "Did ＿＿＿ make you feel better?"

After E1 follows up on each strategy C describes, say,

E1: So, you told me about *[paraphrase angry event].* **When that happened to you, did you feel like it was something you could handle, or something that was just too much?"** *[allow C to reply]*

E1: "Did you feel that way about it right away, or did it take some time for you to feel like that? Is there anything else you want me to know?"

Collect any notes they made.

E1: "Thank you so much, (child's name), **for talking with me about that. I really appreciate it!"**

****   ****   ****   ****

Part 4A. *Recall of **HAPPY** Experience*

E1: "Ok, *(child's name),* **now I'd like you to tell me everything you can about the time you felt <u>REALLY HAPPY</u>, starting at the beginning."**

E1 listens carefully while C describes. If child cannot produce a memory, say, "I was talking to your [parent] earlier and s/he told me you felt happy once when [paraphrase parent's comments] happened. Can you tell me about that time you felt happy? When C stops talking, E1 gives two (2) more prompts–one at a time–for more information. For example:

"What else happened?"   "What else do you remember?"
"What else can you tell me about what happened?"

E1: "Thank you so much, *(child's name),* **for talking with me about that. I really appreciate it!"**

Appendix B

Scary Mask Procedure

XVI. Novel Masks & Emotion Self-Report #6 (5 min.)
E2: Begin hooking up parent to cardiac equipment in room 2128D

TV ROOM
Part 1. *Emotion Self-Report #6*. Before beginning the Novel Masks task, children are asked to provide a report of their current emotional state in the following order: *sad, scared, angry, happy*. [E1 records C's responses.]

Part 2. *Novel Masks.* This task is adapted from a commonly used laboratory battery (the LabTAB temperament assessment; Buss & Goldsmith 2000) designed to elicit mild wariness from children. In this task, an unknown female assistant (Stranger) wears a mask and hooded sweatshirt, inviting the child to play with different Halloween masks.
Stranger: Please DO NOT BLOCK the camera!!!!

E1 leads C into room **2128E**. The Stranger (S), wearing a mask/hooded sweatshirt, is already in the room waiting, facing the corner of the wall so that C cannot see the mask.

E1: "You have fun and I will be back in a little while!" *[E1 exits room.]*

Step 1. Once S hears the door close, S turns to face C. S looks at C for *15 seconds* without saying anything.

Step 2. S takes one step forward and continues looking at C for an additional *15 seconds*.

Step 3. S (still wearing the mask) says in a neutral tone: **S: "Hi, my name is Jamie."**

Step 4. After an additional *15 seconds*, S removes mask while facing C.

Step 5. S then holds the mask under her chin with both hands so that the mask is facing C then says:

> **S: "Hi** *(C's name)***! I was just playing with some Halloween costumes. Would you like to see what this mask looks like up close?"**

Step 6. S moves closer to C, showing him/her the mask and saying:

> **S: "See? It's just a mask. It can't hurt you. Would you like to touch the mask? Go ahead and touch the eyes. Now let's touch the nose together."**

(Allow C to touch/manipulate mask for <u>15 sec.</u>)

S: "*(C's name)*, would you like to put the mask on? Have you worn a mask before? What do you think of it?"

Step 7. When C has finished exploring the mask, the stranger will say:

S: "Well, it was nice to meet you. I have to go now."

Step 8. After S exits the lab room, E1 returns to greet C and escort him/her to room <u>2128A</u>.

Tower of Patience Procedure

XVII. Tower of Patience & Emotion Self-Report #7 (5-7 min.)

Part 1. Emotion Self-Report. Main room. E1 brings C back to the main experimentation room (**2128A**) and both sit at the table. Using the same face scales, children are asked to provide a report of their current emotional state in the following order: *sad, scared, angry, happy.* E1 records C's responses in the codebook.

Part 2. *Tower of Patience (Jenga) Game.* This episode has two parts. The 1st part is timed and is designed to make children wait patiently while waiting for their turn to pull a block. The 2nd part is designed to measure risk-taking. After the 7 timed trials (1st part) are complete, the 2nd part will consist of 4 additional challenging trials.

C should be seated at the table facing the camera. E1 should be seated adjacent to C. Jenga blocks should be pre-loaded into the carton so that when it is turned over to slide the tower out of the box, all the red blocks should be on the bottom, yellow blocks in the middle, and blue blocks on top. E1 places the tower near the corning of the table between themself and C (to minimize C being blocked by tower in camera shot.) Always try to pull an outer bock in a given row to allow C the most options for play. Say, *EXACTLY AS WORDED:*

> **E1: "Let's play a game with these blocks. Have you played with these kinds of blocks before?** (Slide tower out of the box and between E1 and C.) **Since this is a game we play together, I'll put these blocks where we can both reach them."**

It is very important to ask (and get a response about) whether C has ever played Jenga before. We need to know which children have experience with the game in order to control for that in evaluating risk-taking behavior. E1 then says, *EXACTLY AS WORDED*:

E1: "Here's how we play: we'll take turns pulling blocks out one at a time. We don't want them to fall over, though. First I'll pull one out, then you pull one out, then I'll pull one, then you pull one. You can pull any color block. You get _1 point_ for each _blue_ block you pull out, _2 points_ for each _yellow_ block you get, and _3 points_ for each _red_ block."

(Point to each color of block using one finger for blue blocks, two finders for yellow blocks, and three fingers for red blocks to emphasize the number of points each color is worth.)

E1: "The player with the <u>most</u> points wins, but <u>if you knock over the blocks, you automatically lose.</u> When you pull a block out of the tower, you put it into your special box, and I'll put mine in my special box. <u>We have to leave the boxes closed until we're done playing.</u> And then at the end, we'll open the boxes and add up all our points and see who has the most. *(Place one of the storage boxes near C and one near E1.)* **That's how this game works. Ok, I'll start."**

Pull the first block from the very tip level of the blue section. Then let C pull his/her first

block. Always pull your blocks from the outer sides of the rows to give the child the most

options for play. Avoid pulling any more blocks from the top row of the tower the rest of

the game. Throughout the first part of the episode, continue making very "safe" moves

(blue blocks are safest, red blocks can be pulled if necessary).

After E1 and C have each taken their first turn, begin the timed trials where, for each turn

you take after C pulls out his/her block, E1 pauses for a different amount of time. The

timed trial begins when C places his/her block into the box.

XVII. Tower of Patience (continued)

The s*equences of 7 timed trials* (note: these timed trials are after E1 and C have each

taken their first turn) is:

> After each trial, E1 says:
> **"Now it's your turn!"**

Immediate response with **no pause**:

10 sec. pause

20 sec. pause

30 sec. pause

Immediate response with **no pause**

40 sec. pause

60 sec. pause

During the pauses, it is very important that E1 looks at and away from the tower regularly and in a very "ambiguous" manner. The goal is to leave C confused as the whether or not E1 is thinking about the next move. To do this, E1 will need to spend more time looking away from the tower than at it. *(Do not make it obvious that time is being kept, since C will know E1 is waiting for time to pass and will be more patient.)*

If C violates the turn-taking rule, only once (the 1st time), wait until the trial is over and say:

E1: "Remember how to play the game? First I take a block, and then you take a block, then I take one, then you take one. That's how we play the game." *(If they go out of turn again, say <u>nothing.</u>)*

E1's goal is NOT to get C to wait each time, but to see if s/he will wait and what they say while waiting (e.g., "Go!", "Okay, it's your turn!").

After Challenge trials:

* (1) Kid's turn (2) E1 blue (3) Kid's turn (4) E1 red (5) kid's turn (6) knock it over *

After the 7 timed trials are completed, continue playing the game. First, take one blue block and then take one red block. These trials are not timed, so take your turn immediately.

After E1 has pulled out the red block. s/he "accidentally" knocks the tower over on the next turn, exclaiming:

E1: "Oh no, I knocked it over – you win! Wow, you sure are good at that game!"

After finishing Jenga, tell C how good s/he was at the game (because they pulled lots of blocks, or because they pulled hard pieces, etc.)

**_WHAT TO DO IF CHILD KNOCKS TOWER DOWN BEFORE END OF GAME:_

- If C knocks part of tower over (i.e., just the top) say: **"That's O.K., let's keep playing."**
- If C didn't make it through the timed trails without knocking over the tower, quickly rebuild the tower and continue the episode from the timed trial where the tower was knocked over.
- If most of the tower gets knocked over and it is impossible to keep playing, suggest you play again. Assuming C made it through the timed trials, quickly rebuild the tower and play a little more to a point where you can "accidentally" knock it over.

Appendix D

Disappointing Gift Procedure

XXI. Dyadic Wrong Gift Task (10 min.)

The purpose of this task is to elicit mild disappointment by deliberately giving children an undesired gift. Four segments of the task involve the child's waiting alone for the gift, receiving the undesired present in the presence of an experimenter, talking about the wrong gift with the parent, and resolving the gift problem.

E1 politely asks P to return to room **2128E** (TV room).

Part 1. *Waiting for Gift.* (C alone)

> **E1: "You did a great job! And because you did such a great job, I am going to give you a prize. But, I need to go to the other room and get it, so I'll be right back.** *(P's name),* **you can come with me, we'll be back in just a little bit! Be sure to sit in your chair while I'm gone."**

E1 exits lab room and times *one (1) minute.* Escort parent to **2128E** and have him/her sit on the couch. After 1 minute, E1 returns with an elaborately-wrapped gift for C.

Part 2. Receipt of Wrong Gift. (E1 & C together)

E1 returns to the lab room, gives C their gift, and says: **E1: "You can go ahead and open it."**

Once C has opened the gift box to see their (least favorite) prize, E1 begins timing *one (1) minute.* During this time, E1 acts busy doing paperwork, giving C occasional eye contact. *If C talks to E1 and insists on an answer, E1 should just nod their head, repeat their question/statement, while being sure not to show any affect. E1 should simply paraphrase C's statement, being completely neutral in tone.*

After 1 minute, E1 exits the lab room saying:

> **E1: "I forgot something, I'll be right back. Be sure to stay in your chair while I'm gone."**

Part 3. *Wrong Gift Phase.* (P & C together)

After E1 exits lab room, begin timing one (1) minute during which C is all alone in the room. During this minute, E1 gives instructions to P to say specific things to their child for when they re-enter the lab room (**2128A).**

E1: "At the beginning of the visit *(C's name)* **ranked a bunch of prizes from their most favorite to their least favorite. I just "accidentally" gave** *(C's name)* **the prize they ranked as their least favorite, but we'll make sure they get the right one in a few minutes. We're interested in seeing how kids handle being disappointed. We'll have you go back in and talk with** *(C's name)* **for a couple minutes. For the first part, we want you to just talk and interact however you normally would. Then I will knock on the door which will be your cue to say a specific thing."** *[E1 gives laminated condition-specific instructions.]*

DISTRACTION Condition Echo (Parent):

> *"If you are upset about the present, you can think about something else instead. Think about a fun thing you like to do. Okay? Do you think you will be able to think about something else?"*

E1 escorts P to the lab room (**2128A**) with C, then exits room and times *two (2) minutes total*. After the first minute, E1 knocks on the wall to let P know to give the ER suggestion.

Part 4. *Gift Resolution.* E1 re-enters the lab room and announces that s/he made a terrible mistake, saying:

E1: "I'm so sorry, I made a mistake! I realized that I gave you the wrong gift instead of the right one. I accidentally mixed them up when I arranged the prizes earlier. Here is the one you wanted! Is it okay now?"

E1 then politely asks P to move to room *2128E* (TV room). After P has exited, E1 asks C:

E1: "How did you feel when you got the wrong present?"

[allow C to respond]

E1: "Did you think about or do anything to make yourself feel better when that happened?"

[allow C to respond]

E1: "Ok! Thanks for telling me. Now, let's go join mom/dad in the TV room!"

**E1 retrieves prize from C to keep until the end of visit so as to not distract them during the final tasks.

Appendix E

Child Social Preference Scale (CSPS; Coplan et al., 2004)

CHILD SOCIAL PREFERENCE SCALE

Name of child:_____

      Please answer the items on this page about the behavior of your child by *circling* one of the numbers following each item. We know that no item will apply to the child in every situation, but try to consider his/her <u>usual</u> or <u>general</u> behavior. Please answer all questions-- there are <u>no right or wrong answers</u>.

	How much is your child like that? <u>Not at All</u>← → <u>A Lot</u>				
1. My child often seems content to play alone.	1	2	3	4	5
2. My child seems to want to play with other children, but is sometimes nervous too.	1	2	3	4	5
3. My child is just as happy to play quietly by his/herself than to play with a group of children.	1	2	3	4	5
4. My child is happiest when playing with other children.	1	2	3	4	5
5. My child will turn down social initiations from other children because he/she is 'shy'.	1	2	3	4	5
6. My child often approaches other children to initiate play.	1	2	3	4	5
7. My child 'hovers' near where other children are playing, without joining in.	1	2	3	4	5
8. My child rarely initiates play activities with other children.	1	2	3	4	5
9. If given the choice, my child prefers to play with other children rather than alone.	1	2	3	4	5
10. My child often watches other children play without approaching them.	1	2	3	4	5
11. Although he/she appears to desire to play with others, my child is sometimes anxious about interacting with other children.	1	2	3	4	5

Scoring (add items)

Shyness items:

2, 5, 6 (reverse-scored), 7, 8, 10, 11

Social Disinterest items:

1, 3, 4 (reverse-scored), 9 (reverse-scored)

Reference:

Coplan**,** R.J., Prakash, K., O'Neil, K., & Armer, M. (2004). Do you 'want' to play? Distinguishing between conflicted-shyness and social disinterest in early childhood. *Developmental Psychology*, *40,* 244-258.

Appendix F

Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997)

Description: The Emotion Regulation Checklist (ERC) is a 24-item measure of children's self-regulation. It was designed to assess parents' perspective of child's ability to manage and to cope with emotions. The ERC items assess affective stability, intensity, valence, flexibility, and situational appropriateness of children between the ages of 6 to 12 years. Items are rated by a parent on a 4-point scale and are weighted both negatively and positively.

The ERC is comprised of two scales: emotion regulation and emotional lability/negativity. The former scale assesses expression of emotions, empathy, and emotional self-awareness, with higher scores indicating greater adaptive regulatory processes. The latter scale assesses lack of flexibility, anger dysregulation, and mood lability, with higher scores indicating greater emotion dysregulation.

Instructions: In any given circumstance, people often have a number of different feelings. Please think back to how you felt while preparing your speech. Please indicate how much of each emotion you felt during that time. Use the following 0 to 4 scale to make your ratings.

(1 = Never, 2 = Sometimes, 3 = Often, 4 = Almost Always)

1. Is a cheerful child.
2. Exhibits wide mood swings (child's emotional state is difficult to anticipate because he/she moves quickly from a positive to a negative mood.
3. Responds positively to neutral or friendly overtures by adults
4. * Transitions well from one activity to another, doesn't become angry, anxious, distressed or overly excited when moving from one activity to another.
5. * Can recover quickly from upset or distress (for example, doesn't pout or remain sullen, anxious, or sad after emotionally distressing events).
6. Is easily frustrated.
7. Responds positively to neutral or friendly overtures by peers.
8. Is prone to angry outbursts/tantrums easily.
9. * Is able to delay gratification.
10. Takes pleasure in the distress of others (for example, laughs when another person gets hurt or punished; seems to enjoy teasing others).
11. * Can modulate excitement (for example, doesn't get "carried away" in high energy situations or overly excited in inappropriate contexts).
12. Is whiny or clingy with adults.

13. Is prone to disruptive outbursts of energy and exuberance.
14. Responds angrily to limit setting by adults.
15. Can say when he/she is feeling sad, angry, or mad, fearful or afraid.
16. * Seems sad or listless.
17. Is overly exuberant when attempting to engage others in play.
18. * Displays flat affect (expression is vacant or inexpressive; child seems emotionally absent.
19. Responds negatively to neutral or friendly overtures by peers (for example, may speak in an angry tone of voice or respond fearfully.
20. Is impulsive.
21. Is empathetic toward others; shows concern when others are upset or distressed.
22. Displays exuberance that others find intrusive or disruptive.
23. Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by peers.
24. Displays negative emotions when attempting to engage others in play.

Emotion Regulation (1, 3, 5, 7, 9, 15, 16, 21)
Emotion Lability /Negativity (2, 4, 6, 8, 10, 11, 12, 13, 14, 17, 18, 19, 20, 22, 23, 24)

Asterisk (*) indicates reverse items

Appendix G

Original Behavior Coding Scheme

Behavior	0 (none)	1 (A Little)	2 (A Lot)
Face - Expressed Positive Affect	No Positive Facial Expression	Positive Facial Expression for Less than 5 seconds (up to 4.999 seconds)	Positive Facial Expression 5 Seconds or More
Face - Expressed Negative Affect	No Negative Facial Expression	Negative Facial Expression for Less than 5 seconds (up to 4.999 seconds)	Negative Facial Expression 5 Seconds or More
Utterance - Speech	No Speech	Speech for Less than 5 seconds (up to 4.999 seconds)	Speech 5 Seconds or More
Utterance - Laughter	No Laughter	Laughter for Less than 5 seconds (up to 4.999 seconds)	Laughter 5 Seconds or More
Proximity - Approach	No Approach	Partial Approach (Leans In, Reaches Toward)	Full Bodied Approach (Steps Toward E4)

Appendix H

Final Coding Scheme

Behavior	Behavior Description	0 (behavior is absent)	1 (behavior is present)
Face - Expressed Positive Affect	positive facial expressions often characterized by an upturned mouth and raised eyebrows, and may be associated with emotions such as happiness, joy, or contentment	No Positive Facial Expression	Positive Facial Expression for 1 second or more
Face - Expressed Negative Affect	negative facial expressions often characterized by a downturned mouth and furrowed eyebrows, and may be associated with emotions such as anger, sadness, fear	No Negative Facial Expression	Negative Facial Expression for 1 second or more
Utterance - Speech	any instance of understandable language from the child, this does not include yawning, babbling, humming, laughing, or other non-speech sounds	No Speech	Speech for 1 second or more
Utterance - Laughter	full "HA HA" out loud laughter down to quiet giggles from the child; there needs to be an audible sound and not just a smile	No Laughter	Laughter for 1 second or more
Proximity - Approach	moving toward the experimenter, either with their full body, part of their body, or by leaning	No Approach	At least one Approach movement (Leans In, Reaches Toward, Steps Toward)

Appendix I

Social Problem-Solving Coding Manual

PERK Disappointing Gift Behavior Coding Instructions

Step 1: Access the Videos

- Log in to R'Drive with your UCR NetID and password
- R'Drive > Kasey's Dissertation Coding > Disappointing Gift > VIDEOS Disappointing Gift
- Open the video with the Participant ID of the first video you were assigned to code

Step 2: Open a New Behavior Coding Document

- R'Drive > Kasey's Dissertation Coding > Disappointing Gift
- Click the 3 dots in the top right corning of the file "TEMPLATE DG Behavior Coding"
- Click Make a Copy
- Name the new sheet with the Participant ID and the Task Name Initials
    - Example: 8013 DG
- Add the Participant ID in the cell that says, "Participant ID"
- Add your initials in the cell that says "Coder"
- Add the date in the cell that says "Date"

Step 3: Just Watch

- Watch your first video all the way through without coding or taking notes
- If you notice anything that would make the video particularly challenging to code, immediately send Kasey an email with the subject including the Participant ID and "Coding Question"
    - Example: 8013 Coding Question
- Some things that may make a video particularly challenging to code include camera or microphone issues, the experimenter not following the script for the task, or a child displaying behavioral problems. These are not the only issues that can occur, so please reach out with any questions immediately.
- DO NOT begin coding the video if you have seen an issue and emailed Kasey. Wait until you receive instructions on how to proceed.
- If there are no issues with the video, you may proceed to Step 4

Step 4: Set the Intervals

- Start the video over from the beginning and identify the second in which the Task Starts
    - o **Task Start:** The experimenter will give the child a yellow metal Crayola box with a gold bow on top. The Task Starts the second the experimenter finishes saying "You can go ahead and open it." Look for the second the experimenter finishes the word "it" in that sentence.