EARLY PARENT-CHILD RELATIONSHIP AND TYPE OF PARENTAL PRAISE
AND CRITICISM AS PREDICTORS OF TODDLER MOTIVATION ON AN
UNSOLVABLE TASK

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Children experience failure multiple times a day; some children persist viewing the failure as a challenge, whereas other quit in frustration. The purpose of the present study was to understand the early social influences, in particular, parental influences on young children’s motivation. In addition, the present study investigated the types of feedback mothers provide to their young children and the degree to which type of feedback (person vs. non-person) and positive or negative feedback influences young children’s motivation. A longitudinal design assessed how sensitivity during infancy (3-, 5-, and 7-months) and the feedback provided during a teaching task at 20-months would influence two components of motivation, negative affect and persistence measured while the toddler interacts with an unsolvable toy independently at 20-months. Results suggest that early maternal sensitivity predicts toddler negative affect, but not persistence. Further, mothers’ used more ambiguous than either person or non-person positive
feedback. Finally, although feedback did not predict motivation, greater toddler persistence predicted, although not significantly, a greater proportion of maternal positive feedback (i.e., praise). Overall, early sensitive parenting does influence toddler response to failure, whereas feedback was not significantly related for toddlers.
This dissertation is dedicated to my husband, Brad.
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CHAPTER 1:
INTRODUCTION

1.1. Overview

Seligman, Maier, and Geer (1968) have referred to learned helplessness as, “the learning or perception of independence between the emitted response of the organism and the presentation and/or withdrawal of aversive events” (p. 258). The development of helplessness in children, however, cannot necessarily be explained by the processes demonstrated in past research involving controlled experimental designs with animals. Thus, additional research is needed to understand the underlying processes in the development of helplessness in children.

1.2. Background

Carol Dweck and colleagues (Burhans & Dweck, 1995; Dweck & Elliot, 1983; Dweck & Leggett, 1988; see also Dweck, 1999, 2002) attribute motivational differences in children to implicit theories that relate to abilities, intelligence, and, in preschool-aged children, self. Children have been identified as having either a mastery-orientation or a helpless-orientation based on their responses to challenging or unsolvable tasks (Diener & Dweck, 1978, 1980; Dweck, 1975; see Dweck, 1999 for review). After experiencing failure, mastery-oriented children were likely to persist, enjoy the challenge, and believe that more effort is required for success. In contrast, children displaying a helpless-
orientation were more likely to give up, become frustrated, and believe that they were unable to do the task. Most of the research assessing motivation orientation (mastery and helpless) has been done with school-aged children with the exception of a few studies conducted on preschool children (Burhans & Dweck, 1995, Kelley, Brownell, & Campbell, 2000; Smiley & Dweck, 1994; Stipek, Recchia, & McClintic, 1992). However, behavioral distinctions (e.g., high versus low persistence during challenging tasks) related to motivation orientation have been found at younger ages (e.g., 2 years of age in Matas, Arend, & Sroufe, 1978) as well. These findings lead to an important question, how do these differing motivation orientations develop?

The development of motivation appears to begin early, but may change over time. Mastery is thought to be an innate drive (White, 1959), which is why research on motivation in young children originally focused solely on mastery, following the assumption that helplessness would only exist in very rare circumstances (e.g., Dweck & Elliott, 1983). However, both mastery- and helpless-orientations have been found in children as early as 3 years of age (Stipek et al. 1992), and differences in persistence and affect in response to challenging tasks have been reported in children as young as 2 years of age (Matas et al., 1978) as they related to the early parent-child relationship. Although helpless-orientations have been reported in young children, fifth graders were more likely than younger children (Kindergarteners, 1st graders and 3rd graders) to demonstrate helplessness following repeated failure (Rholes, Blackwell, Jordan, & Walters, 1980). In other words, as children get older, their theories of self become stronger. If the child’s theory suggests that failure in caused by lack of ability they will demonstrate helplessness, whereas if the child’s theory suggests that failure is caused by lack of effort,
they will demonstrate mastery behaviors (e.g., Dweck, 1999). However, what explains these individual differences in children’s orientations with some displaying stronger helpless-orientations, and others displaying stronger mastery-orientations.

One implication of more children developing helpless orientations over time is that the environment has the potential to either maintain mastery or create helplessness (Sorich & Dweck, 1999). Parental influences are typically the first socialization experiences that young children receive. Two possible mechanisms through which parents influence children’s motivation orientation are domain-general (i.e., interactions within contexts other than problem-solving) and domain-specific (i.e., interactions within problem-solving contexts).

One possible domain-general mechanism is the internal working model, a representation of the history of the parent’s sensitive responding (Bowlby, 1969/1982; Bretherton, 2005). In this case, parental sensitivity and intrusiveness (i.e., overstimulation) influence the child’s ability to feel secure with themselves and their caregivers allowing the child to openly explore the environment without fear. Sensitivity and intrusiveness, which have been found to predict attachment with mothers (Braungart-Rieker, Garwood, Powers & Notaro, 1998; and see de Wolff & van IJzendoorn, 1997), may contribute to the maintenance of a mastery-orientation in that mothers who provide sensitive, non-intrusive support enable the child to learn on his own.

One possible domain-specific mechanism linking parenting and motivation orientation is the type of praise or criticism (hereon feedback) a child receives during problem-solving tasks (e.g., Kamins & Dweck, 1999). For example, a child given feedback related to his performance (e.g., “You worked hard”) was more likely to persist
in a task than a child given feedback related to the child herself (e.g., “You are smart”).
Dweck and colleagues (Kamins & Dweck, 1999; Mueller & Dweck, 1998; see also
Dweck, 2002) found that the type of feedback is more important than whether feedback is
positive (i.e., praise) or negative (i.e., criticism). Moreover, Dweck (2002) stated that the
type of feedback is more important than sensitivity of the person delivering the
feedback—“A parent or teacher may be very structured or unstructured, very autocratic
or democratic, very warm or formal—it doesn’t matter. A process message
[communicated through non-person feedback] can fit into any of these styles” (Dweck,
Both domain-specific and domain-general mechanisms may predict child motivation,
however to best understand how children’s motivation develops, both must be tested in
the same model using a sample of young children. The degree to which each influences
motivation accounting for the influence of the other can be determined by including both
in the same model. Furthermore, younger children must be examined, to best understand
how these mechanisms may begin to influence development. Thus, the present study
examined parental sensitivity history (domain-general) and parental feedback during an
unsolvable problem-task (domain-specific) on toddler motivation.

1.3. Importance
Research on the development of motivation is important, because motivation
underlies our ability to learn (e.g., White, 1959). For example, those who demonstrated
helplessness developed ineffective strategies following failure and were then more likely
to fail at tasks that were similar to those completed successfully prior to failure (Diener &
Dweck, 1978, 1980; Dweck, 1975; Dweck & Reppucci, 1973). In other words, helpless children adopt ineffective strategies following failure and are then less likely to succeed at future tasks regardless of difficulty level. In addition, motivation orientation appears to be somewhat stable, at least within context, e.g., math class (Gilmore, Cuskelley, & Purdie, 2003; Ziegert, Kistner, Castro & Robertson, 2001). For example, even after accounting for ability and gender, having a helpless-orientation in kindergarten (e.g., choosing a puzzle for which they have succeeded rather than failed, lowered ability attributions) predicted the child’s helplessness on the same puzzle task five years later (Ziegert et al., 2001). Mastery motivation also predicted school success (Fincham, Hokoda, & Sanders, 1989). Helplessness in the third grade, assessed by two self-report questionnaires measuring ability attributions (i.e., beliefs about whether low ability or low effort caused failure) and one teacher report questionnaire measuring learned helplessness versus mastery behaviors, predicted poorer academic achievement (i.e., Stanford Achievement Test) in the fifth grade (Fincham et al., 1989). In turn, academic achievement is one of the strongest predictors of high school dropout, serving as a mediator for influences such as SES, deviant behavior, deviant peers, parental expectations, and parent education (Battin-Pearson et al., 2000). Despite findings supporting the stability of motivation, motivation has been changed by experimentally manipulating the type of feedback children receive (e.g., Mueller & Dweck, 1995). Research, such as the present study, may be used to understand how motivation develops and how interventions can be used to change early helpless-orientations to mastery-orientations thus minimizing poor academic achievement and possibly school dropout. To date interventions have focused on school-aged children currently experiencing poor
academic achievement (e.g., Blackwell, Trzesniewski, & Dweck, 2007), however, it would be optimal to prevent children from poor academic achievement prior to entering school.

Although negative outcomes of motivation orientation are not seemingly apparent until children are in school and experiencing difficulties in academic achievement, motivation orientation develops prior to school age. Parents begin to influence their child’s motivation long before the child is in school. Thus, if interventions are to be successful long-term, research must determine early predictors of helplessness such as parents’ interactions across infancy and during joint problem solving.

In sum, the present study is unique in that it measures a domain-general influence of sensitive parenting during infancy, as well as, a domain-specific influence of parent feedback during an early problem-solving task to determine predictors of toddler motivation. It is important to understand how motivation orientation develops because helplessness relates to learning and achievement and these results could be used to develop early interventions for child motivation that may protect children from poor academic achievement and possibly school dropout. This research adds to the current state of the field in three important ways:

1. Longitudinal research—very little research on motivation investigates predictors of motivation rather than concurrent correlates.

2. Development of motivation—To investigate how motivation develops, it is important to study motivation prior to children entering school. Early parent-child interactions are the most likely predictor of early social influences on motivation orientation.

3. Determines which variables are most predictive of early motivation—Separate studies have found mother-child relationship (a domain-general variable) predicts motivation and type of feedback (a domain-specific variable) predicts motivation. The present study tests multiple factors at the same time, thus testing the degree to which each factor predicts motivation while accounting for others.
2.1. Mastery and Helpless Motivation Orientations

Motivation orientations are associated with different behaviors during problem-solving tasks, specifically after experiencing a challenge or failure. School-aged and preschool-aged helpless children displayed more negative affect, verbalized more negative self-attributions about their abilities, and were less on-task than mastery-oriented children. Somewhat surprisingly, these differences between helpless and mastery children had little to do with ability, confidence in ability, previous success, or lack of praise about intelligence (Dweck, 1999, for review). In fact, despite equal levels of confidence and ability prior to failure, after experiencing failure, helpless children deemphasized successes and emphasized failures (remembering more failures than successes) whereas mastery children remembered accurately (Diener & Dweck, 1978, see also Smiley & Dweck 1994). Although mastery and helpless orientations are clearly distinguished by the time children are school-aged, the way in which these orientations develop is less clear.
2.2. Development of Motivation Orientation

Children are thought to be born with an intrinsic mastery motivation to interact competently with the environment (White, 1959). This innate mastery has been noted in many areas of child development such as cognitive development (e.g., Piaget, 1970) and perceptual learning as noted by Gibson (1969), “[Perceptual learning] is not a passive absorption, but an active process, in the sense of exploring or searching, for perception itself is active” (Gibson, 1969 p. 4). Although all children are seemingly born with a mastery-orientation, about half of school-aged children demonstrated helpless behaviors following failure (e.g., Diener & Dweck, 1978). Contrary to children with a mastery-orientation, in which the child believes that more effort is needed for success, children with helpless-orientation believe that a situation is out of their control and failure is inevitable (Diener & Dweck, 1978, 1980; Dweck, 1975; Dweck, 1999). It is hypothesized that life experiences, socialization in particular, lead children to either continue with a mastery-orientation or to develop a helpless-orientation (Sorich & Dweck, 1999). Support for this hypothesis is that infants express pride—pleasure from personal achievement—a year or more before shame—distress from personal failure (Heckhausen, 1993).

Moreover, younger children around 2 years of age displayed less negative emotion after failure than children aged 3-5 years (Stipek et al., 1992). Yet, approximately a third of preschool children across several studies displayed helpless behaviors in response to failure (Cain & Dweck, 1995; Heyman & Dweck, 1998; Heyman, Dweck, & Cain, 1992; Smiley & Dweck, 1994). Thus, to best understand how these behaviors develop, early social interactions during the first two years of life must be investigated. A critical question is, what are the mechanisms through which social interactions influence
motivation orientation. Two possible early social interactions that may contribute to early motivation orientation are the feedback parents give their children during problem-solving tasks (domain-specific) and the warm and sensitive caregiving parents provide children during infancy (domain-general). Prior to discussing the ways in which parents influence motivation, it is important to understand how domain-specific feedback has been shown to influence motivation experimentally.

2.3. Feedback and Motivation Orientations

“[P]raise is an important mechanism for the social transmission of values” (Kanouse, Gumpert, & Canavan-Gumpert, 1981, p. 101). The type of feedback that children receive influences the way they view themselves following failure and their resulting motivation orientation (Cimpian, Arce, Markman, & Dweck, 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998; Henderlong, 2000; see also Henderlong & Lepper, 2002). Although the terms used to describe types of feedback vary in the literature (Chalk & Bizo, 2004; e.g., Kamins & Dweck, 1998; Cimpian et al., 2007), person and non-person will be adopted here. Person feedback focuses on a stable trait in the person that would continue over time and context (e.g., “You are a good drawer” or “You are a good boy”) whereas non-person feedback focuses on specific behavior or event at one particular time (e.g., “You did a good job drawing” or “You did a good job”).

Dweck and colleagues found that when children succeeded, the type of feedback they received did not influence motivation behaviors such as, task enjoyment and persistence (Cimpian et al., 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998 see also Henderlong, 2000). In other words, both types of feedback are effective when children
succeed. However, when children later failed at a similar task, those given person feedback were more likely to demonstrate helpless behaviors (more negative affect, lower self-evaluations, and less persistence) than children given non-person feedback (Cimpian et al., 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998; Henderlong, 2000). If you are a good drawer who later fails, what does that mean about yourself?—You are a bad drawer. In contrast, when you did a good job drawing and later fail, you are likely to think, I didn’t do a good job drawing that time. This is exactly what Dweck and colleagues found. For example, fifth graders given person feedback ("You must be smart at these problems") who later failed, displayed less task persistence, less task enjoyment, more low-ability attributions, and worse task performance than children given non-person praise about effort ("You must have worked hard at these problems;" Mueller & Dweck, 1998). Younger children are also influenced by praise-type (Cimpian et al., 2007; Kamins & Dweck, 1999). Cimpian et al. (2007) found that 4-year-old children who received non-person praise rated that they felt happier than children who received person praise following the failure scenario. Furthermore, when compared to children who received person praise, children who received non-person praise were more likely to want to draw again (i.e., persist) instead of choosing to do something else. However, these studies assessed the influence of praise (i.e., positive feedback) on children’s motivation, what about the influence of positive versus negative feedback.

Kamins and Dweck (1999) conducted two similar experiments with children 5-6 years of age who engaged in role-play scenarios with puppets in which the child’s puppet attempted to do four tasks (e.g., building a towel with block, cleaning up paints, etc.). In the first experiment the children role-played 4 failure tasks with criticism and in the
second experiment the children role-played 4 success tasks with praise. For the first experiment, depending on the assigned criticism condition children received one of three types of criticism following failed tasks, (1) person (e.g., “I’m very disappointed in you”), (2) non-person praise on the outcome (“That’s not the right way to do it”), or (3) non-person praise on the process (e.g., “Maybe you could think of another way to do it”). For the second experiment the children received one of three types of praise following success tasks, (1) person praise (e.g., “You’re a good girl”), (2) non-person praise on the outcome (“That’s the right way to do it”), or (3) non-person praise on the process (e.g., “You must have tried really hard”). Following the feedback conditions, both experiments role-played one failure scenario in which the child creates a Lego house, but forgets to put in the windows and the teacher says, “That house has no windows.” Those who received person feedback (both praise and criticism) gave themselves lower self-evaluations than both of the non-person groups on questions such as, “Think about what happened in the Lego House Story. Did everything that happened in the story make you feel like you were a good girl/boy or not a good girl/boy.” Children in the person group also rated themselves as feeling less positive than both of the non-person groups on a 5-point scale ranging from a very happy face to a very sad face. Finally, when asked what they would like to do next, children in the person group were more likely than the non-person process group to choose a different type of task—i.e., not persist.

Conversely, Corpus and Lepper (2007) found no differences among person, non-person product and non-person outcome praise on motivation in preschool children. In a sample of 4-5 year old children, the authors found that person and both types of non-person praise served to motivate children equally well and together these types of
feedback were more effective than receiving no praise. Although, these findings were not consistent with Dweck and colleagues, the patterns are very similar in that, although not significant, more children in the non-person praise groups were engaging with the activity on a subsequent day than children in the person group. In other words, this null finding may be occurring due to low power rather than lack of effect. Thus, assuming there is an effect of the type of feedback on motivation orientation, why might this be?

Dweck and colleagues have suggested (Cimpian et al., 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998; see also Kanouse et al., 1981) that when children who received person feedback about stable traits (e.g., intelligence) fail, they view the failure as evidence of the lack of that trait (unintelligent). That is, if the child believes that he or she is truly unintelligent, there is no point in trying harder. Conversely, when children who received non-person feedback about performance (e.g., effort) fail, they view the failure as evidence of the lack of performance (e.g., did not put in enough effort). The child will be more likely to put in more effort to attempt to succeed. Research supported this hypothesis. For example, when provided with person statements about another (e.g., “Rose is a carrot-eater”), children inferred that the statement reflected a stable characteristic that was true over time and contexts—Rose likely ate carrots when she was four, will eat carrots when she is an adult, would eat carrots if her family didn’t like carrots, and would eat carrots if her family forbade it (Gelman & Heyman, 1999).

However, younger children may not be able to understand stable traits as well as older children. For younger children, there have been two hypothesized explanations. First, praise about a trait may be interpreted as less sincere and therefore minimized because the child can recall earlier occasions when this was not true of her (Henderlong
& Lepper, 2002; Kohn, 1993). For example, a child, who on one occasion receives, “bad
girl”, and later receives, “good girl,” would be less rewarded by “good girl,”
remembering the occasion when she was “bad.” Second, young children may develop
*contingent self-worth* (Burhans & Dweck, 1995), meaning that the child’s worth or
feelings about herself and worthiness of love and respect are contingent on her meeting
certain standards, (i.e., success) on a task. Person praise, therefore, conveys a contingent
self-worth based on success. For example, you are “good” only if you succeed. To date, it
is unclear if very young children, around two years of age, could develop a contingent
self-worth that could be influenced by the type of feedback they receive. However,
children are likely receiving a lot of feedback from parents and other adults (Henderlong
& Lepper, 2002). Thus, research with children two and under is necessary to determine at
what age feedback-type influences a child’s motivation.

Another problem with the majority of research on feedback-type on children’s
motivation is that these experiments investigate consistent feedback (100% person or
100% non-person). Testing consistent feedback assumes that adults consistently use a
single type of feedback. However, it is more likely that children receive *inconsistent
praise*, a mixture of person and non-person praise. One recent study (Zentall & Morris, in
preparation), investigated the influence of inconsistent praise on motivation. Following
the methodology from Cimpian et al. (2007), Zentall and Morris randomly assigned 135
Kindergarteners aged 5-6 years to groups receiving different proportions of praise-type.
For example, of the four praise statements, those in the 25% non-person group received
one non-person and three person praise statements (counterbalanced). Findings
demonstrated that more non-person praise related to more mastery behaviors, however
the two components of motivation, persistence and self-evaluations, responded differently to inconsistent praise. Only a small proportion (25%) of non-person praise was necessary to promote positive self-evaluations about themselves and their work, but these children were not as likely to persist as children who received mostly non-person praise. Children had to receive three out of four (75%) non-person praise statements to persist. These experimental findings indicate the importance of investigating the inconsistency of feedback-type, for example, by using the proportion of person feedback, that children receive. Moreover, these findings indicate that it is important to investigate each component of motivation separately. Unfortunately, few studies have investigated these relations naturalistically, leaving several unanswered questions. For example, what types of feedback do young children receive and how does that feedback influence their motivation? To study early social influences on children’s motivation, one must observe early parent-child interactions.

2.4. Parental Influence on Motivation Orientations

Parents influence their children’s motivation through general parenting behaviors that can be measured outside of the problem-solving context (a domain-general mechanism) as well as within the problem-solving context (a domain-specific mechanism). Domain-general parenting is likely to be a stable predictor of child motivation, thus early parenting may predict later motivation. Conversely, domain-specific parenting, such as parental feedback, is more likely to be a context specific predictor of child motivation, thus feedback may predict child motivation concurrently. Often these domains are blurred and investigated together. For example, mothers’ irritability, hostility, criticism, negative
feedback, negative affect exchanges and controlling behaviors during problem-solving tasks decreased mastery behaviors, such as persistence and positive affect (Belsky, Domotrovich, & Crnic, 1997; Fagot & Gauvain, 1997; Heckhausen, 1993; Kelley et al., 2000; Moorman & Pomerantz, 2008; Nolen-Hoeksema, Wolfson, Mumme, & Guskin, 1995; Yarrow, Morgan, Jennings, Harmon, & Gaiter, 1982). However, it is unclear whether these parent behaviors represent domain-general parenting or domain-specific parenting. Thus, it is important to investigate the parent-child relationship outside of the problem-solving context, such as parental sensitivity in infancy during a face-to-face play interaction. And it is important to investigate the influence of parental feedback within the problem-solving context that motivation is later measured.

2.4.1. Parent Domain-Specific Influences: Feedback Types Used by Parents

Although the type of praise parents use influenced motivation in school-aged children (see Pomerantz, Grolnick & Price, 2005 for review), very little research has investigated the types of feedback parents use with their young children (Alessandri & Lewis, 1993; Kelley et al., 2000; Reissland, 1994) and even fewer have investigated the influence these types of feedback have on their young children’s motivation (Kelley et al., 2000). Parents reported that person praise was useful and appropriate to use with young children (Dweck, 2002; Henderlong, 2000). In a survey by Dweck (2002), 80% of parents reported that person praise on the child’s abilities was necessary for children feel good about themselves. Similarly, parents of fourth- and fifth-grade children reported that it was more acceptable to use person praise with a preschool child than with a fourth-grade child (Henderlong, 2000).
Naturalistic observations of parents interacting with their young children supported parent-reports of their use of person or non-person parental feedback (Alessandri & Lewis, 1993; Kelley et al., 2000; Reissland, 1994). Parents of 3-year olds were found to use more specific (non-person) praise than global (person) praise (Alessandri & Lewis, 1993). A naturalistic study (Reissland, 1994) on maternal praise during a new game with their children ranging in age from 10-months to 4 years of age supported parent reports of using person praise, particularly with younger children (Dweck, 2002; Henderlong, 2000), however none of the parents in Reissland’s sample used only person praise with their children. Reissland (1994) also found that mothers of younger children praised with person and non-person praise, whereas parents of older children praised only with non-person praise.

Hebert and Dweck (1985 unpublished document, as cited in Heyman et al., 1992) indirectly assessed parental influences by asking preschool children to role-play their mother’s and father’s responses to the child’s failure. They found that children who displayed mastery behaviors tended to describe parents who focused on effort and progress without negative evaluations of the child or the child's performance, whereas children who displayed helpless behaviors tended to describe punitive responses that focused on negative evaluations of the child and the child's assignment. Only one study, to date, has investigated the influence of parental use of person and non-person feedback on young children’s motivation directly (Kelley, et al., 2000).

Kelley and colleagues (2000) found that more positive feedback, regardless of the type of feedback (i.e., person or non-person), from the mother at 2 years of age was positively related to the child persisting on a difficult task at 3 years of age. This may
suggest that young children around 2 years of age are more influenced by positive versus negative feedback than the type of feedback. However, the consistency of the type of feedback may also influence these results. Kelley et al. (2000) did not assess the consistency of feedback-type within parent. Findings suggest that parents are not consistent, particularly with young children (Reissland, 1994). Parents of young children (M=23.1 months) were not consistent in the type of praise they gave their children (using both person and non-person) while engaging with a new toy (Reissland, 1994). Thus, it is important to investigate the degree to which proportion of positive feedback and proportion of person feedback influence motivation in young children. Furthermore, given that parents have been found to be inconsistent in the type of feedback they use during a single context, parents are not likely to be consistent in their feedback over time. Reissland (1994) found that parents of older preschool children rarely used person feedback, suggesting the influence of feedback on motivation should be assessed within a particular problem-solving context before attempting to predict across tasks or over time.

Based on these findings, two important questions develop, (1) what types of feedback are young children (20-months of age) receiving from their parents?; and (2) are these young children influenced more by the type of feedback or by whether the feedback is positive or negative? Furthermore, the majority of research on feedback and motivation has been experimental, which fails to account for the social context in which the feedback is given, including the sensitive relationship between the mother and child (Henderlong & Lepper, 2002).
2.4.2. Parent Domain-General Influences: Sensitive Parenting

One major theory of development, attachment theory, describes how the parent-child relationship would relate to a child’s motivation (Moss, 1992). Attachment theory states that parents’ sensitive and responsive interactions with their child (i.e., the parent being able to read the child’s signals and respond appropriately) allow the child to feel comfortable exploring independently, confident that the secure base (i.e. the parent) will be there for him if needed (Bowlby, 1969/1982). The parent-child relationship may be a mechanism through which early motivation orientation develops (Maslin-Cole & Spieker, 1990). A secure attachment (Bowlby, 1969/1982) and a competent motivational style (White, 1959), enable children to explore their environments and engage in new experiences with confidence. Attachment theory states that the child creates a representation based on the history of the parent behavior and uses this representation as the basis for expectations of the social world (Bowlby, 1969/1982, Bretherton, 2005). This representation also includes an evaluation of the child’s ability to get the desired response from the environment (Bowlby, 1969/1982; Maslin-Cole & Spieker, 1990). In other words, if the child needs the parent and the parent is responsive, the child views herself as capable of changing the environment, whereas, if the parent is unresponsive the child views herself as having little influence on the environment, and therefore, helpless. Theoretically, differences in these representational histories form the basis for attachment classifications and motivation orientation (Maslin-Cole & Spieker, 1990). Although research on children’s motivation and the construct of attachment has produced mixed results, (Colman & Thompson, 2002; Fagot, Gauvain, & Kavangh, 1996; Frankel & Bates, 1990; Frodi et al., 1985; Lutkenhaus, Grossmann, & Grossmann, 1985; Maslin-
Cole & Spieker, 1990; Matas et al., 1978; Vondra, Shaw, Swearingen, Cohen & Owens, 2001), those who have investigated related constructs of sensitivity (e.g., Skinner, 1986) and intrusiveness (e.g., Lutkenhaus, 1984) have found a consistent relation between the parenting and motivation.

*Sensitivity*, defined as the parent’s ability to recognize and respond promptly and appropriately to his or her child’s signals, is related to motivational orientation. Skinner (1986) found that sensitive initiation (nondirective guidance in a problem-solving task) was related to children’s perceived control during a problem-solving task and both sensitive initiation and sensitive responsiveness were related to the child’s active engagement during a problem-solving task. Moreover, Skinner found that a mother’s level of sensitive initiation decreased when the child passively engaged the problem-solving task. Hokoda, & Fincham (1995) found that mothers of third grade mastery-oriented children were more sensitive and responsive regardless of the type of task. These studies measured parent sensitivity concurrently during problem-solving tasks and with older children, however Frodi et al. (1985) found early maternal sensitivity predicated later motivation. Maternal sensitivity while engaging with novel toys at 12-months predicted persistence and competence at 12- and 20-months during a free play (Frodi et al., 1985). However, motivation during free play may not be as good of a measure of motivation as motivation following failure (McCall, 1995). Also, it is unclear whether sensitivity measured earlier in infancy prior to one-year of age, as the attachment relationship is still developing (Bowlby, 1969/1982), may also relate to later toddler motivation.
Intrusiveness, although similar to sensitivity, offers a unique component of parent responsiveness. Intrusiveness is caregiver over-involvement or overstimulation that inhibits the infant (Isabella & Belsky, 1991). Intrusiveness, and a related term over-controlling, force the parent’s agenda onto the infant, ignoring the will of the infant, which theoretically would prevent the infant from exploring on his own. Research on the relation between maternal support for autonomy (as compared to maternal controlling behaviors) found that mothers who supported autonomy tended to have more persistent 12-month-old infants and more competent, mastery-orientated (task persistent and positive in affect) 20-month-old infants than controlling mothers (Frodi et al., 1985). Likewise, Lutkenhaus (1984) found that mothers’ physical interruptions of the child’s activities were related to less motivation in 36-month-old children. Another study measuring intrusiveness and motivation concurrently, found that parental intrusiveness was related to unwillingness to engage in another challenging task after failure in children aged 4-6 years of age (O’Donnell, 2001). In a longitudinal study, helplessness at age 5 was predicted by maternal negative control at 12-months even after controlling for 12-month mastery motivation during a free play (Marsland, 2005). Taken together, these studies lend support to the idea that sensitivity and intrusiveness are salient factors in the development of motivation orientation, particularly for young children.

2.5. Summary

The current state of the field leaves several important questions unanswered. First, Frodi et al (1985) found that sensitivity at 12-months predicted motivation at 20-months, however by 12-months the attachment relationship has been well established (Bowlby,
1969/1982), could very early parent-infant interactions between 3-and 7-months of age, while the attachment relationship is still developing, predict motivation with an unsolvable task at 20-months? Second, which variables are more predictive of motivation orientation, a domain-specific mechanism (i.e., the type of feedback a parent uses) or a domain-general mechanism (i.e., early sensitive parenting)? Parental sensitivity is an important component of internal working model that allows a child to feel confident in herself and able to explore freely (Bowlby, 1969/1982; Bretherton, 2005). The type of feedback has been shown experimentally to affect motivation, although not with children as young as 20-months. The present study assessed early parental sensitivity and concurrent parental feedback on toddler motivation.

2.6. The Present Study

The reviewed literature suggests that the development of motivation orientation is affected by both domain-general and domain-specific variables. There is evidence that the parent-child relationship, including parental sensitivity and intrusiveness influences a children’s motivation orientation. For example, mothers’ sensitivity and low intrusiveness with her 12-months old infant predicted persistence and competence at 12- and 20-months (Frodi et al., 1985). A second mechanism, the type of feedback provided during a problem-solving task, has been demonstrated through experimental designs with older children. For example, person praise was found to be related to less motivation than non-person praise in school-aged children across praise and criticism (Mueller & Dweck, 1998). Alternatively, positive feedback (person and non-person combined) at age two has been shown to influence later motivation at age three (Kelley et al., 2000) more so than
the type of feedback. Thus, the present study examined the degree to which proportion of positive feedback and proportion of person feedback uniquely influenced motivation at 20-months and the degree to which early sensitive parenting and concurrent feedback influenced motivation in 20-month-old children.

One possibility in this model is that a bidirectional effect exists between parent feedback and child motivation, such that parents are not only influencing their child’s behavior, but also reacting to their child’s behavior. For example, after the child cries while ignored with the toy, the parent may use more of a particular type of praise to make the child feel better. Thus, the present study allows for the possibility of a bidirectional effect between parental feedback and child motivation. In general, socialization should be viewed as a bidirectional effect, in which the child is active in influencing her environment as well as being influenced by her environment (e.g., Bell, 1968). In a review, Sanson, Hemphill, & Smart (2004) stated that, “the same parenting can have differential effects on fearful and bold children, and different modes of school instruction appear optimal for children with different attention regulation capacities” (p. 164). Thus, it is important to consider the possibility that the type of feedback parents provide may depend on the child’s motivation during the unsolvable tasks. Additionally, it is important to acknowledge and control for other individual differences that may influence children’s motivation, such as gender and infant temperamental characteristics.

Gender differences are rarely found when in investigating the relations among parental sensitivity, parental feedback and motivation in children, particularly among younger children. For example, Henderlong and Lepper (2007) found gender differences in responses to person versus non-person praise in fourth and fifth grade children, but not
in preschool children. However gender differences have been reported in young children’s reactions to failure. Stipek et al (1992) found that girls (ranging from 24-to 60-months of age) displayed more negative affect than boys after experiencing failure. Also, mothers were found to be more sensitive to their daughters than to their sons (Schoppe-Sullivan et al., 2007). As stated above, there is little information on what types of feedback young children receive, so the present study explores gender differences in feedback, as well. Based on the results from previous studies, gender differences will be tested at the variable level and covariates will be added to the model(s), when necessary.

It is also important to acknowledge individual differences in children’s motivation. For example, certain characteristics (e.g., positive affect/approach, fear, frustration/irritability, effortful control/attention span) are likely to relate to motivation orientation (Derryberry & Rothbart, 1997; Rothbart & Jones, 1998) and would be expected to be stable across contexts (i.e., different tasks and different parents). The purpose of the present study, however, is to investigate the social influences on young children’s motivation. Thus, as a way to control for the influence of child characteristics, affect and persistence exhibited with fathers will be entered as a covariate in the models such that the remaining variance in infant motivation behaviors is unique to the mother-toddler context.

The following research questions were tested in this study:

1. What types of feedback are used with young children (20-months) while teaching a difficult task? For example, most research has investigated two types of feedback, person and non-person in older children. Are there other types of feedback that parents use with younger children that have not been explored? Also, are mothers using consistent feedback with their young children? In other words, do some mothers use only person feedback, while others use only non-person feedback with
their young children? Consistency can be estimated by creating proportion scores of person feedback out of the total person and non-person feedback. Mothers using consistent person feedback would have a proportion score of 1.0.

2. Which feedback variable is most predictive of toddler motivation? That is to what extent does proportion of person feedback and the proportion of positive feedback relate to each component of toddler motivation (i.e., negative affect and persistence), controlling for toddler motivation with fathers? This will be tested by comparing a full model to two nested models (one constraining person feedback to zero and the second constraining positive feedback to zero) for each component of toddler motivation (Figure 2.1 depicts the three models testing persistence, negative affect will be examined in a similar set of models).

3. The main question of this study is: How does a domain-specific mechanism (i.e., feedback) and a domain-general mechanism (i.e., early sensitivity and intrusiveness) uniquely predict each component of toddler motivation during an unsolvable task, controlling for toddler motivation with fathers (Figure 2.2 depicts the model testing persistence, negative affect will be examined in a similar model)?
Figure 2.1: Nested path analyses testing the influence of maternal feedback on toddler persistence controlling for toddler persistence with fathers (A) Full model with person and positive feedback as free parameters; (B) Nested model with positive feedback constrained to zero; (C) Nested model with person feedback constrained to zero.
Figure 2.2: Hypothesized model of domain-general and domain-specific maternal influences on toddler persistence controlling for persistence with fathers.
CHAPTER 3:

METHOD

The present study was part of a larger longitudinal study designed to investigate individual differences in emotion regulation over the child’s first two years and factors that relate to emotion regulation including, marital functioning and interactions with both mothers and fathers (e.g., parental sensitivity). The larger study collected six waves of data when the infant was 3-, 5-, 7-, 12-, 14-, and 20-months of age (+/-14 days). The fourth and fifth waves of data (12- and 14-months) were designed to assess attachment with mothers and fathers, and were not used in the present study.

3.1. Participants

Participants were recruited through local doctor’s offices, hospitals, childbirth classes and community baby fairs. The initial sample consisted of 135 3-month-old infants and their parents. The infants were mostly Caucasian (85.9%)—2.2% were African American, 2.2% were Hispanic, 0.7% were Asian, 6.7% were multiracial, and 2.2% were other. Furthermore, families were predominantly middle class as measured by total family income (14.8% were below $29,999, 45.2% were $30,000-$59,999, 25.9% were $60,000-$89,999, and 11% were $90,000 or more annually) and highest level of education (11% of mothers and 17.5% of fathers had a high school degree or less, 58.6% of mothers and 45.9% of fathers had some college or completed college, and 27.4% of
mothers and 28.8% of fathers had some postgraduate training or completed postgraduate training. The age of the parents varied from 17-44 years for mothers’ ($M = 29.3$) and 18-44 years for fathers’ ($M = 30.8$). The vast majority of parents were married and living together (84.4%) although 2.2% were married and living separately, 11.9% were unmarried and living together and 1.5% were unmarried and living separately.

Approximately half (52.6%) of the infants were female.

Attrition from the first to the last visit was fairly low (14%): 5-months (N=132); 7-months (N=126); and 20-months (N=116). Attrition analyses indicated that, on average, the families who completed the study were more likely to be older, married, Caucasian, and more educated than those who did not complete the study. Mothers who dropped out of the study were younger ($M = 25.58, SD = 4.69$) than those who remained in the study ($M = 30.15, SD = 5.11; F (1, 134) = 16.23, p < .001$). Likewise, fathers who dropped out of the study were younger ($M = 27.88, SD = 5.93$) than fathers who remained in the study ($M = 31.42, SD = 5.38; F (1, 134) = 8.28, p < .01$). Unmarried parents were more likely to drop out of the study than those who were married ($\chi^2 = 23.62, p < .001$).

Furthermore, mothers and fathers who were non-Caucasian were proportionally more likely to drop out of the study as compared to Caucasian parents ($\chi^2 = 19.99, p < .001$ for mothers; $\chi^2 = 13.47, p < .01$ for fathers). Finally, parents whose highest level of education was a high school diploma or less were more likely to drop out of the study ($\chi^2 = 16.40, p < .05$ for mothers; $\chi^2 = 20.67, p < .01$ for fathers). Thus, the present study can be generalized to a primarily Caucasian, well-educated, middle class sample of intact families. Other assessments were excluded for the following reasons equipment failure,
parent not following procedure such that coding was not possible, parent speaking a foreign language (remaining sample sizes by variable are presented in Table 3.1).
### TABLE 3.1
DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>Measure</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skew SE</th>
<th>Kurto SE</th>
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<tr>
<td>Neg Affect with Mother</td>
<td>115</td>
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<td>2.76</td>
<td>.17</td>
<td>.44</td>
<td>.23</td>
<td>16.49</td>
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<tr>
<td>Neg Affect with Father</td>
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<td>.00</td>
<td>2.42</td>
<td>.15</td>
<td>.37</td>
<td>.23</td>
<td>18.88</td>
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<td>.86</td>
<td>.31</td>
<td>.21</td>
<td>.23</td>
<td>-.93</td>
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<tr>
<td>Persistence with Father</td>
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<td>.00</td>
<td>.88</td>
<td>.31</td>
<td>.21</td>
<td>.69</td>
<td>.24</td>
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<tr>
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<td>1.33</td>
<td>5.00</td>
<td>4.15</td>
<td>.60</td>
<td>-.52</td>
<td>.22</td>
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<td>Sensitivity 5m</td>
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<td>4.94</td>
<td>4.17</td>
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<td>Sensitivity 7m</td>
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<td>5.00</td>
<td>4.33</td>
<td>.54</td>
<td>-1.45</td>
<td>.22</td>
</tr>
<tr>
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<td>0</td>
<td>5</td>
<td>.23</td>
<td>.65</td>
<td>.52</td>
<td>.23</td>
</tr>
<tr>
<td>Pos Non-Person</td>
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<td>10</td>
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<td>.22</td>
<td>1.93</td>
<td>.23</td>
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<tr>
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<td>4.83</td>
<td>1.40</td>
<td>.23</td>
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<tr>
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<td>3</td>
<td>.08</td>
<td>.39</td>
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<td>.23</td>
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<td>.23</td>
</tr>
</tbody>
</table>

NOTE: Skew=Skewness, Kurto=Kurtosis, Neg=Negative, Pos=Positive, Prop=Proportion, Person=Person Feedback, Non-Person =Non-Person Feedback, Ambiguous= Ambiguous Feedback
3.2. Procedure

Prior to each laboratory visit, parents received a description of the upcoming assessment along with questionnaires by mail. Parents were provided with an additional verbal description of the assessments and the consent form at each laboratory visit. Upon consenting, one of the parents (parent-order counterbalanced) and their infant were shown into a small, carpeted room with brightly-colored, child-friendly, pictures and posters on the walls. All assessments were recorded on video by two cameras (one for parent and one for infant) that were positioned behind one-way mirrors. The two images were then fed through a split-screen generator to be more easily coded. The second parent would then engage in the same assessment with their infant directly following the first parent unless the parent indicated that the infant needed a short break (e.g., diaper change). At the end of each laboratory visit, the Bayley Scales of Infant Development (Bayley, 1969) were administered; however, the data from the Bayley Scales and the questionnaire data were not examined in the present study. Mother-child data were the focus of the present study, although toddler negative affect and persistence from father-toddler interactions at 20-months were used as covariates.

3.2.1. 3-, 5- and 7-months.

The Still-Face Paradigm (Tronick, Als, Adamson, Wise, & Brazelton, 1978) consists of three episodes: a Face-to-Face Interaction (Play), the posed Still-Face, and a Play Resumption period. Each episode lasted for 90 seconds unless the infant became overly upset, in which case the episode was cut short (with mothers: 3-month: 10; 5-month: 2; 7-month: 7). During the Play episode, parents were instructed to play with their infant as they normally would but without toys and while keeping their infant in the infant seat.
During the *Still-Face* episode, parents were instructed to cease interacting with the infant, maintain looking at their infant, and refrain from making any facial expressions (i.e., pose a ‘blank’ facial expression). Then, during the *Play Resume* episode, parents were instructed to re-engage with their infant and continue to play as in the *Play* Episode. A *Soothe* episode (90 sec.+), which is not typically part of the Still Face Paradigm, was added following Play Resume to allow parents to soothe their infant as they normally would (i.e., the baby could be taken out of the seat). A doorbell prompted the parent to transition from one episode to the next episode and parents were given both verbal and written instructions. Only data from the play and play resume episodes were utilized in the present study.

3.2.2. 20-month

Parent Ignore Toddler Situation (PITS) was developed for this longitudinal study and designed to be similar to the infant Still-Face Paradigm (described above). In the PITS the toddler sat in a high-chair at a table perpendicular to the parent. The PITS consists of four episodes, in which parents were instructed to (1) *Teach*: ‘teach’ the toddler how to play with a novel mechanical toy (tape player or slide projector); (2) *Parent Ignore*: stop interacting with the toddler, direct attention to a magazine; (3) *Resumption of Play*: resume interaction with their toddler and the mechanical toy; and (4) *Normative Soothing* (90 sec.+) in which the parent could remove the toddler from the chair and interact as they normally would (e.g., looking around the room). Two toys were chosen so that the child could engage in a novel toy with each parent, however the toys were too difficult for a toddler to operate by himself. The first toy was a tape player with microphones and the second toy was a slide projector with a remote. In the rare case that the child was very
familiar with one of the toys (i.e., owned the toy) or in one case frightened by the projector, a TV/VCR was substituted (n=1 with mother; n=4 with father). It was never the case that more than one replacement toy was needed. Those toddlers who used the TV/VCR did not significantly differ from the other two toys on the outcome measures. Following the PITS with both parents, families participated in a clean-up task and a wait task, neither of which were utilized in the present study.

3.3. Measures

3.3.1. Parental Sensitivity and Intrusiveness During Infancy

Sensitivity and intrusiveness were measured when the infant was 3-, 5-, and 7-months of age during the two play interactions (Play and Play Resume) of the Still Face Paradigm. Sensitivity was defined as the parent responding appropriately to the infant’s state and the ability to make appropriate adjustments to the infant’s states as the states change. For example, sensitive parents follow their infant’s signals and if the infant is upset, a sensitive parent can quickly identify the source of the distress and soothe appropriately. Intrusiveness was defined as the parent displaying aggressiveness as evidenced by intruding, following his or her own agenda instead of following the infant as determined by the infant’s response. For example, a lot of tickling is not intrusive if the infant continues to enjoy it, however, if the infant does not enjoy the tickling and the parent continues to tickle, it would be coded as intrusive.

Sensitivity and intrusiveness were coded during the Play, Play Resume, and Soothe episodes of the Still Face Paradigm, although only the Play and Play Resume
episodes were utilized in the present study because of the inconsistencies during the Soothe episode (e.g., some parents kept their infant in the seat, others removed their infants and walked around the room). Sensitivity from the Play Resume episode is important to measure because sensitivity during distress (which is most likely to occur during Play Resume) may serve as a better predictor of the attachment relationship than sensitivity when the child is not distressed (McElwain & Booth-LaForce, 2006).

Sensitivity and Intrusiveness were rated on 5-point scales (with 5 being optimal parenting) every 10 seconds for Play and Play Resume as well as a global sensitivity code for the 90s rated on a 9-point scale. An average of the 10-seconds chunks from the Play and Play Resume episodes were utilized in the present study because it is thought that these ratings, although similar to the global ratings, may be more representative of overall sensitivity than the global ratings. The coding rubric for sensitivity was (5) high sensitivity: parent shows complete sensitivity; could not have improved; (4): mostly sensitive: consistently shows sensitive behavior but improvement is possible in one or more situations; (3): some sensitivity: shows a mix of sensitive and insensitive behaviors but neither is consistent; (2): low sensitivity: consistently shows insensitive behavior; very few sensitive behaviors, or shows attempts at sensitive behavior but fails to read baby’s cues correctly; and (1): no sensitivity: parent shows no sensitive behavior; consistently shows examples of insensitivity. The coding rubric for intrusiveness was (5) no intrusiveness: parent shows no examples of intrusive behavior; (4): ambiguous intrusiveness: ambiguous behavior that includes some potentially intrusive acts, often unclear child reaction; (3): some intrusiveness: 1-2 brief and mild examples of intrusiveness make the episode inconsistent but behavior does not overly interfere with
interaction throughout the episode; (2): *mostly intrusive*: extended or intense examples of intrusiveness but not for entire length of episode, or intrusiveness interferes with interaction throughout the episode; and (1): *extremely intrusive*: constantly exhibits intense, intrusive behavior.

Sensitivity was coded and then coders watched each assessment again to rate intrusiveness. Coders did not code an infant more than once (i.e., with mothers and fathers) within each infant age to prevent coder carryover effects. Inter-rater reliability was assessed on approximately 25% of the infants using intraclass correlations (ICC) during the play and play resume episodes across all three times (maternal sensitivity = .88-.96; M= .94; maternal intrusiveness = .88 - .96; M = .93). Sensitivity and intrusiveness were highly related at each infant age (3-months r = .73; 5-months r = .74; 7-months r = .71), thus these scores were averaged together for each infant age creating three sensitivity/intrusiveness composite scores. From hereon these composite scores will be referred to as *sensitivity*. These three composite scores will be used to create a latent variable of sensitivity. Although, sensitivity is not highly related across infancy (3-months to 5-months r = .23; 3-months to 7-months r = .13; 5-months to 7-months r = .22), it is believed that these reflect accurate variation in maternal sensitivity across infancy.

### 3.3.2. Maternal Feedback

Maternal feedback was coded during the PITS (collapsing the Teach and Resumption of Play)—which represents a parent teaching interaction. The Soothe was not used due to the variability in what mothers did during this period, for example disengaging with the toy and discussing pictures on the wall. Feedback was coded before and after the parent ignore episode for two reasons, (1) preliminary review suggested that many mothers did
not provide feedback during the 90-s Teach episode whereas mothers were more likely to provide feedback after the Ignore episode, and (2) including these two episodes allows us to get a more representative sample of the type(s) of feedback the toddler typically received when the mother teaches a difficult task.

Feedback was coded when the mother responded to the child or the child’s behaviors on the task. This excluded, encouragement (e.g., “keep trying”), attention getting (“Look, look”) and feedback on non-task related behaviors. Feedback was first coded as positive or negative. Positive feedback (i.e., praise) was in response to the child’s successful actions (e.g., “Good job”). Negative feedback was most often corrections (e.g., “Turn it the other way”) and reiterating directions (e.g., “push it, push it, push the green one”), but also could include, although was rarely seen, criticism in response to the child’s unsuccessful actions. Along with codes of positive or negative, feedback was coded as one of the following types: (1) person, or trait, (e.g., “good boy!”; “you’re lazy”); (2) non-person, or specific to the task (e.g., “good job!”; “Turn the tape the other way”), or (3) ambiguous (e.g., “good”; “high five!”; “yea!”; “Un-uh”; “No”). The ambiguous category was created because, to date, there is no research on how feedback that is neither clearly person nor non-person might influence child motivation; however, it was a common type of feedback given to the children in this study. Coders did not code the same toddler more than once (i.e., the mother and father) with the exception of reliability. Inter-rater reliability was assessed on approximately 28% of the assessments using ICCs for each type of feedback: positive person (.71); positive non-person (.98); positive ambiguous (.86); negative person (.91); negative non-person (.91); and negative
ambiguous (.91). Positive person feedback may have been low because of the low frequency of person feedback in this sample (see descriptive statistics in Table 3.1).

In order to evaluate consistency of feedback, two proportion scores were created for each child—proportion of person feedback and proportion of positive feedback. The proportion of person feedback score was the total person feedback (positive and negative) divided by the total person and non-person feedback. Using the proportion of person feedback assesses the consistency of feedback-type, such that a mother who shows anywhere between a proportion of 0.0 and 1.0 uses inconsistent feedback. The proportion of positive feedback included all three types of positive feedback divided by all feedback.

3.3.3. Toddler Motivation

Motivation is a complex concept that is most commonly operationalized using multiple behaviors (e.g., Jennings & Dietz, 2003) and a task that produces failure (McCall, 1995). Many of the behaviors studied were selected based on observations of helplessness manipulated through experimental design, including failure to persist and depressed affect (Abramson, Seligman, & Teasdale, 1978; Diener & Dweck, 1978, 1980; Dweck & Reppucci, 1973). Similarly, two components of mastery motivation were posited as being essential in measuring mastery motivation: instrumental (e.g., task persistence) and expressive (e.g., task pleasure or lack thereof; Barrett, Morgan, & Maslin-Cole, 1993). The authors suggest that, although both components are necessary for a valid measure of mastery motivation, they may not be highly correlated (Barrett et al., 1993). For example, if a task is truly impossible, it would be adaptive for a child to quit, however, children with a mastery-orientation would be less likely to display negative affect and negative self-evaluations than children with helpless-orientations.
Furthermore, tasks should ensure failure or at least struggle to be valid measures of mastery motivation (McCall, 1995) and to detect helplessness (e.g., Diener & Dweck, 1980). Thus, the PITS was an appropriate task on which to assess toddler motivation in that the child engaged with an unsolvable toy and both instrumental (i.e., persistence) and expressive (i.e., negative affect) motivation were assessed. Further, persistence and negative affect are appropriate to assess in young children, unlike other components of helplessness, such as ability attributions (Burhans & Dweck, 1995).

Toddler motivation was assessed during the Parent Ignore episode of the PITS in which the parents disengaged from the toddler, leaving their toddler to attempt the toy on independently. The PITS toys were extremely difficult for a child of this age to operate independently, which ensured some degree of failure. However, the toddler witnessed the toy working during the preceding episode when the parent taught her how it worked. Toddler motivation was assessed during the parent ignore episode because it allowed measurement of the toddler motivational behaviors free of direct parental influences (e.g., the parent encouraging the toddler to engage with the toy). Thus, the degree to which a parent is able to engage their toddler with the toy did not confound the assessment of the toddler’s motivation to engage with the toy.

Persistence was measured using a combination of two observed behaviors—active engagement and looking at the toy. Active engagement was defined as trying to operate the toy (e.g., turn on power and insert cassette tape into player). Inter-rater reliability was assessed on approximately 25% of the videotapes and Cohen’s Kappas were high for toddler engagement with mothers ($\kappa = .90$) and with fathers ($\kappa = .83$). Looking at the toy was defined as visual attention focused exclusively on the toy. Again, inter-rater
reliability was high (κ = .95 for toddlers with their mothers; κ = .93 for toddlers with their fathers).

Persistence was scored as the number of seconds that the child was looking at the toy and actively engaged with the toy out of the total number of valid seconds during the 90-second episode for each child. Although, active engagement and looking at the toy were correlated (r = .45, p<.001 for toddlers with their mothers; and r = .46, p<.001 for toddlers with their fathers), they were not dependent on one another; thus it is important to look at the proportion of time for which both were occurring.

Toddler affect was coded second-by-second using a coding scale previously used by Braungart-Rieker et al. (1998). The coding rubric was -3 (large grimace, mouth open), -2 (frown, mouth slightly ajar), -1 (small frown, mouth closed), 0 (neutral expression), 1 (slight or half smile), 2 (larger smile, mouth open), and 3 (smile with mouth opened widely). Coders did not code a toddler more than once to prevent coder carryover effects. Reliability was calculated on approximately 25% of the videotapes using ICCs. Inter-rater reliability was very high for toddlers with mothers (.93) and with fathers (.85).

Rather than creating a single average affect score, which could make toddlers who display both positive and negative affect appear neutral, affect was split into positive and negative affect. In this case, a zero for negative affect represented “no negative affect” which could either mean neutral or positive affect was displayed during that second. Only the average negative affect score was used in the present study because failure conditions, such as this task, are expected to produce more negative affect than success conditions (e.g., Stipek et al., 1992).
The two components of motivation, negative affect and persistence with mothers were correlated in the present sample, \( r = -.33, p < .001 \). This suggests that toddlers who displayed more negative affect, were less persistent. Further, negative affect with mothers was significantly correlated with negative affect with fathers \( (r = .56, p < .001) \), suggesting that negative affect may be an individual difference that is stable across parents and contexts. Conversely, persistence with mothers was marginally inversely related to persistence with fathers \( (r = -.17, p = .09) \), suggesting that persistence is parent- and context-specific.
CHAPTER 4:  
RESULTS

4.1. Preliminary Analyses

First, descriptive statistics are presented (Table 3.1), which include means, standard deviations, minimum and maximum values, as well as skewness and kurtosis for all measured variables. As can be seen in Table 3.1, most of the variables that are included in the models are skewed (i.e., greater than 1 or less than -1) and have positive kurtosis (i.e., leptokurtic distributions). Thus, subsequent models examining these variables will include a robust method of estimation that accounts for non-normality in variables (described in section 5.3). In general, the majority of the toddlers displayed low levels of negative affect with both parents. Sensitivity during infancy was also skewed toward the high end, though there was a fairly wide range of mothers’ sensitive responding. Finally, very few mothers used person feedback with their 20-month-old children.

Next, parent order effects were tested to determine if the order in which the mother was assessed with the child (i.e., before or after the father) would impact the key variables in the study. Parent-order effects were tested on sensitivity at 3-, 5-, and 7-months, toddler negative affect and persistence with mothers and fathers, and maternal feedback proportion scores using One-way Analysis of Variances (ANOVAs); one
significant effect emerged. Mothers’ proportion of positive feedback scores were greater when they went second, following fathers $F(1, 106)=43.13, p<.001$. Thus, parent order was included as a covariate of the proportion of positive feedback.

Additionally, child gender effects were tested on sensitivity at 3-, 5-, and 7-months, proportion of positive feedback (controlling for parent order), proportion of person feedback, negative affect with mother (controlling for negative affect with father), and persistence with mother (controlling for persistence with father) using ANOVAs. Mothers were more sensitive with boys ($M=4.43$) compared to girls ($M=4.24$) at 7-months, $F(1, 119)=3.97, p<.05$. Also, mothers provided a higher proportion of positive feedback to girls ($M=.34$) compared to boys ($M=.28$), $F(2, 105)=21.63, p<.001$. Finally, girls expressed greater negative affect ($M=.17$) during the unsolvable task than boys ($M=.14$), $F(2, 104)=26.17, p<.001$. Thus, child gender was included as a covariate in subsequent models on sensitivity at 7-months, proportion of positive feedback, and proportion of negative affect with mothers.

Prior to testing the proposed models, zero-order and partial correlations (controlling for negative affect and persistence with fathers) were conducted and are reported in Table 4.1. There was a significant relation between sensitivity at 5-months and toddler negative affect during the unsolvable task at 20-months such that toddlers whose mothers were more sensitive in infancy exhibited less negative affect at 20-months. Thus, there is evidence that sensitivity during infancy is related to toddler negative affect. However, based on these correlations there is little evidence that feedback is related to children’s motivation.
TABLE 4.1

ZERO-ORDER AND PARTIAL CORRELATIONS
FOR THE MODELED VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity 3m</th>
<th>Sensitivity 5m</th>
<th>Sensitivity 7m</th>
<th>PropPerson Feedback</th>
<th>PropPositive Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toddler Negative Affect</td>
<td>-0.05</td>
<td>-0.22*</td>
<td>-0.12</td>
<td>0.04</td>
<td>-0.13</td>
</tr>
<tr>
<td>Toddler Persistence</td>
<td>0.06</td>
<td>0.01</td>
<td>0.04</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>Toddler Negative Affecta</td>
<td>-0.16</td>
<td>-0.32**</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.13</td>
</tr>
<tr>
<td>Toddler Persistenceb</td>
<td>0.04</td>
<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>PropPerson Feedback</td>
<td>0.24*</td>
<td>0.07</td>
<td>0.07</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PropPositive Feedback</td>
<td>0.19†</td>
<td>0.11</td>
<td>0.06</td>
<td>0.19</td>
<td>-</td>
</tr>
</tbody>
</table>

NOTE: Significant p-values (†<.10, *<.05, **<.01, ***<.001) are presented. m= months of age, PropPerson=Proportion of Person, PropPositive=Proportion of Non-Person

a = Controlling for Negative Affect with Fathers; b = Controlling for Persistence with Fathers
4.2. Maternal Feedback: Descriptive Findings

The data presented in Table 3.1 and zero-order correlations among the feedback variables presented in Table 4.2 help to describe how mothers’ gave feedback to their toddlers. Within-Subjects ANOVAs yielded significant differences among the types of negative $F(2, 106)= 189.90, p< .001$ and positive $F(2, 106)= 26.17, p< .001$ feedback mothers provided. Paired t-tests were used to determine that on average, children received more negative non-person feedback, such as corrections and reiterating directions than either negative person $t(107)=19.43, p< .001$, or negative ambiguous $t(107)= 16.57, p< .001$ feedback. On the other hand, the majority of positive feedback was ambiguous, such as “High Five” and “Uh-huh”. Mothers provided more positive ambiguous feedback than either positive non-person feedback $t(107)= 10.32, p< .001$ or positive person feedback $t(107)= 7.22, p< .001$. Person feedback (positive and negative) was used least often among the feedback types. Further, most mothers, 83.3%, used no positive person feedback and 94.4% used no negative person feedback. Moreover, mothers used person feedback in conjunction with a greater amount of non-person feedback (i.e., inconsistent), as evidenced by the maximum proportion of person value (Table 3.1), reflecting that one instance of person feedback to every three instances of non-person feedback was the most person feedback a mother provided. Further, the correlations among the types of feedback are positive (Figure 4.2), suggesting that mothers, tended to use multiple types of feedback together. Specifically, mothers who provided more positive ambiguous feedback tended to provide more positive non-person feedback. In addition, mothers who provided more negative ambiguous feedback tended to provide more negative person and non-person feedback. These correlations suggest
that mothers were more consistent within positive or negative feedback, though less consistent within type of feedback (person, non-person, or ambiguous). One exception to the pattern of consistency within positive and negative is the positive correlation between negative non-person feedback and positive ambiguous feedback, the most common types of negative and positive feedback.

### TABLE 4.2

ZERO-ORDER CORRELATIONS AMONG THE TYPES OF POSITIVE AND NEGATIVE MATERNAL FEEDBACK

<table>
<thead>
<tr>
<th>Feedback Category</th>
<th>Positive Non-Person</th>
<th>Positive Ambiguous</th>
<th>Negative Person</th>
<th>Negative Non-Person</th>
<th>Negative Ambiguous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Person</td>
<td>.07</td>
<td>.27**</td>
<td>-.08</td>
<td>.13</td>
<td>.06</td>
</tr>
<tr>
<td>Positive Non-Person</td>
<td>.24*</td>
<td>-.03</td>
<td>.18†</td>
<td>-.16</td>
<td></td>
</tr>
<tr>
<td>Positive Ambiguous</td>
<td>-.07</td>
<td>.32**</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Person</td>
<td>.34***</td>
<td>.24*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Non-Person</td>
<td></td>
<td>.37***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Only top half of correlation matrix displayed. Significant p-values (†<.10, * < .05, ** <.01, and ***<.001) are presented.

4.3. SEM Testing

Structural equation modeling (SEM) was used to test the models described in Chapter 2 (e.g., Figures 2.1 and 2.2). These models were estimated using MPlus version 5.2
(Muthén & Muthén, 2007). Given that this is a longitudinal study in which attrition was related to several demographic variables (parent education, ethnicity, marital status and parent age) it would be ideal to account for missingness related to these demographic variables. Unfortunately, conventional SEM programs such as MPlus cannot perform this task (at least without advanced programming knowledge) at this point in time. However, full information maximum likelihood (FIML) estimation was used in this study to account for missingness within the measured variables and covariates. FIML produces the unbiased parameter estimates by calculating a likelihood function for each person when the missing mechanism is missing at random (MAR) or missing completely at random (Acock, 2005). FIML predicts missing values using information from the available raw data in order to more accurately estimate the model parameters and standard errors (Enders & Bandolos, 2001). In addition, a robust method for estimation (MLR) was applied, which accounts for the non-normality in variables, as discussed above (also see Table 3.1), as well as varying sample sizes by adjusting the chi-square values with robust standard errors (Curran, West, & Finch, 1996). Along with the $\chi^2$ values and corresponding degrees of freedom, multiple fit indices are reported to assess the extent to which the models fit the present data. Good fit can be assumed when the $\chi^2/df$ ratio is between 1 and 3 (Arbuckle & Wothke, 1999), although fit can be detected more accurately when CFI is $\geq 0.95$, RMSEA is $\leq 0.06$, and SRMR is $\leq 0.08$ (Hu & Bentler, 1999).

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1 Covariance matrices for each model are provided in Appendix A.
The bidirectional effect in the proposed SEM models, known as a nonrecursive, reciprocal effect (e.g., Bollen, 1989), can be problematic (i.e., underidentified) in that the model is attempting to estimate more parameters than there are measures (Bentler & Chou, 1987). However, the proposed models are identified because there are other variables (e.g., covariates) that influence one, but not the other variable (Bentler & Chou, 1987). For example, parent order relates to the proportion of positive feedback, but does not related to negative affect. Thus, the complexity of the models allows the models to be identified.

Two types of SEM models were tested for this study. The first (e.g., persistence in Figure 2.1) is an exploratory model in which two nested models investigating the degree to which each maternal feedback predictor, proportion of person and/or proportion of positive, influenced each component of motivation (persistence and negative affect). Parent order was added as a covariate to the proportion of positive feedback and child gender was added as a covariate to the proportion of positive feedback, and negative affect with mothers. The results for persistence indicated a good fit for one of the three models, the model constraining proportion of person feedback (Model C from Figure 2.1.) $\chi^2 (8, N=135) = 9.58, p = .30, \chi^2/df = 1.20, CFI = .96, RMSEA = .04, \text{and SRMR} = .06$. Standardized path coefficients predicting persistence, however, were non-significant. Interestingly, there was a significant path coefficient predicting maternal positive feedback from toddler persistence, $\beta = .38, SE = .17, p < .05$, suggesting that more toddler persistence predicted a greater proportion of maternal positive feedback.

The results for negative affect indicated a good fit for two of the three models. The model that included proportion of person and proportion of positive feedback (similar to
Model A from Figure 2.1) was an adequately good fit to the data, \( \chi^2 (5, N=135) = 8.60, p = .13, \chi^2/df = 1.72, \) CFI = .91, RMSEA = .07, and SRMR = .04 and the model constraining proportion of person feedback (similar to Model C from Figure 2.1) was a good fit to the data, \( \chi^2 (7, N=135) = 8.66, p = .28, \chi^2/df = 1.24, \) CFI = .96, RMSEA = .04, and SRMR = .04. However, as with the model for persistence, standardized path coefficients predicting negative affect were non-significant. Nevertheless, these models suggest that the inclusion of proportion of positive feedback is important for good model fit predicting persistence and negative affect. Based on the results from these initial models, and given that the sample size of the present study did not offer enough power to test both types of feedback in the same model, only the proportion of positive feedback, not proportion of person feedback, was included in the remaining model-testing.

The second model tested in the present study (e.g., Figure 2.2.) investigated latent sensitivity and maternal feedback on toddler motivation. For the model testing toddler persistence, parent order was added as a covariate to the proportion of positive feedback and child gender was added as a covariate to the proportion of positive feedback, and maternal sensitivity at 7-months. The model testing toddler persistence was a good fit to the data \( \chi^2 (15, N=135) = 15.82, p = .39, \chi^2/df = 1.05, \) CFI = .99, RMSEA = .02, and SRMR = .06); however, there were no significant estimates predicting persistence (see Figure 4.1). In other words, the persistence model results suggest that maternal sensitivity and proportion of positive feedback did not significantly predict toddler persistence. Yet, once again, there is an interesting trend that mothers of toddlers who showed more persistence provided more positive feedback. In addition, mothers who provided a greater
proportion of positive feedback during toddlerhood tended to be more sensitive during infancy.

Figure 4.1: Structural Equation Model results testing the influence of maternal sensitivity and maternal feedback on toddler persistence controlling for parent order, child gender, and toddler persistence with fathers.

Note: Standardized path coefficients and significant p-values (†<.10, * < .05, ** <.01, ***<.001) are presented. ƒ superscripts indicate fixed loadings.
The model testing negative affect, with the aforementioned covariates adding child gender on negative affect with mothers, yielded a reasonably good fit to the data: $\chi^2 (14, N=135) = 21.79, p = .08, \frac{\chi^2}{df} = 1.56$, CFI = .90, RMSEA = .06, and SRMR = .05. In this case, however, the latent variable of maternal sensitivity significantly predicted negative affect expressed during the unsolvable task (see Figure 4.2). In other words, infants with mothers who displayed more sensitivity were less likely to be upset during the unsolvable task at 20-months. In addition, mothers who were more sensitive during infancy also showed a higher rate of positive feedback during the challenging task. The proportion of maternal positive feedback, however, did not predict negative affect. Furthermore, unlike the model for toddler persistence, toddler negative affect did not influence the proportion of maternal positive feedback.
Note: Standardized path coefficients and significant p-values (†<.10, * < .05, ** <.01, ***<.001) are presented. f superscripts indicate fixed loadings.

Figure 4.2: Structural Equation Model results testing the influence of maternal sensitivity and maternal feedback on toddler negative affect controlling for parent order, child gender and toddler negative affect with fathers.
CHAPTER 5:
DISCUSSION

The present study is novel in its examination of socio-emotional and motivation development. The purpose of the study was to understand early social influences, in particular, parental influences on young children’s motivation. Two mechanisms of parental influence were tested, maternal sensitivity (a domain-general mechanism) and maternal feedback during a teaching task (a domain-specific mechanism). Because of the lack of literature on the influence of feedback on motivation in this young age group, the study was by necessity descriptive in nature. There were four major findings. One, an understudied type of feedback, ambiguous, was the most common type of positive feedback offered by mothers. Two, mothers were more consistent in whether they provided positive or negative feedback to their children, but were less consistent in the feedback-type (e.g., person) they provided to their children. Three, a comparison of how feedback related to motivation during the unsolvable task indicated that a model including positive feedback fit the data better than a model including person feedback, though neither positive feedback nor person feedback directly predicted children’s motivation. Four, when examining the two mechanisms of parental influence together, maternal sensitivity during infancy and feedback during toddlerhood, several interesting patterns emerged. Maternal sensitivity from 3- to 7-months predicted toddler motivation (less negative affect). Also, mothers who were more sensitive during infancy offered
more positive feedback during a teaching task at 20-months. Lastly, toddler motivation (increased persistence) was predictive of maternal positive feedback indicating an interesting linkage stemming from child to parent. The following sections will discuss these issues in more detail.

5.1. Maternal Feedback

To date, we know very little about what types of feedback parents provide to their young children. Supporting a previous naturalistic observation of mothers and their young children (Reissland, 1994), mothers used more than one type of feedback (i.e., use inconsistent feedback) with their young children. In the present study, mother’s used person, non-person, as well as third type of feedback that has not been studied, ambiguous feedback. In other words, mothers appear to vary their feedback when toddlers are faced with a challenging task. However, mothers were somewhat more consistent within positive or negative feedback. That is, mothers tended to offer feedback that was either mostly positive or mostly negative. Interestingly, results from subsequent models showed that mothers who used more positive feedback were more sensitive during early infancy. Thus, levels of positive feedback during toddlerhood could reflect an extension of a more general sensitive and a warm parenting style. Somewhat surprisingly, however, sensitivity during infancy, not concurrent positive feedback, influenced the toddler’s motivation. Toddlers with more motivation might have a more positive internal working model of the parent-child relationship. The internal working model is based on a history of a sensitive and responsive parenting environment, which
has less to do with the content of the feedback that mothers provide during teaching tasks at this age.

The majority of positive feedback mothers provided was ambiguous (e.g., “Yay!”), whereas the majority of negative feedback was non-person. In other words, when correcting young children, mothers provided feedback that focused on a specific behavior or event at one particular time. But, when praising young children, mothers provided feedback that was ambiguous. There have been no reported studies investigating how ambiguous feedback relates to motivation or how parents who use the combination of non-person negative feedback and ambiguous positive feedback might relate to motivation. Further, very few mothers used person feedback, which offers further support that future research should not necessarily assume that parents use certain types of feedback such as person feedback or that parents’ feedback is consistent.

5.2. Maternal Feedback and Children’s Motivation

Research on preschool-aged or older children (Kamins & Dweck, 1999; Mueller & Dweck, 1998; see also Dweck, 2002) found that the type of feedback (person versus non-person) is more predictive of children’s motivation than whether feedback is positive or negative, whereas research on younger children (36-months) found that positive feedback was more predictive of motivation than was the type of feedback (Kelley et al., 2000). The present study offers little evidence to support that either positive feedback or type of feedback is related to toddler motivation in children under the age of 2.

There are several reasons why feedback may not have influenced motivation in the present study. First, children under 2 years of age may be too young to have
developed contingent self-worth, an understanding that their self-worth is dependent on their success (Burhans & Dweck, 1999). Thus, when young children fail they may not perceive themselves as unworthy. Perhaps contingent self-worth is still developing in children under the age of two. Second, as suggested above, children of this age may be too young to be socialized by the meaning of the words. For example, the content of the mother’s feedback may be less influential than maternal affect, such as positive tone and/or positive facial expressions, during a teaching task. If this is the case, future research should investigate the degree to which the content of parents’ feedback influences motivation outcomes. Future research on the development of motivation should investigate the influence of feedback across age groups and longitudinally to further our understanding of how the environmental effects (e.g., parental influences) may change as children age. For example, parents have been found to use more person praise with younger children as compared to older children in a study assessing children 10-months to 4 years of age (Reissland, 1994). It is possible that person feedback does not negatively influence motivation until the child is older. So, as long as parents adjust their feedback as their child gets older, there may be no negative impact of early person praise on the child’s motivation. Conversely, parents who continue to use person praise with preschool aged children may negatively influence their children’s motivation. Although maternal feedback did not influence toddler motivation, there is some evidence that maternal feedback was influenced by toddler motivation.

The present study offered no support for the bidirectional effect between maternal feedback and motivation; however, the more the toddler persisted on the task, the greater the proportion of positive feedback the mother provided. Mothers appear to be
responding to their toddlers’ motivation behaviors, providing higher proportions of positive feedback when their toddlers are showing persistence. As mentioned above, the proportion of positive feedback was also predicted by early maternal sensitivity. The proportion of positive feedback may be a proxy for sensitive, responsive, warm parenting at 20-months, in that mothers who are aware of their child’s interest in the toy will continue to provide positive feedback (i.e., praise). However, in this sample, the meaning of the words is not yet having a direct impact on the child’s motivation. Future longitudinal research should investigate how the predictors of children’s motivation change over time. For example, early sensitivity may predict toddler motivation, whereas type of feedback or proportion of positive feedback may be a better predictor of motivation in preschool-aged children and older children. Possibly concurrent positive feedback is a mediator between early sensitivity and preschool motivation. Toddler motivation, however, is predicted more by early sensitivity, as discussed in the next section.

5.3. Domain Specific and Domain General Effects

Based on her work with older children, Dweck (2002) stated that the type of feedback influenced children’s motivation more than sensitivity of the person delivering the feedback; however, the present study suggests the opposite for children under two-years of age. Extending previous research (Frodi et al., 1985), a relation between sensitivity and intrusiveness during early infancy predicts toddler motivation, in the form of negative affect, during an unsolvable task. This is an important finding because it shows that even prior to the formal development of the attachment relationship (Bowlby,
1969/1982), maternal interactions with their infants influence how their toddlers respond to failure. The internal working model could be, in part, predicting how toddlers respond to a failure task. If so, future research should not ignore parental sensitivity as it relates to the development of children’s motivation. Perhaps early maternal sensitivity serves as a protective factor later in life when feedback is more influential. In this case, those with sensitive parents may be less influenced by (i.e., more resilient to) feedback-type than children with less sensitive parents. Conversely, no relation was found between early sensitivity and persistence during the unsolvable task supporting the idea that negative affect and persistence should be evaluated independently (Barrett et al., 1993; Zentall & Morris, in preparation).

In contrast to previous research predicting persistence from sensitivity (Frodi et al., 1985) and feedback (Kelley et al., 2000), the domain-general and the domain-specific mechanisms were not significant predictors of toddler persistence. It is possible that toddler persistence, at this young age, may be more of an individual difference, for which early and concurrent maternal behaviors have less influence. The correlation between persistence with mothers and persistence with fathers was not significantly related, suggesting that toddler’s persistence is not stable across contexts. However, the toddler’s interest in the toy is an example of an individual difference outside of parental influence that may be more predictive of persistence. Deci and Moller (2005) posit that a person must have interest in a task in order to be intrinsically motivated, so without interest, even mastery-oriented toddlers would not be expected to persist. Alternatively, the unsolvable task may have been so difficult that giving up reflected adaptiveness rather
than a sign of helplessness. In this case, as stated by Dweck (1999), helpless children would be expected to display greater negative affect than would mastery children.

Based on these findings, it appears that domain-general parental influences predicted toddler motivation, whereas domain-specific feedback (proportion of positive or proportion of person) did not. It is important to note that these findings could be unique to this age group. As suggested by Dweck (2000), feedback-type may be more predictive of older children’s motivation than sensitive parenting. In this case, domain-specific influences would become more important as the child gets older. It is unclear if the influence of maternal sensitivity on motivation would continue over the life course, or diminish as the influence of domain-specific influences became stronger. Based on the internal working model (Bowlby, 1969/1982), it would be expected that maternal sensitivity would remain a predictor of motivation over time. In addition, mothers who are more sensitive may be more in tune with which types of feedback are most appropriate to offer their children and thus decrease the use of person feedback as their children get older. Future research is needed to better understand the influence of domain-general and domain-specific parental influences on the development of children’s motivation.

5.4. Limitations

There are a few limitations in this study that should be discussed. First, the determination that positive feedback was more important than the person feedback was based on exploratory results. There was one previous study suggesting that positive feedback provided to 20-months-olds was more influential on the children’s motivation at
36-months than the type of feedback (Kelley et al., 2000). However, future studies should replicate this study to confirm that these results are generalizable to children younger than three years of age.

Also, as mentioned above, the unsolvable task used in this study may have been too difficult to expect persistence. Mastery-oriented and helpless-oriented children will give up on tasks that are impossible. However, mastery-oriented children would not express negative affect upon giving up and would persist on future workable tasks unlike helpless-oriented children. Thus, in the present study, negative affect may have been a better measure of motivation orientation than persistence. Future research should include a solvable task after the failure task to test for motivation related persistence.

Third, the feedback provided to these children was given by one parent and in one context (a teaching task). It is possible that the feedback was specific to the mother and to this teaching task. Young children are likely to receive feedback from multiple adults, in particular mothers and fathers. For example, Heyman et al., (1992) used role-play scenarios in which children verbalized the response they expected from each parent in response to the child’s incorrect work. The authors provide an example in which the child depicts the father as one who expresses anger, and the mother as one who expresses acceptance. This particular child had adopted the father’s beliefs, which were reflected as negative self-attributes. Thus, paternal feedback could be another influence that should be investigated in future research. Moreover, although very little person feedback was used during the teaching task, perhaps mothers would use more person feedback on a different type of task, such as a compliance task in which the toddler is persuaded to clean-up toys.
Finally, there are limitations of the sample. The sample was fairly small, which limited the questions that could be investigated using SEM modeling. For example, it was not possible to test a model containing both types of feedback and sensitivity on negative affect and persistence at the same time. Further the generalizability of this study is limited to fairly sensitive parents, from mostly Caucasian, middle-class families. Future research should investigate these relations with larger and more diverse samples.

5.5. Conclusions and Future Directions

This study was unique in that it investigated multiple sources of parental predictors on the development of children’s motivation orientation. Findings suggest that (1) mothers of toddlers provide a combination of types of feedback, in which the majority of positive feedback was ambiguous and the majority of negative was non-person; (2) neither feedback-type nor positive versus negative feedback significantly influenced toddler motivation, although mothers feedback was influenced by the toddler’s level of persistence; and (3) maternal sensitivity during early infancy predicts toddler negative affect during an unsolvable task.

Future directions should focus on four main areas. First, experimental research should investigate ambiguous feedback further. Specifically, how does ambiguous feedback compare to person and non-person feedback? Second, experimental research on the influence of feedback on motivation should be done with samples under the age of two. These experiments should investigate how type of feedback, positive versus negative feedback, and positive affect of the experimenter influences children under the age of two. The aforementioned experiments, conducted cross-sectionally, would be
valuable in determining age-related differences in the influence of feedback on motivation. Third, feedback should be investigated in mothers and fathers as well as across contexts. These studies will help to obtain a better understanding of what types of feedback are provided and how the child’s motivation may be affected by the feedback provided across tasks and across parents. Finally, a longitudinal study is needed to understand how early parental sensitivity and feedback relate to the development of motivation in older children. In other words, how might sensitivity and more so the type of feedback change over time and what influence would this have on the development of motivation? For example, parents reported providing (Henderlong, 2000) and were found to provide (Reissland, 1994) more person praise with a preschool-aged child or younger than with an older child, suggesting that parents may adjust their feedback based on the child’s age. However, sensitive parents may be more able to adjust their feedback than insensitive parents. Another question that can be addressed through a longitudinal design is if parental sensitivity, through the internal working model, could serve as a protective factor, protecting children from the negative effects of receiving person feedback. For example, if a 5-year old with sensitive parents receives person feedback, would she respond as helplessly to failure as a 5-year old with insensitive parents or would the internal working model serve as a protecting mechanism. Alternatively, does early sensitive parenting related to type and positive nature of feedback that in turn related to motivation in older children.

Based on the current findings and the future directions laid out, interventions or prevention programs could be developed to prevent poor academic achievement related to helpless motivation orientation. Older children (fifth-grader) were more likely than
younger children (Kindergarteners, 1\textsuperscript{st} graders and 3\textsuperscript{rd} graders) to demonstrate helplessness (Rholes et al., 1980). And older children, who are currently experiencing academic failure, are most likely to be the focus of intervention programs (e.g., Blackwell, Trzesniewski, & Dweck, 2007). However, the present study demonstrates that children’s motivation is developing before entering school and is influenced by very early sensitive parenting. Thus, education programs designed for pregnant couples who are at-risk for insensitive parenting may be a good place to begin. Further, based on these findings, it does not appear necessary to intervene in the types of feedback parents are providing their young children under two-years of age.
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A.1. Sample Covariance Matrices

The sample covariance matrices for each model are presented in Tables A.1 through A.4. These are provided to enable replication of these findings.

### Table A.1

**COVARIANCE MATRIX FOR POSITIVE AND PERSON MATERNAL FEEDBACK ON TODDLER PERSISTENCE MODEL**

<table>
<thead>
<tr>
<th></th>
<th>Persistence with Mother</th>
<th>Proportion Person</th>
<th>Proportion Positive</th>
<th>Persistence with Father</th>
<th>Parent Order</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence with Mother</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Person</td>
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<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Positive</td>
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<td>0.00</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persistence with Father</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Order</td>
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<td></td>
<td></td>
<td></td>
<td>-0.02</td>
<td>0.25</td>
</tr>
<tr>
<td>Gender</td>
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<td>0.00</td>
<td>0.02</td>
<td>-0.00</td>
<td>-0.05</td>
<td>0.25</td>
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TABLE A.2

COVARIANCE MATRIX FOR POSITIVE AND PERSON MATERNAL FEEDBACK
ON TODDLER NEGATIVE AFFECT MODEL

<table>
<thead>
<tr>
<th></th>
<th>Negative Affect with Mother</th>
<th>Proportion Person</th>
<th>Proportion Positive</th>
<th>Negative Affect with Father</th>
<th>Parent Order</th>
<th>Gender</th>
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</thead>
<tbody>
<tr>
<td>Negative Affect with</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Person</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Positive</td>
<td></td>
<td>-0.01</td>
<td>0.00</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Affect with</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.14</td>
<td></td>
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<tr>
<td>Parent Order</td>
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<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td>0.25</td>
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<td>Gender</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>0.25</td>
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### TABLE A.3

**COVARIANCE MATRIX FOR MATERNAL SENSITIVITY AND POSITIVE FEEDBACK ON TODDLER PERSISTENCE MODEL**

<table>
<thead>
<tr>
<th></th>
<th>Persist with Mother</th>
<th>Sens 3m</th>
<th>Sens 5m</th>
<th>Sens 7m</th>
<th>Prop Pos Feed</th>
<th>Persist with Father</th>
<th>Parent Order</th>
<th>Gender</th>
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<tbody>
<tr>
<td>Persist with</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sens 3m</td>
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</tr>
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<td>Sens 5m</td>
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<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sens 7m</td>
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<td>0.07</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prop Pos Feed</td>
<td>0.01</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persist</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Father</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Order</td>
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<td>-0.03</td>
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<tr>
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<td>0.01</td>
<td>-0.01</td>
<td>-0.05</td>
<td>0.25</td>
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</tbody>
</table>

NOTE: Persist=Persistence, Sens=Sensitivity; Prop Pos Feed=Proportion of Positive Feedback
<table>
<thead>
<tr>
<th></th>
<th>Neg Affect with Mother</th>
<th>Sens 3m</th>
<th>Sens 5m</th>
<th>Sens 7m</th>
<th>Prop Pos Feed</th>
<th>Neg Affect with Father</th>
<th>Parent Order</th>
<th>Gender</th>
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<td>0.25</td>
</tr>
</tbody>
</table>

NOTE: Neg=Negative, Sens = Sensitivity; Prop Pos Feed=Proportion of Positive Feedback