Children's Development of Learning-Related Cognitions: The Influence of Parents' Socialization and Contextual Factors

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CHILDREN'S DEVELOPMENT OF LEARNING-RELATED COGNITIONS: THE INFLUENCE OF PARENTS' SOCIALIZATION AND CONTEXTUAL FACTORS

By

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Dedicated to all of the children from small, rural towns like me.

The greatest truth must be recognition that in every man, in every child, is the potential for greatness. –Robert Kennedy

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ABSTRACT

The overall goal of the current dissertation is to improve understanding of how parents' socialization and contextual factors influence children's development of learning-related cognitions, particularly implicit theories of intelligence and failure mindsets. To achieve this goal, the present dissertation replicated a study that was originally conducted with parent-child dyads from a non-rural community with parent-child dyads living in a rural community (Haimovitz & Dweck, 2016). Using the data from the original study and the replicated study, this dissertation is comprised of two studies which examine how parents' and children's learning-related cognitions, children's perceptions of parents' learning-related cognitions, and contextual factors are interrelated.

Study 1 tested core ideas from emerging theories of intergenerational transmission to document the accuracy of children's perceptions of parents' implicit theories of intelligence and failure mindsets and determine if the link between parents and children's implicit theories of intelligence I and failure mindsets is explained by the accuracy of children's perceptions of parents' implicit theories of intelligence and failure mindsets. Study 1 considered if any of these linkages differ by family structure, parents' level of education, and child's gender. Overall, findings did not support that intergenerational transmission of learning-related cognitions occurred between parents and children for both implicit theories of intelligence and failure mindsets via the theoretical framework presented. Our results indicated a direct link between parents' and children's learning-related cognitions, which connotes some intergenerational transmission, albeit small in magnitude. Thus, our findings reject the premise that children's accurate appraisal of mothers' learning-related cognitions is an essential step in explaining the process of intergenerational transmission of learning-related cognitions. The results point to the

importance of children's perceptions of parents' learning-related cognitions in the process of intergenerational transmission of learning-related cognitions. No latent mean differences emerged in mother's learning-related cognitions, children's perceptions of mothers' learning-related cognitions, and children's learning-related cognitions scores across all contextual factors. Statistical tests indicated no significant differences between correlation and regression coefficients across selected contextual factors, yet some noteworthy contextual differences emerged.

Study 2 determined the potential role of parents' *failure mindsets*, or beliefs about the experience and consequences of failure (Haimovitz & Dweck, 2016), in linking parents' and children's implicit theories of intelligence. Additionally, informed by human ecological theory (Bronfenbrenner, 2001) which argues that "context matters" this study explores the potential modifying effects of selected contextual factors (e.g., community type and gender) on associations of parents' implicit theories of intelligence and failure mindsets with children's implicit theories of intelligence. The primary finding of this study is that that parents' failure mindsets explained a portion of the relationship between parents' implicit theories of intelligence and children's implicit theories of intelligence through complementary mediation in conjunction with other possible mediators not included in the present study for the entire sample and across community type, child's gender, and parents' gender. Observed differences in parents' implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence across community type, child's gender, and parents' gender were documented.

GENERAL INTRODUCTION

Parents are essential in fostering children's motivation and achievement in academics and other important domains (Cheung & Pomerantz, 2012; Duckworth, 2016; Pomerantz, Grolnick, & Price, 2005). The recent surge of findings from research attempting to target the best parenting practices that yield the best developmental outcomes for children may be overwhelming and confusing for parents (Haimovitz & Dweck, 2016). One body of research suggests that learning-related cognitions offer parents, and other adults working with children, a potentially useful tool for understanding and fostering children's motivation and academic achievement (Broda et al., 2018; Burnette, Russell, Hoyt, Orvidas, & Widman, 2018; Haimovitz & Dweck, 2016). Two learning-related cognitions, beliefs about the nature of intelligence and beliefs about factors that influence learning, have demonstrated to have a significant impact on children's motivation, abilities, behaviors, and academic achievement (Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Leggett, 1988).

Given the influence learning-related cognitions have on children's learning, behavior, and achievement, it is necessary to explore children's development of learning-related cognitions; however, the developmental origins of children's learning-related cognitions are largely misunderstood. Empirical evidence suggests that children's learning-related cognitions are formed, primarily, through socialization by parents (Bronfenbrenner, 1979; Chen & Wong, 2014; Gniewosz & Noack, 2012; Gunderson et al., 2013; Haimovitz & Dweck, 2016, 2017; Kamins & Dweck, 1999; Matthes & Stoeger, 2018). Findings indicating parents as the main socializers of children's learning-related cognitions, have led scholars to presume that parents' learning-related cognitions are directly socialized to their children (Haimovitz & Dweck, 2016, 2017). Failure to consider the possibility that parents' learning-related cognitions are *indirectly* socialized to their

children may explain inconsistent research findings (Haimovitz & Dweck, 2016, 2017). Further, little is known about the processes that occur in parents' socialization of learning-related cognitions and mechanisms that potentially influence said processes, such as contextual factors (Chen & Wong, 2014; Knafo & Schwartz, 2003; Whitbeck & Gecas, 1988; Wu, Hou, Wang, & Yu, 2018).

The overall goal of the present dissertation is to improve understanding of the relation between parents' and children's learning-related cognitions. Specifically, this dissertation places emphasis on how parents' socialization of learning-related cognitions influences children's development of learning-related cognitions. The current dissertation will focus on two specific learning-related cognitions: 1) *implicit theories of intelligence*, or beliefs about the nature of intelligence, and 2) *failure mindsets*, or beliefs about the experience and consequences of failure, influences children's development of learning-related cognitions (Haimovitz & Dweck, 2016). To achieve this goal, this dissertation will consider how the following influence the link between parents' and children's learning-related cognitions: parents' socialization of learning-related cognitions; the role of children's perceptions of parents' learning-related cognitions; and the effects of selected contextual factors (e.g., community, gender, family structure, and parents' level of education). Furthermore, the present dissertation is informed by Bronfenbrenner's (2001) bioecological systems theory. This theory conceptualizes socialization as a complex process involving the interaction between an individual and multiple influences that impacts human development (Bronfenbrenner, 1979). This framework is relevant to this dissertation because it highlights the importance of the interplay between various personal and contextual factors and their influence on parents' socialization practices, parent-child interactions,

children's development of learning-related cognitions, as well as parents' and children's endorsements of particular learning-related cognitions (Bronfenbrenner & Morris, 2006).

Parents' Socialization of Learning-Related Cognitions

Much research has indicated that implicit theories of intelligence (ITIs), beliefs about the malleability of intelligence, are important learning-related cognitions (LRCs) that forms an individual's approach towards learning and achievement (Dweck & Leggett, 1988; Elliot & Dweck, 1988). Dweck and Leggett (1988) proposed two kinds of ITIs: an *incremental theory of intelligence*, the belief that intelligence is malleable and can be changed, and an *entity theory of intelligence*, the belief that intelligence is fixed and cannot be changed. ITIs serve as "meaning systems" which shapes a person's achievement goal orientation, or the framework individuals use to interpret and react to achievement situations (Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999). For example, individuals with an incremental theory of intelligence are more likely to believe that their ability can be improved through effort, views effort and challenges as opportunities to learn and grow, have goals which focus on increasing and developing their competence (i.e., learning-goal orientation), and are persistent and implement problem-solving strategies when faced with failure or setbacks (i.e., mastery-oriented pattern of behavior) (Blackwell et al., 2007; Dweck & Leggett, 1988; Hong et al., 1999). In contrast, individuals with an entity theory of intelligence are more likely to value their abilities and performance outcomes (i.e., performance-goal orientation), have negative beliefs about effort, and have low persistence and become discouraged in response to a setback or failure (i.e., helpless pattern of behavior) (Dweck & Leggett, 1988; Elliot & Dweck, 1988).

Despite the abundance of findings to support that implicit theories of intelligence have a significant impact on an individual's achievement motivational framework, little is known of

how implicit theories of intelligence are developed. Experimental and intervention research studies have demonstrated that an incremental theory of intelligence can be taught (Aronson, Fried, & Good, 2002; Blackwell et al., 2007); therefore, researchers have assumed that parents' ITIs are directly transferred to their children. Yet, many research findings have not found a significant relationship between parents' and their children's ITIs (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Moorman & Pomerantz, 2010). Instead, current research suggests that parents' ITIs are manifested and socialized through interactions, feedback, and behaviors which, in turn, influence their children's development of ITIs (Haimovitz & Dweck, 2016, 2017; Matthes & Stoeger, 2018). Furthermore, parents' ITIs may impact parenting practices and behaviors which constructs an environment that consequently affects their children's ITIs, motivational frameworks, and academic performance.

Work by Haimovitz and Dweck (2016) suggested that parents' implicit theories of intelligence influence their own goals and behaviors, and that these beliefs are relevant to shaping their children's beliefs only if they lead to practices that children pick up on. Parents' ITIs are not visible to children and are not clearly manifested in parental practices. These researchers proposed another learning-related cognition, parent's *failure mindset* is more apparent to children, as it is manifested in their reactions to children's setbacks or failure. Like ITIs, failure mindsets are categorized into two types: *failure-is-enhancing mindset*, the belief that failure is an enhancing experience that facilitates learning and growth, and *failure-is-debilitating mindset*, the belief that failure is a debilitating experience that inhibits learning and productivity (Haimovtiz & Dweck, 2016.

Haimovitz and Dweck (2016) proposed that parents' failure mindset is related to their goal orientation which, in turn, influences their children's motivational framework. For instance,

parents with a failure-is-enhancing mindset approaches their child's failure in a manner that focuses on how their child can learn and improve from failure. That is, parents may have a learning-goal orientation, and send messages to their children that intelligence can be improved through persistence and learning. In contrast, parents with a failure-is-debilitating mindset may react and respond to their child's failure with anxiety and concerns about poor performance and ability. That is, parents may have a performance-goal orientation, and send messages that intelligence cannot be improved, and poor performance should be worrisome. The findings from Haimovitz and Dweck's (2016) study demonstrated that parents' failure mindsets, rather than their ITIs, were more predictive of their children's ITIs. Additionally, these researchers indicated that parents' failure mindset, not their ITIs, are translated into concerns and behaviors that are visible to children and that, in turn, shape children's own ITIs. Furthermore, these results support the notion that parents socialize their children's motivational frameworks through their reactions, interactions, and behaviors in response to specific events, not general potential.

Findings from Haimovitz and Dweck (2016) highlight the importance of considering children's perceptions of parents' practices, interactions, and feedback. Scholars have debated that the degree to which a child adopts a certain belief is dependent on how the child constructs and interprets his or her experiences (Rosenholtz & Simpson, 1984). As such, children's development LRCs may be heavily influenced by perceptions of their parents' LRCs (Cole et al., 2018; Haimovitz & Dweck, 2016; Lazarides, Rubach, & Ittel, 2017). Recent work by Haimovitz and Dweck (2016) found children's perceptions of their parent's goal orientation to be related to children's implicit theories of intelligence. Specifically, children's perceptions of their parent's goal orientation emerged as the mechanism that explained the relationship between parent's failure mindset and children's ITIs. Additionally, this study found children's perceptions of their

parent's failure mindsets and ITIs to be related to parents' self-reported failure mindsets and children's ITIs. However, these results did not show evidence of a relationship between children's perception of their parent's implicit theories of intelligence or failure mindsets with parent's self-reported implicit theories of intelligence. Researchers must give attention to children's interpretations and perceptions of their experiences and environment to better understand children's developmental processes and outcomes.

Contextual Influences on Learning-Related Cognitions

Parents' and children's implicit theories of intelligence (ITIs) and failure mindsets cannot be fully understood without considering contextual influences. Bronfenbrenner's (1979) bioecological systems theory was developed to argue that contextual factors outside of the parent-child relationship influence human development. According to Bronfenbrenner (2001), human development occurs through proximal processes or ongoing, lifelong process of complex interactions between an individual and their environment. Through engagement in these essential interactions, individuals are able to understand and make sense of their environment; thus, proximal processes are considered as the "engines of development" (Bronfenbrenner & Ceci, 1994, p. 584). The form, meaning, magnitude, and direction of proximal processes have on developmental outcomes vary in terms of personal and contextual factors (Bronfenbrenner & Evans, 2000). For instance, parents' socialization can be affected by gender, community, parents' level of education, and family structure (e.g., single-parent family vs. two-parent family) (Bronfenbrenner & Morris, 1998).

Bronfenbrenner (1995) supported that both parents' and children's personal characteristic of gender has the capacity to influence the power of socialization of beliefs and endorsement of beliefs. Evidence to support this notion in regard to learning-related cognitions (LRCs), however,

is mixed. Some findings demonstrate that parents' socialization of LRCs is more effective in same-sex parent-child dyads (e.g., mother-daughter dyads vs. father-son dyads) (Vollebergh, Iedema, & Raaijmakers, 2001), while other research has revealed inconsistent findings (Boehnke, Hadjar, & Baier, 2009; Friedlmeier & Trommsdorff, 2011; Whitbeck & Gecas, 1988). Further, the effects of gender on the relation between parents' ITIs and children's gender as well as gender differences in ITIs between parents' children have been found insignificant (Gunderson et al., 2013; Haimovitz & Dweck, 2016). A comparison between same-sex parent-child dyads and different-sex parent-child dyads has not yet been examined for failure mindsets (Haimovitz & Dweck, 2016). Evidence of gender differences in LRCs independent of the parent-child relationship are also mixed (Chen, 2012; Chen & Pajares, 2010; Diseth, Meland, & Breidablik, 2014; Haimovitz & Dweck, 2016; Gunderson, Ramirez, Levine, & Beilock, 2012; Gunderson et al., 2013; Howell & Buro, 2009; Warren, Mason-Apps, Hoskins, Azmi, & Boyce, 2018).

Contextual factors, such as community, family structure, and parents' level of education, are thought to influence parents' socialization of LRCs and parents' and children's endorsement of LRCs (Bronfenbrenner, 2001). In fact, despite the large body of research conducted on the outcomes related to LRCs, many studies have neglected to consider the influence of contextual factors and have used samples that lacked diversity (Burnette et al., 2018). The broader context of society or culture is thought to influence the beliefs and socialization of beliefs of the individuals within said context (Tam, Lee, Kim, Li, & Chao, 2012). Thus, parents socialize the beliefs and values that are upheld by their surrounding context to their children (Doring, Makarova, Herzog, & Bardi, 2017). Therefore, broader contextual factors such as community (e.g., rural vs. non-rural) should, theoretically, have an influence on parents' socialization of

LRCs and parents' and children's LRCs. Evidence supports that family structure (e.g., single-parent vs. two-parent families) may have an effect on parents' socialization of LRCs and children's endorsement of LRCs (Cashmore & Goodnow, 1985; Knafo & Schwartz, 2003; Okagaki & Bevis, 1999). Scholars have suggested that in two-parent families, beliefs are more likely to be expressed more redundantly (Okagaki & Bevis, 1999). In turn, children's perceptions of parents' beliefs and children's endorsement of beliefs are likely to be strongly influenced by frequent exposure of their parents' beliefs. Further findings suggest that parents' level of education is associated with parents' socialization of LRCs and parents' and children's LRCs (Elliot & Bachman, 2018). Parents' level of education may be an indicator of parents' knowledge, skill, and access to financial or educational resources necessary for fostering children's motivation and academic achievement (Bronfenbrenner & Ceci, 1994; Conger & Dogan, 2007; Elliott & Bachman, 2018).

The Current Dissertation

The overall goal of the current dissertation is to improve understanding of how parents' socialization and contextual factors influence children's development of learning-related cognitions, particularly implicit theories of intelligence and failure mindsets. To achieve this goal, the present dissertation replicated a study by Haimovitz and Dweck (2016). Original data were obtained from parent-child dyads living in a rural community and were combined with Haimovitz and Dweck's (2016) existing data set of parent-child dyads from a non-rural community. Using the data from both data sets, this dissertation is comprised of two studies which examine how parents' and children's learning-related cognitions, children's perceptions of parents' learning-related cognitions, and contextual factors are interrelated.

Description of the Two Studies

Study 1. The overall goal of Study 1 is to improved understanding of how children's learning-related cognitions—implicit theories of intelligence and failure mindsets—are influenced by parents' learning-related cognitions and children's perceptions of parents' learning-related cognitions. Study 1 only used original data collected from mother-child dyads from the rural community site to examine relationships among variables. This study: (a) investigated the relationship between parents' learning-related cognitions and children's perceptions of parents' learning-related cognitions for both implicit theories of intelligence and failure mindsets; (b) examined the relationship between children's perceptions of parents' learning-related cognitions (for both implicit theories of intelligence and failure mindsets) and children's learning-related cognitions; (c) determined whether children's perceptions of parents' learning-related cognitions explains the relationship between parents' and children's learning-related cognitions; (d) examined possible differences in parents' and children's learning-related cognitions and children's perceptions of parents' learning-related cognitions by contextual factors such as family structure (e.g., single-parent vs. two-parent families), gender, and parents' level of education; and (e) examined whether the relationship between variables is influenced by contextual factors. The researcher intends to submit the manuscript of Study 1 to *Developmental Psychology*.

Study 2. In Haimovitz and Dweck's (2016) initial study, parents' implicit theories of intelligence were found to be related to their failure mindsets and, in turn, these parents' failure mindsets were related to children's implicit theories of intelligence. This finding supported that parents' implicit theories of intelligence influence parents' failure mindsets which are manifested into behaviors that are apparent to their children. However, the relationship between parents'

implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence were not examined in-depth.

Study 2 combined the original data from parent-child dyads from a rural community and Haimovitz and Dweck's (2016) existing data set from parent-child dyads from a non-rural community. This study: (a) examined the relationship between parents' and children's implicit theories of intelligence; (b) determined whether parents' failure mindsets are the mechanisms that explain the relationship between parents' and children's implicit theories of intelligence; and (c) investigated whether these relationships are affected by community and gender. The researcher intends to submit the manuscript of Study 2 to the *Journal of Experimental Child Psychology*.

STUDY 1: BELIEFS ARE IN THE EYE OF THE BEHOLDER: THE ROLE OF CHILDREN'S PERCEPTIONS OF PARENTS' BELIEFS IN INTERGENERATIONAL TRANSMISSION OF LEARNING-RELATED COGNITIONS

Introduction

Children's beliefs about learning and their ability to learn are two specific learning-related cognitions that are significant predictors of academic motivation, behavior, and ultimate achievement (Acosta & Hsu, 2014; Blackwell, Trzesniewski, & Dweck, 2007; Chen & Wong, 2014; Dweck, 1999; Tempelaar, Rienties, Giesbers, & Gijselaers, 2015; Zander, Brouwer, Jansen, Crayen, & Hannover, 2018). The developmental origins of children's learning-related cognitions are poorly understood and researched, despite clear evidence of their importance. Parents are believed to play a critical role in shaping children's learning-related cognitions and some contend this socialization occurs by parents transmitting their own learning-related cognitions to their children through day-to-day interaction (Chen & Wong, 2014; Gniewosz & Noack, 2012; Gunderson et al., 2013; Haimovitz & Dweck, 2016, 2017; Matthes & Stoeger, 2018). However, little is known about this socialization process and the individual and contextual factors that contribute to variation in how the process unfolds (Chen & Wong, 2014; Knafo & Schwartz, 2003; Whitbeck & Gecas, 1988; Wu, Hou, Wang, & Yu, 2018).

Intergenerational transmission is characterized by parent-child similarity in beliefs (Barni, Donato, Rosnati, & Danioni, 2017; Grønhøj & Thøgersen, 2009; Moore, Wilkie, & Lutz, 2002). Intergenerational transfer is believed to require two distinct steps that need not proceed sequentially (Grusec & Goodnow, 1994; Knafo & Schwartz, 2003, 2004; Okagaki & Bevis, 1999; Wu et al., 2018). One step involves the child's recognition of parents' distinct beliefs. The second step involves the child's addition of the parents' belief, either actively or passively, to her/his own belief system (Knafo & Schwartz, 2003). Clearly if the child rejects the parents'

belief, intergenerational transfer does not occur. This suggests that children's recognition of parents' beliefs functions as an essential gatekeeper; in essence, intergenerational transmission of learning-related cognitions demands that children can differentiate parents' LRCs from other communicated attitudes and beliefs (Gniewosz & Noack, 2012).

The relative abstractness of a belief affects intergenerational (IG) transfer, such that beliefs that are more concrete tend to be transferred more completely than abstract beliefs (Goodnow, 1992; Moore et al., 2002; Okagaki & Bevis, 1999). Implicit theories of intelligence and failure mindsets are two learning-related cognitions that are believed to vary in abstractness, thereby offering a useful tool for testing ideas about the transfer of learning-related cognitions from parents to children. Specifically, some contend that parents' implicit theories of intelligence, or beliefs about the malleability of intelligence, are more abstract than parents' failure mindsets or their beliefs about the experiences and consequences of failure (Haimovitz & Dweck, 2016, 2017). If that is true, failure mindsets should be more strongly shared by parents and children than implicit theories of intelligence, and children should have stronger or more accurate perceptions of parents' failure mindsets than parents' implicit theories of intelligence.

Research on intergenerational transfer of learning-related cognitions, specifically implicit theories of intelligence and failure mindsets, is virtually nonexistent (Haimovitz & Dweck, 2017). Given the impact learning-related cognitions have on children's academic outcomes and parents' role as socialization agents, it is necessary to examine how parents influence children's development of learning-related cognitions. Also, previous studies of parent-child similarity in learning-related cognitions have not taken the role of children's perceptions of parents' beliefs into account (Haimovitz & Dweck, 2016). Even fewer studies have considered how IG transmission for learning-related cognitions like implicit theories of intelligence and failure

mindsets are affected by contextual factors and personal characteristics (Bronfenbrenner & Morris, 2006; Dweck, 1999; Elliott & Bachman, 2018).

The overall goal of this study is to improve understanding of how parents shape their children's learning-related cognitions. To achieve this goal, this study tested core ideas from emerging theories of intergenerational transfer to document the accuracy of children's perceptions of parents' implicit theories of intelligence and failure mindsets and determine if the link between parents and children's implicit theories of intelligence and failure mindsets is explained by the accuracy of children's perceptions of parents' implicit theories of intelligence and failure mindsets. Finally, this study will consider if any of these linkages differ by family structure, parents' level of education, and gender.

Intergenerational Transmission of Learning-Related Cognitions

Intergenerational (IG) transmission occurs when socialization leads to similarity of beliefs or behaviors between parents and children (Grønhøj & Thøgersen, 2009; Moore et al., 2002). Scholars suggest that parents' beliefs are transmitted via children's perceptions of parents' beliefs and behaviors (Eccles, 2014; Šimunović, Ercegovac, & Burušić, 2018). Specifically, children must accurately recognize parents' beliefs and then children must accept those beliefs if IG transfer is to occur (Grusec & Goodnow, 1994; Knafo & Schwartz, 2003, 2004; Okagaki & Bevis, 1999). Of course, the first step is complex because it requires a co-occurring and dynamic process whereby parents express attitudes and beliefs in a variety of direct and indirect ways, and the child must recognize and discriminate specific parental attitudes and beliefs. Some beliefs, such as beliefs about freedom or honesty, are more abstract and are not overtly expressed to children by parents, making them more difficult for children to accurately perceive (Grønhøj & Thøgersen, 2009; Okagaki & Bevis, 1999; Whitbeck & Gecas,

1988). Parents' beliefs that are more concrete and salient, such as religion and politics, are more likely to be explicitly communicated to children thereby making them easier for children to accurately perceive (Grønhøj & Thøgersen, 2009; Moore et al., 2002).

Studies on intergenerational transfer of learning-related cognitions (LRCs), particularly implicit theories of intelligence (ITIs), are few and have produced inconsistent results. Some contend that parents' ITIs are frequently not discussed explicitly with their children (Dweck & Leggett, 1988; Haimovitz & Dweck, 2017). This lack of explicitness may explain why studies have not consistently found a significant relationship between parents' and children's ITIs (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Moorman & Pomerantz, 2010). By contrast, Haimovitz and Dweck (2016, 2017) contend that parents' beliefs of whether failure is constructive for learning and promoting growth (i.e., failure-is-enhancing mindset) or that failure hinders learning and performance (i.e., failure-is-debilitating mindset) are socialized in a clearer fashion. Haimovitz and Dweck (2016) reported that parents' failure mindsets were more recognizable to children than parents' ITIs, but they did not document linkages between children's appraisals of parents' ITIs and failure mindsets with children's own ITIs and failure mindsets: an essential link in intergenerational transfer.

Theoretical Perspective

Understanding of intergenerational transfer of learning-related cognitions (LRCs), like other forms of development, requires attention to both the individual child and her/his environment (Bronfenbrenner & Morris, 2006). Contextual factors such as family structure (e.g., single-parent family vs. two-parent family), and personal characteristics like gender, and parents' level of education likely have meaningful impact on intergenerational transfer of LRCs (Bronfenbrenner, 1995). Bioecological systems theory conceptualizes development as the

outcome of complex interactions between an individual and its environment at several ecological levels (Bronfenbrenner, 1979). Socialization clearly occurs within the parent-child relationship, but the form and power of that socialization is shaped by personal and contextual factors (Bronfenbrenner & Morris, 1998).

Despite the abundance of research on the outcomes associated with LRCs and the available—yet, still limited—empirical evidence of parents' influence on children's LRCs, most studies used samples that lacked diversity and overlook the possible influence of contextual factors. For example, only one study examining LRCs, has been conducted among individuals living in a rural community (Burnette, Russell, Hoyt, Orvidas, & Widman, 2018). Families living in rural communities are thought to have economical and educational disadvantages such as accessibility to resources, technology, and facilities. Scholars have suggested that these limitations may hinder rural children's motivation towards achievement and beliefs about their abilities (Burnette et al., 2018; Eccles, 2005). Thus, more research is needed in rural communities to determine if intergenerational transfer of LRCs contributes to inequitable educational outcomes for children in rural relative to urban areas.

Scholars have also suggested that family structure may influence intergenerational transfer of beliefs (Cashmore & Goodnow, 1985; Knafo & Schwartz, 2003; Okagaki & Bevis, 1999). The principle of homophily or "likes attract" suggest redundancy of parents' expression of beliefs is more likely to occur in two-parent families (Okagaki & Bevis, 1999). As such, frequent exposure of parents' beliefs may have a stronger influence on children's perceptions of parents' beliefs and children's endorsement of beliefs. Examining congruency of beliefs and perceptions of LRCs in single- and two-parent families may help explain inconsistent findings of

intergenerational transfer of LRCs in published work (Gunderson et al., 2013; Haimovitz & Dweck, 2016, 2017; Matthes & Stoeger, 2018).

Parents' and children's gender may also affect transfer of LRCs. Gender role models of socialization theory posit that intergenerational transfer is stronger between same-sex parent-child dyads (e.g., mothers and daughters vs. sons and fathers) (Vollebergh, Iedema, & Raaijmakers, 2001); however, evidence to support this notion is inconsistent (Boehnke, Hadjar, & Baier, 2009; Friedlmeier & Trommsdorff, 2011; Whitbeck & Gecas, 1988). Researchers have found the relation between parents' implicit theories of intelligence and their children's gender to be insignificant (Gunderson et al., 2013; Haimovitz & Dweck, 2016). Furthermore, no differences in ITIs have been revealed between parents of boys and parents of girls (Gunderson et al., 2013). For failure mindsets, Haimovitz and Dweck (2016) did not test whether similarities existed in same-sex parent-child dyads compared to different-sex parent-child dyads.

Furthermore, several studies have examined gender differences in LRCs independent of the parent-child relationship; however, reported results are mixed (Diseth, Meland, & Breidablik, 2014; Haimovitz & Dweck, 2016; Howell & Buro, 2009). For the present study, hypotheses about the effects of gender were not made due to the inconsistent findings on gender differences in endorsement of implicit theories of intelligence and failure mindsets. Despite the lack of evidence for the effects of gender on parent-child transmission of ITIs and failure mindsets, gender role models of socialization theory would suggest that congruence of ITIs and failure mindsets exists in same-sex parent-child dyads; therefore, this study will examine whether similarities in ITIs and failure mindsets are more apparent in mother-daughter dyads compared to mother-son dyads

The role of parental educational attainment on parents' and children's LRCs has received little research attention. Whether educational attainment captures socioeconomic status or is a marker of individual commitment or value of learning and education, there is evidence that parents' levels of education may contribute to children's LRCs (Elliott & Bachman, 2018). When viewed as an indicator of socioeconomic status, parents' educational attainment may capture accessibility to financial or educational resources supportive of children's motivation and academic achievement. But parents' educational attainment can also be a simple reflection of their own commitment to, or value of, formal education thereby becoming an expression of beliefs and values. In either situation, parents with lower levels of education may not have an adequate educational foundation or a specific set of skills to best support their children's development or activities in comparison to parents with higher levels of education (Bronfenbrenner & Ceci, 1994; Conger & Dogan, 2007; Elliott & Bachman, 2018). Empirical and theoretical evidence also suggests that translating beliefs into practice may be more difficult for parents with lower levels of education (Elliott & Bachman, 2018). Available research on parents' level of education differences in LRCs has revealed inconsistent findings (Chen, Chen, Dai, Man, & Cheng, 2018; Gunderson et al., 2013; Gunderson, Hamdan, Sorhagen, & D'Esterre, 2017; Haimovitz & Dweck, 2016; Rautiainen, Räty, & Kasanen, 2016). Examining the effects of parents' level of education on intergenerational transfer of LRCs is needed. Such research would provide insight on potential differences in parents' and children's endorsements of particular LRCs in terms of parents' level of education as well as how parents' level of education influences parents' socialization of LRCs.

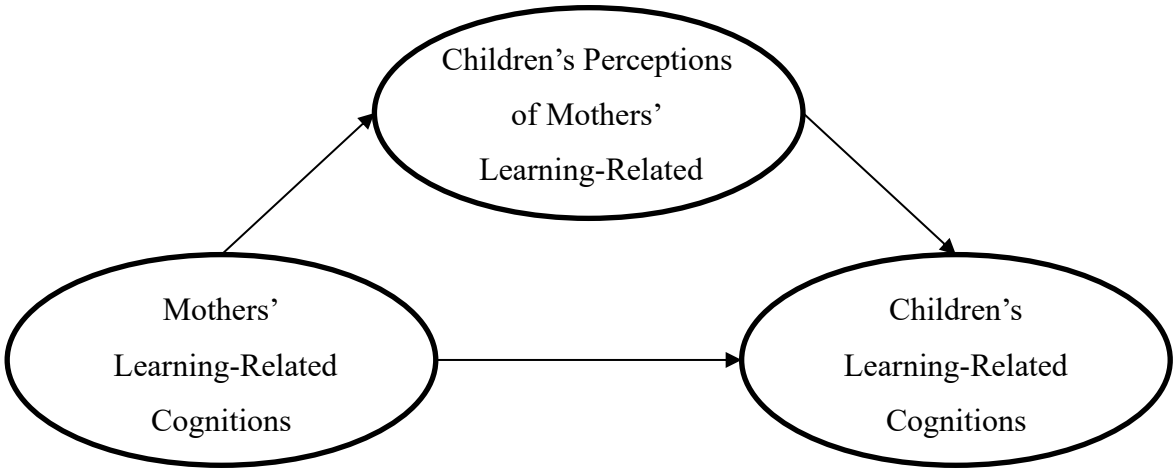

Figure 1.1. The path model for children's perceptions of mother's learning-related cognitions as a mediator between mother's learning-related cognitions and children's learning-related cognitions; *Note*: Model represents learning-related cognitions for both implicit theories of intelligence and failure mindsets.

The Present Study

The main goal of the current study is to improve understanding of how parents shape their children's learning-related cognitions, specifically implicit theories of intelligence and failure mindsets, by studying parents' and children's learning-related cognitions as well as children's perceptions of parents' learning-related cognitions in a diverse sample of mother-child dyads from a rural community. The present study proposed several research questions, which are summarized in Figure 1.1, to address the primary question of how does intergenerational transmission of learning-related cognitions occur between parents and children? First, what is the relationship between mothers' learning-related cognitions, children's learning-related cognitions, and children's perceptions of mothers' learning-related cognitions for both implicit theories of intelligence and failure mindsets? Second, does children's perceptions of mothers' learning-related cognitions explain the relationship between mothers' and children's learning-related cognitions (Figure 1.1)? Third, is intergenerational transfer of learning-related cognitions

moderated by contextual factors)? Fourth, are there mean differences in mothers' and children's learning-related cognitions and children's perceptions of parents' learning-related cognitions by personal characteristics (i.e., child's gender, mothers' level of education) and family structure as a meaningful contextual factor?

Methods

Participants

The present study is a replication of Haimovitz and Dweck's (2016) study. Original data were collected from 106 families of fourth- and fifth-grade students (52.4% fourth grade; 59% females; mean age = 9.9, *SD* = 0.7) from a small, rural Georgia town in the United States (Table 1.1). This sample consisted of 47 two-parent families and 59 single-parent families (56 mother-child; 3 father-child). The three father-child family units were excluded from analyses, yielding a final sample of 103 families. In single-parent families, the children (53.6% fourth grade) consisted of mostly females (66.1%) whose average age was 10.0 years (*SD* = 0.7 years) and mothers' mean age of 38.0 years (*SD* = 7.9 years). For two-parent families, mothers' mean age was 39.4 years (*SD* = 7.4 years) and the children (51.1% fourth grade) consisted of mostly males (51.1%) with a mean age of 9.87 years (*SD* = 0.7 years). Parents' level of education was categorized into two groups: non-degree (e.g., some college, high school diploma or equivalent, less than high school diploma) and degree/certification (e.g., technical/trade/vocational school, associate's degree, bachelor's degree, master's degree, professional degree). 52 (50.5%) of mothers were in the non-degree group and 51 (49.5%) mothers were in the degree/certification group. Data were collected from fathers in two-parent families, but the sample size was not large enough to demonstrate statistical power. Therefore, only mothers' responses from two-parent families were used in analyses.

Table 1.1
Demographic Characteristics of the Study 1 Sample

Characteristic	*n*	%
Total	103	100%
Child's Gender		
Boys	43	41.7%
Girls	60	58.3%
Child's Grade Level		
Fourth	54	52.4%
Fifth	49	47.6%
Family Structure		
Single-Parent	56	54.4%
Two-Parent	47	45.6%
Mothers' Level of Education		
Non-degree	52	50.5%
Some College	21	20.4%
High School Diploma or Equivalent	23	22.3%
Less Than High School Diploma	9	8.8%
Degree/Certification	51	49.5%
Technical/Trade/Vocational School	8	7.8%
Associate's Degree	19	18.4%
Bachelor's Degree	15	12.6%
Master's Degree	6	5.8%
Professional Degree	3	2.9%
Mothers' Race/Ethnicity		
White	57	55.3%
Black/African American	38	36.9%
Other	5	4.8%

Table 1.2
Item Descriptions for Study 1 Variables

Mothers' Implicit Theories of Intelligence (MITI)
MITI1: You have a certain amount of intelligence, and you really can't do much to change it.
MITI2: You can learn new things but you can't really change how intelligent you are.
MITI3Rev: No matter how much intelligence you have, you can always change it quite a bit.
MITI4Rev: You can always greatly change how intelligent you are.

Children's Perceptions of Mothers' Implicit Theories of Intelligence (CPMITI)
CPMITI1: She thinks you can learn new things but you can't change how smart you really are.
CPMITI2: She thinks how smart you are is something you can't change very much.
CPMITI3Rev: She thinks you can always change how smart you really are.

Children's Implicit Theories of Intelligence (CITI)
CITI1: How smart you are is something about you that you can't change very much.
CITI2: You can learn new things, but you can't change how smart you really are.
CITI3Rev: You can always change how smart you are.
CITI4: You're a certain amount smart, and you can't really do much to change it.

Mothers' Failure Mindsets (MFM)
MFM1Rev: Experiencing failure enhances performance and productivity.
MFM2Rev: Experiencing failure facilitates learning and growth.
MFM3Rev: The effects of failure are positive and should be utilized.
MFM4: Experiencing failure debilitates my performance and productivity.
MFM5: Experiencing failure inhibits learning and growth.
MFM6: The effects of failure are negative and should be avoided.

Children's Perception of Mothers' Failure Mindsets (CPMFM)
CPMFM1: She thinks failure is bad and should be avoided.
CPMFM2: She thinks failure hurts my learning.
CPMFM3Rev: She thinks failure can help me learn.
CPMFM4Rev: She thinks failure can help me grow.

Children's Failure Mindset (CFM)
CFM1Rev: When you fail, it can make you perform better and more productive.
CFM2Rev: When you fail, it can help you learn and grow.
CFM3Rev: The effects of failing can be helpful and should be used.
CFM4: When you fail, it can make you perform worse and less productive.
CFM5: When you fail, it can hold you back from learning and growing.
CFM6: The effects of failing can be harmful and should be avoided.

Mother reports.

Implicit theories of intelligence. Mothers' implicit theories of intelligence (MITI) were measured by four items (Haimovitz & Dweck, 2016). Incremental theories of intelligence were assessed with two items focusing on the malleability of intelligence, such as: "No matter how much intelligence you have, you can always change it quite a bit," and "You can always greatly change how intelligent you are". Entity theories of intelligence were assessed with two items focusing on intelligence as a fixed trait: "You have a certain amount of intelligence, and you can't really do much to change it," and "You can learn new things but you can't really change how intelligent you are". Mothers' implicit theories of intelligence were rated using a 6-point Likert type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Incremental theory items were reverse-scored and responses were averaged in such that higher scores indicated greater endorsement of an entity theory of intelligence ($\alpha = 0.82$). Item descriptions are displayed in Table 1.2.

Failure mindsets. Mothers' failure mindsets (MFM) were measured by six items using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). A failure-is-enhancing mindset was assessed with three items: "The effects of failure are positive and should be utilized," "Experiencing failure facilitates learning and growth," and "Experiencing failure facilitates my learning" (Haimovitz & Dweck, 2016). A failure-is-debilitating mindset was assessed with three items: "Experiencing failure enhancing my performance and productivity," "Experiencing failure inhibits my learning and growth," and "Experiencing failure debilitates my performance and productivity" (Haimovitz & Dweck, 2016). Failure-is-enhancing items were reverse-scored and then averaged such that higher scores indicated greater endorsement of a failure-is-debilitating mindset ($\alpha = 0.76$). Item descriptions are displayed in Table 1.2.

Child reports.

Implicit theories of intelligence. Children's implicit theories of intelligence (CITI) were measured with four items using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Children's entity theories of intelligence were assessed with three items (e.g., "How smart you are is something about you that you can't change very much," "You can learn new things, but you can't change how smart you really are," and "You're a certain amount smart, and you can't really do much to change it") and incremental theories of intelligence were assessed with one item (e.g., "You can always change how smart you are") (Haimovitz & Dweck, 2016). The incremental theory of intelligence item was reverse-scored and averaged with responses from the entity items such that higher scores reflect greater endorsement of an entity theory of intelligence ($\alpha = 0.78$). Item descriptions are displayed in Table 1.2.

Failure mindsets. Children's failure mindsets (CFM) were assessed with six adapted items similar to the adult measure of failure mindsets (Haimovitz & Dweck, 2016). Children's failure-is-debilitating mindset was assessed with three items: "When you fail, it can make you perform better and more productive," "When you fail, it can help you learn and grow," and "The effects of failing can be helpful and should be used." Children's failure-is-debilitating mindset was assessed with three items: "When you fail, it can make you perform worse and less productive," "When you fail, it can hold you back from learning and growing," and "The effects of failing can be harmful and should be avoided". Items are measured on a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Failure-is-enhancing items were reverse-scored and averaged with the failure-is-debilitating items such that higher scores are indicated greater endorsement of a failure-is-debilitating mindset ($\alpha = 0.77$). Item descriptions are displayed in Table 1.2.

Perceptions of mothers' implicit theories of intelligence. Children's perceptions of their mothers' implicit theories of intelligence (CPMITI) were measured with three items using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*) (Haimovitz & Dweck, 2016). Children's perceptions of mothers' entity theory of intelligence was assessed with two items (i.e., "My mother thinks you can learn new things but you can't change how smart you really are" and "My mother thinks how smart you are is something you can't change very much"), and one item assessed children's perceptions of their mothers' incremental theories of intelligence (e.g., "My mother thinks you can always change how smart you really are"). The incremental theory item was reverse-scored and the total score was obtained by averaging all responses. Reliability analyses recommended excluded the incremental theory item for improved alpha, thus this item was removed. Higher scores reflected greater perceptions of mothers holding an entity theory of intelligence ($\alpha = 0.77$). Item descriptions are displayed in Table 1.2.

Perceptions of mothers' failure mindsets. Children's perceptions of their mothers' failure mindsets (CPMFM) were assessed with four items (Haimovitz & Dweck, 2016). Children's perceptions of their mothers' failure-is-enhancing mindset were measured by two items (i.e., ("My mother thinks failure can help me learn" and "My mother thinks failure can help me grow"), and perceptions of mothers' failure-is-debilitating mindset were measured by two items (i.e., "My mother thinks failure is bad and should be avoided" and "My mother thinks failure hurts my learning"). All items were measured using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), and failure-is-enhancing items were reverse-scored. Children with higher scores perceived their mother to have a failure-is-debilitating mindset ($\alpha = 0.79$). Item descriptions are displayed in Table 1.2.

Analytic Strategy

Descriptive statistics, frequencies, factor score means, and internal consistency estimates for the study variables were computed using IBM SPSS Statistics Version 25 (IBM Corp., 2017). The IBM SPSS AMOS 25 (Arbuckle, 2017) structural equation modeling (SEM) program, which uses full-information maximum likelihood (FIML) estimation to handle missing data, was used to conduct confirmatory factor analyses (CFA), multi-group CFA (MG-CFA), SEM, and multi-group SEM (MG-SEM). Several recommended fit indices were used to determine how well the data fit the proposed models: chi-square (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), and standardized root mean square residual (SRMR). The criteria for acceptable model fit are small, non-significant χ^2 values ($p > 0.05$), CFI and TLI values greater than .90, and RMSEA and SRMR values less than .08 (Byrne, 2001; Hu & Bentler, 1999; Kline, 2011).

The two-step SEM approach recommended by Anderson and Gerbing (1988) was used to assess the factor structure of each measure and to evaluate the structural adequacy of the proposed model. First, fit indices from the CFA were examined to ensure the data fit the proposed measurement model. Because group comparisons are required by the study, measurement invariance (MI) was then tested whereby each measurement model was subjected to a series of increasingly strict hierarchical models to determine configural, metric, scalar, and strict invariance (Kline, 2011; Putnick & Bornstein, 2016). Cases in which the model did not demonstrate an adequate fit or the chi-square difference test was significant, comparisons of critical ratios and imposing individual equality constraints—factor loadings for metric invariance, item intercepts for scalar invariance, and item residuals for strict invariance—were used to identify parameters that significant differ across groups. In such cases, these parameters

are allowed to be freely estimated across groups in a partial invariance model (Byrne, Shavelson, & Muthén, 1989; Steenkamp & Baumgartner, 1998; van de Schoot, Lugtig, & Hox, 2012).

Models that achieved full or partial scalar invariance in a model allowed for latent means comparisons (Putnick & Bornstein, 2016). Using the scalar invariance model as a baseline, latent means were compared across each selected group for both the implicit theories of intelligence and failure mindsets models. To compare latent means across family structure, the latent mean for each factor in the model were individually constrained to 0 for the reference group, single-parent families, and the latent means for two-parent families were freely estimated. To compare latent means across child's gender, the latent mean for each factor in the model were individually constrained to 0 for the reference group, boys, and the latent means for girls were freely estimated. To compare latent means across mothers' level of education, the latent mean for each factor in the model were individually constrained to 0 for the reference group, non-degree mothers, and the latent means for mothers with a degree or certification were freely estimated. Critical ratios (*C.R.*) and chi-square difference tests from the scalar invariance model were used to assess latent mean differences. A CR value greater than |1.96| indicates a statistically significant difference between latent means. A positive CR value suggests that the reference group's latent mean is less than the latent mean of the comparison group, whereas a negative CR value suggests that the reference group's latent mean is greater than the comparison group's latent mean (Byrne, 2013; Chen, Dai, & Gao, 2017).

In the second step of the SEM approach recommended by Anderson and Gerbing (1988), relationships among variables were tested in the structural model in which model fit was compared between the structural model and the measurement model. A hand-calculated chi-square difference test was used to evaluate the structural fit. Factor scores were derived for each

latent variable and were used in SEM and MG-SEM analyses. For the present study, the second step was used to examine whether children's perceptions of parents' learning-related cognitions (LRCs) explains the relationship between parents' and children's LRCs. Due to the small sample size, the bootstrapping method with a recommended 5000 bootstrap resamples and 95% confidence intervals (CI) was used to test the indirect effect of the mediator (Preacher & Hayes, 2004). Indirect effects with CI not containing zero were considered statistically significant (Hayes, 2009, 2013; Hayes & Rockwood, 2017; Preacher & Hayes, 2008). Mediation effects were defined as: (1) complementary mediation in which the coefficients for the direct effect (path *c'*), mothers' LRCs on children's LRCs controlling for children's perceptions of mothers' LRCs, and the indirect effect were both significant and the same sign; (2) competitive mediation in which the coefficients for the direct effect and indirect effect were statistically significant and opposite signs; (3) indirect-only mediation in which the coefficient for the direct effect is not statistically significant, but the indirect effect is statistically significant; (4) direct-only non-mediation in which the indirect effect coefficient is not statistically significant, but the coefficient for the direct effect is significant; and (5) no-effect non-mediation in which the coefficients for the direct effect and indirect effect are not statistically significant (Hayes & Rockwood, 2017; Memon, Cheah, Ramayah, Ting, & Chuah, 2018; Meule, 2019; Rucker, Preacher, Tormala, & Petty, 2011; Rungtusanatham, Miller, & Boyer, 2014; Zhao, Lynch, & Chen, 2010). Mediational models with complementary or competitive mediation suggest that other mediators not included in the present analyses possibly exist to further explain effects (Rucker et al., 2011; Zhao et al., 2010).

To test for moderating effects of family structure, child's gender, and mothers' level of education on the implicit theories of intelligence and failure mindsets models, separate MG-SEM

were conducted for each selected group. Each MG-SEM tested the equality of each path in the mediation models across the groups for the selected contextual factors. Each selected contextual factor consisted of two groups that were considered levels of a moderator. For basic mediation models with three variables and three paths (e.g., path *a*, path *b*, and path *c*), assessment of equality for path *a* is a test of mediated moderation, whereas assessment of whether path *b* can be equated across groups is a test of moderated mediation (Baron & Kenny, 1986; MacKinnon, 2008). Pairwise comparisons between path coefficients were used to determine whether moderated mediation occurred in each model (Baron & Kenny, 1986; MacKinnon, 2008). Paths are considered statistically significantly different between groups if the critical ratio exceed the z-value of -1.96 and 1.96 at $p < .05$. Evidence of significant critical ratios suggest that the mediation model is moderated by the selected moderator.

Results

Confirmatory Factor Analysis

Item descriptions and factors are displayed in Table 1.2. A CFA was used to separately estimate the factor structures of the implicit theories of intelligence and failure mindsets models for the entire sample. The initial implicit theories of intelligence measurement model did not provide a good fit to the data (Table 1.3). Examination of modification indices recommended that allowing 6 items to covary would significantly decrease the χ^2 value (i.e., MITI3Rev with MITI1, MITI3Rev with MITI4Rev, and MITI2 with MITI4Rev). Additionally, items with standardized residual covariance estimates greater than 2.58 (i.e., CPMITI3Rev and CITI3Rev) suggested significant discrepancies in the model and were dropped (Byrne, 2001). The model was respecified and the final implicit theories of intelligence measurement model, as well as the

implicit theories of intelligence structural model, demonstrated an excellent fit to the data, $\chi^2(21) = 25.48$, $p > .05$.

The initial failure mindsets measurement model did not provide a good fit to the data (Table 1.3). Examination of modification indices suggested that allowing 2 items to covary (i.e., CFM2Rev and CFM5) would significantly decrease the χ^2 value. Additionally, examination of standardized residual covariances identified 9 items with significant discrepancies to be removed from the model. The model was respecified and the final failure mindsets measurement model, as well as the failure mindsets structural model, demonstrated an excellent fit to the data, $\chi^2(16) = 19.15$, $p > .05$.

Table 1.3
Model Fit Statistics for Study 1 Measurement Models and Structural Models

ITIs Model	χ^2	*df*	CFI	TLI	RMSEA	SRMR
Initial Measurement Model	107.61*	41	0.85	0.80	0.13	0.08
Final Measurement Model	25.48	21	0.99	0.98	0.05	0.05
Structural Model	25.48	21	0.99	0.98	0.05	0.05
Failure Mindsets Model	χ^2	*df*	CFI	TLI	RMSEA	SRMR
Initial Measurement Model	220.06*	101	0.79	0.75	0.11	0.09
Final Measurement Model	19.15	16	0.99	0.98	0.04	0.06
Structural Model	19.15	16	0.99	0.98	0.04	0.06

*$p < .01$; ITIs = Implicit theories of intelligence.

Measurement Invariance

Next, analysis of MI between the selected groups for both the implicit theories of intelligence and failure mindsets measurement models were conducted. The implicit theories of intelligence measurement model was found to be partially invariant across family structure, child's sex, and mothers' level of education (see Appendix A for detailed results and procedures). The failure mindsets measurement model was found to be partially invariant across family structure and mothers' level of education. Full invariance was established for the failure

mindsets measurement model across child's gender (see Appendix A for detailed results and procedures).

Latent Mean Comparisons

Based on the results of the measurement invariance tests, latent mean comparisons were conducted in models that demonstrated scalar or partial scalar invariance to assess for latent mean differences in implicit theories of intelligence variables and failure mindsets variables by family structure, child's sex, and mothers' level of education. The reference group for family structure, child's gender, and mothers' level of education were single-parent families, boys, and non-degree mothers, respectively. Table 1.4 displays the results of latent means comparisons for implicit theories of intelligence and failure mindsets variables. Estimation of latent mean differences indicated no significant differences in latent means for all study variables across family structure, child's gender, and mothers' level of education.

Descriptive Statistics

Factor scores were imputed from the measurement model to examine means and standard deviations for the entire sample and selected groups (Table 1.5). Overall for implicit theories of intelligence (ITIs), the average score for mothers ITIs was 2.63 (*SD* = 1.15), indicating an incremental theory of intelligence. The mean score for children's perceptions of mothers' ITIs was 2.86 (*SD* = 1.17), indicating that, overall, children perceived their mothers as having an incremental theory of intelligence. Children's average score for ITIs was 2.84 (*SD* = 1.05), indicating an incremental theory of intelligence. Overall for failure mindsets, the average score for mothers' failure mindsets was 1.46 (*SD* = 0.56), indicating a failure-is-enhancing mindset. The mean score for children's perceptions of mothers' failure mindsets was 2.48 (*SD* = 1.12), indicating that, overall, children perceived their mothers as having a failure-is-enhancing

mindset. Children's average score for failure mindsets was 2.92 (*SD* = 1.06), indicating a failure-is-enhancing mindset. ITIs and failure mindsets endorsements followed a similar pattern across all contextual factors.

Intercorrelations between study variables were obtained from the measurement model and are displayed in Table 1.6 for the entire sample and selected groups. Differences in correlations between groups were assessed with a z-score using Fisher's r-to-z transformation with a two-tailed test (i.e., $z = |1.96|$ for $p = .05$) (Cohen, 1988; Steiger, 1980). Overall, a small, significant correlation was found between mothers' implicit theories of intelligence and children's implicit theories of intelligence ($r = 0.29$, $p < .05$), but not for mothers' failure mindsets and children's failure mindsets ($r = 0.11$, $p > .05$). Mothers' learning-related cognitions (LRCs) were not significantly related to children's perceptions of mothers' LRCs for both ITIs and failure mindsets. A large, significant relationship was found between children's perceptions of mothers' LRCs and children's LRCs for the entire sample. Specifically, children's perceptions of mothers' ITIs were significantly correlated with children's ITIs ($r = 0.95$, $p < .001$) and children's perceptions of mothers' failure mindsets were significantly correlated with children's failure mindsets ($r = 0.90$, $p < .001$). These results indicate that, overall, children's perceptions of their mothers' learning-related cognitions were more strongly related to their own learning-related cognitions than with their mother's learning-related cognitions.

Mothers' implicit theories of intelligence were found to be significantly related to children's implicit theories of intelligence only in two-parent families ($r = 0.37$, $p < .05$) and not for any other group. Mothers' failure mindsets were not related with children's failure mindsets across all groups. Across all selected groups, mothers' LRCs were not correlated with children's perceptions of mothers' LRCs for both ITIs and failure mindsets. Large, significant correlations

were revealed between children's perceptions of mothers' ITIs and children's ITIs across all groups: single-parent families ($r = 0.99$, $p < .001$); two-parent families ($r = 0.97$, $p < .001$); boys ($r = 0.95$, $p < .001$); girls ($r = 0.94$, $p < .001$); children with non-degree mothers ($r = 0.97$, $p < .001$); and children with mothers with a degree or certification ($r = 0.90$, $p < .001$). The correlation between children's perceptions of mothers' ITIs and children's ITIs were significantly different across family structure and mothers' level of education, in which correlation coefficients were greater in single-parent families ($z = 2.72$; $p < .05$) and non-degree mothers ($z = 3.05$; $p < .05$).

For failure mindsets, across all selected groups, mothers' failure mindsets were not related to children's failure mindsets and children's perceptions of mothers' failure mindsets (Table 1.6). Similar to implicit theories of intelligence variables, children's perceptions of mothers' failure mindsets were largely and significantly related to children's failure mindsets for all groups: single-parent families ($r = 0.84$, $p < .001$); two-parent families ($r = 0.90$, $p < .001$); boys ($r = 0.98$, $p < .001$); girls ($r = 0.81$, $p < .001$); children with non-degree mothers ($r = 0.85$, $p < .001$); and children with mothers with a degree or certification ($r = 0.86$, $p < .001$). The relation between children's perceptions of mothers' failure mindsets and children's failure mindsets were significantly difference across child's gender, such that the correlation for boys was greater compared to girls ($z = 5.76$; $p < .05$).

Mediational Analyses

For the learning-related cognition implicit theories of intelligence for the entire sample, children's perceptions of mothers' implicit theories of intelligence did not significantly explain the relationship between mothers' implicit theories of intelligence and children's implicit theories of intelligence (Table 1.7). Results indicated that the regression of mothers' ITIs on

Table 1.4

Latent Mean Differences Across Contextual Factors for Study 1

Contextual Factor		MITI	CPMITI	CITI	MFM	CPMFM	CFM
Family Structure Single-Parent vs. Two-Parent	Estimate	0.24	-0.24	-0.36	-0.01	-0.33	-0.10
	SE	0.18	0.28	0.26	0.18	0.21	0.26
	C.R.	1.33	-0.87	-1.37	-0.07	-1.58	-0.37
Child's Gender Boys vs. Girls	Estimate	-0.50	-0.15	-0.17	-0.06	0.17	-0.24
	SE	0.26	0.28	0.27	0.14	0.25	0.25
	C.R.	-1.94	-0.51	-0.65	-0.40	0.67	-0.95
Mothers' Level of Education Non-Degree vs. Degree/Certification	Estimate	-0.14	-0.48	-0.30	-0.12	0.09	0.36
	SE	0.26	0.28	0.27	0.12	0.25	0.27
	C.R.	-0.55	-1.70	-1.09	-0.98	0.35	1.32

*$p < .05$; *C.R.*= critical ratio; MITI = Mothers' implicit theories of intelligence; CPMITI = Children's perceptions of mother's implicit theories of intelligence; CITI = Children's implicit theories of intelligence; MFM = Mothers' failure mindsets; CPMFM = Children's perceptions of mothers' failure mindsets; CFM = Children's failure mindsets; *Note:* Reference groups were single-parent families, boys, and non-degree mothers. Estimates displayed are latent mean differences for two-parent families, girls, and degree/certification mothers.

Table 1.5

Means and Standard Deviations of Factor Scores for Study 1

	MITI		CPMITI		CITI		MFM		CPMFM		CFM		
Characteristic	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*
Total	2.63	1.15	2.86	1.17	2.84	1.05	1.46	0.56	2.48	1.12	2.92	1.06	103
Family Structure													
Single-Parent	2.53	1.19	2.99	1.18	2.95	1.03	1.48	0.52	2.60	1.19	3.01	1.15	56
Two-Parent	2.75	1.09	2.71	1.14	2.71	1.06	1.45	0.61	2.34	1.01	2.81	0.94	47
Child's Gender													
Boys	2.91	1.20	2.94	1.17	2.95	1.06	1.50	0.63	2.45	1.06	2.96	1.02	43
Girls	2.43	1.07	2.81	1.17	2.77	1.04	1.44	0.51	2.50	1.16	2.89	1.09	60
Mothers' Level of Education													
Non-degree	2.77	1.26	3.07	1.23	3.04	1.11	1.55	0.61	2.38	1.12	2.82	1.03	52
Degree/Certification	2.49	1.00	2.65	1.06	2.64	0.94	1.38	0.50	2.58	1.12	3.03	1.09	51

MITI = Mothers' implicit theories of intelligence; CPMITI = Children's perceptions of mother's implicit theories of intelligence; CITI = Children's implicit theories of intelligence; MFM = Mothers' failure mindsets; CPMFM = Children's perceptions of mothers' failure mindsets; CFM = Children's failure mindsets.

Table 1.6

Study 1 Intercorrelations Between Implicit Theories of Intelligence and Failure Mindsets Variables

Group	MITI with CITI	MITI with CPMITI	CPMITI with CITI
Total	0.29*	0.15	0.95***
Family Structure			
Single-Parent	0.06	0.07	0.99**
Two-Parent	0.37*	0.30	0.97**
Child's Gender			
Boys	0.19	-0.05	0.95***
Girls	0.28	0.11	0.94***
Mothers' Level of Education			
Non-degree	0.22	-0.13	0.97***
Degree/Certification	0.14	0.19	0.90**

Group	MFM with CFM	MFM with CPMFM	CPMFM with CFM
Total	0.11	-0.14	0.90***
Family Structure			
Single-Parent	0.29	-0.04	0.84***
Two-Parent	0.02	-0.28	0.90**
Child's Gender			
Boys	0.17	-0.09	0.98***
Girls	0.03	-0.25	0.81***
Mothers' Level of Education			
Non-degree	0.17	-0.11	0.85***
Degree/Certification	-0.03	-0.22	0.86**

*$p < .05$, **$p < .01$, ***$p < .001$; MITI = Mothers' implicit theories of intelligence; CPMITI = Children's perceptions of mother's implicit theories of intelligence; CITI = Children's implicit theories of intelligence; MFM = Mothers' failure mindsets; CPMFM = Children's perceptions of mothers' failure mindsets; CFM = Children's failure mindsets.

children's ITIs (path *c*), ignoring the mediator, was significant, $B = 0.29$, $SE = .08$, $p < .01$. Mothers' ITIs was not a significant predictor of children's perceptions of mothers' ITIs (path *a*), $B = 0.17$, $SE = .09$, $p > .05$. The relationship between the mediator, children's perceptions of mothers' ITIs, and children's ITIs (path *b*) was significant, $B = 0.86$, $SE = .01$, $p < .01$. Mothers' ITIs were a significant predictor of children's ITIs after controlling for children's perceptions of mothers' ITIs (path *c'*), $B = 0.14$, $SE = 0.01$, $p < .01$. The indirect effect of mothers' ITIs on children's ITIs was not significant, $B = 0.15$, $SE = .08$, $p > .05$. Together, these results indicate a direct-only non-mediation which suggests that other mediating variables not included in the present study are likely (Nitzi, Roldan, & Cepeda, 2016; Zhao et al, 2019).

For the learning-related cognitions failure mindsets for the entire sample, children's perceptions of mothers' failure mindsets did not significantly explain the relationship between mothers' failure mindsets and children's failure mindsets (Table 1.7). Results indicated that the regression of mothers' failure mindsets on children's failure mindsets, ignoring the mediator (path *c*), was not significant, $B = -0.19$, $SE = 0.18$, $p > .05$. Mother's failure mindsets were not a significant predictor of children's perceptions of mothers' failure mindsets (path *a*), $B = -0.30$, $SE = 0.20$, $p > .05$. Children's perceptions of mothers' failure mindsets were found to significantly predict children's failure mindsets when controlling for mothers' failure mindsets (path *b*), $B = 0.94$, $SE = .02$, $p < .01$. Findings demonstrated that, controlling for children's perceptions of mothers' failure mindsets, mothers' failure mindsets were a significant predictor of children's failure mindsets (path *c'*), $B = 0.47$, $SE = .03$, $p < .01$. The indirect effect of mothers' failure mindsets on children's failure mindsets was not significant, $B = -0.28$, $SE = 0.19$, $p > .05$. These results are indicative of direct-only non-mediation (Nitzi et al., 2016; Zhao et al, 2019).

Table 1.7

Unstandardized Coefficients and Confidence Intervals for Total, Direct, and Indirect Effects in Learning-Related Cognition Models for Entire Sample for Study 1

	Learning-Related Cognition Model							
	Implicit Theories of Intelligence Model				Failure Mindsets Model			
Pathway	*B*	*SE*	*UCI*	*LCI*	*B*	*SE*	*UCI*	*LCI*
Path *a*	0.17	0.09	-0.01	0.35	-0.30	0.20	-0.69	0.09
Path *b*	0.86*	0.01	0.84	0.87	0.94*	0.02	0.90	0.97
Path *c*	0.29*	0.08	0.13	0.44	0.19	0.18	-0.15	0.55
Path *c'*	0.14*	0.01	0.12	0.16	0.47**	0.03	0.41	0.54
Indirect effect	0.15	0.08	-0.01	0.30	-0.28	0.19	-0.65	0.09

*$p < .01$, **$p < .001$; Path *a* = Mothers' learning-related cognitions (LRCs) on children's perceptions of mothers' LRCs; Path *b* = Children's perceptions of mothers' LRCs on children's LRCs; Path *c* = Total effect of mothers' LRCs on children's LRCs, ignoring children's perceptions of mothers' LRCs; Path *c'* = Direct effect of mothers' LRCs on children's LRCs, controlling for children's perceptions of mothers' LRCs; *B* = Unstandardized beta coefficient; *SE* = Standard error; *LCI* = Lower confidence interval; *UCI* = Upper confidence interval.

Moderating Effects on Mediation Analyses

Across all contextual factors, children's perceptions of mothers' implicit theories of intelligence did not explain the relationship between mothers' implicit theories of intelligence and children's implicit theories of intelligence. As shown in Table 1.8, no evidence from critical ratios suggested a significant difference in any paths for the ITIs model across family structure, child's gender, and mothers' level of education. A direct-only non-mediation was indicated for all mediational analyses across all selected groups for ITIs (Nitzi et al., 2016; Zhao et al, 2019). For single-parent families, child's gender, and mothers' level of education children's perceptions of mothers' failure mindsets did not explain the relationship between mothers' failure mindsets and children's failure mindsets (Table 1.9). Critical ratios for differences between parameters provided there were no significant differences in the paths for the failure mindsets model for family structure, child's gender, and mothers' level of education.

Amongst two-parent families, mother's failure mindsets were a significant predictor of children's perceptions of mothers' failure mindsets (path *a*) $B = -0.50$, $SE = 0.23$, $p < .05$, yet this is an inverse relationship which suggests children did not correctly perceive mothers' failure mindsets. As in all mediation analyses in the present study, children's perceptions of mothers' failure mindsets strongly predicted children's failure mindsets (path *b*) $B = 0.96$, $SE = 0.03$, $p < .01$. Mothers' failure mindsets were a significant predictor of children's failure mindsets, controlling for the mediator, children's perceptions of mothers' failure mindsets (path *c'*) $B = 0.44$, $SE = 0.05$, $p < .01$. Results indicated that the indirect effect was significant, $B = -0.48$, $SE = 0.22$, $p < .05$. Given that the direct and indirect effects were statistically significant and opposite signs, these analyses suggest that children's perceptions of mothers' failure mindsets explain the relation between mothers' failure mindsets and children's failure mindsets via competitive mediation (Meule, 2019; Nitzi et al., 2016; Zhao et al, 2019).

Rucker et al. (2011) have recommended that there is evidence of a suppression effect when path *c'* is greater in magnitude and significance compared to path *c* and when the indirect effect is significant without significant of path *c* and path *c'*. A suppressor variable is one that "increases the predictive validity of another variable (or set of variables) by its inclusion in a regression equation" (Rucker et al., 2011, p. 366). Children's perceptions of mothers' failure mindsets for two-parent families can be viewed as a suppressor in these analyses. In short, these analyses suggest the possibility of other indirect effects from unmeasured constructs to explain the relationship between mothers' failure mindsets and children's failure mindsets (Rucker et al., 2011). Aside from two-parent families, analyses suggest that the proposed implicit theories of intelligence and failure mindsets models are equivalent across levels of the moderators of children's gender, family structure, and mother's level of education.

Table 1.8.

Unstandardized Coefficients and Confidence Intervals for Total, Direct, and Indirect Effects for Implicit Theories of Intelligence Model Across Family Structure, Child's Gender, and Mothers' Level of Education for Study 1

Path	*B*	*SE*	*UCI*	*LCI*	*B*	*SE*	*UCI*	*LCI*	*CR*
	Single-Parent				Two-Parent				
Path *a*	0.10	0.12	-0.11	0.35	0.30	0.16	-0.04	0.61	1.01
Path *b*	0.84**	0.01	0.82	0.86	0.88**	0.01	0.85	0.90	1.93
Path *c*	0.23*	0.10	0.04	0.43	0.40*	0.14	0.10	0.67	-0.64
Path *c'*	0.14**	0.01	0.12	0.17	0.13**	0.01	0.11	0.16	
Indirect	0.09	0.10	-0.10	0.29	0.27	0.14	-0.03	0.53	
	Boys				Girls				
Path *a*	0.10	0.13	-0.18	0.35	0.23	0.13	-0.01	0.50	0.63
Path *b*	0.87**	0.01	0.84	0.89	0.85**	0.01	0.83	0.87	-0.90
Path *c*	0.24	0.12	-0.01	0.45	0.33**	0.11	0.12	0.56	-0.91
Path *c'*	0.15**	0.02	0.12	0.18	0.13**	0.02	0.10	0.16	
Indirect	0.09	0.12	-0.16	0.31	0.20	0.11	-0.01	0.43	
	Non-Degree				Degree				
Path *a*	0.14	0.11	-0.08	0.37	0.17	0.16	-0.19	0.47	0.17
Path *b*	0.86**	0.01	0.84	0.88	0.86**	0.01	0.83	0.88	-0.24
Path *c*	0.27**	0.10	0.08	0.47	0.27	0.14	-0.04	0.52	-1.81
Path *c'*	0.15**	0.01	0.13	0.18	0.12**	0.01	0.10	0.15	
Indirect	0.12	0.10	-0.07	0.32	0.15	0.14	-0.16	0.40	

*$p < .05$, **$p < .01$; Path *a* = Mothers' implicit theories of intelligence (ITIs) on children's perceptions of mothers' ITIs ; Path *b* = Children's perceptions of mothers' ITIs on children's ITIs; Path *c* = Total effect of mothers' ITIs on children's ITIs, ignoring children's perceptions of mothers' ITIs; Path *c'* = Direct effect of mothers' ITIs on children's ITIs, controlling for children's perceptions of mothers' ITIs; *B* = Unstandardized beta coefficient; *SE* = Standard error; *LCI* = Lower confidence interval; *UCI* = Upper confidence interval; *C.R.* = Critical ratio.

Table 1.9.

Unstandardized Coefficients and Confidence Intervals for Total, Direct, and Indirect Effects for Failure Mindsets Model Across Family Structure, Child's Gender, and Mothers' Level of Education for Study 1

Path	*B*	*SE*	*UCI*	*LCI*	*B*	*SE*	*UCI*	*LCI*	*CR*
	Single-Parent				Two-Parent				
Path *a*	-0.07	0.31	-0.57	0.45	-0.50*	0.23	-0.88	-0.13	-1.10
Path *b*	0.93***	0.02	0.89	0.96	0.96***	0.03	0.90	1.00	0.78
Path *c*	0.46	0.28	0.00	0.94	-0.04	0.22	-0.40	0.31	-1.24
Path *c'*	0.53**	0.06	0.44	0.62	0.44***	0.05	0.36	0.51	
Indirect	-0.07	0.29	-0.53	0.42	-0.48*	0.22	-0.85	-0.13	
	Boys				Girls				
Path *a*	-0.14	0.29	-0.61	0.33	-0.47	0.26	-0.85	-0.01	-0.83
Path *b*	0.93***	0.03	0.89	0.98	0.94**	0.02	0.90	0.97	0.25
Path *c*	0.32	0.27	-0.11	0.76	0.05	0.24	-0.30	0.47	0.54
Path *c'*	0.45**	0.04	0.38	0.51	0.49***	0.05	0.41	0.59	
Indirect	-0.13	0.27	-0.57	0.31	-0.44	0.25	-0.81	-0.01	
	Non-Degree				Degree				
Path *a*	-0.28	0.27	-0.69	0.20	-0.28	0.27	-0.73	0.16	-0.02
Path *b*	0.90***	0.02	0.87	0.93	0.96***	0.02	0.92	1.00	1.77
Path *c*	0.22	0.24	-0.15	0.65	0.23	0.26	-0.19	0.65	0.44
Path *c'*	0.47***	0.05	0.40	0.55	0.50***	0.05	0.42	0.59	
Indirect	-0.25	0.24	-0.62	0.18	-0.27	0.26	-0.70	0.15	

*$p < .05$, **$p < .01$, ***$p < .001$; Path *a* = Mothers' failure mindsets (FM) on children's perceptions of mothers' FM ; Path *b* = Children's perceptions of mothers' FM on children's FM; Path *c* = Total effect of mothers' FM on children's FM, ignoring children's perceptions of mothers' FM; Path *c'* = Direct effect of mothers' FM on children's FM, controlling for children's perceptions of mothers' FM; *B* = Unstandardized beta coefficient; *SE* = Standard error; *LCI* = Lower confidence interval; *UCI* = Upper confidence interval; *C.R.* = Critical ratio.

Discussion

The present study sought to understand how intergenerational transmission of learning-related cognitions, specifically implicit theories of intelligence and failure mindsets, occurs between parents and children from a diverse sample of mother-child dyads from a rural community. Further, the current work examined whether intergenerational transmission of learning-related cognitions differed by family structure, child's gender, and mothers' level of education. intergenerational transmission of beliefs is characterized by similarity in beliefs between parents and children (Barni et al., 2017; Grønhøj & Thøgersen, 2009; Moore et al., 2002). intergenerational transfer is said to occur when children are able to recognize parents' beliefs and when children adopt the beliefs they perceive their parents to hold (Knafo & Schwartz, 2003). Overall, findings did not support that intergenerational transmission of learning-related cognitions occurred between parents and children for both implicit theories of intelligence and failure mindsets via the theoretical framework presented. Our results indicated a direct link between parents' and children's learning-related cognitions, which connotes some intergenerational transmission, albeit small in magnitude. Thus, our findings reject the premise that children's accurate appraisal of mothers' learning-related cognitions is an essential step in explaining the process of intergenerational transmission of learning-related cognitions.

The first research question sought to understand the relationship between parents' learning-related cognitions (LRCs), children's LRCs, and children's perceptions of mothers' LRCs for both implicit theories of intelligence (ITIs) and failure mindsets. Analyses indicated virtually no relationship between mothers' LRCs and children's perceptions of mothers' LRCs for both implicit theories of intelligence and failure mindsets for the entire sample and for selected groups, with the exception of two-parent families for failure mindsets. Although

mothers' failure mindsets were a significant predictor of children's perceptions of mothers' failure mindsets in two-parent families, the relationship was negative indicating that children did not correctly perceive mothers' failure mindsets. This observation is inconsistent with claims and findings by Haimovitz and Dweck (2016) in that children are better able at recognizing their parents' failure mindsets opposed to parents' ITIs. It has been argued that parent beliefs that are more abstract, such as ITIs, are not explicitly conveyed to children which diminishes children's ability to appropriately perceive such beliefs (Gniewosz & Noack, 2012). In contrast, parents' failure mindsets are believed to be manifested in their reactions to children's setbacks or failure—experiences that are salient to both parents and children—and are, therefore, more visible to children. Findings from the present study would suggest that parents' failure mindsets, along with parents' ITIs, may also be less visible to children. Interestingly, although a null relationship was revealed between mothers' LRCs and children's perceptions of mothers' LRCs, post-hoc analyses supported that, for the regression of children's perceptions of mother's LRCs on children's LRCs, estimates were significantly greater for failure mindsets than ITIs. This finding may point to the notion that parents' failure mindsets are more apparent than parents' implicit theories of intelligence, but still, parents' failure mindsets are not clearly socialized as commonly as believed (Haimovitz & Dweck, 2016, 2017).

It may be that, unless prompted by a child's failure event or specifically asked about views on intelligence, parents are less likely to voluntarily express their beliefs to their children. Scholars have suggested that parents' behaviors and interactions with their children, whether directly or indirectly, may improve children's capability in correctly recognizing parents' beliefs (Acosta & Hsu, 2014; Eccles, 2005; Gniewosz & Noack, 2012). Thus, parents' beliefs should be: (a) directly socialized by parents to children through intentional, explicit training, initiation,

frequent communication, and exposure; or (b) indirectly socialized through parents' behaviors that are reinforced (by parents and other environments where such beliefs are reinforced) and modeled in a manner that is evident enough for children to pick up on (Bandura, 1977; Derbaix & Derbaix, 2019; Grønhøj & Thøgersen, 2009; Hoge, Petrillo, & Smith, 1982; Knafo & Schwartz, 2003; Moore et al., 2002). Evidence from the present study would suggest that children may not be picking up on parents' learning-related cognitions because parents' learning-related cognitions are neither explicitly nor implicitly conveyed naturally in family rituals of everyday life (Bryant, Zvonkovic, & Reynolds, 2006; Cemalcilar, Secinti, & Sumer, 2018; Döring, Makarova, Herzog, & Bardi, 2017; Moore et al., 2002). These findings identify an important part of intergenerational transmission of LRCs that needs more attention. Future studies should examine this component of intergenerational transfer to determine other possible mechanisms and sources that affect the relationship between parents' LRCs and children's perceptions of parents' LRCs. Furthermore, the lack of a relationship between parents' LRCs and children's perceptions of parents' LRCs indicates an area in which parent education programs and interventions should focus their attention. Our findings clearly demonstrate that children are not able to recognize parents' LRCs; therefore, parent education programs and interventions should focus their attention to how parents can directly and indirectly express their LRCs in a manner that has positive effects on their children.

Another consideration for why no relationship between mothers' learning-related cognitions and children's perceptions of mothers' learning-related cognitions was evident may be that learning-related cognitions is socialized by the broader social context. Because children's development of LRCs does not occur in a vacuum, the wider socio-cultural context affects parents' efficacy in transmitting LRCs as well as children's perceptions of parents' LRCs, thus

influencing the process of intergenerational transmission of LRCs between parents and children (Barni, Alfieri, Marta, & Rosnati, 2013; Friedlmeier & Trommsdorff, 2011; Roest, Dubas, & Gerris, 2010). Bronfenbrenner (1979) supported that proximal processes between two components of an individual's microsystem (i.e., mesosystem) are likely to affect experiences and interactions in another microsystem component. In the social context of school, teachers' and peers' LRCs and related behaviors influence children's LRCs and children's perceptions of mothers' LRCs (Barni, Vieno, Rosnati, Roccato, & Scabini, 2014; Kiousis & McDevitt, 2008; Wentzel & Looney, 2007). If the socio-cultural context promotes beliefs that is different than that of parents', then parents' efficacy in transmitting their own beliefs to their children is hindered (Barni, et al., 2013; Friedlmeier & Trommsdorff, 2011; Knafo, 2003).

Further, no evidence of a relationship between mothers' learning-related cognitions and children's perceptions of mothers' learning-related cognitions may be a reflect the broader socio-cultural context of living in a rural community. It has been heavily argued that parents are the primary socialization agents of children's beliefs and socialization occurs, notably, in the family context given the multiple channels of information from other family members and frequent observation opportunities (Barni et al., 2014; Barni et al., 2017; Goodnow, 1992; Moore, Wilkie, & Alder, 2001). Yet, LRCs may not be salient to mothers from a rural community, thus socialization of LRCs to their children may have less importance (Barni et al., 2013; Friedlmeier & Trommsdorff, 2011; Trommsdorff, 2009).

Another contribution to the literature is our finding that children's perceptions of mothers' learning-related cognitions significantly correlated and predicted children's learning-related cognitions for both implicit theories of intelligence and failure mindsets for the entire sample and selected groups. Researchers have long assumed that parents directly transmit their

implicit theories of intelligence to their children and have often neglected to consider the role of the children's perceptions of parents' beliefs in the process of children's internalization of parents' beliefs (Dweck, 1999; Haimovitz & Dweck, 2016). Scholars have emphasized that socialization processes operate through children's perceptions of parents' beliefs and behaviors (Bandura, 1977; Gniewosz & Noack, 2012; Lazarides, Rubach, & Ittel, 2017). Evidence has supported that children's perceptions of parents' LRCs (e.g., beliefs about academic value and utility) are a critical in the socialization process (Acosta & Hsu, 2014; Grusec & Goodnow, 1994; Gniewosz & Noack, 2012). Our findings align with those of other studies in which children's perceptions of parents' practices and beliefs were found to be more strongly related with children's own beliefs than their parents' beliefs (Dickhäuser & Stiensmeier-Pelster, 2002; Gniewosz & Noack, 2012; Marchant, Paulson, & Rothlisberg, 2001; Šimunović et al., 2018; Whitbeck & Gecas, 1988).

Since children were unable to accurately perceive their mothers' learning-related cognitions, then why were children's perceptions of mothers' learning-related cognitions strongly related to children's learning-related cognitions in the current study? One explanation may be that children attributed their perceptions of mothers' LRCs to their own LRCs (Šimunović et al., 2018). Results from prior studies have revealed that when an individual is uncertain of the beliefs or values held by the person they are assessing, the individual will adjust their perception of the other person's beliefs to their own set of beliefs or values (Crano, 1983; Krueger, 1998; Šimunović et al., 2018). The non-significant correlations indicate that children adjust their perceptions of their mothers' LRCs to their own LRCs. Also, the greater magnitude and significance of correlations between children's perceptions of mothers' LRCs and children's LRCs, for both implicit theories of intelligence and failure mindsets, provide further evidence.

Children had higher LRCs scores compared to mothers, so children may heighten their perceptions of their mothers' LRCs. Further, as previously mentioned, children's perceptions of mothers' LRCs and children's LRCs may be influenced by the wider socio-cultural context.

Overall, we found that mothers' learning-related cognitions were related to children's learning-related cognitions for both implicit theories of intelligence but not for failure mindsets. These findings suggested a potential intergenerational transfer of learning-related cognitions between mothers and children for implicit theories of intelligence. In regression analyses, mothers' learning-related cognitions predicted children's learning-related cognitions for ITIs but not for failure mindsets. Previous studies have reported inconsistent results regarding the relationship between parents' and children's ITIs (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Moorman & Pomerantz, 2010). Haimovitz and Dweck (2016, 2017) have argued that this inconsistency of establishing a relationship between parents' and children's ITIs is because parents do not explicitly express their ITIs with their children. However, findings from the present study are inconsistent with previous assumptions and results. Also, our findings are not consistent with the claims about the process of intergenerational transfer of beliefs, such that similarity of beliefs between parents and children occurs through children's accurate perceptions of parents' beliefs and children's acceptance of their perceived beliefs (Eccles, 2014; Grønhøj & Thøgersen, 2009; Knafo & Schwartz, 2003; Moore et al., 2002; Šimunović et al., 2018). For the present study, mothers' ITIs were not related to or predicted children's perceptions of mothers' ITIs yet, mothers' ITIs were associated with children's ITIs and children's perceptions of mothers' ITIs were related to children's ITIs. These results indicate that intergenerational transfer of implicit theories of intelligence still occurred even though children were unable to recognize their mothers' implicit theories of intelligence.

Another objective of the present study was to examine differences mothers' learning-related cognitions, children's perceptions of mothers' learning-related cognitions, children's learning-related cognitions, as well as differences in intergenerational transfer of learning-related cognitions as a function of family structure, child's gender, and mothers' level of education. No latent mean differences emerged in mother's LRCs, children's perceptions of mothers' LRCs, and children's LRCs scores across all contextual factors. All scores were all within the range of an incremental theory of intelligence and failure-is-enhancing mindset. Statistical tests indicated no significant differences between correlation and regression coefficients across selected contextual factors, yet some noteworthy contextual differences emerged.

For instance, in terms of family structure, it was assumed that relationships between mother's learning-related cognitions, children's perceptions of mothers' learning-related cognitions, and children's learning-related cognitions would be stronger amongst two-parent families, given that children from two-parent families were more likely to receive frequent, redundant messages that express mothers' learning-related cognitions (Cashmore & Goodnow, 1985; Knafo & Schwartz, 2003; Okagaki & Bevis, 1999). Although mother's failure mindsets were a significant predictor of children's perceptions of mothers' failure mindsets, this relationship was negative, indicating that children did not correctly perceive their mothers' failure mindsets. These results conflict with prior expectations about the function of family structure in terms of intergenerational transmission of LRCs. Regarding child's gender, mothers' implicit theories of intelligence was related to and predicted children's implicit theories of intelligence for girls but not for boys. Our findings support gender role models of socialization and previous findings such that same-sex parent-child dyads have a stronger relationship in beliefs in comparison to different-sex parent-child dyads (Vollebergh et al., 2001). For mothers'

level of education, mothers' implicit theories of intelligence correlated with and predicted children's implicit theories of intelligence amongst non-degree mothers, but not mothers with a degree or certification. Despite support that parents with a degree or certification may have better accessibility to resources and an educational foundation that aids in supporting children's development, motivation, or activities, these assumptions did not hold true for our findings (Conger & Dogan, 2007; Elliott & Bachman, 2018). Although no statistically significant differences were found for the structural model tested in the present study, post-hoc analyses of individual paths indicated statistically significant differences in relationships.

Limitations

Although the current research provides a better understanding about intergenerational transmission of learning-related cognitions between parents and children, there are several limitations that warrant caution in interpretation of findings. The first limitation of this study is the relatively small size and convenience sample of mothers and children from a rural community in the U.S. While our sample was heterogenous in terms of family structure, child's gender, mothers' level of education, and race/ethnicity, it was homogenous in terms of socio-cultural context with all parent-child dyads being from a rural community in the southeastern U.S. There may be variability in terms of rural communities across the U.S. and within other countries. Larger representative samples would increase the generalizability of findings. Further, the small sample size may have caused low power in analyses, thus the effects of relations in the present study should be interpreted with caution. The sample was also limited in that only mothers participated in the study. Future studies should include responses from both mothers and fathers to provide a deeper understanding of intergenerational transmission of learning-related cognitions gender composition of parent-child dyads thus the generalizability of findings.

Additionally, the cross-sectional design of the study limited our ability to interpret the direction of relations between variables over time. This limitation provides an opportunity for future studies to examine intergenerational transmission of learning-related cognitions longitudinally.

The method used to interpret scores of implicit theories of intelligence and failure mindsets is another limitation to our study. Given that both scales were measured using a 6-point Likert-type scale in which higher scores represented an entity theory of intelligence and a failure-is-debilitating mindset and lower scores represented an incremental theory of intelligence and a failure-is-enhancing mindset. Thus, the cutoff point for all measures was 3.50. Dweck, Chiu, and Hong (1995) suggested only using participants with definite implicit theories of intelligence—those with scores of 3.0 and lower and those with scores of 4.0 and higher—and excluding participants with an unclear endorsement of implicit theories of intelligence (i.e., participants with scores between 3.0 and 4.0). The same dichotomization method can be said for failure mindsets scores, as well. Although this method is beneficial, it also minimizes sample size, diminishes variance, and possibly artificially polarize scores (Makel, Snyder, Thomas, Malone, & Putallaz, 2015; Rucker, McShane, & Preacher, 2015). For the present study, it would have been useful to use participants with clear implicit theories of intelligence and failure mindsets. However, using the dichotomization method would have reduced the sample size significantly. Future studies with larger sample sizes should test whether implementing this method reveals significant statistical differences.

Conclusions about intergenerational transmission of learning-related cognitions from our research assume that intergenerational transmission of learning-related cognitions can be inferred from parents' and children's responses to questionnaires. Several studies of intergenerational transfer have assumed this position, yet it does not consider possibility of bidirectional influences

(e.g., child to parent) of intergenerational transmission (Grønhøj & Thøgersen, 2009; Moore et al., 2002). Further, our study did not include measures of other LRCs (e.g., goal orientation) or parent behaviors related to LRCs. Studies have supported that parents' LRCs influence their behaviors and messages towards their children (Haimovitz & Dweck, 2016, 2017; King, 2019; Moorman & Pomerantz, 2010; Rattan, Good, & Dweck, 2012). Scholars have suggested that parents' LRCs-influenced behaviors are what children are able to recognize which, in turn, influence children's own LRCs. Including a measure of parents' responses to achievement-related success or failure in addition to the present study's measure may provide a better understanding of how intergenerational transmission of LRCs between parents and children takes place.

Despite the aforementioned limitations, the present study has important implications. It is the first study to examine intergenerational transmission of learning-related cognitions between parents and children using dyadic data. The results point to the importance of children's perceptions of parents' learning-related cognitions in the process of intergenerational transmission of learning-related cognitions. Although evidence of a relationship between mothers' learning-related cognitions and children's perceptions of mothers' learning-related cognitions did not emerge, it points to an important area that must be given attention. Given previous findings on the significance of learning-related cognitions for children's motivation and academic achievement, it is essential that parents socialize learning-related cognitions in a manner that children are able to recognize and accept into their own belief syst

STUDY 2: WHAT INFLUENCES CHILDREN'S DEVELOPMENT OF IMPLICIT THEORIES OF INTELLIGENCE? THE ROLE OF PARENTS' SOCIALIZATION AND CONTEXTUAL FACTORS

Introduction

Parents play an essential role in promoting children's motivation and academic achievement (Cheung & Pomerantz, 2012; Duckworth, 2016; Pomerantz, Grolnick, & Price, 2005). Most parents want to facilitate their children's motivation and success in school, yet many are uncertain of which practices are optimal or how to implement such practices (Haimovitz & Dweck, 2016). One approach that parents can take to foster their children's motivation and learning is promoting in children the belief that intelligence and abilities can grow and improve (Broda et al., 2018; Burnette, Russell, Hoyt, Orvidas, & Widman, 2018; Haimovitz & Dweck, 2016). Individual's beliefs about the malleability of intelligence, or their *implicit theories of intelligence*, lead to meaningful variation in how children approach learning and respond to achievement outcomes (Costa & Faria, 2018; Haimovitz & Dweck, 2017).

The developmental origins of children's implicit theories of intelligence are poorly understood and rarely researched. Available evidence assumes children's implicit theories of intelligence are socialized, with parents as the primary socialization agents (Haimovitz & Dweck, 2017; Kamins & Dweck, 1999; Matthes & Stoeger, 2018). The idea of parents as socializers of children's implicit theories of intelligence has led researchers to believe that parents' own implicit theories of intelligence would be directly related to their children's implicit theories of intelligence (Haimovitz & Dweck, 2017). Yet, studies of a direct link between parents' and children's implicit theories of intelligence has yielded inconsistent results (Haimovitz & Dweck, 2016, 2017). Whereas some studies find a correlation between parents'

and children's implicit theories of intelligence (Matthes & Stoeger, 2018), others report a null association (Gunderson et al., 2013; Haimovitz & Dweck, 2016).

The absence of a strong and consistent relationship between parents' and children's implicit theories of intelligence (ITIs) suggest at least two possible explanations. First, it is possible that parents' ITIs are not *directly* socialized to their children; rather, perhaps the socialization is indirect through diverse forms of parent-child interaction surrounding diverse aspects of schooling, school-related work or academic challenges encountered through school (Costa & Faria; Haimovitz & Dweck, 2017; Yeager & Dweck, 2012). A large array of indirect pathways would create weak and likely inconsistent associations among parents' and children's ITIs. A second possible explanation for the absence of a strong and consistent relationship between parents' and children's ITIs could be the presence of moderating forces. Contextual factors, such as communities (e.g., rural or urban) and gender can influence an individual's experience, knowledge, and development (Bronfenbrenner, 1979). Perhaps social or cultural attributes of diverse samples suppress or accentuate associations among assessments of parents' and children's ITIs.

The goal of the present study is to improve understanding of how children develop their implicit theories of intelligence. To achieve this goal, this study determines the potential role of parents' *failure mindsets*, or beliefs about the experience and consequences of failure (Haimovitz & Dweck, 2016), in linking parents' and children's implicit theories of intelligence. Additionally, informed by human ecological theory (Bronfenbrenner, 2001) which argues that "context matters" this study explores the potential modifying effects of selected contextual factors (e.g., community type and gender) on associations of parents' implicit theories of intelligence and failure mindsets with children's implicit theories of intelligence.

Parents' Socialization of Implicit Theories of Intelligence

Implicit theories of intelligence (ITIs) form an individual's motivational framework, or their subsequent approach towards learning, behavior, and achievement (Dweck & Leggett, 1988; Elliot & Dweck, 1988). The ITIs framework posits two primary "theories" of intelligence. The first is an *incremental theory of intelligence* or the belief that intelligence is malleable and has a potential for growth (Haimovitz & Dweck, 2016). Incrementalists contend that intelligence and subsequent academic achievement can be improved through effort, acquiring and applying different strategies, perseverance, and seeking help from others when faced with a setback or challenge (Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Leggett, 1988). The second is an *entity theory of intelligence* or the belief that intelligence is stable and cannot be meaningfully changed. Consequently, individuals with an entity theory of intelligence are likely to avoid challenges, give up on tasks, and have lower achievement (Blackwell et al., 2007; Haimovitz, Wormington, & Corpus, 2011; Haimovitz & Dweck, 2016).

Although it is widely believed that children acquire their ITIs from parents through socialization, the evidence for direct socialization is mixed (Haimovitz & Dweck, 2017). Only three studies could be located that have examined the relationship between parents' and children's ITIs (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Matthes & Stoeger, 2018). Two studies, both with small sample sizes of parent-child dyads (n = 53, Gunderson et al., 2013; n = 73, Haimovitz & Dweck, 2016) from metropolitan areas, did not report a significant relationship between parents' and children's ITIs. One study of a large cohort (N=723) of parent-child dyads from Germany reported a small (r = 0.34) but significant relationship between parents' and children's ITIs (Matthes & Stoeger, 2018).

One explanation for the mixed findings linking parents' and children's implicit theories of intelligence is that parents' implicit theories of intelligence are not explicitly expressed to their children (Luftenegger & Chen, 2017). Instead, one strand of evidence suggests that parents' socialization of their ITIs is manifested in their beliefs and reactions to their children's academic achievement, not their potential (Haimovitz & Dweck, 2016). Haimovitz and Dweck (2016) contend that parents' failure mindsets, not their ITIs, may be more pivotal in shaping children's ITIs. A failure mindset is an individual's beliefs about the effects of failure (Haimovitz & Dweck, 2016). Like implicit theories of intelligence, failure mindsets are believed to take one of two forms. The first failure mindset is a *failure-is-enhancing mindset* or the belief that failure is an enhancing experience that facilitates learning and growth. The second failure mindset is a *failure-is-debilitating mindset* or the belief that failure is a debilitating experience that inhibits learning and productivity (Haimovitz & Dweck, 2016).

Some evidence supports that parents' implicit theories of intelligence is linked with their failure mindset and that parents' failure mindsets—not ITIs—shape children's implicit theories of intelligence. Haimovitz and Dweck (2016) used findings from a series of five studies to suggest that failure mindsets are distinct from ITIs, and that parents' failure mindsets have a stronger ability to socialize children. The argument underlying this premise is that parents' beliefs about failure may be expressed more frequently and in a manner that is more apparent to their children than their ITIs. Also, there is some evidence supporting the plausibility of parents' failure mindsets as a mechanism linking parents' and children's ITIs (Haimovitz & Dweck, 2016). Similarly, parents' failure-is-debilitating mindset predicted children's endorsement of an entity theory of intelligence (Haimovitz & Dweck, 2016). While these findings suggest that

children's ITIs are indirectly influenced by parents' ITIs via parents' failure mindsets, to our knowledge, no research has examined these relationships.

The potential value of parents' failure mindsets in fostering children's implicit theories of intelligence would benefit from additional research. First, besides Haimovitz and Dweck's (2016) work, no other studies of parents' failure mindsets and its associations with parents' and children's ITIs could be found; replication is needed. Further, the samples used to test the ideas were obtained from predominantly White, middle- to upper-class participants (primarily children and mothers) living in the San Francisco Bay Area. Like many ITIs studies, Haimovitz and Dweck (2016) did not consider potential contextual factors, such as community and gender, in their analyses to determine whether possible differences in ITIs and failure mindsets exist. Replication with a more diverse body of students and parents is needed to determine how ITIs and failure mindsets are constructed within their respective contexts. Perhaps most importantly, Haimovitz and Dweck (2016) implied that ITIs and failure mindsets are distinct constructs; however, it remains unclear whether failure mindsets are a consequence of, or a part of, parents ITIs. The conceptual differences between ITIs and failure mindsets have been articulated but their empirical distinctiveness has yet to be determined.

Contextual Influences on Implicit Theories of Intelligence and Failure Mindsets

Consideration of the influence of wider socio-cultural context on children's implicit theories of intelligence remains underdeveloped. Bronfenbrenner (1979) highlighted the importance of considering contextual influences outside of the parent-child relationship in studies of child development. Human ecological theory posits that human development is influenced by proximal processes, complex interactions between an individual and his or her environment, that occurs throughout the lifespan (Bronfenbrenner & Morris, 2006). Contexts are

"processes of influence" that provide opportunities or impose limitations in an individual's day-to-day activities and interactions (McHale, Dotterer, & Kim, 2009, p. 5). The context of the family environment is embedded within the broader societal context (Bronfenbrenner, 2001).

Not only do parents socialize beliefs that are personally held, but also the beliefs that are customarily endorsed by the broader context of society or culture (Tam, Lee, Kim, Li, & Chao, 2012). Parents socialize their children to maximize the potential for their children to successfully adapt to the given society (Kuczynski, Marshall, & Schell, 1997; Tam & Lee, 2010; Youniss, 1994). In other words, parents serve as filters for the values upheld by their surrounding context (Doring, Makarova, Herzog, & Bardi, 2017). Thus, broader contextual factors such as community should, theoretically, have an influence on parents' and children's implicit theories of intelligence and parents' failure mindsets.

Most studies have examined implicit theories of intelligence in non-rural (e.g., suburban and urban) communities, but there is reason to believe that salience of beliefs about the malleability of intelligence could differ between rural- and non-rural-dwelling parents. Rural communities often have higher levels of social capital because of their generally smaller size (Byun, Meece, & Irvin, 2012; Crockett, Shanahan, & Jackson-Newsom, 2000; Elder & Conger, 2000; Petrin, Schafft, & Meece, 2014). Greater social capital suggests stronger connection among community families, and between families and the schools and institutions providing services. High levels of social capital may lead rural parents to view education as a way of meeting local community needs (Stone, 2018), which may result in narrowed or diminished educational aspirations (Hardré, Sullivan, & Crowson, 2009; Meece et al., 2013; Meece, Askew, Agger, Hutchins, & Byun, 2014; Morton, Ramirez, Meece, Demetriou, & Panter, 2018). Further,

in some rural communities the value of "common sense" over "book smarts" can diminish students' desire and ability to learn (Burnette et al., 2018; Carrico, Murzi, & Matusovich, 2016).

Bronfenbrenner (1995) also suggested that an individual's personal characteristics, such as gender, have the capacity to influence the power of proximal processes to impact human development and related beliefs. Mixed results for gender differences in implicit theories of intelligence have been revealed. Several studies have reported that girls tend to hold an entity theory of intelligence (Chen, 2012; Chen & Pajares, 2010; Diseth, Meland, & Breidablik, 2014; Dweck, 2000; Gunderson, Ramirez, Levine, & Beilock, 2012; Gunderson et al., 2013; Howell & Buro, 2009; Rickert, Meras, & Witkow, 2014; Todor, 2014; Warren, Mason-Apps, Hoskins, Azmi, & Boyce, 2018), while other research has shown that boys are more likely to endorse an entity theory of intelligence (Cavanagh et al., 2018; Romero, Master, Paunesku, Dweck, & Gross, 2014; Stipek & Gralinski, 1996). Other studies indicated no significant gender differences in implicit theories of intelligence (Chen, Chen, Dai, Man U, & Cheng, 2018; Shively & Ryan, 2013; Smiley, Buttitta, Chung, Dubon, & Chang, 2016; Tarbetsky, Collie, & Martin, 2016). Furthermore, it is unknown whether gender differences in implicit theories of intelligence and failure mindsets amongst parents exist given that many studies have had samples consisting primarily of mothers or have neglected to analyze and report gender differences in parents' implicit theories of intelligence and failure mindsets.

The Present Study

The main goal of the current study is to improve understanding of how children develop their implicit theories of intelligence by studying the children's and parents' beliefs about intelligence and failure using data from a diverse sample to capture contextual influences. Four research questions based on theoretical and previous research were asked to achieve the study's

goal. First, are parents' implicit theories of intelligence and failure mindsets distinct constructs? Second, are there mean differences in parents' and children's implicit theories of intelligence and parents' failure mindsets regarding contextual factors (e.g., community type and gender)? Third, what is the relationship between parents' implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence? Fourth, do parents' failure mindsets explain the relationship between parents' and children's implicit theories of intelligence (Figure 2.1)? Fifth, are the relationships between parents' and children's implicit theories of intelligence and parents' failure mindsets moderated by contextual factors?

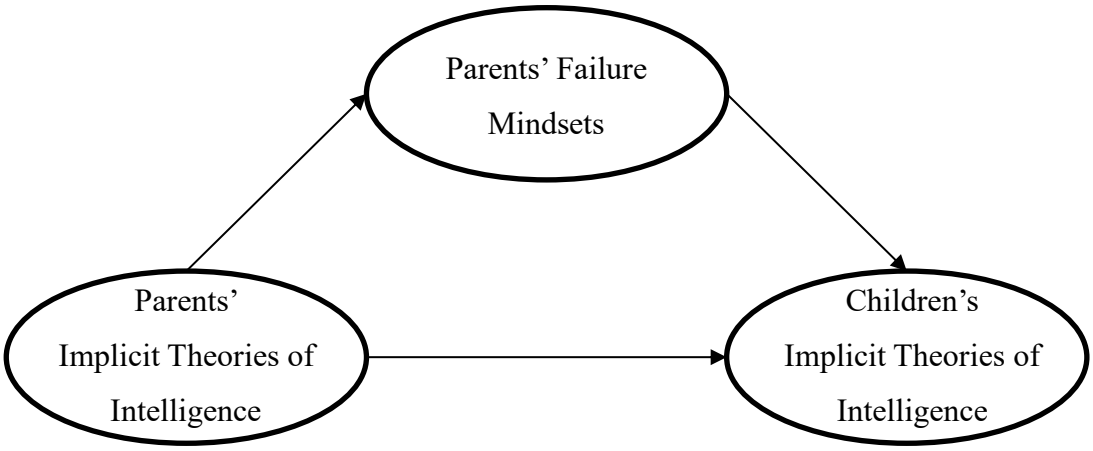

Figure 2.1. The path model for parents' failure mindsets as a mediator between parents' implicit theories of intelligence and children's implicit theories of intelligence.

Methods

Participants

The present study is a replication of Haimovitz and Dweck's (2016) study. Original data were collected from 106 parent-child dyads from a rural elementary school in the Southeast region of the United States. Data were from children in the fourth and fifth grade (52% fourth grade; 57% female) and their mothers (53%) and fathers (46.2%) whose mean age was 39.8 (*SD*

= 7.4). The original data were combined with Haimovitz and Dweck's (2016) existing data set of 73 parent-child dyads from a non-rural community in the San Francisco Bay Area of fourth and fifth grade children (66% fifth grade; 55% female) and their mothers (80.8%) and fathers (19.2%) whose mean age was 44.5 (SD = 6.5). Collectively, the final data were from 179 parent-child dyads (59% rural) of fourth and fifth grade students (55.3% fifth grade; 56% female) and their mothers (64%) and fathers (35%) whose mean age was 42.9 (*SD* = 7.4). Demographic characteristics are presented in Table 2.1.

Table 2.1
Demographic Characteristics of the Study 2 Sample

	Rural Community		Non-Rural Community		Total	
Characteristic	*n*	%	*n*	%	*n*	%
Total	106	59.2%	73	40.8%	179	100%
Child's Gender						
Male	45	42.5%	33	45.2%	78	43.6%
Female	60	56.6%	40	54.8%	100	55.9%
Child's Grade Level						
Fourth	55	51.9%	25	34.2%	80	44.7%
Fifth	51	48.1%	48	65.8%	99	55.3%
Parents' Gender						
Male	49	46.2%	14	19.2%	63	35.2%
Female	56	52.8%	59	80.8%	115	64.2%

Measures

Parents' implicit theories of intelligence. Parents' implicit theories of intelligence were measured with the four-item Implicit Theories of Intelligence Scale (ITIS-4; Haimovitz & Dweck, 2016). The ITIS uses a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Incremental theories of intelligence were assessed with two items (e.g., "No matter how much intelligence you have, you can always change it quite a bit," and "You can always greatly change how intelligent you are") and entity theories of intelligence were assessed with two items (e.g., "You have a certain amount of intelligence, and you can't really do much to

change it," and "You can learn new things but you can't really change how intelligent you are"), and were reverse-scored. Higher scores indicated an endorsement of an entity theory of intelligence ($\alpha = 0.92$).

Parents' failure mindsets. Parents' failure mindsets were assessed with the six-item Failure Mindset Scale (FMS; Haimovitz & Dweck, 2016). This measure assessed a failure-is-enhancing mindset with three items (e.g., "The effects of failure are positive and should be utilized," "Experiencing failure facilitates learning and growth," and "Experiencing failure facilitates my learning") and a failure-is-debilitating mindset was assessed with three items (e.g., "Experiencing failure inhibits my learning and growth," and "Experiencing failure debilitates my performance and productivity"). All items were measured with a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*) and failure-is-enhancing items were reverse-scored. Higher scores reflected a failure-is-debilitating mindset ($\alpha = 0.88$).

Children's implicit theories of intelligence. Children's implicit theories of intelligence were assessed with four items (Haimovitz & Dweck, 2016). Three items were used to assess an entity theory of intelligence (e.g., "How smart you are is something about you that you can't change very much," "You can learn new things, but you can't change how smart you really are," and "You're a certain amount smart, and you can't really do much to change it") and one item for an incremental theory of intelligence (e.g., "You can always change how smart you are") which was reverse-scored. All items were measured using a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores were indicative of an entity theory of intelligence ($\alpha = 0.69$).

Table 2.2
Item Descriptions for Study 2 Variables

Parents' Implicit Theories of Intelligence (PITI)
PITI1: You have a certain amount of intelligence, and you really can't do much to change it.
PITI2: You can learn new things but you can't really change how intelligent you are.
PITI3Rev: No matter how much intelligence you have, you can always change it quite a bit.
PITI4Rev: You can always greatly change how intelligent you are.
Parents' Failure Mindsets (PFM)
PFM1Rev: Experiencing failure enhances performance and productivity.
PFM2Rev: Experiencing failure facilitates learning and growth.
PFM3Rev: The effects of failure are positive and should be utilized.
PFM4: Experiencing failure debilitates my performance and productivity.
PFM5: Experiencing failure inhibits learning and growth.
PFM6: The effects of failure are negative and should be avoided.
Children's Implicit Theories of Intelligence (CITI)
CITI1: How smart you are is something about you that you can't change very much.
CITI2: You can learn new things, but you can't change how smart you really are.
CITI3Rev: You can always change how smart you are.
CITI4: You're a certain amount smart, and you can't really do much to change it.

Analytic Plan

A two-step structural equation modeling (SEM) approach was used to evaluate each measurement's factor structure and investigate whether the proposed model of parents' failure mindsets mediate the relationship between parents' and children's implicit theories of intelligence (ITIs) has structural adequacy, (Anderson & Gerbing, 1988). Confirmatory factor analysis (CFA) and multi-group CFA (MG-CFA) were conducted using IBM SPSS AMOS 25 (2011). This program uses full-information maximum likelihood (FIML) estimation to handle missing data. Several indices were used to evaluate model fit: Chi-square statistics (χ^2), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). RMSEA and SRMR values below 0.08 and chi-square values that are small and non-significant, $p > 0.05$, is a recommended threshold for determining a good model fit. CFI and TLI values above 0.90 also demonstrate the

model has a good fit (Byrne, 2010; Hu & Bentler, 1999; Kline, 2015). First, CFA was conducted to establish a good fit for the measurement component of the model to establish good fit. For the present study, the first step was also used to determine the factor structure of the ITIS-4 and FMS and whether parents' ITIs and failure mindsets are distinct constructs.

Next, measurement invariance (MI) was tested to determine whether the factor structures functioned in a conceptually similar manner across groups. Three separate MG-CFA were performed for each selected contextual factor (e.g., community type, parents' gender, and child's gender) to investigate configural, metric, scalar, and strict invariance across (Kline, 2011; Putnick & Bornstein, 2016). Latent mean differences were allowed for models that achieved scalar or partial scalar invariance. Latent mean comparisons were performed by constraining the latent mean for each factor to 0 for the reference group and allowing the latent mean of the comparison group to be freely estimated (Putnick & Bornstein, 2016). Critical ratios (*C.R.*) were used to assess latent mean differences in which *C.R.* values greater than |1.96| support statistically significant differences between latent means (Byrne, 2013; Chen, Dai, & Gao, 2017).

In the second step of the SEM approach (Anderson & Gerbing, 1988), the structural component was evaluated by comparing the fit of the structural model to the fit of the measurement model. The structural model fit was evaluated with a hand-calculated chi-square difference test was performed in which the final structural model statistics were subtracted from the final measurement model statistics. Factor scores were then imputed from the measurement model.

To examine whether parents' failure mindsets explained the relationship between parents' and children's implicit theories of intelligence, total, direct, and indirect effects of mediating relationships were tested with a bias-corrected bootstrapping procedure with 5,000 resamples and

95% confidence intervals (CI) supplied by the AMOS program (Shrout & Bolger, 2002). If the CI did not contain zero, the indirect effect of the mediating variable is considered statistically significant (Hayes, 2009, 2013; Hayes & Rockwood, 2009; Preacher & Hayes, 2008). According to Baron and Kenny's (1986) mediation approach, the relationships between the following variables must be statistically significant in order for mediation to occur: the relationship between the independent variable (IV) and the mediator (M) (path *a*), the relationship between M and the dependent variable (DV) (path *b*), and the relationship between the IV and the DV (path *c*). However, current literature suggests that only the indirect effect (path *a* x path *b*) must be significant to identify mediation (Hayes & Rockwood, 2016; Meule, 2019; Rucker, Preacher, Tormala, & Petty, 2011; Zhao, Lynch, & Chen, 2010).

For models that established measurement invariance across each group, the moderation effect of each contextual factor on the mediation model was assessed. Three separate models—a model for community type, a model for children's gender, and a model for parents' gender—using MG-SEM were tested to determine whether the paths in the mediation model were equal across groups in each selected contextual factor. Each contextual factor had two levels of a moderator: rural and non-rural for community type, boy and girls for child's gender, and males and females for parents' gender. To determine whether moderated mediation occurred in each model, pairwise comparisons between path coefficients for each path in the mediation model were conducted. Pairwise comparison between paths that exceed a critical ratio (CR) value above |1.96| indicate a significant difference between groups and provide evidence that the mediation model is moderated by the selected moderator.

Results

Confirmatory Factor Analysis

The initial measurement model implicit theories of intelligence consisted of fourteen items loading on three separate factors: PITI1-PITI4Rev on PITI (parents' implicit theories of intelligence); PFM1Rev-PFM6 on PFM (parents' failure mindsets); and CITI1-CITI4 on CITI (children's implicit theories of intelligence) (see Table 2 for item descriptions). The initial measurement model did not provide a good fit to the data; thus, adjustments were made in which several items were dropped and PFM2Rev and PFM3Rev were covaried (Table 2.3). The adjustments resulted in a final measurement model consisting of seven items loading on three separate factors (same as initial measurement model) that demonstrated a good model fit, $\chi^2(10) = 6.01$, $p > .05$. The final measurement model was used to test for measurement invariance across the selected contextual factors.

Measurement Invariance

Configural, metric, and scalar invariance was established for the measurement model across community type, child's gender, and parents' gender (see Appendix B for detail results and procedures). Table 2.4 displays the results of measurement invariance tests across all selected groups. For models that supported scalar invariance, latent mean differences across contextual factors were compared to address whether there are mean differences in parents' implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence by community type, child's gender, and parents' gender as meaningful contextual factors (Putnick & Bornstein, 2016).

Table 2.3

Model Fit Statistics and Unstandardized Factor Loadings for Measurement Model and Structural Model in Study 2

Model	χ^2	*df*	CFI	TLI	RMSEA	SRMR
Initial Measurement Model	706.55*	77	0.63	0.57	0.21	0.20
Adjusted Measurement Model	359.32*	74	0.83	0.80	0.15	0.08
Final Measurement Model	6.01	10	1.00	1.00	0.00	0.02

	Adjusted Measurement Model			Final Measurement Model		
Item	PITI	PFM	CITI	PITI	PFM	CITI
PITI1	1.00			1.00		
PITI2	1.05			1.04		
PITI3r	1.11			-		
PITI4r	1.07			-		
PFM1r		1.00			1.00	
PFM2r		0.84			0.64	
PFM3r		0.83			0.66	
PFM4		0.87			-	
PFM5		0.68			-	
PFM6		0.82			-	
CITI1			1.00			-
CITI2			1.42			-
CITI3r			1.49			1.00
CITI4			1.29			0.91

*$p < .001$; Initial measurement model: 1 factor for parents' variables and 1 factor for children's variables; Adjusted measurement model: 2 factors for parents' variables and 1 factor for children's variables; PITI = parents' implicit theories of intelligence; PFM = parents' failure mindsets; CITI = children's implicit theories of intelligence.

Latent Mean Comparisons

Given that scalar invariance was supported across community type, child's gender, and parents' gender, latent mean comparisons were performed (Putnick & Bornstein, 2016). The reference group for community type, child's gender, and parents' gender were rural community families, boys, and fathers, respectively. Table 2.5 shows the results of latent mean differences for all study variables across groups. For parents' implicit theories of intelligence, significant mean differences were found across community type. That is, when the latent mean of parents' implicit theories of intelligence (ITIs) was fixed as 0 in rural community families, the latent means of parents' ITIs were significantly higher in non-rural families compared to rural

community families by 1.54 (*SE* = 0.19, *C.R.* = 8.21). Additionally, significant latent mean differences were revealed for parents' failure mindsets across community type and parents' gender. Specifically, the latent means of parents' failure mindsets in non-rural community families were significantly higher compared to rural community families by 2.30 (*SE* = 0.13, *C.R.* = 17.32), and the latent means of mothers' failure mindsets were significantly higher in comparison to fathers by 0.47 (*SE* = 0.23, *C.R.* = 2.08). For children's ITIs, latent means comparisons revealed a significant difference across community type and parents' gender. Children from non-rural communities had significantly higher latent means for ITIs compared to children from rural communities by 1.82 (*SE* = 0.23, *C.R.* = 7.97) and the latent means for children's ITIs were significantly higher for children with mothers compared to fathers by 0.51 (*SE* = 0.25, *C.R.* = 2.09). No significant latent mean differences across child's gender emerged.

Table 2.4.
Tests of Measurement Invariance Across Contextual Factors for Study 2

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	SRMR
Community Type							
Configural	18.26	20	-	1.00	1.00	0.00	0.03
Metric	19.40	24	1.14(4)	1.00	1.00	0.00	0.03
Scalar	24.92	28	5.52(4)	1.00	1.00	0.00	0.04
Strict	44.04	35	19.12*(7)	0.98	0.97	0.04	0.04
Partial Strict	28.92	33	3.99(5)	1.00	1.00	0.00	0.04
Child's Gender							
Configural	15.41	20	-	1.00	1.00	0.00	0.03
Metric	23.08	24	7.67(4)	1.00	1.00	0.00	0.04
Scalar	26.42	28	3.34(4)	1.00	1.00	0.00	0.04
Strict	46.33	35	19.91*(7)	0.98	0.98	0.04	0.05
Partial Strict	32.11	34	5.67(6)	1.00	1.00	0.00	0.05
Parents' Gender							
Configural	15.93	20	-	1.00	1.00	0.00	0.04
Metric	17.06	24	1.12(4)	1.00	1.00	0.00	0.04
Scalar	24.34	28	7.28(4)	1.00	1.00	0.00	0.05
Strict	43.63	35	19.29*(7)	0.98	0.99	0.04	0.05
Partial Strict	31.41	34	7.07(6)	1.00	1.00	0.00	0.05

*$p < .01$; Community type partial strict: Residuals for PFM1r and PFM2r were freely estimated; Child's gender partial strict: Residuals for PITI1 were freely estimated; Parents' gender partial strict: Residuals for PITI2 were freely estimated.

Table 2.5

Latent Mean Differences Across Contextual Factors for Study 2

		Estimate	*SE*	*C.R.*
Community Type: Rural vs. Non-Rural	PITI	1.63**	0.19	8.50
	PFM	2.30**	0.13	17.35
	CITI	1.77**	0.23	7.70
Child's Gender: Boys vs. Girls	PITI	-0.20	0.23	-0.89
	PFM	-0.18	0.22	-0.82
	CITI	-0.26	0.23	-1.12
Parents' Gender: Fathers vs. Mothers	PITI	0.36	0.22	1.67
	PFM	0.47*	0.23	2.07
	CITI	0.53*	0.24	2.24

*$p < .05$, **$p < .01$; *C.R.*= critical ratio; PITI = parents' implicit theories of intelligence; PFM = parents' failure mindsets; CITI = children's implicit theories of intelligence; *Note:* Reference groups were rural community families, boys, and fathers. Estimates displayed are latent mean differences for non-rural community families, girls, and mothers.

Descriptive Statistics

Factor scores were imputed from the measurement model to examine descriptive statistics for the entire sample and selected groups (Table 2.6). Overall, parents' scores for implicit theories of intelligence was 3.14 (*SD* = 1.35), indicating an incremental theory of intelligence. Parent' failure mindsets scores for the entire sample were 3.38 (*SD* = 1.42), which is indicative of a failure-is-enhancing mindset. Children's implicit theories of intelligence scores were 2.99 (*SD* = 1.13) overall, which indicates an incremental theory of intelligence. Scores indicated that parents from the rural community endorsed an incremental theory of intelligence (*M* = 2.49, *SD* = 1.17) and a failure-is-enhancing mindset (*M* = 2.46, *SD* = 0.97), and children endorsed an incremental theory of intelligence (*M* = 2.33, *SD* = 0.82). In contrast, scores indicated that parents from the non-rural community endorsed an entity theory of intelligence (*M* = 4.10, *SD* = 0.97), a failure-is-debilitating mindset (*M* = 4.72, *SD* = 0.73), and children endorsed an entity theory of intelligence (*M* = 3.94, *SD* = 0.77).

In terms of child's gender, scores indicated an incremental theory of intelligence for parents, a failure-is-enhancing mindset for parents, and an incremental theory of intelligence for children in both boys and girls (Table 2.6). For parents' gender, parents' implicit theories of intelligence scores for both fathers and mothers were indicative of an incremental theory of intelligence. For parents' failure mindsets, fathers' scores indicated a failure-is-enhancing mindset (M = 3.08, SD = 1.41), while mothers' scores indicated a failure-is-debilitating mindset (M = 3.55, SD = 1.40). Children's implicit theories of intelligence scores indicated that children endorsed an incremental theory of intelligence for both fathers and mothers.

Table 2.6
Means and Standard Deviations of Factor Scores for Study 2

	PITI		PFM		CITI		
Characteristic	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*
Total	3.14	1.35	3.38	1.42	2.99	1.13	179
Community Type							
Rural	2.49	1.17	2.46	0.97	2.33	0.82	106
Non-Rural	4.10	0.97	4.72	0.73	3.94	0.77	73
Child's Gender							
Boy	3.25	1.34	3.49	1.49	3.10	1.12	78
Girl	3.06	1.35	3.30	1.37	2.90	1.13	101
Parents' Gender							
Fathers	2.92	1.25	3.08	1.41	2.71	1.09	63
Mothers	3.27	1.39	3.55	1.40	3.14	1.12	116

PITI = parents' implicit theories of intelligence; PFM = parents' failure mindsets; CITI = children's implicit theories of intelligence.

Intercorrelations between variables were obtained from the measurement model and are shown in Table 2.7 for both the entire sample and selected groups. To determine whether significant differences in correlations between groups existed, correlation coefficients were compared across groups by converting correlation coefficients into a z-score using Fisher's r-to-z transformation with the two-tailed test (i.e., z = 1.96 for p = .05) (Cohen, 1988; Steiger, 1980). Overall, parents' implicit theories of intelligence (ITIs) were significantly related to parents'

failure mindsets ($r = 0.56$, $p < .01$) and with children's ITIs ($r = 0.51$, $p < .01$). A large, significant correlation was found between parents' failure mindsets and children's ITIs ($r = 0.64$, $p < .01$) (Cohen, 1988; Hemphill, 2003).

For community type, parents' ITIs were not significantly related to parents' failure mindsets for both rural ($r = 0.15$, $p > .05$) and non-rural ($r = 0.10$, $p > .05$) families. Parents' ITIs were not significantly related to children's ITIs in rural families but were significantly related amongst non-rural families ($r = 0.10$, $p > .05$ vs. $r = 0.44$, $p < .01$; $z = -2.40$; $p < .05$). Also, parents' failure mindsets were not significantly related to children's ITIs in rural families but were significantly related in non-rural families, however this difference was not significant ($r = 0.12$, $p > .05$ vs. $r = 0.35$, $p < .05$; $z = -2.40$; $p < .05$). Regarding child's gender and parents' gender, significant correlation coefficients were revealed across boys, girls, fathers, and mothers between all study variables. No significant differences between correlation coefficients were found across child's gender and parents' gender.

Table 2.7.
Intercorrelations Between Study 2 Variables

Variable	PITI with PFM	PITI with CITI	PFM with CITI
Total	0.56**	0.51**	0.64**
Community Type			
Rural	0.15	0.10	0.12
Non-Rural	0.10	0.44**	0.35*
Child's Gender			
Boys	0.61**	0.63**	0.70**
Girls	0.54**	0.44**	0.60**
Parents' Gender			
Fathers	0.47**	0.44**	0.54**
Mothers	0.60**	0.53**	0.66**

*$p < .05$, **$p < .01$; PITI = parents' implicit theories of intelligence; PFM = parents' failure mindsets; CITI = children's implicit theories of intelligence. *Note.* Variables were standardized to have a mean of 0 and a standard deviation of 1. $n = 179$; $M = 0$; $SD = 1$.

Mediational Analyses

For the entire sample the total effect of parents' implicit theories of intelligence (ITIs) on children's implicit theories of intelligence (i.e., path *c*) was significantly different from zero ($p <$ .01) (Table 2.8), indicating a linear relationship between parents' ITIs and children's ITIs ($B =$ 0.50, SE = .05, $p <$ .01, 95% *CI* = [0.41, 0.57]). The effect of parents' ITIs on parents' failure mindsets for path *a* was also significantly different from zero ($p <$ .01), meaning that parents' ITIs were a significant predictor of parents' failure mindsets ($B =$ 0.62, SE = .07, $p <$ .01, 95% *CI* = [0.50, 0.72]). The effect of parents' failure mindsets on children's ITIs for path *b* was significantly different from zero ($p <$ .001), indicating a linear relationship between parents' failure mindsets and children's ITIs ($B =$ 0.47, SE = 0.04, $p <$ .001, 95% *CI* = [0.40, 0.54]). The direct effect of parents' ITIs on children's ITIs, controlling for parents' failure mindsets, for path *c'* was significantly different from zero ($p <$ .001), meaning that parents' ITIs significantly predicted children's ITIs controlling for parents' failure mindsets ($B =$ 0.21, SE = 0.05, $p <$ .001, 95% *CI* = [0.12, 0.29]). The estimated path coefficient for the indirect effect of parents' ITIs on children's ITIs through parents' failure mindsets was statistically significant ($B =$ 0.29, SE = .04, $p <$ .001, 95% *CI* = [0.23, 0.37]).

Moderating Effects on Mediational Analyses

Results for mediational analyses across all contextual factors are displayed in Table 2.9. No evidence from critical ratios demonstrated significant differences in paths for the proposed model across community type, child's gender, and parents' gender.

Table 2.8
Unstandardized Coefficients and Confidence Intervals for Total, Direct, and Indirect Effects in Mediation Model for Total Sample for Study 2

Pathway	*B*	*SE*	*LCI*	*UCI*
Path *a*	0.62*	0.07	0.50	0.72
Path *b*	0.47**	0.04	0.40	0.54
Path *c*	0.50*	0.05	0.41	0.57
Path *c'*	0.21**	0.05	0.12	0.29
Indirect effect	0.29**	0.04	0.23	0.37

*$p < .01$, ** $p < .001$; Path *a* = parents' implicit theories of intelligence on parents' failure mindsets; Path *b* = parents' failure mindsets on children's implicit theories of intelligence; Path *c* = parents' implicit theories of intelligence on children's implicit theories of intelligence, ignoring parents' failure mindsets; Path *c'* = parents' implicit theories of intelligence on children's implicit theories of intelligence, controlling for parents' failure mindsets; *B* = unstandardized beta coefficient; *SE* = standard error; *LCI* = lower confidence interval; *UCI* = upper confidence interval; *C.R.* = critical ratio.

Discussion

The current study examined the role of parents' failure mindsets in explaining the relationship between parents' and children's implicit theories of intelligence to improve understanding of how children develop implicit theories of intelligence. Further, we explored the modifying effects of contextual factors, specifically community type, child's gender, and parents' gender, on associations of parents' implicit theories of intelligence and failure mindsets with children's implicit theories of intelligence as well as mean level differences. Study results contribute to the literature on the developmental origins of children's implicit theories of intelligence, and they highlighted the importance of context.

The primary finding of this study is that that parents' failure mindsets explained a portion of the relationship between parents' implicit theories of intelligence (ITIs) and children's ITIs through complementary mediation in conjunction with other possible mediators not included in the present study (Hayes & Rockwood, 2016; Meule, 2019; Rucker et al., 2011; Zhao et al., 2010). These results are consistent with the previously untested idea that parents' failure mindsets potentially serve as the mechanism which links parents' and children's ITIs (Haimovitz

& Dweck, 2016, 2017). Like Haimovitz and Dweck (2016), we interpret these results to mean that parents' failure mindsets are manifested in their behaviors and interactions with their children when they have experienced failure (Haimovitz & Dweck, 2016), praise, and criticism (Gunderson et al., 2013). Future research should include assessments of parents' socialization practices related to implicit theories of intelligence and failure mindsets along with children's implicit theories of intelligence to provide a deeper understanding of parents' socialization of implicit theories of intelligence and how it contributes to children's development of implicit theories of intelligence.

Results also draw attention to other more modest, nevertheless, meaningful contributions to the literature. The first is the evidence that parents' implicit theories of intelligence are related to, but distinct from their failure mindsets. Parents' ITIs and parents' failure mindsets loaded on separate factors, which is consistent with Haimovitz and Dweck's (2016) implications that ITIs and failure mindsets are distinct constructs. Additional research thoroughly examining the psychometric properties of the measurement for parents' failure mindsets is needed considering the significant role parents' failure mindsets play in terms of children's development of ITIs. The present study found for the entire sample, parents' ITIs predicted and were positively correlated with children's ITIs. Several studies have not found a direct link between parents' implicit theories of intelligence and children's implicit theories of intelligence, yet our findings add to the small body of research which has revealed a significant association (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Matthes & Stoeger, 2018). Like results from Haimovitz and Dweck (2016), we found parents' failure mindsets were positively associated with parents' ITIs and children's ITIs. The magnitude of the relation between parents' failure mindsets and children's ITIs was greater than parents' ITIs and children's ITIs.

Table 2.9

Unstandardized Coefficients and Confidence Intervals for Total, Direct, and Indirect Effects in Mediation Model for Community Type, Child's Gender, and Parents' Gender for Study 2.

Path	*B*	*SE*	*LCI*	*UCI*	*B*	*SE*	*LCI*	*UCI*	*C.R.*
				Community Type					
		Rural				Non-Rural			
Path *a*	0.20*	0.10	0.05	0.36	0.21*	0.09	0.06	0.36	0.09
Path *b*	0.31***	0.06	0.21	0.40	0.40**	0.12	0.19	0.60	0.68
Path *c*	0.18**	0.07	0.08	0.30	0.33***	0.08	0.20	0.45	1.16
Path *c'*	0.12*	0.06	0.02	0.23	0.24**	0.08	0.11	0.37	
Indirect	0.06*	0.03	0.02	0.13	0.08*	0.05	0.02	0.19	
				Child's Gender					
		Boys				Girls			
Path *a*	0.70***	0.09	0.53	0.83	0.56**	0.09	0.39	0.70	-1.08
Path *b*	0.45**	0.07	0.33	0.56	0.49***	0.06	0.40	0.59	0.45
Path *c*	0.54***	0.07	0.42	0.64	0.46***	0.07	0.35	0.58	-0.34
Path *c'*	0.22**	0.07	0.11	0.35	0.19**	0.07	0.08	0.30	
Indirect	0.31***	0.06	0.22	0.42	0.27***	0.06	0.19	0.38	
				Parents' Gender					
		Fathers				Mothers			
Path *a*	0.60***	0.12	0.38	0.79	0.61***	0.08	0.48	0.73	0.10
Path *b*	0.46***	0.07	0.36	0.59	0.47***	0.06	0.37	0.57	0.09
Path *c*	0.48***	0.09	0.33	0.63	0.49***	0.06	0.39	0.58	-0.01
Path *c'*	0.20*	0.09	0.05	0.34	0.20**	0.06	0.10	0.30	
Indirect	0.28***	0.08	0.16	0.42	0.29***	0.05	0.22	0.38	

***$p < .001$, **$p < .01$, *$p < .05$; Path *a* = parents' implicit theories of intelligence on parents' failure mindsets; Path *b* = parents' failure mindsets on children's implicit theories of intelligence; Path *c* = parents' implicit theories of intelligence on children's implicit theories of intelligence, ignoring parents' failure mindsets; Path *c'* = parents' implicit theories of intelligence on children's implicit theories of intelligence, controlling for parents' failure mindsets; *B* = unstandardized beta coefficient; *SE* = standard error; *LCI* = lower confidence interval; *UCI* = upper confidence interval; *C.R.* = critical ratio.

Our findings support that parents' ITIs are related to and shape parents' failure mindsets, but parents' failure mindsets are more strongly related with children's ITIs than parents' ITIs. Together, these results bolster the claims that parents' failure mindsets are socialized in a manner that is more transparent to children than parents' ITIs (Haimovitz & Dweck, 2016, 2017). Although most studies have not established a link between parents' and children's implicit

theories of intelligence, we have provided evidence that parents' implicit theories of intelligence are indirectly associated with children's implicit theories of intelligence. Thus, parent education programs and/or interventions should emphasize how parents' implicit theories of intelligence are generally not directly transmitted to children and, rather, influence and are manifested in other parental learning-related cognitions (e.g., failure mindsets, goal orientations) that are critical to children's development of implicit theories of intelligence.

Observed differences in parents' implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence across rural and non-rural communities is also a contribution to the literature. Whereas parents in non-rural communities endorsed an incremental theory of intelligence and failure-as-enhancing mindset, non-rural community parents endorsed an entity theory of intelligence and a failure-is-debilitating mindset. Similarly, children in the rural community had an incremental theory of intelligence whereas their non-rural counterparts endorsed an entity theory of intelligence. Given evidence that changes in implicit theories of intelligence can result in improved performance, the role of parents' and children' beliefs about intelligence and academic failure may prove useful for understanding notable differences in children's academic success in rural and nonrural areas if findings are replicated in subsequent research (Burnette et al., 2018; Haimovitz & Dweck, 2017).

Findings obtained to answer the remaining research questions are also noteworthy. It is notable that in terms of child's gender, on average, both boys and girls endorsed an incremental theory of intelligence with no significant differences. These findings contradict those which have reported that girls and boys hold an entity theory of intelligence (Cavanagh et al., 2018; Diseth et al., 2014; Gunderson et al., 2012; Gunderson et al., 2013; Romero et al., 2014; Warren et al., 2018), but are in line with previous findings that did not signify gender differences in children's

implicit theories of intelligence (Chen et al., 2018; Shively & Ryan, 2013; Smiley et al., 2016; Tarbetsky et al., 2016). Similarly, it is considerable that significant differences in parents' gender emerged. For the overall sample, both fathers and mothers endorsed an incremental theory of intelligence, on average, with no significant differences. However, mean comparisons demonstrated that mothers' failure mindsets were considerably higher than fathers for the entire sample. Additionally, children's ITIs of mothers were significantly higher than those of fathers overall. Parents' ITIs, parents' failure mindsets, and children's ITIs were found to be correlated with one another across child's gender and parents' gender. Although no significant differences between relations emerged across child's gender and parents' gender, the magnitude of the correlations for boys were greater than for girls and the magnitude of correlations for mothers were greater than for fathers.

Finally, it is worthy mention that the finding that correlations among parents' implicit theories of intelligence, failure mindsets, and children's implicit theories of intelligence differed by community type, yet there was no evidence of moderated-mediation. For rural community families, no significant relations between parents' ITIs, parents' failure mindsets, and children's ITIs were found, whereas parents' ITIs and failure mindsets were moderately related to children's ITIs amongst non-rural community families. Results from structural equation modeling analyses indicated that parents' failure mindsets explained the relationship between parents' ITIs and children's ITIs via complementary mediation for both rural and non-rural community families. Although no significant differences between paths were found across community type, relations between parents' ITIs, parents' failure mindsets, and children's ITIs were much greater in non-rural families than rural families. Observed differences in rural and non-rural areas are compelling and are in accordance with the assumption that parents' beliefs

about the malleability of intelligence, as well as parents' beliefs about the consequences of failure, may not be as salient for rural community parents (Byun et al., 2012; Elder & Conger, 2000; Hardré et al., 2009; Meece et al., 2013; Meece et al., 2014; Petrin et al., 2014). Parents' socialization of beliefs about intelligence and failure to their children may not be as important for rural community parents compared to non-rural community parents (Barni, Alfieri, Marta, & Rosnati, 2013; Friedlmeier & Trommsdorff, 2011). To our knowledge, this is the first study to examine community type differences in how parents' socialization of implicit theories of intelligence and failure mindsets influences children's development of implicit theories of intelligence. Together, these findings on community type highlight how context influences behaviors, interactions, and development which, in turn, could suppress the relation parents' and children's beliefs (Bronfenbrenner, 1979). As such, more research is needed to further corroborate the patterns of relationships demonstrated in the present study to identify areas in which rural families can be assisted.

Limitations and Conclusions

One limitation of the present study is that the data are cross-sectional, thus whether relations and effects revealed in the current study may or may not change over time cannot be determined. Future studies should assess parents' and children's characteristics and other variables not included in the present study that may be pertinent to parents' socialization of implicit theories of intelligence and children's development of implicit theories of intelligence (e.g., learning-related cognitions and their associated behaviors/practices, children's academic achievement, frequency of parental learning-related practices, etc.) at multiple time points to examine the relation of variables over time. Examining critical life transitions and the aggregations of these lifespan developmental changes is essential (Bronfenbrenner, 1986).

Previous findings have suggested that children's ITIs are associated with children's academic achievement and adaptability in challenging developmental transitions, such as school transitions in adolescence (Blackwell et al., 2007; Romero et al., 2014; Sorich & Dweck, 1999). During such critical transitional periods, parents' socialization of ITIs to their children may be of the utmost importance. Another limitation is that demographic data were not collected in a similar manner from the non-rural sample than the rural sample which resulted in large portions of demographic data excluded from the present study (e.g., race/ethnicity, parents' level of education, etc.). It is important that future studies gather in-depth demographic data from participants to understand the generalizability of findings and how certain contextual factors may influence results. Relatedly, while our rural and non-rural samples certainly reflect cultural differences, these are only in terms of a Western industrialized culture. Future studies should extend data collection to other cultures aside from Western industrialized cultures to assess cross-cultural differences. Furthermore, although we were able to collect data from fathers in the present study—a challenge for most researchers—a large portion of the fathers were from the rural community sample. Thus, findings regarded parents' gender differences should be interpreted cautiously because the results may reflect rural fathers' ITIs and failure mindsets and not of fathers in general.

Despite these limitations, the current findings have provided support for parents' failure mindsets as a possible mechanism that explains the relationship between parents' and children's implicit theories of intelligence; yet, our results also point to the possible existence of an omitted indirect path. Thus, other potential variables, such as parents' behaviors, interactions, and responses to children's failure or successes, should be included in future models Additionally, differences in implicit theories of intelligence and failure mindsets endorsements across

community type, child's gender, and parents' gender were found. These results are essential to informing our understanding of how children's development of implicit theories of intelligence is influenced by parents' socialization of implicit theories of intelligence via parents' failure mindsets, and how these associations may vary in terms of contextual factors. While our study provides insight to processes of children's development of implicit theories of intelligence, it also highlights the importance parents' socialization practices of implicit theories of intelligence and the need for continued research on the subject.

GENERAL DISCUSSION

Introduction

The overall goal of the present dissertation was to improve understanding of how parents' socialization of learning-related cognitions, specifically implicit theories of intelligence and failure mindsets, influence children's development of learning-related cognitions. Also, the current work was informed by Bronfenbrenner's (2001) bioecological systems theory which conceptualizes socialization as a complex process involving the interaction between an individual and multiple influences that impacts human development (Bronfenbrenner, 1979). As such, the present dissertation considered the influential role of personal and contextual factors, such as family structure, community type, child's gender and parents' gender, in parents' socialization of learning-related cognitions, children's development of learning-related cognitions, and parents' and children's endorsements of learning-related cognitions (Bronfenbrenner & Morris, 2006). To achieve this goal, the current dissertation replicated a study by Haimovitz and Dweck (2016). Original data were obtained from parent-child dyads living in a rural community and were combined with Haimovitz and Dweck's (2016) existing data set of parent-child dyads from a non-rural community. Using the data from both data sets, the present dissertation was comprised of two studies which examined the association between parents' and children's learning-related cognitions, children's perceptions of parents' learning-related cognitions, and contextual factors.

Study 1 examined the association between mothers' learning-related cognitions, children's perceptions of mothers' learning-related cognitions, and children's learning-related cognitions and whether intergenerational (IG) transmission of learning-related cognitions—for both implicit theories of intelligence and failure mindsets—between mothers and children was

influenced by contextual factors (i.e., family structure, child's gender, and mothers' level of education) in a sample of mother-child dyads from a rural community. Study 2 examined whether the relationship between parents' implicit theories of intelligence and children's implicit theories of intelligence could be explained by parents' failure mindsets and whether these associations were moderated by contextual factors (i.e., community type, child's gender, and parents' gender) in a sample of parent-child dyads from rural and non-rural communities. While the results of Study 1 and Study 2 each made unique contributions to the existing literature, together, these studies provide a synergistic understanding of how parents' socialization of learning-related cognitions influences children's development of learning-related cognitions.

The Relationship Between Parents' and Children's Learning-Related Cognitions

Study 1 and Study 2 revealed mechanisms that explain the relationship between parents' and children's learning-related cognitions (LRCs). In Study 1, the proposed mediator of children's perceptions of mothers' LRCs—for both implicit theories of intelligence (ITIs) and failure mindsets—were highly correlated with and substantially predicted children's own LRCs. Likewise, in Study 2, the proposed mediator of parents' failure mindsets was significantly associated with and predicted children's ITIs. Although the indirect effects in both the ITIs and failure mindsets models in Study 1 were not statistically significant, the significant direct effects suggest that other potential mediators not included in the study may be present. In essence, children's perceptions of mothers' LRCs could potentially explain the relationship between mothers' and children's LRCs in conjunction with variables not included in the study (Zhao et al., 2010). Results from Study 2 were consistent with the proposed theoretical framework in which parents' failure mindsets were identified as a mediator between parents' and children's ITIs. Similar to findings from Study 1, the significant direct effect revealed in Study 2 points to

possible existence of other variables that could explain the relation between parents' and children's implicit theories of intelligence, in tandem with parents' failure mindsets (Nitzl et al., 2016; Zhao et al., 2010).

Researchers have assumed that parents' learning-related cognitions, particularly implicit theories of intelligence, are directly transferred to children, yet few studies have revealed a significant relationship between parents' and children's learning-related cognitions, (Gunderson et al., 2013; Haimovitz & Dweck, 2016; Moorman & Pomerantz, 2010). Although findings from both studies demonstrated that parents' implicit theories of intelligence were significantly correlated with and predicted children's implicit theories of intelligence, these associations were less than modest. Evidence of the possibility of other potential mediating variables revealed in Study 1 and Study 2 suggest that beliefs about the malleability of intelligence and beliefs about the experiences and consequences of failure are not merely transferred from parents to their children. Results from Study 1 suggest that parents may not be explicitly expressing their LRCs to their children given that children were unable to accurately perceive parents' LRCs. It would seem that parents' LRCs are indirectly socialized to children via parents' behaviors, practices, or reactions (Haimovitz & Dweck, 2017). However, manifestations of parents' LRCs may remain dormant unless they are activated by an achievement-related event in their child's life (Haimovitz & Dweck, 2016, 2017; Matthes & Stoeger, 2018).

Another common contribution of Study 1 and Study 2 is that both studies highlighted the potential value of parents' failure mindsets in fostering children's development of learning-related cognitions. Both studies argued that parents' failure mindsets are socialized more frequently (ITIs) and in a manner that is more apparent to children than parents' implicit theories of intelligence (Haimovitz & Dweck, 2016, 2017; Luftenegger & Chen, 2017). In Study 1,

children were unable to accurately discern their parents' LRCs, for both ITIs and failure mindsets, which may indicate that parents' failure mindsets are not as clearly socialized as claimed. However, the association between children's perceptions of mothers' LRCs and children's LRCs were significantly greater for failure mindsets than implicit theories of intelligence in Study 1. This finding would suggest that, even though children were not able to correctly recognize their mothers' failure mindsets, parents' failure mindsets may be expressed more frequently or manifested in such a manner that children are able to pick up on and relate to compared to parents' implicit theories of intelligence.

Findings from Study 2 further supported the claims that parents' failure mindsets have strong socialization capabilities with evidence of correlations with greater magnitude for the relation between parents' failure mindsets and children's ITIs compared to the association between parents' and children's ITIs and evidence of parents' failure mindsets as a mechanism between the relation of parents' and children's ITIs. Together, findings from both studies bolster the claims that parents' failure mindsets are socialized more transparently to children than parents' implicit theories of intelligence (Haimovitz & Dweck, 2016, 2017). More research should be conducted to identify particular parental behaviors and practices associated with parents' failure mindsets. Such evidence could be used to inform development of parent education programs and/or interventions which emphasize appropriate and effective socialization of parents' LRCs—for not only parents' failure mindsets, but also parents' implicit theories of intelligence, achievement goal orientations, etc.—to their children.

The Influence of Contextual Factors

Study 1 and Study 2 also examined the influence of personal characteristics (i.e., child's gender and parents' gender) and contextual factors (i.e., family structure, mothers' level of

education, and community type) on parents' and children's learning-related cognitions. No significant differences in mediational analyses were revealed across all selected contextual factors, yet significant differences in latent means and correlations emerged.

Community Type

Regarding community type, although Study 1 used only a rural community sample, findings may have been a result of the broader social context. Children may not have been able to accurately perceive mothers' learning-related cognitions because socialization of learning-related cognitions may have less importance for rural parents (Barni et al., 2013; Friedlmeier & Trommsdorff, 2011; Trommsdorff, 2009). Indeed, in Study 2, parents' failure mindsets and implicit theories of intelligence (ITIs) were significantly related to children's ITIs across non-rural community families, but not for rural community families. Significant latent mean differences in parents' ITIs, parents' failure mindsets, and children's ITIs across community type were found in Study 2, such that families from non-rural communities endorsed an entity theory of intelligence and a failure-is-debilitating mindset and rural community families endorsed an incremental theory of intelligence and a failure-is-enhancing mindset. Together, these findings on community type highlight how context influences behaviors, interactions, and development which, in turn, could suppress the relation parents' and children's beliefs (Bronfenbrenner, 1979).

Mothers' Level of Education

In Study 1, mothers' implicit theories of intelligence predicted children's implicit theories of intelligence amongst non-degree mothers, but not mothers with a degree or certification. Despite support that parents with a degree or certification may have better accessibility to resources and an educational foundation that aids in supporting children's development,

motivation, or activities, these assumptions did not hold true for our findings (Conger & Dogan, 2007; Elliott & Bachman, 2018). Although no statistically significant differences were found for the structural model tested in the present study, post-hoc analyses of individual paths indicated statistically significant differences in relationships.

Gender

In terms of child's gender, Study 1 found mothers' implicit theories of intelligence as a predictor of children's implicit theories of intelligence amongst girls but not for boys, yet this difference was not significant. In Study 2, parents' implicit theories of intelligence and failure mindsets were significantly correlated with and predicted children's implicit theories of intelligence child's gender and parents' gender. Although no significant differences between relations emerged across child's gender and parents' gender, the magnitude of the correlations for boys were greater than for girls and the magnitude of correlations for mothers were greater than for fathers. Regarding parents' gender, Study 2 revealed significant latent mean differences in parents' failure mindsets and children's implicit theories of intelligence. On average, fathers endorsed a failure-is-enhancing mindset while mothers held a failure-is-debilitating mindset. Although a significant latent mean difference in children's implicit theories of intelligence emerged across parents' gender, children of both fathers and mothers held an incremental theory of intelligence.

It should be noted that relationships among variables must be interpreted cautiously given the small sample size in both studies. In Study 1 and Study 2, relationships among variables and mediating effects were tested with a bias-corrected bootstrapping procedure. Bias-corrected bootstrapping is recommended by scholars as the best approach to test for mediating effects due to its strong statistical power and minimizes the probability of making a Type-II error (Fritz &

MacKinnon, 2007; Fritz et al., 2012; Manuel & Wade, 2013; Rungtusanatham et al., 2014). Post-hoc power analyses were conducted for both Study 1 and Study 2 using MedPower (Kenny, 2017). In Study 1, no evidence of an indirect effect was found for both implicit theories of intelligence and failure mindsets models for the entire sample (n = 103) and all selected groups (n = 43 – 60 across groups) with the exception of the failure mindset model for two-parent families. For the implicit theories of intelligence model, post-hoc power analyses indicated that the probability of making a Type-II error was 60% for the entire sample and 46% to 90% for sub-groups. For the failure mindsets model, the probability of making a Type-II error was 22% for the entire sample and 1% to 86% for sub-groups. Null findings revealed in Study 1 may have been a result of low power due to small overall and sub-group sample sizes. Regarding Study 2, a significant indirect effect was found in the mediational model for the entire sample (n = 179) and across groups (n = 63 – 116). Post-hoc power analyses indicated a 1% chance of making a Type-II error for the entire sample and a 1% to 59% chance across groups.

Interpretation of Scores

A limitation for both studies was the method used to interpret scores for implicit theories of intelligence (ITIs) and failure mindsets. In both studies, ITIs and failure mindsets were operationalized on a bipolar scale using a 6-point Likert-type scale in which scores 3.50 and above represented an entity theory of intelligence and a failure-is-debilitating mindset and scores of 3.49 and below represented an incremental theory of intelligence and a failure-is-enhancing mindset (Dweck 1986; Dweck, 2006; Dweck & Leggett, 1988; Gunderson et al., 2013; Haimovitz & Dweck, 2016; Schleider et al., 2016). Scholars have suggested using cutoff points of 2.0 and below and 4.0 and above which would only include responses from participants that had a clear ITIs or failure mindsets endorsement (Dweck et al., 1995). According to Elliot,

Dweck, and Yeager (2017), generally, about 40% of participants endorse an incremental theory of intelligence, 40% are entity theorists, and 20% are categorized into what we have labeled a "hybrid" group because these participants do not fully endorse an incremental or entity theory of intelligence. However, these statistics are not consistent for every study (Tempelaar et al., 2015). This dichotomization method would eliminate sample size, diminish variance, and possibly artificially polarize scores (Makel et al., 2015; Rucker et al., 2015).

In both studies, large portions of participants' scores fell within the 3.0 to 4.0 range, which would suggest that these participants had unclear endorsements of implicit theories of intelligence and failure mindsets (Dweck et al., 1995). Dweck and Leggett's (1988) social-cognitive model suggests that implicit theories are often domain-specific in which individuals may hold different assumptions about the malleability and nature of traits or abilities. In other words, the incremental or entity belief an individual holds about one domain are not necessarily correlated with implicit beliefs for other domains (Dweck et al., 1995; Chiu, Hong, & Dweck, 1997). For example, an individual may have an incremental theory of intelligence and an entity theory of giftedness. Researchers cannot assume that individuals' implicit beliefs are domain-general as individuals may simultaneously hold both incremental and entity beliefs. This distinction is important considering manner in which implicit theories of intelligence have been historically operationalized. The same can be said for failure mindsets. In both studies, the measure used for failure mindsets did not specify the domain in which failure occurred and was, rather, general. Future studies should assess domain-specific failure mindsets to determine whether beliefs about the experience and consequence of failure vary across domains. For example, measures should specify beliefs about the experience and consequence of failure in the context of academic achievement, athletics, work, or other areas in which the experience of

failure may be salient. Therefore, it seems it may be more appropriate to operationalize implicit theories of intelligence and failure mindsets as a multidimensional construct measured with two unipolar scales: for implicit theories of intelligence, one for incremental theories of intelligence and one for entity theories of intelligence; and for failure mindsets, one for failure-is-enhancing mindset and one for failure-is-debilitating mindset. It is imperative that more work empirically tests the dimensionality of implicit theories of intelligence and failure mindsets measures so that appropriate interpretation of the data and conclusions can be made.

Conclusion

Together, the present dissertation points to importance of parents' socialization of learning-related cognitions to their children and highlights areas that must be given more attention in future research. Despite the limitations in Study 1 and Study 2, collectively these works have provided evidence of mechanisms promote our understanding of the relationship between parents' and children's learning-related cognitions and how endorsements and relationships vary by contextual factors. Collectively, both studies identify areas that are critical to understanding the relationship between parents' and children's learning-related cognitions. Given the mutual contributions of these studies, continued research on how parents' learning-related cognitions are manifested through parents' feedback, behavior, and interactions with their children is warranted. Expanding our knowledge on these essential pieces will help to inform development of parent education and/or intervention programs in which the best practices for socialization of learning-related cognitions can be shared with parents which, in turn, will potentially improve children's motivational frameworks.

APPENDIX A

MEASUREMENT INVARIANCE TESTS FOR STUDY 1

To test the moderation effect of each contextual factor (e.g., family structure, mothers' level of education, and child's gender) on the mediation model, measurement invariance (MI) of each latent variable across each grouping was first established in order to make group comparisons. MI is used to assess the stability of measures across qualitatively distinctive groups to determine whether differences in scores are attributed to group differences or measurement error (Vervoort et al., 2019).

Generally, four levels of equivalence are distinguished in MI that are tested through a series of increasingly strict hierarchical models: configural, metric, scalar, and strict invariance (Kline, 2011; Putnick & Bornstein, 2016). The first step of MI is to establish configural invariance by demonstrating equality of factor structure across groups. Simply stated, configural invariance tests whether the scale factors and the items that load onto those factors have the same pattern when assessed in different groups (Olino, Finsaas, Dougherty, & Klein, 2018). This step involves specifying a model that allows all parameters to be freely estimated in each group (Zajenkowski & Fronczyk, 2020). Results from the configural invariance test must have acceptable model-fit indices indicating that the factor structure is supported in both groups.

Next, metric invariance, or weak invariance, is tested to verify that the factor loadings function similarly across groups. The metric invariance level assesses whether the respondents across groups attribute the same meaning to the construct and respond to the items in a similar manner (Jansen, Harris, Mallan, Daniels, & Thorpe, 2018). Metric invariance is tested in a model in which factor loadings are constrained to be equal across groups and intercepts are allowed to differ between groups (Putnick & Bornstein, 2016). A χ^2 difference test between the metric

invariance model and configural invariance model is implemented to determine if metric invariance is supported. If the overall fit of the metric invariance model is significantly worse compared to the configural invariance model, this is an indication that at least one of the factor loadings is not equivalent across groups, and metric invariance is not supported.

The third step of MI is to test scalar invariance to establish that the factor structure, loadings, and levels of the intercepts are equal across groups (Vervoort et al., 2019). Testing scalar invariance involves imposing equality constraints on factor loadings and item intercepts (Jansen et al., 2018). Establishing scalar invariance allows for mean level comparisons on latent variables to determine whether mean differences in shared variance among items are comparable across groups. To determine if scalar invariance is supported, a χ^2 difference test between the scalar invariance model and metric invariance model is conducted. Scalar invariance is not supported if the overall fit of the scalar invariance model is significantly worse compared to the metric invariance model.

The fourth step of assessing MI is to confirm that the factor structure, loadings, intercepts, and unique variances are equal across groups in a strict invariance model (Vervoort et al., 2019). In the strict invariance model, item residual variances, item factor loadings, and intercepts are constrained to be equal across groups to determine whether these are differences in error variances of the scales across groups (Doğan, Akar, & Üstüner, 2019). A χ^2 difference test between the strict invariance model and scalar invariance model is implemented to determine if strict invariance is supported. If the overall fit of the strict invariance model is significantly worse compared to the scalar invariance model, this is an indication that at least one item residual is not equivalent across groups, and strict invariance is not supported.

Cases in which the model did not demonstrate an adequate fit or the chi-square difference test was significant, comparisons of critical ratios and imposing individual equality constraints—factor loadings for metric invariance, item intercepts for scalar invariance, and item residuals for strict invariance—were used to identify parameters that significant differ across groups. In such cases, these parameters are allowed to be freely estimated across groups in a partial invariance model (Byrne, Shavelson, & Muthén, 1989; Steenkamp & Baumgartner, 1998; van de Schoot, Lugtig, & Hox, 2012).

Results

MI Testing of the Implicit Theories of Intelligence Model Across Family Structure

Item descriptions are displayed in Table A.1. As shown in Table A.2, the configural invariance model demonstrated a good model fit, $\chi^2(44) = 52.62$, $p > .05$, (CFI = 0.98, TLI = 0.97, RMSEA = .04), which supported equality of factor structure across family structure. Although the metric invariance model yielded an adequate fit, $\chi^2(50) = 67.55$, $p > .05$, (CFI = 0.96, TLI = 0.94, RMSEA = .06), the χ^2 difference test indicated that metric invariance was not supported, $\Delta\chi^2(6) = 14.93$, $p > .05$. Comparisons of critical ratios and imposing individual equality constraints for each factor loading identified the factor loading for MITI4Rev significantly differed across family structure. This item was allowed to be freely estimated across the groups in a partial metric invariance model, $\chi^2(49) = 59.64$, $p > .05$, (CFI = 0.98, TLI = 0.96, RMSEA = .05). Results from the χ^2 difference test revealed that partial metric invariance was supported, meaning single-parent families and two-parent families had similar factor loadings, $\Delta\chi^2(5) = 7.02$, $p > .05$.

The equality constraints and freely estimated parameters applied in the partial metric invariance model were retained for the scalar invariance model. The scalar invariance model

demonstrated a good model fit, $\chi^2(55) = 64.22$, $p > .05$, (CFI = 0.98, TLI = 0.97, RMSEA = .04). Results from the χ^2 difference test revealed that scalar invariance supported equality of item intercepts across family structure, $\Delta\chi^2(6) = 4.58$, $p > .05$. The equality constraints and freely estimated parameters from the scalar invariance model were retained for the strict invariance model. The strict invariance across family structure was not supported, $\Delta\chi^2(12) = 42.98$, $p < .01$, thus a partial strict invariance model was tested. Comparisons of critical ratios and imposing individual equality constraints for each item residual identified item residuals for MITI3Rev, MITI4Rev, and CITI4 were significantly different across family structure. These item residuals were allowed to be freely estimated across groups in the partial strict invariance model, which resulted in a good model fit, $\chi^2(63) = 75.64$, $p > .05$, (CFI = 0.97, TLI = 0.97, RMSEA = .05). Results from the χ^2 difference test supported equality of residuals across family structure, $\Delta\chi^2(8) = 11.42$, $p > .05$.

MI Testing of the Implicit Theories of Intelligence Model Across Child's Gender

Tests of MI for the implicit theories of intelligence (ITIs) model across child's gender were conducted. As shown in Table A.3, the configural invariance model demonstrated a good fit to the data, $\chi^2(42) = 51.83$, $p > .05$, (CFI = 0.98, TLI = 0.96, RMSEA = .05), which supported equality of factor structure across child's gender. The metric invariance model demonstrated a good model fit, $\chi^2(48) = 64.33$, $p > .05$, (CFI = 0.96, TLI = 0.94, RMSEA = .05), and results from the χ^2 difference test supported equality in factor loadings across child's gender, $\Delta\chi^2(6) = 12.50$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(54) = 70.07$, $p > .05$, (CFI = 0.96, TLI = 0.95, RMSEA = .05), and results from the χ^2 difference test supported equality in item intercepts across child's gender, $\Delta\chi^2(6) = 5.74$, $p > .05$. The strict invariance model did not demonstrate a good model fit, $\chi^2(63) = 84.66$, $p < .05$, (CFI = 0.95, TLI = 0.94,

RMSEA = .06). Comparisons of critical ratios and imposing individual equality constraints for each item residual identified that the item residuals for MITI1 were significantly different across child's gender. These item residuals were allowed to be freely estimated across boys and girls in a partial strict invariance model, which resulted in a good model fit, $\chi^2(62) = 77.10$, $p > .05$, (CFI = 0.96, TLI = 0.96, RMSEA = .05). Results from the χ^2 difference test supported equality in item residuals across child's gender, $\Delta\chi^2(8) = 7.03$, $p > .05$.

MI Testing of the Implicit Theories of Intelligence Model Across Mothers' Level of Education

MI for the implicit theories of intelligence (ITIs) model across mothers' level of education was tested (Table A.4). The results revealed a good model fit for the configural invariance model, $\chi^2(42) = 52.76$, $p > .05$, (CFI = 0.97, TLI = 0.95, RMSEA = .05), and metric invariance model, $\chi^2(48) = 62.87$, $p > .05$, (CFI = 0.96, TLI = 0.94, RMSEA = .05). Results from the χ^2 difference test supported equivalence in factor structure and factor loadings across mothers' level of education, $\Delta\chi^2(6) = 10.11$, $p > .05$. Scalar invariance across mothers' level of education was not supported, $\Delta\chi^2(6) = 13.83$, $p < .05$, thus partial scalar invariance was tested. Comparisons of critical ratios and imposing individual equality constraints for each item intercept identified item intercepts for MITI2, MITI4Rev, and CITI2 significantly differed across mothers' level of education. These item intercepts were allowed to be freely estimated across groups in a partial scalar invariance model, which demonstrated a good model fit, $\chi^2(51) = 65.35$, $p > .05$, (CFI = 0.96, TLI = 0.95, RMSEA = .05). Results from the χ^2 difference test supported equality in item intercepts across mothers' level of education, $\Delta\chi^2(3) = 2.49$, $p > .05$. The equality constraints and freely estimated parameters from the scalar invariance model were retained for the strict invariance model, which demonstrated a good model fit, $\chi^2(63) = 74.74$, p

> .05, (CFI = 0.97, TLI = 0.97, RMSEA = .04). Results from the χ^2 difference test supported equality in item residuals across mothers' level of education, $\Delta\chi^2(12) = 9.39$, $p > .05$.

MI Testing of the Failure Mindsets Model Across Family Structure

MI was tested for the failure mindsets model across family structure (Table A.5). The configural invariance model demonstrated a good model fit, $\chi^2(32) = 46.08$, $p > .05$, (CFI = 0.96, TLI = 0.92, RMSEA = .07), which indicated equality in factor structure across family structure. The metric invariance model did not yield an adequate fit, $\chi^2(37) = 58.82$, $p < .05$, (CFI = 0.93, TLI = 0.89, RMSEA = .08), and the χ^2 difference test indicated that metric invariance was not supported, $\Delta\chi^2(5) = 12.74$, $p > .05$. Comparisons of critical ratios and imposing individual equality constraints for each factor loading identified the factor loadings for MFM2Rev, MFM3Rev, and CPMFM4Rev significantly differed across family structure. These items were allowed to be freely estimated across the groups in a partial metric invariance model, $\chi^2(34) = 48.16$, $p > .05$, (CFI = 0.96, TLI = 0.93, RMSEA = .06). Results from the χ^2 difference test revealed that partial metric invariance was supported, meaning single-parent families and two-parent families had similar factor loadings, $\Delta\chi^2(2) = 2.08$, $p > .05$.

The equality constraints and freely estimated parameters applied in the partial metric invariance model were retained for the scalar invariance model. The scalar invariance model demonstrated a good model fit, $\chi^2(39) = 50.78$, $p > .05$, (CFI = 0.96, TLI = 0.95, RMSEA = .06). Results from the χ^2 difference test revealed that scalar invariance supported equality of item intercepts across family structure, $\Delta\chi^2(5) = 2.62$, $p > .05$. The equality constraints and freely estimated parameters from the scalar invariance model were retained for the strict invariance model. The strict invariance across family structure was not supported, $\Delta\chi^2(8) = 20.29$, $p < .01$, thus a partial strict invariance model was tested. Comparisons of critical ratios and imposing

individual equality constraints for each item residual identified item residuals for MFM1Rev and CPMFM3Rev were significantly different across family structure. These item residuals were allowed to be freely estimated across groups in the partial strict invariance model, which resulted in a good model fit, $\chi^2(45) = 59.56$, $p > .05$, (CFI = 0.95, TLI = 0.94, RMSEA = .06). Results from the χ^2 difference test supported equality of residuals across family structure, $\Delta\chi^2(6) = 8.78$, $p > .05$.

MI Testing of the Failure Mindsets Model Across Child's Gender

MI was tested for the failure mindsets model across child's gender. As displayed in Table A.6, the results of the goodness-of-fit indices indicated that factor structure for the failure mindsets model was similar across child's gender and supported configural invariance, $\chi^2(32) = 40.95$, $p > .05$, (CFI = 0.97, TLI = 0.95, RMSEA = .05). The metric invariance model demonstrated a good model fit, $\chi^2(37) = 49.96$, $p > .05$, (CFI = 0.96, TLI = 0.93, RMSEA = .06), and results from the χ^2 difference test supported equality in factor loadings across child's gender, $\Delta\chi^2(5) = 9.01$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(42) = 54.32$, $p > .05$, (CFI = 0.96, TLI = 0.95, RMSEA = .05), and results from the χ^2 difference test supported equality in item intercepts across child's gender, $\Delta\chi^2(5) = 4.36$, $p > .05$. The strict invariance model did not demonstrate a good model fit, $\chi^2(50) = 70.25$, $p < .05$, (CFI = 0.93, TLI = 0.92, RMSEA = .06). Comparisons of critical ratios and imposing individual equality constraints for each item residual identified that the item residuals for CPMFM4Rev were significantly different across child's gender. These item residuals were allowed to be freely estimated across boys and girls in a partial strict invariance model, which resulted in a good model fit, $\chi^2(49) = 63.44$, $p > .05$, (CFI = 0.95, TLI = 0.95, RMSEA = .05). Results from the χ^2 difference test supported equality in item residuals across child's gender, $\Delta\chi^2(7) = 9.12$, $p > .05$.

MI Testing of the Failure Mindsets Model Across Mothers' Level of Education

MI was tested for the failure mindsets model across family structure (Table A.7). The configural invariance model resulted in a poor-fitting model which indicated the factor structure was not equivalent across mothers' level of education. Thus, items that diminished the model fit were omitted (i.e., CFM5 and MFM3Rev) and an adjusted configural invariance model was tested (Putnick & Bornstein, 2016). The adjusted configural invariance model demonstrated a good model fit which indicated that factor structure for the failure mindsets model was similar across mothers' level of education, $\chi^2(12) = 19.13$, $p > .05$, (CFI = 0.97, TLI = 0.92, RMSEA = .08). The metric invariance model demonstrated a good model fit, $\chi^2(15) = 21.12$, $p > .05$, (CFI = 0.97, TLI = 0.94, RMSEA = .06), and results from the χ^2 difference test supported equality in factor loadings across child's gender, $\Delta\chi^2(3) = 1.99$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(18) = 21.47$, $p > .05$, (CFI = 0.98, TLI = 0.97, RMSEA = .04), and results from the χ^2 difference test supported equality in item intercepts across mothers' level of education, $\Delta\chi^2(3) = 0.35$, $p > .05$. The strict invariance model resulted in a good model fit, $\chi^2(24) = 29.92$, $p > .05$, (CFI = 0.98, TLI = 0.97, RMSEA = .05). Results from the χ^2 difference test supported equality in item residuals across mothers' level of education, $\Delta\chi^2(6) = 8.45$, $p > .05$.

Table A.1
Item Descriptions for Study 1 Variables

Mothers' Implicit Theories of Intelligence (MITI)
MITI1: You have a certain amount of intelligence, and you really can't do much to change it.
MITI2: You can learn new things but you can't really change how intelligent you are.
MITI3Rev: No matter how much intelligence you have, you can always change it quite a bit.
MITI4Rev: You can always greatly change how intelligent you are.

Children's Perceptions of Mothers' Implicit Theories of Intelligence (CPMITI)
CPMITI1: She thinks you can learn new things but you can't change how smart you really are.
CPMITI2: She thinks how smart you are is something you can't change very much.
CPMITI3Rev: She thinks you can always change how smart you really are.

Children's Implicit Theories of Intelligence (CITI)
CITI1: How smart you are is something about you that you can't change very much.
CITI2: You can learn new things, but you can't change how smart you really are.
CITI3Rev: You can always change how smart you are.
CITI4: You're a certain amount smart, and you can't really do much to change it.

Mothers' Failure Mindsets (MFM)
MFM1Rev: Experiencing failure enhances performance and productivity.
MFM2Rev: Experiencing failure facilitates learning and growth.
MFM3Rev: The effects of failure are positive and should be utilized.
MFM4: Experiencing failure debilitates my performance and productivity.
MFM5: Experiencing failure inhibits learning and growth.
MFM6: The effects of failure are negative and should be avoided.

Children's Perception of Mothers' Failure Mindsets (CPMFM)
CPMFM1: She thinks failure is bad and should be avoided.
CPMFM2: She thinks failure hurts my learning.
CPMFM3Rev: She thinks failure can help me learn.
CPMFM4Rev: She thinks failure can help me grow.

Children's Failure Mindset (CFM)
CFM1Rev: When you fail, it can make you perform better and more productive.
CFM2Rev: When you fail, it can help you learn and grow.
CFM3Rev: The effects of failing can be helpful and should be used.
CFM4: When you fail, it can make you perform worse and less productive.
CFM5: When you fail, it can hold you back from learning and growing.
CFM6: The effects of failing can be harmful and should be avoided.

Table A.2

Tests of Measurement Invariance for Implicit Theories of Intelligence Model Across Family Structure for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	52.62	44	-	0.98	0.97	0.04
Metric	67.55	50	14.93*(6)	0.96	0.94	0.06
Partial Metric	59.64	49	7.02(5)	0.98	0.96	0.05
Scalar	64.22	55	4.58(6)	0.98	0.97	0.04
Strict	107.20**	67	42.98**(12)	0.91	0.90	0.08
Partial Strict	75.64	63	11.42(8)	0.97	0.97	0.05

**$p < .01$, *$p < .05$; Partial metric: factor loadings for MITI4Rev were freely estimated; Partial strict: residuals for MITI3Rev, MITI4Rev, and CITI4 were freely estimated.

Table A.3

Tests of Measurement Invariance for Implicit Theories of Intelligence Model Across Child's Gender for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	51.83	42	-	0.98	0.96	0.05
Metric	64.33	48	12.50(6)	0.96	0.94	0.05
Scalar	70.07	54	5.74(6)	0.96	0.95	0.05
Strict	84.66*	63	14.59(9)	0.95	0.94	0.06
Partial Strict	77.10	62	7.03(8)	0.96	0.96	0.05

*$p < .05$; Partial strict: residuals for MITI1 were freely estimated.

Table A.4

Tests of Measurement Invariance for Implicit Theories of Intelligence Model Across Mothers' Education for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	52.76	42	-	0.97	0.95	0.05
Metric	62.87	48	10.11(6)	0.96	0.94	0.05
Scalar	76.70*	54	13.83*(6)	0.94	0.92	0.07
Partial Scalar	65.36	51	2.49(3)	0.96	0.95	0.05
Strict	74.74	63	9.39(12)	0.97	0.97	0.04

*$p < .05$; Partial scalar: item intercepts for MITI2, MITI4Rev, and CITI2 were freely estimated.

Table A.5

Tests of Measurement Invariance for Failure Mindsets Model Across Family Structure for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	46.08	32	-	0.96	0.92	0.07
Metric	58.82*	37	12.74*(5)	0.93	0.89	0.08
Partial Metric	48.16	34	2.08(2)	0.96	0.93	0.06
Scalar	50.78	39	2.62(5)	0.96	0.95	0.06
Strict	71.08*	47	20.29**(8)	0.92	0.91	0.07
Partial Strict	59.56	45	8.78(6)	0.95	0.94	0.06

**$p < .01$, *$p < .05$; Partial metric: factor loadings for MFM2Rev, MFM3Rev, and CPMFM4Rev were freely estimated; Partial strict: residuals for MFM1Rev and CPMFM3Rev were freely estimated.

Table A.6

Tests of Measurement Invariance for Failure Mindsets Model Across Child's Gender for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	40.95	32	-	0.97	0.95	0.05
Metric	49.96	37	9.01(5)	0.96	0.93	0.06
Scalar	54.32	42	4.36(5)	0.96	0.95	0.05
Strict	70.25*	50	15.93*(8)	0.93	0.92	0.06
Partial Strict	63.44	49	9.12(7)	0.95	0.95	0.05

*$p < .05$; Partial strict: residuals for CPMFM4Rev were freely estimated.

Table A.7

Tests of Measurement Invariance for Failure Mindsets Model Across Mothers' Education for Study 1

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA
Configural	54.63*	32	-	0.93	0.88	0.08
Configural Adjusted	19.13	12	-	0.97	0.92	0.08
Metric	21.12	15	1.99(3)	0.97	0.94	0.06
Scalar	21.47	18	0.35(3)	0.98	0.97	0.04
Strict	29.92	24	8.45(6)	0.98	0.97	0.05

*$p < .01$; Configural adjusted: items CFM5 and MFM3Rev were omitted.

APPENDIX B

MEASUREMENT INVARIANCE TESTS FOR STUDY 2

After an adequate fitting structural model was established, measurement invariance (MI) was tested before the moderation effect of each contextual factor (e.g., community type, parents' gender, and child's gender) on the mediation model was assessed. MI is used to determine whether the underlying constructs function in a conceptually similar manner across groups. In order to compare scores across different groups, measurement invariance must be established to ensure that group comparisons are meaningful (Doğan, Akar, & Üstüner, 2019). Three separate multi-group confirmatory factor analyses (MG-CFA) were performed for each selected contextual factor (e.g., community type, parents' gender, and child's gender) to investigate measurement invariance across groups and to test whether or not the direct effects and indirect effects between parents' implicit theories of intelligence, parents' failure mindsets, and children's implicit theories of intelligence could be equated. Item descriptions are displayed in Table B.1.

In MI, four differentiated levels of equivalence are tested through increasingly strict steps: configural, metric, scalar, and strict invariance (Kline, 2011; Putnick & Bornstein, 2016;). First, configural invariance must be established to verify the factor structure is equal across groups. Configural invariance is tested in a model to determine whether there is a similar pattern of the scale items and factors when assessed in different groups (Olino, Finsaas, Dougherty, & Klein, 2018). To assess configural invariance, all parameters in the model are allowed to be freely estimated in each group (Zajenkowski & Fronczyk, 2020). The configural invariance test results should have acceptable model-fit indices to support that the factor structure of the model is equivalent across groups.

Next, a metric invariance model is tested to confirm that the factor loadings function in a similar manner across groups. Metric invariance is assessed by imposing equality constraints on factor loadings across groups and is then compared to the configural invariance model to determine overall model fit (Putnick & Bornstein, 2016). To determine whether metric invariance is supported, a χ^2 difference test between the metric invariance model and the configural invariance model is implemented. If the overall fit of the metric invariance model is significantly better than that of the configural invariance model then metric invariance is supported.

Third, MI is tested in a scalar invariance model which is used to confirm equality of factor structure, loadings, and intercepts across groups (Vervoort et al., 2019). To assess scalar invariance, factor loadings and item intercepts are constrained to be equal across groups (Jansen, Harris, Mallan, Daniels, & Thorpe, 2018). A χ^2 difference test is then conducted between the scalar invariance model and the metric invariance model. Scalar invariance is supported if the overall fit of the scalar invariance model is significantly better compared to the metric invariance model.

Finally, strict invariance must be established in which factor structure, loadings, intercepts, and unique variances are similar in the different groups (Vervoort et al., 2019). Testing strict invariance involves imposing equality constraints on item residual variances, item factor loadings, and intercepts across groups (Doğan et al., 2019). This step is used to determine whether or not error variances of the scales differ across groups. To determine whether strict invariance is supported, a χ^2 difference test between the strict invariance model and the scalar invariance model. If the overall fit of the strict invariance model is significantly better than scalar invariance model, then strict invariance is supported.

Table B.1
Item Descriptions for Study 2 Variables

Parents' Implicit Theories of Intelligence (PITI)
PITI1: You have a certain amount of intelligence, and you really can't do much to change it.
PITI2: You can learn new things but you can't really change how intelligent you are.
PITI3Rev: No matter how much intelligence you have, you can always change it quite a bit.
PITI4Rev: You can always greatly change how intelligent you are.
Parents' Failure Mindsets (PFM)
PFM1Rev: Experiencing failure enhances performance and productivity.
PFM2Rev: Experiencing failure facilitates learning and growth.
PFM3Rev: The effects of failure are positive and should be utilized.
PFM4: Experiencing failure debilitates my performance and productivity.
PFM5: Experiencing failure inhibits learning and growth.
PFM6: The effects of failure are negative and should be avoided.
Children's Implicit Theories of Intelligence (CITI)
CITI1: How smart you are is something about you that you can't change very much.
CITI2: You can learn new things, but you can't change how smart you really are.
CITI3Rev: You can always change how smart you are.
CITI4: You're a certain amount smart, and you can't really do much to change it.

Results

MI Testing for Community Type

As displayed in Table B.2, the configural invariance model demonstrated a good model fit, $\chi^2(20) = 18.25$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .03), which supported equality of factor structure across community type. The metric invariance model demonstrated a good model fit, $\chi^2(24) = 19.40$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .03), and results from the χ^2 difference test supported equality in factor loadings across community type, $\Delta\chi^2(4) = 1.14$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(28) = 24.92$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04), and results from the χ^2 difference test supported equality in item intercepts across community type, $\Delta\chi^2(4) = 5.52$, $p > .05$. Although the strict invariance model yielded an adequate fit, $\chi^2(35) = 44.04$, $p >$

.05, (CFI = 0.98, TLI = 0.97, RMSEA = .04, SRMR = .04), the χ^2 difference test indicated that strict invariance was not supported, $\Delta\chi^2(7) = 19.12$, $p < .01$. Comparisons of critical ratios and imposing individual equality constraints for each item residual identified item residuals for PFM1Rev and PFM2Rev were significantly different across community type. These item residuals were allowed to be freely estimated across groups in the partial strict invariance model, which resulted in a good model fit, $\chi^2(33) = 28.92$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04). Results from the χ^2 difference test supported equality of residuals across community type, $\Delta\chi^2(5) = 3.99$, $p > .05$.

Table B.2
Measurement Invariance Test Across Community Type

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	SRMR
Configural	18.26	20	-	1.00	1.00	0.00	0.03
Metric	19.40	24	1.14(4)	1.00	1.00	0.00	0.03
Scalar	24.92	28	5.52(4)	1.00	1.00	0.00	0.04
Strict	44.04	35	19.12*(7)	0.98	0.97	0.04	0.04
Partial Strict	28.92	33	3.99(5)	1.00	1.00	0.00	0.04

*$p < .01$.

MI Testing for Child's Gender

As displayed in Table B.3, the configural invariance model demonstrated a good model fit, $\chi^2(20) = 15.41$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .03), which supported equality of factor structure across child's gender. The metric invariance model demonstrated a good model fit, $\chi^2(24) = 23.08$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04), and results from the χ^2 difference test supported equality in factor loadings across child's gender, $\Delta\chi^2(4) = 7.67$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(28) = 26.42$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04), and results from the χ^2 difference test supported equality in item intercepts across child's gender, $\Delta\chi^2(4) =$

3.34, $p > .05$. Although the strict invariance model yielded an adequate fit, $\chi^2(35) = 46.33$, $p > .05$, (CFI = 0.98, TLI = 0.98, RMSEA = .04, SRMR = .05), the χ^2 difference test indicated that strict invariance was not supported, $\Delta\chi^2(7) = 19.91$, $p < .01$. Comparisons of critical ratios and imposing individual equality constraints for each item residual identified item residuals for PITI1 were significantly different across child's gender. These item residuals were allowed to be freely estimated across groups in the partial strict invariance model, which resulted in a good model fit, $\chi^2(34) = 32.11$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .05). Results from the χ^2 difference test supported equality of residuals across child's gender, $\Delta\chi^2(6) = 5.67$, $p > .05$.

Table B.3
Implicit Theories of Intelligence Measurement Invariance Test for Child's Gender

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	SRMR
Configural	15.41	20	-	1.00	1.00	0.00	0.03
Metric	23.08	24	7.67(4)	1.00	1.00	0.00	0.04
Scalar	26.42	28	3.34(4)	1.00	1.00	0.00	0.04
Strict	46.33	35	19.91*(7)	0.98	0.98	0.04	0.05
Partial Strict	32.11	34	5.67(6)	1.00	1.00	0.00	0.05

*$p < .01$.

MI Testing for Parents' Gender

As displayed in Table B.4, the configural invariance model demonstrated a good model fit, $\chi^2(20) = 15.93$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04), which supported equality of factor structure across parents' gender. The metric invariance model demonstrated a good model fit, $\chi^2(24) = 17.06$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .04), and results from the χ^2 difference test supported equality in factor loadings across parents' gender, $\Delta\chi^2(4) = 1.12$, $p > .05$. The scalar invariance model demonstrated a good model fit, $\chi^2(28) = 24.34$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .05), and results from the χ^2 difference test supported equality in item intercepts across parents' gender, $\Delta\chi^2(4) =$

7.28, $p > .05$. Although the strict invariance model yielded an adequate fit, $\chi^2(35) = 43.63$, $p > .05$, (CFI = 0.98, TLI = 0.99, RMSEA = .04, SRMR = .05), the χ^2 difference test indicated that strict invariance was not supported, $\Delta\chi^2(7) = 19.29$, $p < .01$. Comparisons of critical ratios and imposing individual equality constraints for each item residual identified item residuals for PITI2 were significantly different across parents' gender. These item residuals were allowed to be freely estimated across groups in the partial strict invariance model, which resulted in a good model fit, $\chi^2(34) = 31.41$, $p > .05$, (CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .05). Results from the χ^2 difference test supported equality of residuals across parents' gender, $\Delta\chi^2(6) = 7.07$, $p > .05$.

Table B.4
Implicit Theories of Intelligence Measurement Invariance Test for Parents' Gender

Invariance Model	χ^2	*df*	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	SRMR
Configural	15.93	20	-	1.00	1.00	0.00	0.04
Metric	17.06	24	1.12(4)	1.00	1.00	0.00	0.04
Scalar	24.34	28	7.28(4)	1.00	1.00	0.00	0.05
Strict	43.63	35	19.29*(7)	0.98	0.99	0.04	0.05
Partial Strict	31.41	34	7.07(6)	1.00	1.00	0.00	0.05

*$p < .01$.

APPENDIX C

IRB APPROVAL MEMORANDUM

Florida State University
Office of the Vice President For Research Institutional Review Board
Human Subjects Office humansubjects@fsu.edu/850-644-8673

APPROVAL MEMORANDUM

Date: 4/12/2019
To: Kelly Berthiaume
Address: 1491
Department: FAMILY & CHILD SCIENCE
From: Florida State University Institutional Review Board (IRB)

The application that you submitted to this office regarding the use of human subjects in the proposal referenced above has been reviewed by the Florida State University Institutional Review Board. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process. This approval does not replace any departmental or other approvals that may be required.

Since your application was approved after January 21, 2019, it is subject to the revised Common Rule (45 CFR 46.109(f)(1)). Under the revised Common Rule, expedited projects granted initial approval after January 21, 2019 do not require annual continuing review by the IRB. You will notice that consent documents that are reviewed under this pathway now contain only an approval date. Please note that you may be requested to submit an annual report to the Human Subjects Office.

You are advised that any change in protocol for this project must be reviewed and approved by the IRB prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the IRB. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to ensure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protections. The Assurance Number is FWA00000168/IRB number IRB00000446.

Should you have any questions, please contact the Office of Human Subjects at 850-644-7900, or by email at humansubjects@fsu.edu.

Thank You.
Cc: Joseph Grzywacz, Advisor

HSC No. 2019.26791

REFERENCES

Acosta, S., & Hsu, H. (2014). Shared academic values: Testing a model of the association between Hong Kong parents' and adolescents' perception of the general value of science and scientific literacy. *Educational Studies*, *40*(2), 174-195.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Arbuckle, J. (2017). Amos (Version 25.0) [Computer Program]. Chicago, IL: IBM SPSS.

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, *38*, 113-125.

Bandura, A. (1977). *Social learning theory*. Oxford, England: Prentice-Hall.

Barni, D., Alfieri, S., Marta, E., & Rosnati, R. (2013). Overall and unique similarities between parents' values and adolescent or emerging adult children's values. *Journal of Adolescence*, *36*, 1135–1141.

Barni, D., Donato, S., Rosnati, R., & Danioni, F. (2017). Motivations and contents of parent-child value transmission. *Journal of Prevention and Intervention in the Community*, *45*(3), 180-186.

Barni, D., Vieno, A., Rosnati, R., Roccato, M., & Scabini, E. (2014). Multiple sources of adolescents' conservative values: A multilevel study. *European Journal of Developmental Psychology*, *11*, 433–446.

Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Blackwell, L., Trzesniewski, K., & Dweck, C. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, *78*(1), 246-263.

Boehnke, K., Hadjar, A., & Baier, D. (2009). Value transmission and ''zeitgeist'' revisited. In U. Schönpflug (Ed.), *Cultural transmission: Psychological, developmental, social, and methodological aspects* (pp. 441–460). Cambridge, UK: Cambridge University Press.

Broda, M., Yun, J., Schneider, B., Yeager, D., Walton, G., & Diemer, M. (2018). Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions. *Journal of Research on Educational Effectiveness*, *11*(3), 317-338.

Bronfenbrenner, U. (1977). The ecology of human development in retrospect and prospect. In H. McGurk (Ed.), *Ecological factors in human development* (pp. 275–286). Amsterdam, The Netherlands: North Holland.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1995). The bioecological model from a life course perspective: Reflections of a participant observer. In P. Moen & G. Elder Jr. (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619-647*)*. Washington, DC: American Psychological Association.

Bronfenbrenner, U. (2001). The bioecological theory of human development. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopaedia of the social and behavioural sciences* (pp. 6963–6970). Oxford, UK: Elsevier.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature–nurture reconceptualized: A bioecological model. *Psychological Review*, *101*, 568–586.

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st century: Emerging theoretical models, research designs, and empirical findings. *Social Development*, *9*, 115–125.

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol. 4.* (5th ed., pp. 993-1028). New York: Wiley.

Bronfenbrenner, U., & Morris, P. A. (2006). *The bioecological model of human development.* In W. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), *Handbook of child psychology: Theoretical models of human development* (pp. 793–828). New York, NY: Wiley.

Bryant, B. K., Zvonkovic, A. M., & Reynolds, P. (2006). Parenting in relation to child and adolescent vocational development. *Journal of Vocational Behavior*, *69*(1), 149–175.

Burnette, J., Russell, M., Hoyt, C., Orvidas, K., & Widman, L. (2018). An online growth mindset intervention in a sample of rural adolescent girls. *British Journal of Educational Psychology*, *88*, 428-445.

Byrne, B. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd edition). Mahwah, NJ: Erlbaum.

Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.

Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, *105*, 456–466.

Byun, S., Irving, M., & Meece, J. (2012). Predictors of bachelor's degree completion among rural students at four-year institutions. *The Review of Higher Education*, *35*(3), 463-484.

Carrico, C., Murzi, H. G., & Matusovich, H. (2016). The importance of socializers in career choice decision for high school students in rural Appalachia. In *American evaluation research association conference.*

Cashmore, J., & Goodnow, J. (1985). Agreement between generations: A two-process approach. *Child Development*, *56*, 493-501.

Cavanaugh, A., Chen, X., Bathgate, M., Frederick, J., Hanauer, D., & Graham, M. (2018). Trust, growth mindset, and student commitment to active learning in a college science course. *CBE—Life Sciences Education*, *17*(10), 1-8.

Cemalcilar, Z., Secinti, E., & Sumer, N. (2018). Intergenerational transmission of work values: A meta-analytic review. *Journal of Youth and Adolescence*, *47*, 1559-1579.

Chen, H., Dai, J., & Gao, Y. (2017). Measurement invariance and latent mean differences of the Chinese version physical activity self-efficacy scale across gender and education levels. *Journal of Sport and Health Science*, *8*, 46-54.

Chen, J. (2012). Implicit theories, epistemic beliefs, and science motivation: A person-centered approach. *Learning and Individual Differences*. *22*, 724-735.

Chen, J., & Pajares, F. (2010). Implicit theories of ability of Grade 6 science students: Relation to epistemological beliefs and academic motivation and achievement in science. *Contemporary Educational Psychology*, *35*, 75-87.

Chen, W., & Wong, Y. (2014). What my parents make me believe in learning: The role of filial piety in Hong Kong students' motivation and academic achievement. *International Journal of Psychology*, *49*(4), 249-256.

Chen, W., Chen, C., Dai, C., Man U, N., & Cheng, L. (2018). Is the incremental theory of intelligence a key to students' motivational engagement? The moderating effects of self-enhancement and self-criticism. *Interactive Learning Environments*, *26*(6), 730-744.

Cheung, C., & Pomerantz, E. (2012). Why does parents' involvement enhance children's achievement? The role of parent-oriented motivation. *Journal of Educational Psychology*, *104*(3), 820-832.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cole, D., Goodman, S., Garber, J., Cullum, K., Cho, S., Rights, J., … Simon, H. (2018). Validating parent and child forms of the parent perception inventory. *Psychological Assessment*, *30*(8), 1065-1081.

Conger, R. D., & Dogan, S. J. (2007). Social class and socialization in families. In J. E. Grusec, & P. D. Hastings (Eds.). *Handbook of socialization: Theory and research*. New York, NY: Guilford Press.

Costa, A., & Faria, L. (2018). Implicit theories of intelligence and academic achievement: A meta-analytic review. *Frontiers in Psychology*, *9*, 1-16.

Crano, W. D. (1983). Assumed consensus of attitudes: The effect of vested interest. *Personality & Social Psychology Bulletin*, *9*(4), 597–608.

Crockett, L. J., Shanahan, M. J., & Jackson-Newsom, J. (2000). Rural youth: Ecological and life course perspectives. In R. Montemayor, G. Adams, & T. Gullotta (Eds.), *Adolescent diversity in ethnic, economic, and cultural contexts: Advances in adolescent development* (pp. 43–74). Thousand Oaks, CA: Sage.

Derbaix, C., & Derbaix, M. (2019). Intergenerational transmissions and sharing of musical taste practices. *Journal of Marketing Management*, *35*, 1600-1623.

Dickhäuser, O., & Stiensmeier-Pelster, J. (2002). Gender differences in computer work: Evidence for the model of achievement-related choices. *Contemporary Educational Psychology*, *27*(3), 486– 496.

Diseth, Å, Meland, E., & Breidablik, H. (2014). Self-beliefs among students: grade level and gender differences in self-esteem, self-efficacy, and implicit theories of intelligence. *Leaning and Individual Differences*, *35*, 1-8.

Doğan, Y., Akar, H., & Üstüner, M. (2019). Examining the measurement invariance of the teachers' sense of self-efficacy scale in terms of gender. *International Journal of Evaluation and Research in Education*, *8*(2), 213-220.

Döring, A. K., Makarova, E., Herzog, W., & Bardi, A. (2017). Parent–child value similarity in families with young children: The predictive power of prosocial educational goals. *British Journal of Psychology*, *108*(4), 737–756

Duckworth, A. (2016). *Grit: The power of passion and perseverance*. New York, NY: Scribner/Simon & Schuster.

Dweck, C. (1999). *Self-theories: Their role in motivation, personality, and development*. New York, NY: Psychology Press.

Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality and development*. New York, NY: Psychology Press.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95,* 256-273.

Dweck, C. S., Chiu, C. -Y., & Hong, Y. -Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, *6*, 267−285.

Eccles, J. (2005). Studying the development of learning and task motivation. *Learning and Instruction*, *15*, 161-171.

Eccles, J. (2014). Gendered socialization of STEM interests in the family. *International Journal of Gender, Science, and Technology*, *7*(2), 116-132.

Elder, G. H., & Conger, R. D. (2000). *Children of the land: Adversity and success in rural America*. Chicago, IL: University of Chicago Press.

Elliott, L., & Bachman, H. (2018). Parents' educational beliefs and children's early academics: Examining the role of SES. *Children and Youth Services Review*, *91*, 11-21.

Elliott, A., & Dweck, C. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, *54*(1), 5-12.

Friedlmeier, M., & Trommsdorff, G. (2011). Are mother-child similarities in value orientations related to mothers' parenting? A comparative study of American and Romanian mothers and their adolescent children. *European Journal of Developmental Psychology*, *8*(6), 661-680.

Gniewosz, B., & Noack, P. (2012). What you see is what you get: The role of early adolescents' perceptions in the intergenerational transmission of academic values. *Contemporary Educational Psychology*, *37*, 70-79.

Goodnow, J. (1992). Parents' ideas, children's ideas: Correspondence and divergence. In I.E. Sigel, A.V. McGillicuddy-DeLisi, & J.J. Goodnow (Eds.), *Parental belief systems: The psychological consequences for children* (2nd ed., pp. 293-317). Hillsdale, NJ: Erlbaum.

Grønhøj, A., & Thøgersen, J. (2009). Like father, like son? Intergenerational transmission of values, attitudes, and behaviours in the environmental domain. *Journal of Environmental Psychology*, *29*, 414-421.

Grusec, J. E., & Goodnow, J. J. (1994). Impact of parental discipline methods on the child's internalization of values: A reconceptualization of current points of view. *Developmental Psychology*, *30*, 4–19.

Gunderson, E. A., Gripshover, S. J., Romero, C., Dweck, C. S., Goldin-Meadow, S., & Levine, S. C. (2013). Parent praise to 1- to 3-Year-Olds predicts children's motivational frameworks 5 Years later. *Child Development, 84*(5), 1526-1541.

Gunderson, E. A., Ramirez, G., Levine, S. C., & Beilock, S. L. (2012). The role of parents and teachers in the development of gender-related math attitudes. *Sex Roles, 66,* 153–166.

Gunderson, E., Hamdan, N., Sorhagen, N., & D'Esterre, A. (2017). Who needs innate ability to succeed in math and literacy? Academic-domain-specific theories of intelligence about peers versus adults. *Developmental Psychology*, *53*(6), 1188-1205.

Haimovitz, K., & Dweck, C. (2016). What predicts children's fixed and growth intelligence mind-sets? Not their parents' views of intelligence but their parents' views of failure. *Psychological Science*, *27*(6), 859-869.

Haimovitz, K., & Dweck, C. (2017). The origins of children's growth and fixed mindsets: New research and a new proposal. *Child Development*, *88*(6), 1849-1859.

Haimovitz, K., Wormington, S. V., & Corpus, J. H. (2011). Dangerous mindsets: How beliefs about intelligence predict motivational change. *Learning and Individual Differences*, *21*, 747–752.

Hardré, P., Sullivan, D., & Crowson, H. (2009). Student characteristics and motivation in rural high schools. *Journal of Research in Rural Education*, *24*(16), 1-19.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millenium. *Communication Monographs*, *7*6, 408–420.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis* [1st ed.]. New York, NY: The Guilford Press.

Hayes, A. F., & Rockwood, N. J. (2017). Regression- based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, *98*, 39–57.

Hemphill, J. (2003). Interpreting the magnitude of correlation coefficients. *American Psychologist*, *58*(1), 78-79.

Hoge, D. R., Petrillo, G., & Smith, E. (1982). Transmission of religious and social values from parents to teenage children. *Journal of Marriage and Family*, *44*(3), 569–580.

Hong, Y., Chiu, C., Dweck, C. S., Lin, D. M.-S., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology*, *77*, 588–599.

Howell, A., & Buro, K. (2009). Implicit beliefs, achievement goals, and procrastination: A mediational analysis. *Learning and Individual Differences*, *19*, 151-154.

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.

IBM Corp. (2017). IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.

Jansen, E., Harris, H., Mallan, K., Daniels, L., & Thorpe, K. (2018). Measurement invariance of the Feeding Practices and Structure Questionnaire-28 among a community of socioeconomically disadvantaged mothers and fathers. *Appetite*, *120*, 115-122.

Kamins, M. L., & Dweck, C. S. (1999). Person versus process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology, 35*(3), 835-847.

King, R. (2019). Mindsets are contagious: The social contagion of implicit theories of intelligence among classmates. *British Journal of Educational Psychology*, 1-15.

Kiousis, S., & McDevitt, M. (2008). Agenda-setting in civic development: Effects of curricula and issue importance on youth voter turnout. *Communication Research*, *35*, 481–502.

Kline, R. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: The Guilford Press.

Knafo, A., & Schwartz, S. (2004). Identity formation and parent-child value congruence in adolescence. *British Journal of Developmental Psychology*, *22*, 439-458.

Knafo, A., & Schwartz, S. H. (2003). Parenting and accuracy of perception of parental values by adolescents. *Child Development, 73*, 595–611.

Krueger, J. (1998). On the perception of social consensus. *Advances in Experimental Social Psychology*, *30*, 163–240.

Kuczynski, L., Marshall, S., & Schell, K. (1997). Value socialization in a bidirectional context. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and the internalization of values: A handbook of contemporary theory* (pp. 23–50). New York, NY: Wiley.

Lazarides, R., Rubach, C., & Ittel, A. (2017). Adolescents' perceptions of socializers' beliefs, career-related conversations, and motivation in mathematics. *Developmental Psychology*, *53*(3), 525-539.

Lerner, R. (2002). *Concepts and theories of human development* (3rd ed.). New York, NY: Routledge.

Lüftenegger, M., & Chen, J. A. (2017). Conceptual issues and assessment of implicit theories. *Zeitschrift für Psychologie*, *225*, 99–106.

MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. New York, NY: Lawrence Erlbaum Associates.

Makel, M., Snyder, K., Thomas, C., Malone, P., & Putallaz, M. (2015). Gifted students' implicit beliefs about intelligence and giftedness. *Gifted Child Quarterly*, *59*(4), 203-212.

Marchant, G., Paulson, S., & Rothlisberg, B. (2001). Relations of middle school students' perceptions of family and school contexts with academic achievement. *Psychology in the Schools*, *38*(6), 505-519.

Matthes, B., & Stoeger, H. (2018). Influence of parents' implicit theories about ability on parents' learning-related behaviors, children's implicit theories, and children's academic achievement. *Contemporary Educational Psychology*, *54*, 271-280.

McHale, S., Dotterer, A., & Kim, J. (2009). An ecological perspective on the media and youth development. *American Behavioral Scientist*, *52*(8), 1186-1203.

Meece, J. L., Askew, K. J., Agger, C. A., Hutchins, B. C., & Byun, S. Y. (2014). Familial and economic influences on the gender-related educational and occupational aspirations of rural adolescents. *Journal of Educational and Developmental Psychology*, *4*(1), 238.

Memon, M., Cheah, J., Ramayah, T., Ting, H., & Chuah, F. (2018). Mediation analysis issues and recommendations. *Journal of Applied Structural Equation Modeling*, *2*(1), i-ix.

Meule, A. (2019). Contemporary understanding of mediation testing. *Meta-Psychology*, *3*, 1-7.

Moore, E. S., Wilkie, W. L., & Lutz, R. J. (2002). Passing the torch: Intergenerational influences as a source of brand equity. *Journal of Marketing*, *66*, 17–37.

Moorman, E., & Pomerantz, E. (2010). Ability mindsets influence the quality of mothers' involvement in children's learning: An experimental investigation. *Developmental Psychology*, *46*(5), 1354-1362.

Morton, T., Ramirez, N., Meece, J., Demetriou, C., & Panter, A. (2018). Perceived barriers, anxieties, and fears in prospective college students from rural high schools. *The High School Journal*, *101*(3), 155-176.

Nelson J., & Lund E. (2017). Bronfenbrenner's theoretical framework adapted to women with disabilities experiencing intimate partner violence. In A. J. Johnson, J. R. Nelson, & E. M. Lund (Eds.), *Religion, disability, and interpersonal violence* (11-23). New York, NY: Springer International Publishing.

Nitzi, C., Roldan, J., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling. *Industrial Management & Data Systems*, *116*(9), 1849-1864.

Okagaki, L., & Bevis, C. (1999). Transmission of religious values: Relations between parents' and daughters' beliefs. *The Journal of Genetic Psychology*, *160*(3), 303-318.

Olino, T., Finsaas, M., Dougherty, L., & Klein, D. (2018). Is parent-child disagreement on child anxiety explained by differences in measurement properties? An examination of measurement invariance across informants and time. *Frontiers in Psyschology*, *9*, 1-11.

Petrin, R.A., Schafft, K.A., & Meece, J.L. (2014). Educational sorting and residential aspirations among rural high school students: What are the contributions of schools and educators to the rural brain drain? *American Educational Research Journal*, *51*, 294–327.

Pomerantz, E. M., Grolnick, W. S., & Price, C. E. (2005). The role of parents in how children approach school: A dynamic process perspective. In A. J. Elliot & C. S. Dweck (Eds.), *The handbook of competence and motivation* (pp. 259-278). New York, NY: Guilford.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*, 717– 731.

Preacher, K.J., & Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891.

Putnick, D., & Bornstein, M. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, *41*, 71-90.

Rattan, A., Good, C., & Dweck, C. S. (2012). "It's ok—not everyone can be good at math": Instructors with an entity theory comfort (and demotivate) students. *Journal of Experimental Social Psychology*, *48*, 731–737.

Rautiainen, R., Räty, H., & Kasanen, K. (2016). Is children's intelligence malleable? Parental perspectives on implicit theories of intelligence. *Nordic Psychology*, *68*(4), 233-243.

Rickert, N., Meras, I., & Witkow, M. (2014). Theories of intelligence and students' daily self-handicapping behaviors. *Learning and Individual Differences*, *36*, 1-8.

Roest, A. M. C., Dubas, J. S., & Gerris, J. R. M. (2010). Value transmissions between parents and children: Gender and developmental phase as transmission belts. *Journal of Adolescence*, *33*(1), 21–31.

Romero, C., Master, A., Paunesku, D., Dweck, C., & Gross J. (2014). Academic and emotional functioning in middle school: The role of implicit theories. *Emotion*, *14*(2), 227-234.

Rosa, E., & Tudge, J. (2013). Urie Bronfenbrenner's theory of human development: Its evolution from ecology to bioecology. *Journal of Family Theory and Review*, *5*, 243-258.

Rosenholtz, S. J., & Simpson, C. (1984). The formation of ability conceptions: Developmental trend or social construction? *Review of Educational Research*, *54*, 31–63.

Rucker, D., McShane, B., & Preacher, K. (2015). A researcher's guide to regression, discretization, and median splits of continuous variables. *Journal of Consumer Psychology*, *25*(4), 666-678.

Rucker, D.D., Preacher, K.J., Tormala, Z.L. & Petty, R.E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, *5*(6), 359-371.

Rungtusanatham, M., Miller, J., & Boyer, K. (2014). Theorizing, testing, and concluding for mediation in SCM research: Tutorial and procedural recommendations. *Journal of Operations Management*, *32*, 99-113.

Shively, R., & Ryan, C. (2013). Longitudinal changes in college math students' implicit theories of intelligence. *Social Psychology of Education*, *16*(2), 241-256.

Shrout, P., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*(4), 422-445.

Šimunović, M., Ercegovac, I., & Burušić, J. (2018). How important is it to my parents? Transmission of STEM academic values: The role of parents' values and practices and children's perceptions of parental influences. *International Journal of Science Education*, *40*(9), 977-995.

Smiley, P., Buttitta, K., Chung, S., Dubon, V., & Chang, L. (2016). Mediation models of implicit theories and achievement goals predict planning and withdrawal after failure. *Motivation and Emotion*, *40*(6), 878-894.

Sorich, L., & Dweck, C. S. (1999). Mastery-oriented thinking. In C. R. Snyder (Ed.), *Coping: The psychology of what works* (pp. 232–251). New York, NY: Oxford University Press.

Steenkamp, J. B. E., & Baumgartner, H. (1998). Assessing measurement invariance in cross national consumer research. *Journal of Consumer Research*, *25*, 78-107.

Steiger, J. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, *87*(2), 245-251.

Stipek, D., & Gralinski, J. (1996). Children's beliefs about intelligence and school performance. *Journal of Educational Psychology*, *88*(3), 397-407.

Stone, A. (2018). Small-town values: How understanding the values of rural students can influence recruitment strategies. *College and University*, *93*(3), 14-22.

Tam, K., & Lee, S. (2010). What values do parents want to socialize to their children? The role of perceived normative values. *Journal of Cross-Cultural Psychology*, *41*(2), 175-181.

Tam, K., Lee, S., Kim, Y., Li, Y., & Chao, M. (2012). Intersubjective model of value transmission: Parents using perceived norms as reference when socializing children. *Personality and Social Psychology Bulletin*, *38*(8), 1041-1052.

Tarbetsky, A., Collie, R., & Martin, A. (2016). The role of implicit theories of intelligence and ability in predicting achievement for Indigenous (Aboriginal) Australian students. *Contemporary Educational Psychology*, *47*, 61-71.

Tempelaar, D., Rienties, B., Giesbers, B., & Gijselaers, W. (2015). The pivotal role of effort beliefs in mediating implicit theories of intelligence and achievement goals and academic motivations. *Social Psychology of Education*, *18*, 101-120.

Todor, I. (2014). Investigating the old stereotype about boys/girls and mathematics: Gender differences in implicit theory of intelligence and mathematics self-efficacy beliefs. *Procedia – Social and Behavioral Sciences*., *159*, 319-323.

Trommsdorff, G. (2009). Intergenerational relations and cultural transmission. In U. Schönpflug (Ed.), *Cultural transmission: Psychological, developmental, social, and methodological aspects* (pp. 126–161). Cambridge, UK: Cambridge University Press.

Tudge, J. R. H., Mokrova, I. L., Hatfield, B. E., & Karnik, R. B. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory and Review*, *1*, 198–210.

van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology*, *9*, 486-492.

Vervoort, L., De Caluwé, E., Vandeweghe, L., De Decker, A., Wante, L., Van Beveren, M., Goossens, L., Verbeken, S., Sioen, I., Michels, N., & Braet, C. (2019). Parent-reported BIS/BAS scales for children: Factor structure and measurement invariance across age and gender. *Assessment*, *26*(7), 1282-1295.

Vollebergh, W. A. M., Iedema, J., & Raaijmakers, Q. A. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and the Family*, *63*, 1185–1198.

Warren, F., Mason-Apps, E., Hoskins, S., Azmi, Z., & Boyce, J. (2018). The role of implicit theories, age, and gender in the creative performance of children and adults. *Thinking Skills and Creativity*, *28*, 98-109.

Weaver-Hightower, M. B. (2008). An ecology metaphor for educational policy analysis: A call to complexity. *Educational Researcher, 37,* 153–167.

Wentzel, K. R., & Looney, L. (2007). Socialization in school settings. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization. Theory and research* (pp. 382 – 403). New York, NY: Guilford Press.

Whitbeck, L. B., & Gecas, V. (1988). Value attributions and value transmission between parents and children. *Journal of Marriage and the Family*, *50*, 829–840.

Wu, N., Hou, Y., Wang, Q., & Yu, C. (2018). Intergenerational transmission of educational aspirations in Chinese families: Identifying mediators and moderators. *Journal of Youth and Adolescence*, *47*, 1238-1251.

Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, *47*, 302-314.

Youniss, J. (1994). Rearing children for society. *New Directions for Child and Adolescent Development, 66*, 37-50.

Zajenkowski, M., & Fronczyk, K. (2020). How do narcissists perceive personality items? Measurement invariance of a Big Five scale across low and high narcissism groups. *Personality and Individual Differences*, *152*, 1-6.

Zander, L., Brouwer, J., Jansen, E., Crayen, C., & Hannover, B. (2018). Academic self-efficacy, growth mindsets, and university students' integration in academic and social support networks. *Learning and Individual Differences*, *62*, 98-107.

Zhao, X., Lynch, J.G., & Chen, Q., (2010). Reconsidering Baron and Kenny: myths and truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197–206.

BIOGRAPHICAL SKETCH

CURRICULUM VITAE

KELLY C. BERTHIAUME

Department of Family and Child Sciences, Florida State University
120 Convocation Way, Tallahassee, Florida, 32306

EDUCATION

Anticipated May 2020	**Florida State University**, Tallahassee, FL Ph.D. in Human Development and Family Sciences Committee: Joseph Grzywacz, PhD (Chair), Ming Cui, PhD, Lenore McWey, LMFT, PhD, Steven Pfeiffer, PhD
2016	**Florida State University**, Tallahassee, FL M.S. in Family and Child Sciences Thesis: *The College Experience of Gifted Emerging Adults: Factors Associated to Social Adjustment to College* Committee: Kendal Holtrop, LMFT, PhD (Chair), Ming Cui, PhD, Lenore McWey, LMFT, PhD, Steven Pfeiffer, PhD
2012 – 2014	**Valdosta State University**, Valdosta, GA Coursework in Marriage and Family Therapy Master's Program
2012	**Georgia Southern University**, Statesboro, GA B.S. in Child and Family Development

DISSERTATION

Title: *Children's Development of Learning-Related Cognitions: The Influence of Parents' Socialization and Contextual Factors*

This work is comprised of two quantitative studies with the objective to improve understanding of parents' socialization processes and contextual factors that influence how children develop beliefs about intelligence and failure.

CERTIFICATIONS & PROFESSIONAL TRAININGS

Certified Family Life Educator, *National Council on Family Relations*
Trust-Based Relational Intervention Practitioner, *KPICD at Texas Christian University*
Preparing Future Faculty Academic Certificate, *Florida State University*

PROFESSIONAL EXPERIENCE

Fall 2019	Adjunct Faculty, Department of Psychology, Texas Christian University, Fort Worth, TX
2014 – Present	Teaching Assistant, Department of Family and Child Sciences, Florida State University, Tallahassee, FL
2012 – 2014	Graduate Assistant Academic Advisor, OASIS Center for Advising, Valdosta State University, Valdosta, GA
2012	Family and Consumer Sciences Agent Intern, Telfair County Cooperative Extension, McRae, GA

RESEARCH EXPERIENCE

2017 – Present

Principal Investigator
Title: Investigating Parents' and Personal Influences on Factors Related to College Students' Academic Performance
Florida State University IRB #: 2018.25266
Supervisor: Dr. Gregory Harris
Responsibilities: Developed a quantitative research project to investigate factors that influence college students' achievement, motivation, and well-being in college. Participated in project development, quantitative research design and implementation, administration of surveys, IRB applications, aided in data management and analysis, and collaborated on development of presentation posters and manuscripts.

2017 – Present

Principal Investigator
Title: Parents' and Children's Implicit Theories of Intelligence
Florida State University IRB #: 2019.26791
Supervisor: Dr. Joseph Grzywacz
Responsibilities: Developed a quantitative research project to investigate parents' influence on children's implicit theories of intelligence. Participated in project development, quantitative research design and implementation, administration of surveys, IRB applications, data management and analysis, training and supervision of undergraduate research assistants, and collaborated on development of manuscripts.

RESEARCH EXPERIENCE (Continued)

2015 – Present

Principal Investigator
Title: Implicit Theories of Intelligence, Creativity, and Leadership
Florida State University IRB #: 2018.25901
Supervisor: Dr. Steven Pfeiffer
Responsibilities: Developed a quantitative research project to investigate implicit theories of intelligence, creativity, and leadership in college students. Participated in project development, quantitative research design and implementation, administration of surveys, IRB applications, aided in data management and analysis, and collaborated on development of manuscripts.

2015 – 2017

Research Team Member
Title: Investigating the Relationships Among Parenting Practices, Social Competence, and Risky Behaviors in Gifted College Students
Florida State University IRB #: 2016.19038
Supervisor: Dr. Kendal Holtrop & Dr. Marsha Rehm
Responsibilities: Developed a quantitative and qualitative research project to investigate the relationships among parenting practices, social competence, and risky behaviors in college students. Participated in project development, quantitative and qualitative research design, implementation, IRB applications, aided in data management and analysis, and collaborated on development of presentation posters and manuscripts.

2013

Directed Study
Valdosta State University, Valdosta, GA
Supervisor: Dr. Jennifer Lambert-Shute
Responsibilities: Developed a qualitative research project to explore racial, cultural, and age differences in parent-child interactions in public settings.

2011 – 2012

Directed Study
Georgia Southern University, Statesboro, GA
Supervisor: Dr. Katy Gregg
Responsibilities: Participated in observations of children with challenging behaviors. Coded behaviors to target and identify the antecedents and consequences of behaviors. Modeled and reinforced positive and appropriate behaviors to children with challenging behaviors through direct interventions to foster social and emotional development.

PUBLICATIONS

Submitted Manuscripts

Berthiaume, K., Heo, J., Pfeiffer, S., & Petscher, Y. (2019). Do our implicit theories and personal views on intelligence and creativity matter? Examining influential factors. Manuscript submitted to *Creativity Research Journal* on April 11, 2019.

Murray, K., **Berthiaume**, K., Fitzgerald., M., & Holtrop, K. (2017). The association between parenting practices and sexuality outcomes in gifted college students. Submitted to *Journal of Family Issues* on April 7, 2017.

Manuscripts in Preparation

***Berthiaume**, K., Grzywacz, J., Cui, M., McWey, L., & Pfeiffer, S. (2020). Beliefs are in the eye of the beholder: The role of children's perceptions of parents' beliefs in intergenerational transmission of learning-related cognitions. Manuscript in preparation for submission to *Developmental Psychology*. Target submission date: Apr. 2020.

***Berthiaume**, K., Grzywacz, J., Cui, M., McWey, L., & Pfeiffer, S. (2020). What influences children's development of implicit theories of intelligence? The role of parents' socialization and contextual factors. Manuscript in preparation for submission to *Journal of Experimental Child Psychology*. Target submission date: Apr. 2020.

Berthiaume, K., Fitzgerald, M., London-Johnson, A., Love, H., & Ledermann, T. (2019). The parent-adolescent relationship and behaviors: A dyadic analysis of change over time. Manuscript in preparation for submission to *Journal of Adolescence*. Target submission date: May 2020.

Heo, J., **Berthiaume**, K., Pfeiffer, S., & Petscher, Y. (2019). College students' implicit theories of intelligence and creativity: A latent profile analysis. Manuscript in preparation for submission to *The Leadership Quarterly*. Target submission date: Oct. 2019.

**Denotes manuscripts from dissertation*

PRESENTATIONS

Berthiaume, K., Fitzgerald, M., & Fincham, F. (2019). *The influence of implicit theories of intelligence on children's goal orientation and views of failure*. Poster session presented at Society for Research in Child Development Biennial Meeting, Baltimore, MD.

Berthiaume, K. (2018). *Mothers' and fathers' influence on children's implicit theories of intelligence and failure mindsets.* Poster session presented at Society for Research in Child Development Special Topic Meeting, Philadelphia, PA.

PRESENTATIONS (Continued)

Berthiaume, K. (2018). *The college experience of gifted emerging adults: factors associated to social adjustment to college.* Poster session presented at Southeastern Council on Family Relations, Baton Rouge, LA.

Berthiaume, K. (2017). *The college experience of gifted emerging adults: factors associated to social adjustment to college.* Poster session presented at College of Human Sciences Research and Creativity Day, Tallahassee, FL.

Murray, K., **Berthiaume**, K., Fitzgerald, M., & Holtrop, K. (2016). *Parenting factors and risky behavior in gifted college students.* Poster session presented at Annual American Association of Marriage and Family Therapy Conference, Indianapolis, IN.

Friar, E., Murray, K., **Godfrey**, K., Fitzgerald, M., Armstrong, M., Holtrop, K. (2016). *Investigating relationships among parenting practices, social competence, and risky behaviors in gifted college students*. Poster session presented at Florida State University UROP Research Symposium, Tallahassee, FL.

Godfrey, K., Mathews, K., & Lambert-Shute, J. (2013). *Caregivers' expectations and perceptions of grief camps*, Poster presented at Georgia Association of Marriage & Family Therapy, Savannah, GA. (Won GAMFT Poster Award).

Godfrey, K. (2013). *Parks, parents, and pipsqueaks: Observing parent-child interactions in public parks,* Poster presented at Valdosta State University Graduate School Research & Scholarship Symposium, Valdosta, GA.

Godfrey, K., Maddox, J. & Smart, J. (2012). *Exploring early childhood challenging or distracted behaviors in the classroom,* Poster presented at Georgia Southern University Phi Kappa Phi Research Symposium, Statesboro, GA.

Gregg, K. & **Godfrey**, K. (2012). *Young children with challenging behaviors: Finding support in a university partnership,* Poster presented at National Youth at Risk Conference, Savannah, GA.

**Name changed from Godfrey, K. to Berthiaume, K. in June 2016*

TEACHING EXPERIENCE

Instructor of Record, Texas Christian University, Fort Worth, TX

Fall 2019	CHDV 50533: Case Studies in Child Development
Fall 2019	CHDV 35053: Professional Development for Careers with Children

TEACHING EXPERIENCE (Continued)

Instructor of Record, Florida State University, Tallahassee, FL

Summer 2019	CHD 2220: Child Development*
Fall 2018	CHD 2220: Child Development*
Summer 2018	CHD 2220: Child Development*
Summer 2018	CHD 4905: Directed Individual Study
Spring 2018	FAD 4455: Family Life Education

Graduate Teaching Assistant, Florida State University, Tallahassee, FL

Fall 2019	CHD 4615: Public Policy: Child and Family Issues*
Spring 2019	FAD 2230: Family Relationships: A Life Span Development Approach*
Fall 2017	FAD 3220: Individual and Family Life Span Development*
Summer 2017	CHD 3243: Contexts in Adolescent Development*
Spring 2017	FAD 2230: Family Relationships: A Life Span Development Approach
Fall 2016	FAD 2230: Family Relationships: A Life Span Development Approach*
Summer 2016	FAD 4805: Practicum in Family and Child Science
Spring 2016	FAD 3343: Contexts of Adult Development and Aging
Fall 2015	CHD 3243: Contexts of Adolescent Development
Spring 2015	FAD 3343: Contexts of Adult Development and Aging*
Fall 2014	FAD 2230: Family Relationships: A Life Span Development Approach*
Fall 2014	CHD 4630: Methods of Studying Families and Children

Guest Lecturer

Spring 2019	FAD 2230: Family Relationships: A Life Span Development Approach*
Fall 2018	DEP 5070: Child and Adolescent Development, Graduate Course

2011 – 2014 Substitute Teacher, Dodge County Board of Education, Eastman, GA

**Denotes online courses*

CLINICAL EXPERIENCE

2013 – 2014 Marriage and Family Therapy Intern, Family Works, Valdosta, GA
Responsibilities: Worked with families, couples, and individuals around a variety of issues such as couple and family issues, substance abuse, sex therapy, etc.

CLINICAL EXPERIENCE (Continued)

2013 — Freshman Academy School Counseling Intern, Valdosta High School, Valdosta GA
Responsibilities: Worked with adolescents in individual and group settings while facilitating decision making skills towards social, academic, and life issues and skills

2012 – 2014 — Intake Worker, Family Works, Valdosta, GA
Responsibilities: Conducted clinical intakes, helped clients and therapist interns coordinate therapy sessions, maintained clinic activity records, and managed the recordkeeping needed to keep the clinic running

PROFESSIONAL SERVICE

2018 — Review Committee Panel for Dissertation Awards Program, The College of Human Sciences, Florida State University, Tallahassee, FL
Responsibilities: Evaluated and rated the Dissertation Awards Program proposals on their scholarly and technical merit. Made recommendations to determine the final awards.

GRANTS & AWARDS

Spring 2019 — Conference Presentation Support Grant
Amount: $750
Awarded by: Family and Child Sciences Department, Florida State University

Fall 2018 — Conference Presentation Support Grant
Amount: $200
Awarded by: Congress of Graduate Students, Florida State University

2018 – 2019 — Graduate Student Grant
Amount: $1000
Awarded by: Family and Child Sciences Department, Florida State University

Fall 2016 — Conference Presentation Support Grant
Amount: $500
Awarded by: Family and Child Sciences Department, Florida State University

2013 — First Place Southern Region Award; State Award;
Second Place National Award
Awarded for: College 101 Curriculum – Educational Technology
Awarded by: Georgia Extension Association of Family and Consumer Sciences

GRANTS & AWARDS (Continued)

2013 Poster Presentation Winner
Awarded for: Caregivers' Expectations and Perceptions of Grief Camps
Awarded by: Georgia Association of Marriage and Family Therapy Conference

PROFESSIONAL DEVELOPMENT

2019 **Stewards of Children Child Sexual Abuse Prevention Training**
Darkness to Light

2019 **Trauma-Informed Care Training**
Texas Department of Family and Protective Services

2018 **National Council on Family Relations**
Annual National Conference

2018 **Society for Research in Child Development**
Special Topic Meeting

2014 **Program for Instructional Excellence Teaching Conference**
Florida State University

2013 **Grief: Working with Adults and Children**
Annual South Georgia Regional MFT Student Conference

2012 **National Youth at Risk**
Annual National Conference

2011 **Georgia Association on Young Children**
Annual State Conference

2011 **American Association of Marriage and Family Therapy**
Annual National Conference

Notable Coursework, Florida State University, Tallahassee, FL

2018 **Assessment Techniques for Children and Families**
Department of Family & Child Sciences

2017 **Advanced Research Methods in Family and Child Sciences**
Department of Family & Child Sciences
Requirements: Write an NSF grant proposal

2017 **Grant Writing in Family and Child Sciences**
Department of Family & Child Sciences

2016 **Assessment of Socio-Emotional Problems in Children and Adolescents**
Department of Educational Psychology and Learning Systems

2016 **Current Issues in the Psychology of Gifted**
Department of Educational Psychology and Learning Systems

2015 **Assessment of Intelligence**
Department of Educational Psychology and Learning Systems

2015 **College Teaching in Family Science Courses**
Department of Family & Child Sciences

PROFESSIONAL MEMBERSHIPS

American Association of Family and Consumer Sciences	Member since 2012
American Association of Marriage and Family Therapy	Member since 2011
National Council on Family Relations	Member since 2012
Society for Research on Child Development	Member since 2018
Southeastern Council on Family Relations	Member since 2018
Texas Council on Family Relations	Member since 2020