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It is entitled:
Innovation and the Family Firm: Leadership, Mindsets, Practices and Tensions

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Innovation and the Family Firm: Leadership, Mindsets, Practices and Tensions

A Dissertation submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of Doctorate of Philosophy (Ph.D.) in the Department of Management of the College of Business

2011

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ABSTRACT

Family business is a vital economic driver, yet scant attention has been paid to the antecedents of family firm performance. Similarly, family business research remains limited in addressing innovation, despite its central role in firm performance and survival. This dissertation seeks to fill these gaps by unpacking innovation in the family firm. Borrowing from various theoretical lenses, I review factors deemed to fuel family firm performance and to foster organizational innovation. Additionally, scholars posit that family firms are imbued with paradoxical tensions, stemming from the juxtaposition of competing yet complementary values and demands, which can enhance or stymie innovation.

Utilizing structural equation modeling, this study develops and tests a model of family firm innovation, hypothesizing that intergenerational leadership, practices, mindsets, and tensions fuel innovative behavior. The findings explicate the complexity of innovation for family firms, confirming several of the hypothesized relationships. The results highlight the existence of paradoxical tensions and the importance of leadership embracing paradoxical thinking and fostering a climate of risk taking in order to manage these inherent tensions. Moreover, findings suggest that family business leaders need to embrace risk, failure tolerance and think paradoxically to encourage innovative behavior. Additionally, findings stress that traditionally conceptualized antecedents of innovation are more complex in this context. Whereas, resources, idea time, leadership support and authority are traditionally conceptualized as direct drivers of a firm’s innovative behavior, in this context, these antecedents are still important, yet mediated by family business leaders’ paradoxical thinking, risk taking and failure tolerance.
The results contribute to extant literature in several ways. First, this inquiry extends existing organizational innovation and paradox literatures into the realm of family business. Second, it offers conceptual insights by providing a novel, valid and reliable measures of paradoxical tensions and of family firm innovation. Finally, given the undeniable importance of family business to the economy, this work provides a basis for further inquiry into family firm innovation.
ACKNOWLEDGMENTS

This dissertation is a milestone at the end of a long winding path and the beginning of another. Above all it has been the many people I have met on this path who have made this work possible. Foremost, I would like to thank my dissertation committee, without their guidance and cumulative knowledge this dissertation would not have been possible. First, I want to express my deepest gratitude my dissertation chair, Dr. Marianne Lewis. Dr. Lewis offered thoughtful yet critical guidance and constructive feedback, enabling and nurturing my intellectual curiosity with great patience and support. She has been an unrelenting source of intellectual inspiration for me. Beyond this work, Dr. Lewis has been a kind, patient, knowledgeable, and generous mentor for many years. I consider it a great honor to be her doctoral student and I am a better scholar and person through knowing her. Second, I owe unending gratitude to Dr. Sidney Barton for serving on my committee, and most importantly, for his continual support and practical guidance through this journey. His great wit and strategic insight enlightened my perspective and greatly enhanced this work. Lastly, I would like to express my gratitude to Dr. Wei Pan for his expert statistical guidance. Dr. Pan’s statistical expertise coupled with patience and a wonderful sense of humor exponentially increased my knowledge and comfort with statistical methods and concepts.

Many others have been a great source of encouragement and guidance on this path and I am profoundly grateful to all of the individuals who have influenced my thinking during this journey. Special thanks to Dr. Suzanne Masterson, Dr. Elaine Hollensbe, Dr. BJ Zirger, Dr. Ann Welsh, Dr. Charles Matthews, Dr. Ana Leonard, Dr. Gail Fairhurst, and Tricia Burger for their continual guidance, support, and wisdom.
I also offer many thanks to Larry Grypp, Mary Beth Hammond, and Steve Hater from the Goering Center for Family & Private Business and Joe Rogers Jr. for their support and assistance in acquiring this sample. Without them all, this dissertation would not have been possible.

Finally, my deepest thanks to my family and friends who offered unwavering moral, emotional, and intellectual support during this journey. My parents set and calibrated my moral compass—fostering values of integrity, honesty, hard work, and benevolence. My grandfather and uncle have been shining examples that spurred my interests in business management. My partner supported and endured the trial and tribulations of this journey with me, making many personal sacrifices to foster this perpetual knowledge quest. Finally, I owe my eternal gratitude to my miraculous children who fundamentally altered my perspective and transcended my spiritual foundation and beliefs. Their daily presence reminds me to honor the fragility and joy of each moment while embracing life’s vicissitudes.
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CHAPTER 1: INTRODUCTION

Family firms are a key contributor to the US economy (e.g., Astrachan & Shanker, 2003; Hatum, 2007). Regardless, surprisingly scant attention has been given to enablers of family business performance. For instance, organization theorists have long stressed the importance of innovation for profitability and sustainability (e.g., Cordozo, McLaughlin, Harmon, Reynolds, & Miller, 1993; Frambach & Schillewaert, 2002). Yet, little is known about what fosters or hinders family firm innovation. Additionally, scholars note that family businesses are imbued with tensions (e.g., e.g., Danes & Lee, 2004; Kets de Vries, 2007), which can foster negative outcomes (e.g., Danes, Rueter, Kwon & Doherty, 2002; Harvey & Evans, 1994), or energize high performance (e.g., Danes, Zuiker, Kean, & Arbuthnot, 1999). Tapping insights from organizational innovation and paradox literature, this dissertation aims to address the following questions. First, how might family firms cope with inherent tensions to fuel innovation? Second, what are key antecedents driving family firm innovation?

As the global economic landscape shifts, organizations face pressures to distinguish themselves from competitors via innovative behaviors. Therefore, the organizational innovation literature has garnered much attention. According to Damanpour, Walker and Avellaneda (2009), “The study of innovation hardly needs justification as scholars, policy makers, business executive’s, and public administrators maintain that innovation is a primary source of economic growth, industrial change, competitive advantage, and public service”(650). Moreover, the extant literature has emphasized that successful innovation provides a sustainable competitive advantage (e.g., Brown & Eisenhardt, 1995; Kanter, 1997; Leonard-Barton, 1995), and is critical for long term survival (Ancona & Caldwell, 1987). Indeed, “Innovation is the basis of all competitive advantage” (Schumann, Prestwood, Tong, & Vanston; 1994:xii).
Although few innovation studies examine the context of family business, exceptions do exist (e.g., Poza, 2007; Zahara, Hayton, Neubaum, & Dibrell, 2008). McCann, Leon-Guerrero and Haley (2001), for instance, found that “innovative” family firms’ stress the development of new products in their mission and vision, helping ensure that strategic planning supports innovative efforts. Further, Litz and Kleysen (2001) suggested that successful family firms exhibit domain relevant skills, creativity, intrinsic task motivation, and macro cultures that support innovation.

Managing both innovation and the related tensions are vital for family businesses. Undoubtedly, innovation is critical in today’s turbulent markets, but the paradoxical demands of innovation often challenge firms. Extant literature is replete with exemplars positing that innovation encompasses paradoxical goals and practices (e.g., Andriopoulos & Lewis, 2008; March, 1991; Sheremata, 2000; Taylor & Greve, 2006). For instance, firms must explore new ideas and domains, while simultaneously exploiting existing products and competencies (Gupta, Smith & Shalley, 2006).

In addition to managing the paradoxical demands of innovation, family businesses must cope with broader tensions. Scholars have asserted that family firms are a paradox, replete with contradictory yet complementary goals, values, and ideologies (e.g., Tapies & Ward, 2008). Certain tensions are often noted, such as business growth vs. family liquidity, tradition vs. change, inward vs. outward thinking, and emotion vs. rationality (e.g., Poza, 2008; Ward, 1997). Zahara and colleagues (2008) discussed tensions of individual-collective, exploration-exploitation, and short term-long term orientation. Garcia-Alvarez, Lopez-Sintas and Gonzalvo (2002) depicted the “founder’s dependence paradox”, as founders ironically remain in the business because of their successors.
Inherent tensions of family business may energize or stymie innovation. Poza (2007) suggested that such firms struggle to adapt to a dynamic environment, while simultaneously maintaining core values and traditions. Ward (2005) warned that family firms may fall into the “strategic simplicity” trap, avoiding the tradition-change paradox and clinging to what has worked before even when changes are needed. Interestingly, Zahara and colleagues (2008) proposed that, initially, the founding generation is highly creative and risk taking yet over time reliance on their early ideas and ingrained ideology impedes ongoing innovation.

Contributions of the Research

This study responds to the need for research examining the drivers of family firm innovation. I investigate paradoxical tensions that enable or detract from family firm innovative behavior and explicate the key antecedents of innovation. In so doing, this dissertation contributes to extant understandings in multiple ways. The study extends existing theory and empirical evidence from organizational innovation and paradox literature to the context of family business. Further it offers conceptual insights, providing rare measures of specific paradoxical tensions and of paradoxical thinking. Given the importance of family business to the global economy, this work strives to provide a foundation for ongoing research into family firm innovation, and the nature of related tensions and their management.

Structure of this Dissertation

The structure of this study is as follows. Chapter two develops a theoretical framework, building from the literature of family business, paradox and organizational innovation. Next, chapter three develops specific hypotheses based upon this theoretical foundation. Chapter four then discusses the research design and methodology applied to investigate the drivers of family
firm innovation. Chapter five walks through the analysis and findings and lastly, chapter six explores the findings, limitations, contributions and future research directions.
CHAPTER 2: INFORMING LITERATURE

In this section, I review the theoretical foundations of family business, organizational paradox, and organizational innovation. I begin by explicating the current state of family firm literature. Next, I review the organizational paradox and innovation literatures, emphasizing their importance in driving organization performance. Finally, I integrate these disparate yet complementary streams, suggesting that paradoxical tensions and antecedents of innovation can fuel family firm performance.

Family Business

The family business literature is dominated by studies of succession, performance, and governance (Zahara & Sharma, 2004). While these issues are of the upmost importance to the profitability and sustainability of the family firm, there are other contributing factors. Chua and Litz (2003) conducted a survey of family business articles published between 1996-2003, discovering that succession was the dominant focus followed by economic performance and governance. Hautman (2007) reiterated, “The critical role of succession processes in family firms has eclipsed other aspects of change and development in the family firm” (120). Contrastingly, topics such as entrepreneurship and innovation, culture, and strategy creation only accounted for 5% of the total 190 articles published. Indeed, Zahara & Sharma (2004) posited, “Paradoxically, key issues related to effective management of family firms, such as goal and strategy formulation, innovation and professionalization of firms are routinely ignored and remain understudied” (335). Hence, it is imperative, if this domain is to evolve, to investigate the antecedents of firm performance.

I now examine the lack of breadth in this field. In part, my review suggests that several factors have enabled the stagnant state of the family business domain. First, the prevalence of
definitional ambiguity. Second, the myopic focus to differentiate family firms from non-family firms. Finally, the extensive theoretical diversity of the field. Arguably, these factors have caused increasing operationalization and measurement issues for family business researchers.

*Definitional Ambiguity*

Currently, the family firm literature is burdened by a myriad of incongruent articulations of the family firm. This inconsistency in defining the bounds the family firm has led to skewed statistics and interpretations. Accordingly, three intellectual streams have emerged in an attempt to find a common definition of the family firm: operational definitions, family firm taxonomies, and family firm involvement (Sharma, 2004). Davis (1983) classified definitions into two groups: structural (ownership) or process (family factors). Alternatively, Astrachan, Klein and Smyrnios (2006) suggested classifying family business by content, purpose, and form while using criteria, such as percentage of ownership, involvement of multiple generations, strategic control by family, and intentions to “remain in the family business” (Astrachan & Shanker, 2006). The scholars “bulls-eye” typology defines the family business by offering three definitions ranging from broad to narrow. The broadest definition portrays a family business as a sole ownership. For instance, the only requirement for the family firm is that some family is active in the business and that family has strategic control over the business. Their middle definition stresses the intention to pass the business to other generations, and that the founder plays a key role in running the business. The narrowest definition suggests that there must be multiple generations involved in ownership of the firm, and that more than one family member engages in management responsibilities. Overall, scholars concur that the majority of the definitions include the requirements of family firm control and management by multiple family members (Miller, Le Breton-Miller, Lester & Cannella, 2007).
Arguably, this definitional ambiguity inhibits scholars’ efforts to differentiate the field from general business studies. Such distinction is critical to delineated family business as a separate, unique field of inquiry (Sharma, 2004). Moreover, the lack of consensus has led to difficulty validating the significant impact of family firms on the economic landscape. Indeed, Westhead, Cowling, and Storey (1997) posited, “The scale of family firm activity in any developed economy is highly sensitive to the family firm definition selected” (1998:31).

Therefore, the bounds placed on defining a family firm can impact the importance to the economic landscape, the uniqueness of the field, and the attention space given to this unique context by organizational theoreticians. Hence, this study adopts Astranchan and Shanker’s (2006) broad definition, classifying any firm with family control over the strategic direction coupled with family member participation as a family business.

*Family vs. Non-Family*

Within the literature, there is a struggle to demarcate the bounds of family and non-family firms. Overall, scholars have argued that there are many inherent differences because “Family businesses are extensions of the family culture, dynamics, and biases” (Hollander & Bukowitz, 1990: 151). Yet if these differences are leveraged properly, they can give family firms a competitive advantage over non-family firms (Zahara et al., 2008).

For example, scholars have distinguished practices that differentiate family from non-family firms. Indeed, Gomez-Mejia and colleagues (2003) suggested that family firms take fewer risks and are ultimately less innovative. Family firms may also be more conservative, slower to respond to environmental change (Zahara, Hayton, Neubaum, Dibrel & Craig, 2008) and slower to make decisions (Muntea, 2008). Still, others have posited that family firms are
more inert, embracing the status quo (Kellermans & Eddleston, 2006). These differences are characteristic of the divergent cultures of family and non-family business. (e.g., Denison, Lief & Ward, 2004; Gudmundson, Tower, & Hartman, 2003; Kets de Vries, 2007). Further, family firms tend to have more trust between members and foster greater intrinsic motivation (Muntea, 2008). Also, family firms face unique governance (Carney, 2005) and succession (Naldi et al., 2007) issues.

Ultimately, the differences between governance forms are important because innovation can be context specific. The organizational innovation literature stresses that attributes of flexibility, decision making speed, levels of trust, and structures are key enablers of innovative behavior. Yet, it is questionable if these innovation drivers are applicable to the family business context. Therefore, this study attempts to distinguish the specific, at times unique factors, enabling family firm innovative behavior.

**Theoretical Diversity**

In addition to the focus on distinguishing the uniqueness of the family firm, multiple categorizations, streams, and levels have been utilized to understand this business. Yet the diverse streams of research have increased the ambiguity of the family business domain. For instance, Sharma (2004) categorized family business research by levels of analysis. The individual level has focused on founders, next generation, women, and non-family employees. Founders and next generation members have garnered the most attention. At the group/interpersonal level, conflict and contractual obligations have been the dominant focus. Much of the focus has been about identifying the sources of conflict and Agency and stewardship theories have been applied to explore and explain governance issues. At the organizational level, resource based view (RBV) has been used to examine the acquisition,
identification, and strategic use of resources for family firms. Finally, at the societal level, the main focus has been on how family firms’ impact and contribute to the national economy.

Resulting from the stream of diverse inquiries, a plethora of theories about family firms have emerged (Ibrahim & Parsa, 2008): family embeddedness (Aldrich & Cliff, 2003), family influence (Astrachan et al., 2003), RBV (Habbershon & Williams, 1999), Agency (Karra, Phillips, 2006), Stewardship (Davis, Schoorman, & Donaldson, 1997; Greenwood, 2003), among others. Illustratively, RBV has been applied to explicate the competitive advantage of family firms. RBV theorists argue that family members’ involvement leads to a competitive advantage because they offer unique, inimitable, and sustainable resources.

Yet as diverse as these streams are, few lenses have been applied to investigate family firm innovation. This myopic focus on succession, governance, and strategic initiative has ignored other essential imperatives for family firm competitiveness and sustainability. Hence, this dissertation focuses on innovation as an essential determinate of a firm’s competitive prowess.

**Measurement**

In addition to the aforementioned ambiguity, measurement issues have aggrandized the stagnant state of the literature. Measuring family firm performance is challenging because the juxtaposition of two divergent ideological and value systems. Resultantly, scholars have argued that performance must be measured in financial and non-financial terms to reflect the diverse goals (Olsen, Zuiker, Danes, Stafford, Heck & Duncan, 2003). Furthermore, the ambiguity surrounding the antecedents of performance such as fairness, justice, altruism generosity, and “familiness”, makes performance assessment difficult (Hienerth & Kessler, 2006).
Illustratively, there are multiple measures applied to measure family firm performance. Indeed, Capon, Farley and Hoenig (1990) found multiple divergent measures of performance: profitability, growth, and reduced variability. Alternatively, others posit that longevity or sustainability is a marker or performance. Yet many times ownership transition and efficiency are considered markers of success (e.g., Habbershon & Pistruci, 2002).

The lack of consistent operationalization juxtaposed with ambiguous definitional bounds leads to mixed empirical results. Consequently, the field lacks generalizable findings, which aid theoretical development. Thereby, it is important to clearly articulate what performance is, and when possible, use validated measures to advance domain relevant knowledge. Therefore, this study seeks to assess innovative behavior with a-priori validated empirical measure.

**Organizational Paradox**

In addition to theories about the antecedents of family firm performance, scholars assert that family firms are imbued with paradoxical tensions. Therefore, it is important to understand how paradoxical tensions impact organizational performance. Moreover, the extant management literature highlights that paradoxical tensions either enhance or stymie organizational change efforts, like innovation (Lewis, 2000). Indeed, Morgan (1977) argued that managing organizational change, hence innovation, requires organizations to deal with paradoxical, “contradictory tensions”. I attempt to leverage the breadth of literature by reviewing the current conversation surrounding organizational paradox. First, I discuss the pervasiveness of paradoxical tensions in modern organizations. Second, I explicate the varied definitions of paradox. Third, I examine the diverse body of literature surrounding paradox in management studies. Fourth, I review the prescribed management practices. Finally, I investigate the potential of transcending organizational paradoxes through paradoxical thinking.
Paradoxical Landscape

Contemporary organizations are characterized by ambiguity, contradictions, dualities, and paradoxes (e.g., Cameron & Quinn, 1988; Lewis, 2000; Smith & Berg, 1989). Hence, paradoxical tensions are an inescapable part of organizational life. However, in the recent past, practitioners and scholars were content to ascribe to parsimonious either/or logic, driving routinized strategies and practices, thereby ignoring paradoxical tensions. This denial was demonstrated by a plethora of management theories and practices that emphasized this “either/or” logic: Theory X and Y, centralization or decentralization, cost or differentiation, simplicity or complexity, and contingency theory. Yet as the complexity of the competitive and global landscape has increased, firms can no longer rely on parsimonious mental models and resulting practices. Scholars and practitioners alike are recognizing the necessity of managing paradoxical tension, proposing that it is imperative for firms embrace these paradoxes to efficiently manage and leverage the inherent complexities in organizations (e.g., Lewis, 2000, Quinn & Cameron, 1988). Indeed, Ford and Backoff (1980) purported, “Paradoxes reflect the underlying tensions that generate and energize organizational change” (82). Scholars have argued that competitive, efficient organizations embrace paradoxical tensions, thereby leveraging their power (Lewis, 2000; Quinn & Cameron, 1988; Van de Ven & Poole, 1988).

Delineating Paradox

Lewis (2000) denoted that paradox is “contradictory yet interrelated elements—elements that seem logical in isolation but absurd and irrational when appearing simultaneously” (760). Chen (2002) described paradox as “interdependent opposites constituting a whole” (184). Van de Ven and Poole (1998) suggested that paradox is characterized by two phenomenon that are individually consistent yet when juxtaposed are inconsistent. These complementary views of paradox highlight the interdependence of competing yet complementary concepts. Common
paradoxes discussed in the management literature are: integration/differentiation, exploration/exploitation, short-term imperative/long-term imperatives, flexibility/control, dependence/independence, autocracy/democracy, social/financial, cooperation/competition, and global/local, among others.

Further, paradox has become more prevalent in organizational studies over the last several decades. Since 1989, there have been over 400 articles in 12 dominant management journals that embrace a paradox perspective. This includes scholars identifying a myriad of paradoxes that pervade organizations, the management of these paradoxes, the resulting performance, and usage as a lens to explicate multiple organizational phenomena. Indeed, this perspective has been applied to investigate a multiplicity of key organizational phenomena: innovation (Andriopoulos & Lewis, 2009), creativity (DeFillippi, Grabher & Jones, 2007) corporate governance (Sundaramurthy & Lewis, 2003), institutional logics (Kraatz & Block, 2008), leadership (Jarzabkowski & Sillince, 2007), identity (Huy, 2002), organizational performance (Beer, 2001), knowledge creation and dissemination (Nonaka, Toyama, and Nagata, 2000), change (Lucher, Lewis & Ingram 2006), public sector management (Hood, 2004), teams (Van den Broek, Callaghan, & Thompson, 2004), corporate downsizing (Fairhurst, Cooren, & Cahill, 2002), customer relationship management (Law, Lau, & Wong, 2003), homeworking (Pearlson and Saunders, 2001), and organizational forms (Benner & Tushman, 2003).

Usage of the Perspective

Not only has paradox been applied to investigate a range of organizational phenomenon but also has been utilized as a management tool, a theory building technique, and a tool to unearth underlying tensions. Indeed, researchers have leveraged paradox to unpack the complex nature of organizational phenomenon via the exploration of tensions (Cameron & Quinn, 1988). In addition, paradox has been utilized as a management tool via prescriptive strategies aimed at
leveraging paradoxical tensions. Furthermore, paradox is touted as a vital lens in building theories. Pool and Van de Ven (1989, 1988) surmised scholars should “look for theoretical tensions or oppositions and use them to stimulate the development of more encompassing theories” (563). Therefore, they recommend, juxtaposing conflicting theories to spark creative insight and theoretical development. Finally, this lens has been applied as a problem centric approach. Whereby, the objective is to uncover and reveal embedded tensions and explicate how they impact the firm, and discuss management strategies to enhance sustainable performance.

Management of Paradox

In addition to the explication of the utility of the lens, the literature is replete with paradox management strategies (e.g., Lewis, 2000; Quinn & Cameron, 1989). Poole & Van de Ven (1989) recommended several paradoxical management strategies. First, accept the paradox. Second, spatial separation; thereby, embracing both sides of the paradox in different places. Third, temporal separation of the paradox, and finally, reframing of the paradox. Accordingly, others have purported, to manage the “inevitable struggle of opposites”, one must first recognize the legitimacy of both aspects and second leverage the value of tensions while minimizing the conflict (Morgan, 1997).

Expounding upon the management strategies in the literature, Lewis (2000) recommended that actors adopt three methods to leverage the energizing potential of paradox: avoidance, confrontation, or transcendence. Reiterating the potential of paradox, Fiol (2002) discussed leveraging paradoxes by using the “inherent tensions to ones advantage rather than ignoring or resolving them” (655). Chen (2002) suggested that actors adopt a more Eastern mindset and integrative world view of “Paradoxical Integration”. Smith and Tushman (2006) theorized that actors must employ paradoxical cognition to acknowledge and manage paradox. Yet although there are a multitude of prescriptive paradox management strategies, scant attention
has been given to the cognitive domain of managing organizational paradoxes—paradoxical thinking. Nevertheless, researchers have called for the need to embrace forms of paradoxical thinking to manage the pervasive paradoxes of organizational life (e.g., Fletcher & Olwyer, 1997; Lewis, 2000; Pascale, 1990).

Paradoxical Thinking

Paradoxical thinking is an ambiguous concept. Yet rare exceptions exist explicating this alternative thinking style that is guised under different nomenclature. Smith & Tushman (2005) discussed “paradoxical cognition”, articulating that this alternative cognition is “paradoxical frames and cognitive processes of differentiation and integrating-enable balanced strategic decision” (526). Rothenberg (1979) posited that creative individuals engage in “Janusian thinking” where actors “actively conceive two or more opposite ideas, images, or concepts simultaneously” (55). Wright (1982) defined paradoxical thinking as “Thinking that remains aware of the limits of conventional thought, and, on that basis, is open and receptive to its own sublation in the immediate presence of that which is other than thought and conventional truth” (332). Others have used the term dialectical and paradoxical interchangeable. Paradoxical thinking allows for both/and perspectives whereas dialectical thinking emphasizes balance and a both/or perspective (Westneholz, 1999). Conceptually, most articulations of paradoxical thinking suggest that this alternative logic, or thinking style, can be characterized as the awareness and juxtaposition of competing yet complementary ideas.

Organizational Innovation

In addition to the pervasive paradoxical tensions and demands facing organizations, organizational innovation is touted as a key facilitator of organizational success and survival (Ancona & Caldwell, 1987). Moreover, scholars argue that innovation is a driving force of performance (e.g., Cordozo, McLaughlin, Harmon, Reynolds, & Miller, 1993; Frambach &
Schillewaert, 2002) and provides a sustainable competitive advantage (Brown & Eisenhardt, 1995). Indeed, today, a firm’s competitive advantage rests upon the ability exploit incremental innovation while simultaneously exploring frame breaking radical innovation (March, 1991; Teece, Pisano & Shuen, 1997).

Yet although scholars recognize the undeniable importance of innovation to a firm’s sustainability, the field is fragmented. A myriad of factors contribute to this fragmentation. First, as with other domains, theoreticians do not concur on the conceptual bounds of innovation; therefore, definitional ambiguity exists. The definitional confusion likely stems from the overlap with other constructs such as creativity and invention. Second, extant literature is theoretically diverse resulting in a myriad of innovation types and typologies. Finally, the plethora of measures contributes to the diverse views about organizational innovation.

Definitional Ambiguity

Lam (2005) asserted: “There is no single coherent conceptual framework for understanding the phenomenon of organizational innovation. This is partly due to the great conceptual ambiguity and confusion surrounding the term organizational innovation” (139). Scholars have acceded that there are a plethora of definitions creating equivocal meaning (e.g., Boronat-Navarro, 2004; Hellstrom, 2004). However, most agree that any articulation of innovation includes novelty (e.g., Camison-Zornoza et al., 2004, Hellstrom, 2004; Johannessen, Olsen & Lumpkin, 2001). Indeed, Van de Ven (1986) emphasized that innovation is “A new idea, which may be a recombination of old ideas, a scheme that challenges the present order, a formula, or a unique approach which is perceived as new by the individuals involved”(591). Daft (1978) reiterated that innovation is the creation and/or adoption of a new idea or behavior for the organization. Camison-Zornoza and colleagues (2004) posited, “One common element in all definitions of innovation is that it is a new idea that is put into practice while paying special
attention to its usefulness” (334). Others have explained that innovation is the process by which new products or new methods of production are introduced, including all the steps from the inventor's idea to bringing the new item to market (Baumol & Blinder, 2000). Hence, a commonly adopted conception of organizational innovation includes the adoption of a new idea, process, or behavior to a firm (Lam, 2005). Nevertheless, even though there is conceptual convergence surrounding the novelty aspect of innovation, there is still no single unifying definition of innovation.

Further, exacerbating the equivocality, is the interchangeable use of innovation with creativity and invention. Many scholars intermingle the terms innovation and creativity (King, 1990). Researchers concur that creativity and innovation are distinguishable constructs; however, creativity is an essential antecedent of innovation (e.g., Amiablie, 1996; Leonard and Swapp, 1999; Unsworth, 2001; Woodman, Sawyer & Griffen, 1993). Indeed, Nijstod & De Dreu (2002) posited that creativity is the essence of organizational innovation. Plausibly, the delineating bound among creativity and innovation is the level of analysis, where creativity is an individual level phenomenon (e.g., Ford, 1996, Glynn, 1996). Yet others believe that creativity is also a collective multilevel phenomenon in organizations, completely separate from innovation (Hargadon & Bechky, 2006). However, many theoreticians emphasize that creativity is the creation of novel ideas and innovation is the implementation of those ideas (e.g., Amabile, Coon, Lazenby & Herron, 1996: George & Zhou, 2007). Thereby, creativity is the essence of the innovation process.

Innovation is also intertwined with the concept of invention. Indeed, “Invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice” (Fagerberg, 2005:4). Hill and Rothermel (2003) stressed that
invention is the discovery of new product where innovation is introducing the product to a market. Arguably, invention is congruent with creativity, emphasizing the creation of a new idea and innovation is the development of that idea.

Although there are a myriad of definitions and usages of the term innovation, this study focuses on innovation in terms of novelty of ideas, practices, processes, and products. Hence, creativity is assumed to be embedded in the process of innovation (Amabile, 1996; Leonard & Swapp, 1999; Woodman, Sawyer & Griffen, 1993). Some suggest creativity is the “fuzzy front end” of the innovation process, yet more than idea generation has to occur for something to be deemed an innovation. Indeed, scholars reiterate that innovation is the successful implementation of creative ideas (e.g., Amabile, 1988; Walker, 2008). Amabile (1988) asserted: “Individual creativity is the most crucial element of organizational innovation, but it is not, by itself, sufficient. And features of the organization can be the most crucial determinants of an individual’s creativity at any point in time” (125). In this view, innovation includes the generation, adoption and diffusions of innovation, while including process innovation, technological innovation, administrative innovation, or product innovation. Hence, innovation goes beyond the actual physical output of a new product or technology, but encompasses the process of creation. Moreover, for purposes of this study, innovative behavior is the focus and entails the actual generations of new ideas, the actual promotion of ideas, and the actual realizations of those ideas (e.g., Kanter, 1988; Scott & Bruce, 1984).

**Theoretical Diversity**

Coupled with the numerous articulations of innovation, there are multiple strands and resulting typologies. Lam (2006) surmised that a myriad of complementary yet competing innovation research streams be categorized as organizational design theories, organizational cognition and learning, and organizational change and adoption. Accordingly, organizational
design theories are equivalent to structural innovation, assuming that innovations must “fit” the organizational structure. Organizational cognition and learning have a micro focus, examining how new ideas emerge and evolve. Typically, this emphasis has been intertwined with the learning and knowledge constructs. Yet recently, researchers have also examined cognitive elements, such as schemata and frames, which fuel innovation (Ingram, Lewis & Andriopoulos, & Gosti, 2007 Smith & Tushman, 2005). The final strand, organizational change and adoption, emphasizes a firm’s ability to deal with unavoidable inertia and adaptation to changing markets and preferences. This dynamic view focuses on the longitudinal processual aspects of organizational innovation.

Combined with definitional ambiguity and the multiple typologies of innovation, the extant literatures tend to theoretically comingle different types of innovation. Most noticeably, the literature fails to distinguish the differences between technical, product, process, and administrative innovations. Technical innovations typically emphasize both product and process related to work activities (Damanpour, 1991). Product innovation revolves around changes made to existing or breakthrough products (Damanpour & Gopalakrishnan, 2001). Alternatively, process innovation encompasses changes made in processes and technologies adopted by the organization in its operations, including any novel approach to a work procedure (Papinniemi, 1999). Camison-Zornoza and colleagues (2004) compared product and process innovation, defining product innovation as the “development of new products or services...” and process innovation as “new elements, equipments or methods introduced into the firm’s production system to develop a product or service” (335). Arguably, process innovation logically precedes and leads to product innovation. Yet researchers discuss product and process as identical constructs, adding to the conceptual ambiguity surrounding organizational innovation. Finally,
administrative innovations involves finding novel administrative procedures to support the firm (Damanpour, 1991) and are functional innovations that support firm functions and processes (e.g., Camison-Zornoza et al., 2004; Knight, 1967).

In addition, the multitude of innovation typologies augments the blurry bounds of organizational innovation. Schumpeter (1934) proposed one of the first innovation typologies: new products, new product methods, new sources of supply, exploitation of new markets, and new ways to organize business. Similarly there are typologies of the magnitude innovations. One of the most commonly applied magnitude categorizations is incremental versus radical (Dewar & Dutton, 1986; Hage, 1980). In an in-depth review of the literature, Garcia and Calantone (2002) discussed categorizations of the outcome and degree of innovation: continuous (incremental) innovations vs. discontinuous (radical) innovation, high, medium, low innovativeness, reinnovations, and matrix. As these labels indicate, much of the extant literature uses a dichotomous labeling system, not allowing scholars to embrace the multifaceted, complexity of innovation. Garcia and Calantone (2002) posited that the plethora of categories have led to creating “inconsistencies in labeling innovation types” (118). This semantic ambiguity has created many difficulties in operationalizing innovation. Therefore, to reduce this ambiguity, this study does not measure the type or level of innovation but broadly spans all categories in defining innovative behavior. Further, I conceptualize and operationalize innovative behavior as encompassing process, product, administrative, and technological innovation, fueled by creative ideation.

Measures

Another contributing factor to the ambiguity shrouding the organizational innovation literature is the variety and number of organizational innovation measures that have emerged. The abundance of measures stems from the definitional ambiguity and myriad of innovation
typologies. Resultantly, the measures are inconsistent, leading to mixed empirical results. Indeed, scholars concur that the theoretical and empirical inconsistency likely stem from the lack of a standardized innovation typology (Garcia & Calantone, 2002) and multiple conceptualizations of innovation (Camison-Zornoza, Lapiédra-Alcamí, Segarra-Ciprés, & Boronat-Navarro, 2004). Yet although scholars reiterate there is no single measure of innovation (Downs & Mohr, 1976); there are several dominant measures of innovation used. Some of the most widely ascribed to measures are the number of innovations adopted by the firm (Camison-Zornoza et al., 2004), the number of new product launches (Katila & Ahuja, 2002), R&D intensity (Greve, 2003), newness of innovation based on traditional typologies (Johannessen, Olsen & Lumpkin, 2001), R&D expenditures (Miller, 1987), number of patents (Iverson, 1988), and frequency of innovation. Many of these measures ignore the process of innovation and have an output focus.

The inconsistency in operationalizing innovation coupled with multiple incongruent definitions continues to fragment the literature. Further, measurement inconsistency has led to the interchangeable use of different constructs, which has created incongruent categorizations of innovation and misinterpretation of empirical findings (Garcia & Calantone, 2002). Consistent measurement of specified innovation outputs will advance generalizable knowledge and crystallize scholars understanding of the different types and magnitudes of innovation. Thereby, this study intends to utilize a validated, reliable measure of innovative behavior. This measure conceptualizes and operationalizes innovative behavior as idea generation, idea promotion, and idea realization (Scott & Bruce, 1984).

**Antecedents**

Although, the innovation literature is highly diverse, many scholars have focused on unpacking the enablers of organizational innovation. Discussion has surrounded the structural
supports for innovation, supportive cultures and climates, leader and managerial styles, network structure and relations, among others. Yet a laundry list of antecedents is beyond the scope of this study. However, this dissertation will focus on several empirically validated antecedents of innovation: culture, leadership, mindsets, and practices supportive of innovation.

Climate/Culture

Scholars have demonstrated that certain climate and cultural factors support organizational creativity and innovation (Tesluk, Farr & Klein, 1997). Indeed, Amabile and colleagues (1996) surmised that work group support, the level of work challenge, organizational and supervisory encouragement, the level of freedom, work load pressure, and sufficient resources are critical in fostering creativity. Further, Ekvall (1996) proposed eight climate dimensions: freedom, trust and openness, idea time, conflict, playfulness and humor, risk taking, challenge and involvement, and debate. Combining prior empirical insights, Hunter, Bedell, & Mumford (2005) articulated a fourteen factor model of innovative climate: positive peer group, positive supervisory relationships, resources, challenge, mission clarity, autonomy, positive interpersonal exchange, intellectual stimulation, top management support, reward orientation, flexibility and risk taking, product emphasis, participation, and organizational integration. Additionally, scholars have proposed that certain values foster innovative cultures: risk taking, trust among co-workers and stakeholders, embracing organizational change, ownership in the development process, collaboration, and vulnerability (Jassawalla & Sashittal, 2002).

Leadership

In addition to the cultural drivers of innovation, scholars theorize that leadership influences firm creativity and innovation (Amabile et al., 2004; Hunt, Stelluto & Hooijberg, 2004). Researchers have suggested that certain characteristics, behaviors, and perceptions
enhance firm creativity and innovation. Mumford, Scott and Gaddis (2003) posited that characteristics such as a leader’s creative thinking skills and expertise influence innovative output. Others purport that specific behaviors encourage creativity and innovation. Indeed, Amabile and colleagues (2004) demonstrated that leaders who exhibit strong communication and interpersonal skills, have positive responses to ideas, and are empathetic, foster creativity. DiLiello and Houghton (2006) proposed that leaders who learn from mistakes, encouraging knowledge sharing, focus on continuous learning, reward creativity, encourage divergent thinking, and challenge the status quo, promote an innovative environment. Others have iterated the importance of promoting a fair and just climate through intrinsic rewards (Collins & Amabile, 1999), and clear articulation of firm mission and goals (Shalley, 1991; 1995). Furthermore, scholars have suggested the quality of the exchange relationship among leaders and subordinates impacts the level of innovation (Scott & Bruce, 1994). Indeed, Leader Member Exchange (LMX) theoreticians have argued that the quality of the exchange relationship among supervisors and employees is positively related to innovation (Basu & Green, 1997; Graen & Scandura, 1987). Coupled with LMX, the extant literature points to characteristics of the relationship among a leader and subordinate that foster innovation through an employee’s perception of support. In general, scholars argue that when employees’ perceive their leaders as supportive, they are more likely to perceive the work environment as innovative. Whereby, a leader’s perceived support and guidance is essential in promoting ideas generation and implementation (Mumford & Licuanan, 2004).

*Mindsets of Innovation*

In addition to a supportive climate/culture and leadership, key mindsets foster innovation. The discussion about cognitive facilitators of innovation generally surrounds the encouragement
of creative ideation, not the actual cognitive frames and processes actors draw upon to support creativity and innovation. Jelinek and Litterer (1994) proposed a cognitive theory of organizations, linking individual level phenomenon, such as cognition, to organizational level phenomena. They theorized that an actor’s mental frames and beliefs are the basis of all organizational action. Indeed, others have reiterated that mindsets act as frames that enable behavior (Walsh, 1995). Additionally, scholars have argued that cognition plays an integral role in fueling innovation (e.g., Damanpour & Schneider, 2006; Howells, 1994; Yadav, Prabhu & Chandy, 2007). Although, scholars have declared the importance of cognition in driving innovation, related research is scarce.

The strategy literate is replete with discussion of the importance of top managers’ cognitions impacting a firm’s strategic behavior and outcomes (Stubbart, 1989). Indeed, “Organizational outcomes- both strategies and effectiveness- are viewed as reflections of the values and cognitive bases of powerful actors” (Hambrick & Mason, 1984; 193). Moreover, executive cognition is imperative to innovation because executives’ cognitive frames enable or detour firms from championing ideas, directing and allocating resources, and creating a supportive culture. Managerial cognition supports strategic action because executives deploy support and resources that are consistent with their mental frames (e.g., Daft & Weick, 1984; Dutton, Fahey& Narayanan, 1983). Hence, the dominant mindsets and logics of top management foster mental models that guide strategic decision making and enable action (Bettis & Prahlad, 1995).

In addition, scholars have posited that innovation relies on fundamentally different mindsets (March, 1991). Indeed, radical innovation requires divergent thinking, yet incremental innovation requires convergent thinking (He & Wong, 2004). Norman, Palich, Livingstone and
Carini (2004) posited that divergent yet complementary logics fuel innovation, emphasizing that formal logic frames contribute to incremental innovation but constrain radical innovation. Further, radical innovation is supported by paradoxical logics. Yet contemporary firms are challenged by the divergent thinking required to fuel innovation (e.g., Ingram, Lewis, Andriopolous & Gosti; 2008; March, 1991). Although scholars have purported that innovation is fueled by paradoxical logic and frames, there is a noticeable lack of research.

**Practices**

Juxtaposed with supportive leadership and mindsets, there are a myriad of supporting practices discussed in the extant literature, ranging from resource allocation to cultural supports. Resource allocation, idea time, and encouragement of risk taking via failure tolerance have garnered much empirical support as drivers of firm creativity and innovation. The resources of time and money, have received the most attention (e.g., Amabile et al., 1996; Shalley & Gilson, 2004). In terms of material resource allocation, scholars have demonstrated that the availability of slack resources (Damanpour, 1991; Kanter, 1983), relative R&D intensity (Parthasarthy & Hammond, 2002), and monetary resources dedicated to innovation (e.g., Amabile, 1998; Delbecq and Mills, 1985; Katz and Allen, 1988) are essential drivers of innovation.

Likewise, scholars have declared that provision of time for creative thinking is essential for creativity and innovation (e.g., Amabile & Gryskiwicx, 1987; Ekval, 1996; Kelly & Karau, 1993). Supporting this proposition, many empirical investigations have demonstrated a positive relationship among the amount of idea time allotted and innovation (Katz & Allen, 1988).

In addition, it is a widely accepted that risk taking is an essential component in creative ideation and innovation (e.g., Andriopoulus, 2001; Borgelt & Falk, 2007; Farson & Keyes,
Innovation itself is inherently risky because creative ideas and projects stem from multiple divergent, novel ideas and propositions (George & Zhou, 2007). Management can foster a risk taking climate by being failure tolerant (Martins & Terblanche, 2003).

**Family Business Tensions, Paradox, and Innovation**

Scholars posit that family businesses are imbued with pervasive tensions (e.g., Danes & Lee, 2004; Kets de Vries, 2007) that can either lead to conflict and negative performance outcomes (e.g., Danes, Rueter, Kwon & Doherty, 2002; Harvey & Evans, 1994) or potentially drive performance and sustainability (e.g., Danes, Zuiker, Kean & Arbuthnot, 1999; Ward, 1997). Further, innovation is essential to firm sustainability and performance (Hult et al., 2004). Yet we know little about what drives the process of family firm innovation. Moreover, managing both innovation and paradoxical tensions is vital for family firms. Therefore, I discuss the importance of innovation to family firms. In addition, I examine how, although there is little explicit reference to innovation, there have been numerous discussions about similar constructs that are applicable and embedded in family firm innovation. Lastly, I explicate the identified antecedents of family firm innovation with a special emphasis on the paradoxical tensions driving or stymieing performance.

**Family Firms and Innovation**

Coupled with pervasive tensions, scant attention has been given to family firm innovation (e.g., Graig & Moores, 2006; Gudmundson, Tower & Hartman, 2003). Increasingly, theoreticians are emphasizing the importance of innovation in driving family firm performance and sustainability (e.g., Hult et al., 2004; Zahara et al., 2008). Indeed, scholars have asserted that family firms need an inviting climate for “entrepreneurial” practices to occur (Aldrich & Cliff, 2003; Rogoff & Heck, 2003). Although, few scholars explicitly apply the term innovation, many
use interchangeable nomenclature, representing components of innovation. The extant literature is filled with exemplars discussing the importance of entrepreneurship (Poza, 2007), corporate entrepreneurship (Zahara et al., 2004), intergenerational entrepreneurship (Poza, 2007; Litz & Kleysen, 2001), adaptation (Hatun, 2007; Chirico & Salvato, 2008), and strategic flexibility (Zahara et al., 2008). These various terms have been substituted for innovation. Thereby, it is important to delineate the differences and similarities among constructs. I review the literature emphasizing the various innovation concepts guised as entrepreneurship, creativity, adaptivity and flexibility.

**Entrepreneurship**

Within the family firm literature, entrepreneurship has garnered more attention than innovation, yet arguably, to be entrepreneurial requires one to be creative and innovative. There have been many competing yet complementary articulations of what entrepreneurship is. Schumpeter (1934) contended that entrepreneurship is novelty in production and processes, including but not limited to new product/market combination or organization. In addition, he asserted that entrepreneurs enable economic change by innovating. Penrose (1958) posited that entrepreneurs are actors with “superior foresight”. Kirzner (1973) argued that an entrepreneur is one that perceives and seizes opportunities, recognizing market disequilibrium opportunities. Sharma & Chrisman (1999) suggested that entrepreneurship is a process of organizational creation, renewal and innovation that occur in and outside the existing organization. Regardless of the definition applied, most articulations of entrepreneurship include innovation as a key component (e.g., Dess & Lumpkin, 1996; Garner, 1984; Morris & Sexton, 1996; Robbinson, 1987). Hence, entrepreneurship can be conceptualized as the juxtaposition of innovation and opportunity recognition.
Creativity

The entrepreneurship, innovation, and creativity literature overlap. Ardichvili, Cardozo, and Ray (2003) suggested that creativity and entrepreneurship are very similar. Whereby, the antecedents of creativity are embedded in and overlap with the antecedents of entrepreneurial decision making (Kay, 1986). Some argue that creativity is an essential part of opportunity identification (Hills et al., 1997). Nevertheless, an actor can have a creative insight and never bring that ideology to fruition. Yet being innovative or entrepreneurial entails bringing that creative spark and ideology to life. Furthermore, creativity is the first essential stage of the entrepreneurial innovation process (Amiable, 1996; Nijstod & De Dreu, 2002; West, 2002).

Adaptivity and Flexibility

Still others discuss innovation guised in terms of adaption. Adaption stresses a firm’s ability to deal with unavoidable inertia and adaptation to changing markets and preferences (Lam, 2006). Indeed, organizational adaptation is “The ability of an organization to change itself, or the way in which it behaves in order to survive in the face of external change which were not predicted in any precise way when the organization was designed” (Tomlinson, 1976; 533). Moreover, adaption is essential to organizational survival and firms that do not adapt can deteriorate (March, 1995). Indeed, Kanter (1983) stressed that innovation is embedded in the process of organizations adapting to their changing environments.

Arguably, innovation, adaptation, entrepreneurship, and creativity are interwoven constructs stemming from blurred bounds. Scholars have emphasized that actors need to be creative in order to recognize opportunities (Ardichvili et al., 2003), which fuels innovative behavior (e.g., Leonard & Swapp, 1999; Nijstod & De Dreu, 2002; Unsworth, 2001). Entrepreneurship in turn stems from the juxtaposition of opportunity recognition and innovation.
Hence, creativity and innovation are needed to be entrepreneurial. Furthermore, innovation is an integral part of any conception of entrepreneurship as demonstrated by the numerous scholars who include innovation as a defining characteristic of entrepreneurial action (e.g., Des & Lumpkin, 1996; Garner, 1984; Morris & Sexton, 1996; Robinson, 1987). Extant literature is ripe with discussions about the overlap between the creativity and entrepreneurship, suggesting that creativity is an antecedent and component to entrepreneurship (Hills et al., 2004). Further, adaptation and innovation are interwoven. Where firms are embedded in dynamic contexts characterized by flux and must adapt to survive (March, 1995). Yet adaptation requires firms to be innovative in implementing new processes, products, and services. Hence, innovation in itself leads to the cycle of innovation and adaption stemming from the process of “creative destruction” (Schumpeter, 1934). Therefore, when investigating family firm innovation, discussions including entrepreneurship, creativity, adaptivity, and flexibility are included.

*Family Firm Innovation Imperative*

Although innovation is necessary for firm sustainability, discussion surrounding drivers of innovative behavior is noticeable missing from the extant literature. Yet rare exceptions exist. Some scholars have argued that family businesses need to embrace innovation to survive (e.g. Poza, 2007; Zahara et al., 2008). Moreover, scholars have emphasized that innovation is more critical to family firms than other types of organizations because of generational succession issues (Litz & Kleysen, 2001; Poza, 2007). Indeed, intergenerational transfer of ownership and other successor issues demand that a family firm’s competitive standing rest upon its ability to engage in “intergenerational innovation”. Poza (2007) declared that the succeeding generation must engage in “vital” and “necessary” entrepreneurial activity stemming from innovative behavior. He suggested that the first generation plants entrepreneurial roots for survival, and then
the second generation is challenged to grow and sustain the firm. Hence, the second generation is required to be “leaders of change, growth, and stewards of culture and values” (Poza, 2007;275). Further, change is equivalent to innovation, which is the prerequisite for firm growth and survival (Zahara et al., 2004). Subsequently, Litz & Kleysen (2001) applied the definition of innovation specific to the family business context where innovation is “The intentional generation or introduction of novel processes and or products resulting from the autonomous and interactive efforts of members of a family” (336).

**Antecedents of Family Firm Innovation**

There has been minimal discussion about enablers of family firm innovation. Zahara and colleagues (2004) posited that family “familness” combined with the cultural dimension of external orientation leads to entrepreneurship and/or innovation. McCann, Leon-Guerrero, & Haley (2001) examined practices innovative family firms adopt. They found that innovative firms integrated new product development as a central part of their mission and vision, ensuring that their strategic planning incorporated resources to meet these innovative behaviors. Salvato (2004) discovered that a founder’s perception of his/her firm’s ability to recognize opportunity drives entrepreneurial behavior. Additionally, when family firms have an active second generation there is greater likelihood they will turn the opportunity into an actuality, hence innovation. Furthermore, Salvato (2004) proposed that a founder’s prior experience in an industry is related to entrepreneurial actions. Finally, Litz & Kleysen (2001) suggested that innovative family firms have domain relevant skills, creativity, intrinsic task motivation, and macro cultures that support innovation.
Intergenerational Authority and Support

Family business scholars also suggest that the founder’s/senior generations level of authority over successors has significant impact on the family business—“intergenerational authority” (Bjornberg & Nicholson, 2007). Indeed, the founder’s/senior generations level of continued control inversely impacts the level of firm innovativeness. Moreover, the perception of a founder’s intergenerational support is vital for continued innovation. Hence, the founder’s/senior generation support of different generations is a significant factor in socializing potential successors (Morris, Williams & Neal, 1996), guiding the roles and expectations, and providing either autonomy and freedom or rigidity and control (in Bjornberg & Nicholson, 2007). Scholars have posited various ways that founders can demonstrate their support to succeeding generations. Founders/senior generations can be supportive by giving successors substantial access to resources, relinquishing some control, which has been positively linked to the level of firm innovativeness (Litz and Kleysen, 2001). Further, the founder’s/senior generations support is demonstrated and embedded in a firm’s mission and value statement, ultimately reflecting the founders values (McCann et al., 2001).

Innovation, Adaptation, Flexibility, and Mental Models

Coupled with intergenerational authority and support, adaptation has been identified as an integral component of innovative behavior (e.g., Hautum, 2007; March, 2002). Some suggest that family firms are more resistant to change (Kets de Vries, 2007); thereby, more inflexible and less likely to adapt to environmental jolts (Zahara et al., 2008) Ward (1987) reiterated that a family firm characterized by inflexibility will not be innovative. In an empirical investigation, Hautum (2007) proposed several antecedents to organizational flexibility that promotes adaptability and innovation: heterogeneity of dominant coalition, flexible divergent mental models,
environmental scanners, and strong family firm identification. He discovered that “flexible” Argentinian family firms were characterized with heterogeneity of its dominant coalition. Heterogeneity led to more divergent “mental models”, hence cognitive divergence and flexibility. Therefore, the founders or managing generations mental models have been found to significantly impact the firm adaptive ability and innovative prowess.

Overall, the antecedents of family firm innovation overlap with the organizational innovation literature. Yet family firms do have unique issues surrounding succession and governance that can challenge ongoing innovative behavior.

*Family Firm Conflict, Tensions, Paradox*

In addition to the importance of family firm innovation, family firms are challenged with inherent paradoxical tensions that can either enhance or stymie innovation. Pervasive paradoxical tensions stem from the juxtaposition of two competing yet complementary subsystems (e.g., Kets de Vries, 2007; Ward, 2005). Hence, the resulting conflict is accepted as an inevitable part of the business (e.g., Kellermans & Eddleston, 2007; Miller & Rice, 1998). Paradoxical tensions and contradiction stem, in part, from the irony of the family business, where competing yet complementary values, ideologies and practices are juxtaposed (Tapias & Ward, 2008; Ward, 2005). Yet most discussion about tensions is guised in a conflict lens, surrounding the consequences and management conflict, not paradoxical tensions. Under the conflict lens or conflict management, tensions are temporarily bound and can be resolved. Contrastingly, paradoxical tensions are not resolved but management and leveraged to enhance firm performance.
Accordingly, it is important to delineate and demarcate the bounds between conflict, tensions, contradiction, and paradox. Donohue & Kolt (1992) asserted that conflict occurs when interdependent actors express difference among their needs and interests, feeling that the other actor is interfering with accomplishing their goal. Tensions are “the clash of ideas, principles and actions as well as the subsequent feelings of discomfort” (Fairhurst, Coorent & Cahil, 2002) or “a balance maintained in an artistic work between opposing forces or elements” (Websters-Merrieam dictionary). Dilemma is an “Either/or situation where one alternative must be selected over the other alternatives” (Cameron & Quinn, 1988:2). Further, irony is an “unexpected or contradictory outcome arising from a single alternative” (Cameron & Quinn, 1988; 2).

Contradictions are “ideas, principles, and actions in direct opposition to one another that exert tensions within a process. Thus, contradictions are not simple inconsistencies; they always exist in a bipolar relationship” (Fairhurst et al., 2002: 506). Finally, contradictions can be paradoxical but are not always considered a paradox. Indeed, “Some contradictions lead to a paradox, which involves the simultaneous presence of contradictory and mutually exclusive elements” (Fairhurst et al., 2002; 506). Lewis (2002) describes paradox as “contradictory yet interrelated elements—elements that seem logical in isolation but absurd and irrational when appearing simultaneously” (760). Adopting these descriptions of paradox emphasizes that these interdependent concepts can only be defined together. Thereby, there are distinguishing conceptual bounds among tensions, contradictions, and paradox.

Minimal discussion exists of the divergent, contradictory values associated with the collision of these two diverse subsystems comprising a family business (Dane et al., 2004; Kets de Vries, 2007; Ward, 1997; 2005). Yet some have explicitly acknowledged tensions as paradoxical (e.g., Kimberly, 1979; Pitts et al., 2007; Tapias & Ward, 2008). Because these
tensions are pervasive, it’s imperative to elucidate the dominant family business tensions and associated management strategies to enhance performance.

*Paradoxical Tensions Embedded in Family Firms*

The vast majority of the discussion of the paradoxes in the family business has been anecdotal coupled with minimal empirical inquiry via family business surveys and case studies. Family business theoreticians assert that family businesses are replete with paradoxical tensions stemming from contradictory values and ideologies, in addition to their unique governance and succession requirements (e.g., Tapies & Ward, 2008; Ward, 2005). Others claim there are paradoxes unique to this context: business growth vs. family liquidity, tradition vs. change, long term vs. short term focus, individual vs. collective, inward thinking vs. outward thinking and emotion versus rationality, among others (e.g., Tapies & Ward, 2008; Ward, 1997; 2005; Poza, 2008). Tapies & Ward (2008) proposed that there are specific values underlying family business paradoxes: consensus vs. democracy, duty vs. opportunity, friendly vs. professional, compromise vs. resolve, altruism vs. self-interest, duty vs. privilege, informal vs. formal, among others. Overall, certain paradoxical tensions are often noted, such as business growth vs. family liquidity, tradition vs. change, inward vs. outward thinking, and emotion vs. rationality (e.g., Poza, 2008; Ward, 1997). Zahara and colleagues (2008) discussed tensions of individual-collective, exploration-exploitation, and short term-long term orientation. Garcia-Alvarez, Lopez-Sintas and Gonzalvo (2002) depicted the “founder’s dependence” paradox, as founders ironically remain in the business because of their successors.

Inherent tensions of family business may energize or stymie innovation. Poza (2007) suggested that such firms struggle to adapt to a dynamic environment, while simultaneously maintaining core values and traditions. Ward (2005) warned that family firms may fall into the
“strategic simplicity” trap, avoiding the tradition-change paradox and clinging to what has worked before even when changes are needed. Interestingly, Zahara and colleagues (2008) proposed that, initially, the founding generation is highly creative and risk taking yet over time reliance on their early ideas and engrained ideology stymies ongoing innovation.

The extant literature offers prescriptive strategies to manage paradoxical tensions (e.g., Pitts et al., 2008, Zahara et al., 2008). Pitts and colleagues (2009) discussed five management strategies: denial, disorientation, segmentation, integration, and re-affirmation. Zahara and colleague (2008) posited that entrepreneurship is a remedy to the tension of stability and change or the “strategic simplicity trap”. Tapias & Ward (2008) added to the list, discussing five distinct paradoxical management strategies: compromise, balance, portfolio, polarity management, and acceptance. Further, family business practitioners discuss cognitive techniques, such as polarity mapping, to manage these tensions. Consequently, the extant literature is replete with paradoxical management strategies. Yet many family firms still grapple with these paradoxical demands and tensions.

In the following sections, I attempt to leverage the multiple literature streams to develop a model of family firm innovation. In doing so, I intend to explicate how family firms cope with inherent tensions to fuel innovation and delineate the key antecedents driving family firm innovation.
CHAPTER 3: TOWARDS A MODEL OF FAMILY FIRM INNOVATIVE BEHAVIOR

Within the bounds of this study, I focus on the theoretical and empirically relevant enablers of organizational innovation, extending these relationships to the context of the family firm. I hypothesize that certain organizational factors fosters innovative behavior: leadership, practices, and mindsets. Explicitly, this dissertation examines the relationship among intergenerational authority, intergenerational support, resources, idea time, failure and risk tolerance, paradoxical tensions, and innovative behavior. Further, I examine the impact of one moderator on the relationship between organizational factors and innovative behavior—paradoxical thinking (Figure 1).

FIGURE 1
Hypothesized Model Family Firm Innovative Behavior
Intergenerational Leadership

Intergenerational Authority

Scholars have purported that supervisory control stymies innovative performance (e.g., Amabile, Schatzel, Moneta & Kramer, 2004; Mumord, Scott, Gaddis, & Strange, 2002). Oldham and Cummings (1996) suggested that control occurs when supervisors pressure employees to think, feel or behave in certain ways, ultimately reducing an employee’s autonomy and voice. Ergo, controlling supervisors tightly monitor behavior, make decisions without employee involvement, and pressure them (Deci & Ryan, 1999). Ultimately, controlling supervisory behavior undermines an employee’s intrinsic motivation, which is essential to creativity, and thus reduces creative performance (Amabile et al., 1996; Deci & Ryan, 1985). Further, excessive control leads to anxiety, job dissatisfaction, and reduced commitment to the firm (Schaubroeck, Walumbwa, Ganster, & Kepes, 2007).

Alternatively, scholars have purported that employees who perceive themselves as autonomous, and in control of their job, are more committed to the organization, experience higher levels of motivation and performance (Spector, 1987). Workplace control theory reiterates that actors need autonomy and discretion within their jobs and resultant tasks, ultimately feeling as if they have control. Autonomy has received a great deal of attention in the literature and is purported to be a job characteristic that impacts firm creativity and innovativeness (Ford & Kleiner, 1987). Indeed, scholars have suggested that autonomy is a key condition of creativity and innovation, insisting that actors need to feel like they have discretion in how their work is done and the allocation of their time (Mumford et al., 2002).
Moreover, other theoretical lenses reiterate that supervisory support is demonstrated by non-controlling supervision. Leader Member Exchange (LMX) theoreticians note that in high quality exchange relationships, that encourage productivity, leaders give their followers certain autonomy and discretion, lessening control and motioning, which fosters innovation (Graen & Scandura, 1987). In addition, scholars have emphasized that non-controlling supervision allows actors procedural autonomy, encouraging creativity and innovation (Oldham & Cummings, 1996).

Empirical investigations have demonstrated that supervisory control is negatively related to creativity and innovation. Indeed, Quinn (1985, 1989) discovered that firms exhibiting strong processual and financial control were less likely to be innovative. Amabile and colleagues (2004) found that when leaders monitor employees in a controlling manner by “checking on the status of work too much”, “lack of understanding o the employees work”, “providing non-constructive feedback on work”, and “checking the status of assigned work for too long”, discouraged employee creativity. Trevelyan (2001) revealed that when a leaders control becomes too tight, employee involvement and motivation dwindled. Shalley and Perry-Smith (2001) surmised that when leaders give feedback about novel ideas in a controlling, non- informational manor, intrinsic motivation decreases and creativity dwindles. Alternatively, Amabile and associates (2004) discovered when leaders are perceived as supportive and monitor in a non-controlling way, creativity is enhanced.

Within the family business literature scholars have emphasized the issue of founder/senior generational control and firm performance. Bjornberg and Nicholson (2007) coined the term “intergenerational authority” to capture the level of control a founding/senior generation exerts and maintains over succeeding/current generations. Founder or leader control is
very important to family firms because many fail because of the conflicts stemming from struggles over control and autonomy. Indeed, studies have found that family firms with a high degree of founder/senior generation control tend to be more rigid, less adaptive and closed off (Bjornberg & Nicholson, 2007), creating a hostile environment for innovation to occur.

**H1: Intergenerational authority is negatively related to family firm innovative behavior.**

**Intergenerational Support**

Perceived leader support is a significant aspect of the creative environment. Indeed, many scholars have asserted that a leader’s behavior ultimately impacts the levels of creativity and innovation in a firm (e.g., Amabile et al., 1996; Hunt, Stelluto & Hooijberg, 2004; West, Borrill, Dawson & Brodbeck, 2003). Scholars have purported when employees perceive their leader as supportive, they are more likely to perceive the organizational climate as innovative (Scott & Bruce, 1994). Moreover, according to LMX, the quality of the relationship among supervisors and employees is related to innovation (Basu & Green, 1997: Graen & Scandura, 1987). High quality exchanges are characterized by contribution from both leaders and followers leading to autonomy and idea exchange, hence creativity and innovation. Further, leaders develop variable relationships with followers, creating different types of exchanges. A low quality exchange occurs where the interaction essentially surrounds contractual obligations, whereas high quality relationships stems from exchanges that go beyond contractual obligations.

Although, LMX focuses on the quality of exchange, other researchers have examined the specific factors that drive the perception of support. They have argued that relationships characterized by mutual trust, respect, and collaboration lead to innovative outcomes (Amabile & Gryskiewicz, 1989; Scott & Bruce, 1992). The componential theory of organizational creativity
states that an actor’s perception of a work environment as creative impacts their creative performance. The recognition of work environment creativity partially stems from the perception of supervisory support (Amabile et al., 2004). In an empirical investigation, Amabile and associates (2004) demonstrated that specific leader behaviors impact the perception of leader support, specifying specific antecedents of perceptual support: monitoring, clarifying roles and objectives, and consulting.

Further, in the family business domain scholars have purported that relational support from founding/senior generational members is critical for the functioning of the family business. Family business succession is “The process during which managerial control of the business is transferred from one generation to the next” (Shepherd & Zacharakis, 2000) or intergenerational succession. Bjornberg & Nicholson (2007) coined the term “intergenerational attention” to denote the degree of attention the founder/senior generations gives the successor/next generation before, during and after passing over control of the family business, emphasizing the importance of socialization support for successors. This is congruent with leader/ supervisory support in mainstream organizational literature. Scholars claim that the succeeding/current generation’s performance is dependent on the support they receive from founding/senior generations (Bjornberg & Nicholson, 2007). Hence, the current/succeeding generation’s perceptions of the founding/senior generation’s support will be positively related to the level of creativity and innovation.

**H2: Intergenerational Support is positively related to family firm innovative behavior.**
Practices Supporting Innovation

*Resources*

In addition to leadership support, many scholars insist that resources are an essential antecedent of organizational creativity and innovation (e.g., Amabile et al., 1996; Katilia & Shane, 2005; Woodman, Sawyer & Griffen, 1993). Indeed, resources are critical to innovation for a variety of reasons. First, access to resources encourages organizational experimentation (March, 1981), which leads to creativity and innovation. Greve (2003) elaborated that firms with excess resources will have more opportunities to experiment, leading to innovation. Second, when organizational actors lack access to key resources they feel frustrated, raising a barrier to creative ideology (Isaksen, Lauer & Ekvall, 1999). Third, perceptions of a lack of resources impact actors’ perceived intrinsic value (Ekvall, 1996). Indeed, Amabile and colleagues (1996) posited that “Perceptions of adequacy of resources may affect people psychologically by leading to beliefs about the intrinsic value of the projects they have undertaken”, which leads to decreases in intrinsic motivation (1161). Intrinsic motivation is a necessary component of creative ideology and behavior (Deci & Ryan, 1985). Further, lack of resources leads employees to perceive a decrease in organizational commitment and support of their project (Jones & Nisbett, 1972). Ultimately, firms need resources that nurture new ideas and solve problems to drive innovation (Kanter, 1983). Hence, access to key organizational resources is necessary to encourage creative ideation and provide resources to bring ideas to fruition.

Additionally, scholars have purported that slack resources are necessary for innovation to occur (e.g., Cohen & Levinthal, 1990; Damanpour, 1991; Tushman & Nelson, 1990). Ahmed (1998) defined slack as the “Cushion of resources that allows an organization to adopt to internal and external pressures” (42). Yet others have argued that firms need more than slack, which is
more by happenstance, and posit that resources need to be intentionally incorporated and
disturbed into the organization (Doughtery and Hardy, 1996).

Empirical investigations have demonstrated that access to resources is a fundamental
element of innovation. Delbecq and Mills (1985), discovered that highly innovative firms have
superior resources including dedicated R&D funding, in addition to other committed resources
for channeling innovation. Daellenbach and colleagues (1999) purported that top management
teams allocation of resources directly and indirectly allows and enables R&D units to function.

Doughtery, Barnard and Dunne (2005) posited that actors need access to three types of
resources for innovation: access to others time and attention, freedom to control how ones work
will contribute to the task, and access to options available. However, the most prominent
resources emphasized for creativity and innovation are time and money (e.g., Amabile et al.,
2004; Shalley & Gilson, 2004). Indeed, Amabile (1998) reiterated a lack of time allotted for
creative ideation stymies creativity. Further, if money is not readily available to fund and support
these ideas, then actors will not focus on creative ideas but instead on acquisition of resources
detracting from creativity. Indeed, Isaksen and colleagues (1999) argued that a lack of key
resources can frustrate and detract from creativity. Katila and Shane (2005) suggested that
financial resources are imperative for innovation to occur.

**H3: Family firm members’ perception of the provision of resources is positively related to
innovative behavior.**

**Idea Time**

As a critical resource, scholars have argued that the provision of idea time is essential to
enabling innovation (e.g., Amabile & Gryskiewicz, 1987; Ekvall ,1996; Leonard & Swapp,
1999). Indeed, providing time to create and nurture ideas is the essence of creative ideology and
creative ideology is the seed of innovation. Indeed, “All innovation begins with creative ideas” (Amabile et al., 2006:1154). Therefore, firms need to support employees’ creation of novel ideas.

Ekvall (1996) described idea time as “The amount of time people can use (and do use) for elaborating new ideas. In the high idea-time situation, possibilities exist to discuss and test suggestions not included in the task assignment. There are opportunities to take the time to explore and develop new ideas. Flexible timelines permit people to explore new avenues and alternatives. In the reverse case, every minute is booked and specified. The time pressure makes thinking outside the instructions and planned routines impossible.” (108). Amabile and Gryskiewicz (1987) reiterated that idea time is needed to explore new ideas and think creatively. Further, when management does not provide nor support this time, by exerting too much time pressure, they stymie creativity (Amabile et al., 2003).

Empirical studies have demonstrated a positive relationship among employees provision of idea time and creativity. The majority of studies examine how time pressure stymies organizational creativity and innovation. Specifically, high time pressure reduces the amount of time employees spend engaging in exploratory thinking (Andrews & Smith, 1996). Amabile and colleagues (1996; 2002) asserted that workload or time pressure is the opposite of idea time, and that this “workload pressure” or “extreme time pressure” distracts from creative work. Andrews and Smith (1996) found that time pressure is negatively related to marketing program creativity. They defined time pressure as “The degree to which the respondent believed there was limited time to complete tasks” (181). Hence, actors felt they did not have enough time. The authors purported that creativity was stymied because high time pressure reduces exploratory thinking. Katz and Allen (1988) discovered that engineers discovering and developing new technologies must have uninterrupted time to be creative. Amabile and Gryskiewicz (1989) empirical
investigation of R&D units revealed that time is needed for creative work to occur, suggesting that actors need sufficient time to create, explore, and play with ideas. Hence, providing employees with time to develop and foster new ideas is essential aspect of innovation.

**H4:** *Family firm members’ perception of the provision of idea time is positively related to innovative behavior.*

**Risk Taking and Failure Tolerance**

Tolerance for risk taking and failure are critical enablers of organizational creativity and innovation (e.g., Ahmed, 1998; Andriopoulus, 2001). The extant literature stresses that actors must be willing to take risks and embrace failures in the quest for innovativeness (Dewett, 2006; Mumford et al., 2002). Borgelt and Falk (2007) posited that “By its very name and nature ‘innovation’ requires thinking and acing outside the square… innovation can only exist when leadership allows and fosters- risk taking” (122). Leonard and Swapp (1999) reiterated that tolerance for risk taking and intelligent failures are primary drivers of firm innovation. Indeed, it is imperative that employees know that certain risks are tolerated because innovative activities have a higher probability of failure. Thereby, tolerance for failure is critical in motivating innovation (Manso, 2009). Ekvall (1996) articulated that risk taking is “Tolerance of uncertainty and ambiguity in the workplace. In the high risk-taking case, bold initiatives can be taken even when the outcomes are unknown. People feel as though they can “take a gamble” on their ideas. People will often “go out on a limb” to put an idea forward. In a risk-avoiding climate, there is a cautious, hesitant mentality. People try to be on the “safe side” and often “sleep on the matter.” They set up committees, and they cover themselves in many ways” (108).
Wan, Ong, and Lee (2005) demonstrated that willingness to take risks and exchange ideas increased innovation. An empirical investigation by Tierny, Farmer, and Graen (1999) highlighted that creativity is encouraged when work conditions promote risk taking and “freedom to deviate from the status quo”(594). Smith, Collins, & Clark (2005) found that in high technology firms, risk taking is imperative in driving firm innovation. In a study of midsized German firms, Baer and Frese (2003) discovered that a climate that fosters risk taking enhances process innovations. Caldwell and O’Reilly (2003) determined that when teams embrace norms of risk taking and failure tolerance, the actors are more likely to engage in novel and original problem solving. Finally, Dewitt (2006) recognized that an employee’s willingness to take risks is positively associated with their creative performance level.

Scholars have purported that demonstrating failure tolerance is critical in promoting a risk taking (e.g., Barsh, Capozzi, & Davidson, 2008; Martins & Terblanhe, 2003). A failure tolerant culture emerges when failure is viewed as a learning experience and source of information. Failure tolerance can be demonstrated by multiple organizational practices. Indeed, leaders promote risk taking by being “failure tolerant”, where their behaviors and works encourage failure tolerance (Farson & Keyes, 2002). Leaders demonstrate this tolerance by showing interest in subordinates work, by asking questions, by expressing support, by giving feedback, and being collaborative rather than controlling. Moreover, scholars purport the organizations that encourage novel idea generation, embracing failures, ultimately encouraging creativity (Filipczak, 1997). Indeed, employees will only engage in new ideas or creative thinking if they are in a safe environment that endorses long term views, thereby tolerating mistakes (Andriopoulos, 2001). In a cross cultural empirical investigation, Nacinovic, Lovorka Galetic, and Nevenka Cavlek (2009) discovered that (2009) “acceptance of failure” is an integral
part of the innovation process. They asserted that that management’s attitude towards failure is a good indicator of the cultures “orientation” to innovation. Further, Caldwell and O’Reilley (2003) discovered that group’s development of norms encouraging risk taking and tolerance for mistakes is essential to team innovativeness. Hence, encouraging risk taking by embracing failure tolerance is critical to innovative behavior.

H5: Family firm members’ tolerance for risk and failure are positively related to innovative behavior.

**Family Business Tensions**

**Inherent Paradoxical Tensions**

Because organizations are rife with paradoxical tensions, it is imperative to identify salient family business tensions and their subsequent management. Indeed, understanding and managing tensions is vital for business sustainability and survival (e.g., Danes et al., 2002; Kae, 1996). Moreover, family businesses must cope with inherent paradoxical tensions that energize or stymie innovation. Scholars have argued that family firms are a paradox, replete with contradictory yet complementary goals, values and ideologies (e.g., Tapies & Ward, 2008; Ward, 2005). Certain tensions are often noted, such as business growth vs. family liquidity, tradition vs. change, inward vs. outward thinking, and emotion vs. rationality (e.g., Poza, 2008; Ward, 1997). Zahara and colleagues (2008) discussed tensions of individual-collective, exploration-exploitation, and short term-long term orientation.

Several scholars have discussed the pervasiveness of firms grappling with the paradox of tradition vs. change. Indeed, Poza (2007) suggested that such firms struggle to adapt to a dynamic environment, while simultaneously maintaining core values and traditions. Ward (2005) warned that family firms may fall into the “strategic simplicity” trap, avoiding the tradition-
change paradox and clinging to what has worked before even when changes are needed. Interestingly, Zahara and colleagues (2008) proposed that, initially, the founding generation is highly creative and risk taking yet over time reliance on their early ideas and engrained ideology stymies ongoing innovation.

Others have iterated the importance of founder control vs. autonomy during planning and succession. Indeed, Garcia-Alvarez, Lopez-Sintas and Gonzalvo (2002) depicted the “founder’s dependence” paradox, as founders ironically remain in the business because of their successors, extenuating the paradox of control vs. autonomy to the family business realm. Pitts, Fowler, Kaplan, Nussbaum and Becker (2009) discovered that family farm owners struggle with relinquishing control while maintaining control during succession planning.

Family liquidity vs. business growth is another pervasive family firm paradox (Tapias & Ward, 2008). Ward (2005) posited that any family business must address the question of whose interests should come first- business or family. Some argue that a family business has a different financial logic (Maherault, 1998). Indeed, any business faces paradoxes of liquidity where as firm asset liquidity increases the ability to raise cash yet simultaneously reduced the firm’s ability to actively engage and commit investment strategies that protect investors. For a family firm, this paradox can be even more precarious because secession can challenge the firm’s investment/reinvestment paradigm. As a firm matures and succession occurs, founders might rely on dividends to support their family, while a successor might embrace long term growth and want to reinvest money back into the firm for growth versus paying out dividends. The tension between reinvestment and liquidity creates complex demands and impacts growth. Moreover, when the demand for liquidity increases the sustainability of the firm is threatened.
Although a multitude of paradoxes have been identified in by family business scholars and practitioners, three paradoxes have a significant impact on family business and innovation: tradition vs. change, control vs. autonomy and family liquidity vs. business growth.

H6: The level of paradoxical tension family firm members’ experience will influence innovative behavior

**Mindsets Supporting Innovation**

*Paradoxical Thinking*

In addition to practices that enhance innovation, it is also imperative that family firm executives cope with and the aforementioned manage inherent paradoxical demands and tensions (e.g., Kanter, 1989, Lewis, 2000, Quinn, 1998, Quinn & Cameron, 1988). Indeed, Mitroff (1995) suggested that the management of paradox “is one of the most crucial of all human activities” (749). Moreover, theoreticians have declared the importance of top manager’s mental frames guiding strategic behavior (Hambrick & Mason, 1984). The dominant coalition’s cognitive frames enable leaders to direct and provide necessary resources, support creative ideation, and the innovation process. Indeed, Hautman (2007) discovered that the heterogeneity and mental models of the dominant family firm coalition either enabled or detoured innovation. Specifically, family firm members whose mental frames were characterized by flexible, divergent thinking were more innovative. Therefore, leader’s mental models significantly impact a firm’s innovative ability.

Although, the complexity of the competitive and global landscape has increased, firms attempt to rely on parsimonious mental models and polarized practices. Management relies on simplified mental frames even when success is dependent upon embracing more complex mental models to foster complex competitive actions. However, theoreticians know little about what
drives an actor’s ability to recognize and manage paradox. Therefore, it is important to understand the thinking that enables actors to manage the complex paradoxical demands they face.

Likewise, a variety of scholars have suggested that alternative thinking and logic is essential in supporting the unwavering complexity of organizational life. This discussion has been guised in a myriad of terms and lenses. Morin (1977, 1980, 1994, 2001) argued that contemporary actors need to embrace “complex thinking” that recognizes and accepts uncertainty and equivocality, embracing the interrelationship among the part and the whole by breaking free from dichotomous thinking. Theoreticians have proposed that paradoxical thinking is a solution in dealing with the inherent complexities and tensions embedded in contemporary organizations (e.g., Lewis, 2000; Smith & Tushman, 2005). Paradoxical thinking is an ambiguous concept that has been scantly examined in the management literature. Smith & Tushman (2005) discussed “paradoxical cognition”, positing that paradoxical cognition is “Paradoxical frames and cognitive processes of differentiation and integrating-enable balanced strategic decision” (526). Rothenberg (1979) used the phrase Janusian process where a creative individual conceptualizes two contrasting ideas simultaneously and then combines them to come up with a creative idea. Martin (2007) coined the term integrative thinking to denote “The ability to face constructively the tension of opposing ideas and, instead of choosing one at the expense of the other, generate a creative resolution of the tension in the form of a new idea that contains elements of the opposing ideas but is superior to each other” (15). Still others have embraced the term “naïve dialecticism”, to describe a type of paradoxical thinking (Peng & Nisbett, 1999; Spencer-Rodgers, Boucher, Mori, Wang & Peng, 2009), suggesting that different cultures reason differently. Accordingly, Chinese actors engage in a “naïve dialecticism” that “Retain the basic
elements of the two opposing perspectives and believe that both perspectives might contain some truth, even at the risk of tolerating contradiction” (Peng & Nisbett, 1999;741). However, Peng and Nisbett (1999) clearly demarcate the difference among western dialectical thought, which is not paradoxical, and Chinese “Naive” dialectical thought. Wright (1982) emphasized the open nature of paradoxical thinking compared to formal logical thinking, emphasizing the both/and. Arguably, naïve dialecticism, Junusian thinking, and integrative thinking are comparable constructs that highlight an actor’s ability, when faced with two opposing but interrelated ideas, to embrace both perspectives and leverage tensions arriving at a novel idea, practice or procedure. Hence, paradoxical thinking entails actors embracing multiple interrelated, contradictory ideologies simultaneously (Martin, 2007).

Furthermore, a rich line of inquiry suggests that creativity and innovation are fueled by a variety of cognitive processes: divergent thinking (Guilford, 1967); associative thinking (Mednick, 1962), Junusian thinking (Rothenberg, 1979), insightful thinking (Sternberg & Davidson, 1995), among others. Scholars have posited that paradoxical and dialectical thinking are drivers of creativity and innovation (e.g., Arlin, 1976; Arlin & Leitt, 1998; Benack, Basseches, & Swan, 1989; Christopher, 2007; Norman, Palich, Livingstone & Carinin, 2004; Paletz & Peng, 2006; Reigel, 1973; Rothenberg, 1979; Ward, Fink & Smith, 1995). Additionally, scholars have touted that dialectical thinking enhances creativity. Indeed, dialectical thinking requires actors to challenge current mental frames, focus on contradiction, and be acutely aware of the complexity among relationships (Benack et al., 1999). Arlin (1976) argued that “Dialectical operation may be foundational dynamics of creative thought” (250). In an empirical investigation, Wu and Chiou (2008) discovered that there is a positive relationship between dialectical thinking and creativity in late adolescence. Arlin and Levitt (1998) discovered that
dialectical thinking and problem finding loaded on the same factor, implying that dialectical thinking is intertwined and related to the process of creativity.

Still even more scholars suggest that paradoxical thinking, guised in various terms, is positively related to creativity and innovation. Rothenberg (1979) stated that “actively conceiving two or more opposites or antithetical ideas, images, or concepts simultaneously… as equally operative and equally true. Such thinking is highly complex. It is intrinsic to creativity and operates widely in all types of creative processes, intellectual and pragmatic as well as artistic” (55). Christopher (2007) purported that paradoxical thinking is “a technique for creative thinking” (330). Martin (2007) insisted that actor’s juxtaposition of two contradictory ideas simultaneously leads to “new superior idea” (7). Ward, Smith and Finke (1995) proposed the creativity is characterized by the ability to combine opposites. Riegal (1973) posited that creative scientific activities are “dominated by playful manipulations of contradiction and by conceiving issues integratively which have been torn apart by formal operational thinking” (363). Norman and colleges (2004) argued that a firm must embrace both formal and paradoxical logic to successfully innovate. Fong (2006) reiterated that in the process of embracing contradictions, actors will search for novel associations which lead to creativity. Hence, paradoxical thinking is an antecedent to creative ideation, which is a critical element of the innovation process.

H7: Family firm leaders’ paradoxical thinking is positively related to innovative behavior.

Tensions, Paradoxical Thinking, and Innovation

As mentioned, managing both innovation and tensions is vital for family businesses. Innovation is critical in today’s turbulent markets, but the paradoxical demands of innovation challenge firms. Extant literature is replete with exemplars positing that innovation encompasses
paradoxical goals and practices (e.g., Andriopoulos & Lewis, 2008; March, 1991; Sheremata, 2000; Taylor & Greve, 2006). Indeed, firms must explore new ideas and domains, while simultaneously exploiting existing products and competencies (Gupta, Smith & Shalley, 2006). March (1991) asserted that exploration and exploitation, alternative modes of innovation, are synergistic yet entail contradictory logics.

Scholars warn against mismanaging innovation, as focusing solely on exploration or exploitation can prove counterproductive (Tushman & O’Reilly, 1996). Gupta and colleagues (2006) described the dangers of myopia as failure and success traps. Failure traps stem from single-minded exploration, whereby risks are increasingly taken to overcome past mistakes. In contrast, success traps arise from overemphasizing exploitation, honing core competencies to the neglect of building new capabilities and identifying novel opportunities (Taylor & Greve, 2006).

Although few innovation studies examine the context of family business, exceptions do exist (e.g., Poza, 2007; Zahara, Hayton, Neubaum, & Dibrell, 2008). McCann, Leon-Guerrero and Haley (2001), for instance, found that “innovative” family firms’ stress the development of new products in their mission and vision, helping ensure that strategic planning supports innovative efforts. Further, Litz and Kleysen (2001) suggested that successful family firms exhibit domain relevant skills, creativity, intrinsic task motivation, and macro cultures that support innovation. As mentioned, cognition may play a critical role in managing the dual challenge of innovation and family business tensions. Studies propose that actors must leverage innovation tensions via alternate mindsets (e.g., Cameron, 1986; Norman, Palich, Livingstone & Carini, 2004; Wright, 1982), engaging in “paradoxical thinking” to denote the ability to embrace contradictory ideas, practices, and goals in search of creative synergies. Indeed, March (1991) claimed that innovation stems from the ability to apply the contradictory logics of exploration
and exploitation simultaneously. Similarly, according to Smith and Tushman (2005), paradoxical cognition enables top managers to frame exploration and exploitation as complementary and guide strategic decision making accordingly. Ingram, Lewis, Andriopoulos and Gotsi (2008) further demonstrated how actors in highly creative firms value tensions as fuel for innovation. In sum, family firms face the dual challenges of needing to manage innovation and family business tensions. Paradoxical thinking, however, may enable the positive potential of tensions.

H8: Family firm leaders’ paradoxical thinking moderates the relationship among paradoxical tensions and innovative behavior.
CHAPTER 4: RESEARCH METHODOLOGY

This chapter discusses the research design that was employed to test the theoretical model of family firm innovation proposed in Chapter 3.

Research Design

This study posits that family business leadership, mindsets, practices, and management of paradoxical tensions fuel a firm’s innovative prowess. The study adopted a four stage field study design. Given the scarcity of family business innovation measures, which explicitly gauge tensions and paradoxical thinking, the early stages of this study focused on scale development and validation. The first stage entailed initial scale creation, building from existing work wherever possible. The second stage involved conceptual refinement of the measurement scales. During this stage, an expert panel of content and lay experts assessed the measures based on representativeness of the content domain, clarity of items, factor structure, and comprehensiveness. During the third stage the pilot study was conducted, using confirmatory factor analysis (CFA) to assess the overall construct validity and reliability. During the final stage, an online questionnaire was administered and analyzed using multiple statistical methodologies including structural equation modeling (SEM) and multivariate analysis.

Sample

Participants for both waves of the study were recruited from the University of Cincinnati Goering Center for Family & Private Business. The Goering Center has approximately 130 family business members from the Greater Cincinnati area. Company sizes range from ten to 600 employees. This survey was given to multiple family firm generations from founder to the current successor generation. The focal respondents were family firm executives, including family and non-family members.
Procedure

This study adopted a snowball sampling technique. This began with participation from the Goering Center family business members. Participants were asked to recruit other members from their firms including the founder and executive team members. Further, they were asked to recruit other family businesses who are not members of the Goering Center.

Stage One: Survey Design

In this research, measurement development adhered to generally accepted recommendations for scale development; thereby, producing a valid and reliable measurement instrument (e.g., Anderson & Gerbing, 1988; Churchill, 1979; Churchill & Peter, 1984; Fowler, 2002; Hinkin, 2005; Nunnally, 1978). Churchill (1979) posited that researchers must adhere to the following criteria to develop a reliable instrument: (1) specify the domain of the construct, (2) generate a sample of items, (3) collect data, (4) purify the measure, (5) collect data, (6) assess reliability, (7) assess validity, and (8) develop norms. The development phase of the measure included item generation, item wording, determining the appropriate number of items, item scaling, and content validity assessment (Hinkin, 2005). Content validity was assessed by an analysis via an expert panel (Litwin, 2002; Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). The instrument testing stage included selecting the sample and confirmatory factor analysis to determine validity and reliability.

Creation of Scale Items

Stage one consisted of the initial scale development to measure the eight latent constructs. There are multiple validated scales that assess perception of leadership support, leadership control, material resource provision, allocation of idea time, risk taking/failure
tolerance, and innovation. I adapted and created measures that specifically examined these constructs in the family firm context. These measures incorporated several existing construct measures that have empirically demonstrated validity and reliability. Further, to my knowledge, there are no existing measures for paradoxical thinking and paradoxical tensions. Hence, this study included the development and validation of all scale items for these measures. The development of the new measures followed a deductive approach, leveraging extant theory and recommended guidelines for scale development (Anderson & Gerbing, 1988; Churchill & Peter, 1984; Hinkin, 1995; 2005). In specifying the wording of individual items, careful attention was given to applying negatively worded items because this type of wording has been found to reduce the validity of responses and to introduce systematic error to the scale (Hinkin, 1995). The goal was to develop items that resulted in measures that sampled the theoretical domain of interest.

Important issues in scale creation include the number of items in the scale, and the type of scale used. A delicate balance was sought while creating this survey. On the one hand, a shorter measure can decrease response bias (Hinkin, 1995). Yet scales with too few items can lack reliability and construct validity (Nunnally, 1976) because reliability can be a function of the number of items. Further, scaling is an important consideration, and this study adopted a Likert-type scale. Indeed, Kerlinger (1986) suggested that Likert-type scales are the most appropriate for behavioral research. Likert-type scales are used to assess actors’ opinions, perceptions or attitudes based upon a respondent’s degree of agreement or disagreement. Yet Likert-type self response measures are susceptible to measurement instrument biases, and such bias can confound the relationships among constructs and can invalidate a measure (Spector & Brannick, 2009). Social desirability bias and acquiescence are two, very common response
biases that can confound the relationship among constructs of interests. A social desirability bias occurs when respondents report what is socially acceptable rather than their genuine belief. Acquiescence occurs when respondents give the answer they believe would be desirable to the sponsor rather than their own opinion. Further, there are survey design biases introduced by the actual questionnaire given, such as priming. Priming occurs when “a question at one point in time affects subsequent responses” (Spector & Brannick, 2009: 352).

In designing the measure, certain strategies were employed in attempt to reduce response and measurement biases. First, to reduce the social desirability bias, careful attention was given to the wording of the item so that respondents would not feel pressure to conform to the status quo. Second, to reduce the likelihood of acquiescence occurring, I assured respondents that honest answers are needed. In addition, I made sure that I did not indicate which answers are considered positive or negative in my view. Hence, one major way to reduce response biases is to reword questions and pay close attention to the instructions. Moreover, scholars suggest using different scale endpoints for the independent (IV) and dependent variables (DV) to reduce common method variance; therefore, I incorporated different scale anchors for the endogenous and exogenous constructs (Podsakoff et al., 2003).

The initial survey consisted of 69 items within four, overarching categories: leadership, practices, mindsets and tensions. The leadership category is represented by intergenerational authority and intergenerational support. The practices category is represented by the perception of being provided idea time, material resources, and risk taking and failure tolerance. The mindset category is represented by the type of thinking actors engage in. Finally, the tensions category is represented by the level of tensions actors experience in their respective firms. The following are the descriptions of each variable being measured in this study.
Intergenerational Authority (IA) is the level of control the senior generation exerts over the managing/current generation and non-family executives. This construct was measured with eight items from the Family Climate Scale (Bjornberg & Nicholson, 2007). The five Point Likert-type response anchors range from strongly disagree (1) to strongly agree (5). The overall combined scale displayed alphas ranging from .75 to .90. A representative item from the scale is, “The authority of the older generation is not questioned.”

Intergenerational Support (IS) is the level of support, including but not limited to socializing, caring, recognizing, and monitoring that current/next generation family business members receive from the founding/senior generation. IS is measured with an initial 13 items. Five of these items were adopted from the Family Climate Scale measure for Intergenerational Attention. The overall combined measure displayed alphas ranging from .75 to .90. The five point Likert-type response anchors range from strongly disagree (1) to strongly agree (5). Nine items were created to measure various aspects of support, four items to measure idea support and consulting. For instance, an illustrative item is that “The older generation encourages employees to develop new ideas to improve the organization.” Recognition from senior generations was represented by one item. Finally, caring and monitoring have four representative items, such as, “The older generation provides constructive feedback on work.”

Material resource support indicates the degree to which family members and executives feel that they have access to material resources. Four items were developed to measure the family business member’s perception of the availability of material resources. The five point Likert-type response anchors ranged from strongly disagree (1) to strongly agree (5). For instance, one item states, “I have adequate resources to complete my project.”
Idea time is the perception of “The amount of time people can use (and do use) for elaborating new ideas” (Ekvall, 1996:108). Six items were developed to measure the family business member’s perception of the availability of time to generate and enhance novel, creative ideas. The five point Likert-type response anchors range from strongly disagree (1) to strongly agree (5). Illustratively, one item states, “Employees are given time to develop new ideas.”

Risk taking and failure tolerance is the perception that the firm encourages organizational members to take risks and embrace failure. Risk and failure tolerance are measured with seven items. Four items were taken from Caldwell and O’Reilly’s (2003) measure of risk taking and tolerance for mistakes. The scale displayed factor loadings greater than .50 for all items. Moreover, items were developed to further assess an actor’s perception that the focal firm supports bounded risk taking and promotes an atmosphere of failure tolerance. The five point Likert-type response ranges from strongly disagree (1) to strongly agree (5). A sample item from the scale states, “Firm leadership stresses that it is ok to fail as long as we put in a good effort.”

Paradoxical tensions are the tensions actors experience from the existence of organizational paradoxes. Hence, the level of paradoxical tensions is measured by the degree of perceived paradoxes that exists within the organization and the resultant level of tension an actor experiences. Six items were created to measure the level of tensions firm members experience from the following paradoxes embedded in the family firm: tradition vs. change, family liquidity vs. business growth, and generational control vs. generational autonomy. The five point Likert-type response ranges from strongly disagree; no tension (1) to strongly agree; a great deal of tension (5). For instance, one item states, “There are pressures to explore new ways of doing things, while also embracing company traditions.”
Paradoxical thinking is the mental juxtaposition of two contradictory but interrelated ideas simultaneously. There are no established measures of paradoxical thinking and thus, a scale was constructed. Paradoxical thinking was assessed with 15 items. Five of these items were taken from the Dialectical Self Scale (Spencer-Rodgers, Srivastava, & Peng, 2001). The scale displayed alpha ranging from .69 to .87 and had a one month test-retest reliability of .79-.91. The remaining items were generated to represent how actors cognitively recognize and embrace the logic of paradox. The five point Likert-type scale response range from strongly disagree; does not make sense (1) to strongly agree; makes perfect sense (5). An illustrative item from the scale states, “It is possible to always change to remain the same.”

Innovative behavior includes idea generation, idea promotion, and idea realization (Scott & Bruce, 1984). Innovative behavior is measured with nine items taken from Jansen’s (2000, 2001, 2005) scale of individual innovation. This scale draws from Kanter’s (1988) stages of innovation, which was further developed by Scott and Bruce (1994). The reliability of this scale ranges from alpha .89 to .98. The five point Likert-type response scale ranges from never (1) to always (5). The first three items correspond to idea generation, the next three represent idea promotion, and the final three refer to idea realization. In addition, a tenth item was taken from Scott and Bruce’s (1994) general level of innovativeness. A representative item is that members “Mobilize support for innovative ideas”.

In addition to the constructs, I collected certain demographic information; thereby, decreasing the chance that the firm or representative members’ demographic characteristics will confound the relationships examined in this study. In general, many innovation studies control for industry (Brown & Eisenhardt, 1995), organizational size (Aiken & Hage, 1971), and the age of the organization (McGahan & Silverman, 2001). Therefore, I controlled for these
Stage Two: Expert Panel

In this stage, a panel of experts critiqued the instrument to ensure content validity. The objective of a content validity assessment is to provide feedback on the representativeness and clarity of all items in a measure, while providing feedback on improving the measure (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003). Following recommendations by Rubio and colleagues (2003), the expert panel consisted of three “content” or academic experts and at least one “lay” or family business practitioner.

In assessing content, the goal was to gauge the representativeness, clarity, factor structure, and comprehensiveness of the whole measure (Rubio et al., 2003). During the expert panel session, experts were asked to rank each scale item for clarity and representativeness using a Likert-type one to four scale. One indicating that the item is not clear, and four representing that the item is very clear. Further, to assess the factor structure, experts were provided with a list of the constructs and asked to match each scale item to a construct. Finally, after assessing the clarity, representativeness and factor structure, the panelists were asked to assess the entire measure and recommend any items they feel should be deleted.

After the expert panel feedback was provided, Interrater Agreement (IRA) was calculated to gauge scale clarity and representativeness (Rubio et al., 2003). To estimate the IRA, I counted the number of items that demonstrated 100% agreement and divided that by the total number of items. Next, the factor structure validity was evaluated using a factor validity index (FVI) created by Rubio and colleagues (2003). The FVI was assessed by counting the number of experts who
correctly assigned the item under investigation to the correct category/factor. After the analysis of the expert panel data, the scale was revised accordingly to achieve content validity.

**Stage Three: Pilot Study**

After iterative revision of the initial scales, the reduced web based measure was placed online. Oppeheim (1992) stressed, “Survey piloting is the process of conceptualizing and re-conceptualizing the key aims of the study and making preparations for the fieldwork and analysis so that not too much will go wrong and nothing will have been left out” (64). Hence, administering a pilot questionnaire aided in assessing the validity and reliability of the new measures. A measure needs to display overall validity via demonstration of content validity, convergent validity, discriminate validity, and reliability.

*Pilot Model Evaluation-CFA*

The goal of this pilot study was to ensure construct validity and reliability. Construct validity includes convergent and discriminate validity. Convergent validity implies that theoretically correlated constructs are indeed related with one another. Convergent validity is demonstrated when correlations exist between measures of the same trait (Campbell & Fiske, 1959). Alternatively, discriminate validity is “The requirement that a test not correlate too highly with measures from which it is suppose to differ” (Campbell, 1960: 548). Therefore, discriminate validity is the degree to which a scale measures something different than the related scales and discriminate validity coefficients are correlations of two types.

Reliability is the degree to which the measure is free from error, which is represented by coefficient alpha (Nunnally & Bernstien, 1994). A common recommendation is that a coefficient alpha of .70 or better is considered reliable (Nunnally, 1978). Indeed, alpha of .70 or greater is
indicative of item covariance and that the sampling domain is represented (Churchill, 1979). For this study, construct reliability, specifically convergent validity, was evaluated via coefficient alpha, and values over .70 were considered acceptable (Nunnally, 1978). Yet with short scales with fewer than tens items, it is common to find a low alpha value so in those cases it is appropriate to check that the mean inter-items correlation be .2 to .4 (Briggs & Cheek, 1986). To estimate reliability, convergent and discriminate validity, I followed Anderson and Gerbing's (1988) guidelines, conducting a CFA to evaluate the properties of the latent constructs and the fit of the model.

Overall, in this pilot stage, there were 45 items expected to form eight factors that required 168 parameters to be estimated. However, the pilot study sample size (n=63) “fell short” of the recommendation of five observations to one parameter (Bentler & Cho, 1987); therefore, I conducted individual factor analyses for each latent construct. Next, to assess model fit and discriminate validity of the constructs, a full model CFA was conducted. However, because of sample size limitation (n=63), a full model could not be run. Therefore, to account for this limitation, the CFA’s were simplified into separate analysis based upon extant theory. Three separate CFA’s were conducted for Leadership (IA, IS), practices (Res, RT/FT, IT) and mindsets/tensions (PT, Tens). Overall, this approach reduced the number of parameters required for estimation; yet, the sample size was still short of the 5:1 recommendation. Therefore, to account for this sample size limitation, bootstrapping in AMOS 18.0 was utilized.

Overall, the model assessment was conducted in two categories: measures of overall model fit and measures of the individual model parameters. AMOS 18.0 provides multiple statistics to evaluate model fit. To assess the individual model parameters, I examined the standardized regression weights (factor loadings), squared multiple correlations, which reflect
the amount of variance associated with the item and latent factor, standardized residuals, and bootstrap confidence intervals. Generally scholars recommend the following criteria for assessing the items representativeness of the latent construct. First, items should have a factor loading of >.3 (Hair et al., 2006) and be statistically significant (<.05), indicating that the item represents the latent construct. AMOS 18.0 reports critical values, equivalent to z test statistics equating a critical ratio of 1.96 equivalent to the significance level (p=.05) and critical ratio equal or greater than 2.56 equivalent to the significance level (p=.01). Any weights greater than or equal to .30 will be deemed significant. The convention utilized is that .3 is the lower bound of significance and .5 denotes practical significance. Second, standardized residuals should be between 2.58 and -2.58 (Byrne, 2001). Third, bootstrap corrected confidence intervals should not include zero, which indicates non-significance (Byrne, 2001). Additionally, scholars recommend that for a construct to display sufficient convergent validity, the average variance extracted should be >.50 (Hair et al., 2006).

In addition, to assessing the individual parameters, the overall fit of the model was assessed using multiple indices (Bollen & Long, 1993). Although there are a variety of fit indices, “no golden rules” exist to determine the most suitable index (Hooper et al., 2008). I included indices of absolute and relative fit. These indices consisted of the traditional Chi-Square test of model fit, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), and the Bollen Stine Index to correct for limited sample size.

Hu and Bentler (1999) suggested the following minimal acceptable values for the indices: >.90 for CFI and TLI and RMSEA close to .06. Moreover, the Bollen-Stine method is a modified Chi-Square for bootstrapping to account for non normal data and is suggested the p value be >.05.
Yet scholars warn that caution should be garnered when utilizing the $\chi^2$-Chi-Square index because the statistic is skewed by sample size and data normality issues. Indeed, Anderson and Gerbing (1984) demonstrated that a Maximum Likelihood (ML) Chi-Square statistics in a small sample leads to too many rejections of HO. Moreover, the Chi-Square test statistic assumes that the observed variables follow a normal distribution. Therefore, Chi-Square is interpreted cautiously.

**Stage Four: Final Model**

The final validated measure was placed on line via Survey Monkey, and a wave of e-mails was sent to Goering Center Family Business Executives who volunteered to participate in research. The email requested that participants in the sample firms take the survey. 178 executives from 115 organizations responded; however; only 115 responses were included in the analyzed data. 62 responses were removed because this study focuses on the leadership as its primary level of analysis, and can only include one response per firm.

*Evaluation of Models*

As previously discussed, the measurement models were assessed by global fit indices and model parameter estimates. I examined absolute fit indices in combination with relative fit indices. Furthermore, I assessed the Bollen Stine P value, which is considered to be a “Modified bootstrap method for the Chi-Square goodness-of-fit statistic” (Byrne, 2001:284).

*Hypotheses Testing-Path Model*

Following Anderson and Gerbing’s (1988) two step approach to analysis, after conducting CFA’s, structural analysis was used to examine the hypothesized relationships among
latent constructs. Structural analysis examines the relationships among constructs to test the hypotheses proposed in chapter three. Testing was performed using the AMOS 18.0 statistical program coupled with SPSS analysis of descriptive statistics.

Based on the CFA’s conducted, the factors displayed reliability, and convergent and discriminatory validity; and therefore, were utilized in the structural model. As discussed, this sample (n=115) falls short of the prescribed recommendations in utilizing SEM; therefore, was not large enough to run a full information model. To reduce the number of parameters estimated, single item indicators were formed for each construct. The items for each unique variable were combined to form a single indicator via SPSS 18.0 factor reduction. Moreover it is assumed, since the factor structures displayed convergent and discriminate validity and reliability that measurement error has been accounted for with the single item path model.

The hypothesized model (Figure 1) was tested using AMOS 18.0. First, to test the paths, goodness of fit must be tested and achieved. Indeed, Bagozzi and Baugartner (1994) posted that fit is important because examining model parameters and estimate in a poor fitting model, it is likely that relationships are attenuated or exaggerated. Therefore, I first examined the path model, with single item indicators for fit and the latent constructs were allowed to co-vary a priori.
CHAPTER 5: RESULTS

Stage One: Results

As mentioned, the objective of stage one was to create a measure to examine the drivers of family firm innovative behavior. A 68 item measure was developed for further testing.

Stage Two: Results

As discussed, the goal of this stage was to leverage expert feedback to sustain content validity. After the expert respondents’ feedback was provided, Interrater Agreement (IRA) was calculated to gauge scale clarity and representativeness (Rubio et al., 2003). The IRA was .71 and was calculated by taking the number of items considered 100% reliable and divided by the total number of items. Next, construct validity was evaluated using the construct validity index (CVI) created by Rubio and colleagues (2003). The recommended threshold for the CVI is .70 (Davis, 1992). The CVI was assessed by counting the number of experts who correctly assigned the item under investigation to the correct category/factor. The CVI was .89. Overall, following experts recommendations, 24 items were eliminated due to lack of clarity and 12 items were reworded to add clarity. Therefore, 45 scale items remained.

Stage Three: Results

Pilot Study Participants: Stage Three

63 family firm executives, representing 19 firms, completed the initial web based pilot survey. 20 firms were asked to participate and request their executive team members complete the survey. 73% of the respondents were male, while 27% were female. The respondents leadership positions varied: 33.9% of the respondents are currently vice presidents of their
respective firms, 17.7% presidents, 14.5% CEO’s, 14.5% managers, 12.9% in other position, 8.1% CFO’s, 3.2% COO, and 3.2% directors. The majority of the respondents were from the second generation of the firm (44.3%), followed by fourth generation members (23%), first generation (23%), and third generation (14.8%).

Data Analysis: Preliminary Data Screening

Before conducting the statistical analysis, CFA and SEM, the data were assessed for missing data, normality, outliers and homoscedasity using SPSS 18.0 descriptive statistics (Kline, 2005).

Missing Data

Missing Data were analyzed using SPSS 18.0 Missing Value Analysis 18.0, with an Expected Maximization (EM) technique. Overall, 1.6% of the data were missing; which is considered minimal. Additionally, the data were analyzed for discernable patterns and no patterns were detectable. Hence, Little’s MCAR was non-significant, p=.681, indicating the data is missing completely at random (MCAR). Lastly, I examined the characteristic of missing data for each variable and the range of missing data was from 0%- 5.9%. Because the number of missing data was minimal, linear interpolation was used to replace the missing values.

Data Normality

An important assumption of SEM is that the data follow a multivariate normal distribution (Byrne, 2001); where normality is required for the endogenous variables in the SEM model. Indeed, traditional maximum likelihood methods in SEM assume that the continuous variables are normally distributed. When distribution is non-normal then there are several potential adverse affects on the SEM. West, Finch, and Curran (1995) posited that when data are
non-normal the following can occur: the chi-square values are exaggerated and when juxtaposed with smaller sample sizes, certain fit indexes (Comparative Fit Index (CFI), Tucker-Lewis Index (TLI)) underestimate model values and standard errors. Consequentially, non-normal data can lead to underestimation of model fit and parameter estimates resulting in regression paths and variances that are deemed significant when they are insignificant in a larger population (Byrne, 2001).

Because normality is a pivotal assumption to identifying model fit, normality was assessed in several ways. First, in AMOS 18.0 the skewness and kurtosis for each scale item was evaluated. The majority of items demonstrated non-normality because they had a skewness and kurtosis critical ratio (CR) greater than 2.0 or smaller than -2.0. Second, Maridia’s (1970) coefficient was examined, estimating multivariate kurtosis.

There are several suggested methods to accommodate for non-normal data in SEM. First, the data can be transformed to more closely align the data with the assumption of normality via a natural log transformation, z-score transformation, square root transformation, or an inverse transformation (e.g. Kline, 2005; Winer, 1974). However, there are several inherent issues when using these popular transformation techniques. First, in this study, a Likert scale with anchors 1-5 was used; resultantly many cumulative items demonstrated a negative skewness, which would be assumed based upon prior empirical studies. For instance, the majority of respondents reported that the access to resources were important; thus the distribution of that item response was skewed. Indeed, Tabachnick and Fidell (2001) discussed that when variables are likely to be non-normally distributed, such as the example above, then the use of data transformation is not advised. Second, as scholars have asserted, transformed data can be harder to interpret because they change the fundamental nature of the variable by altering the distance between data points.
One approach to dealing with non-normal data distributions in structural equation modeling is bootstrapping. Indeed, Yung and Bentler (1996) asserted that bootstrapping offers a statistical solution where assumptions of multivariate normality and large sample size are violated, whereas bootstrapping can handle violations of traditional methods. Bootstrapping re-samples cases from observed data; thereby, estimating the population distribution of a given statistic. Therefore, many new datasets are created by re-sampling the original data set. To account for this non-normality, I used the bias corrected approach to interval estimation in AMOS 18.0. I examined the .95 corrected confidence intervals and the Bollen Stine p value test for overall model fit with non-normal data.

Sample Size Issues

In addition to non-normal distributions, the proposed model included 45 items, forming 8 factors; thereby, requiring 168 parameters to be estimated. Yet the sample size of this pilot study (n=63) falls below the prescribed recommendations of five observation per parameter (Bentler & Cho, 1987). Therefore, to confirm the validity of the proposed factor structures two steps were taken. First, individual CFA’s were conducted for each latent construct (Intergenerational Authority (IA), Intergenerational Support (IS), Material Resources (Res), Risk Taking/Failure Tolerance (RTFT), Idea Time(IT), Paradoxical Thinking (PT), Paradoxical Tensions (Tens) and Innovative Behavior (IB). Second, after the factor structures were confirmed, three separate CFA’s were conducted based upon aprior theoretical groupings. This method significantly reduced the number of parameters required; thereby enabling statistical rigor.

Pilot Results

The initial results (n=63) from the series of individual CFA’s run indicated that some of
the factor structures did not form as expected and the model was not representative of the observed data. The AMOS output suggested fit was poor because of low factor loadings; <.30, indicating that the item did not represent the latent construct. Due to the lack of fit, AMOS output Modification Indexes (MI) and the standardized residuals were examined to guide the model respecification. An MI value greater than 4.0 indicates a change in the model will increase fit (Byrne, 2001). MI’s indicate a variety of changes needed, ranging from adding paths from latent constructs to indicators or adding error covariance between observed variables. In addition, residuals can identify areas of misfit. Standardized positive residuals greater than 2.58 indicate that the models parameters underestimate the relationship. Whereas standardized negative residuals indicate that the parameters overestimate the relations. Therefore, modification was based upon the following criteria: factor loading/coefficients <.30, standardized residuals > 2.58 and AMOS modification indices. Statistically and theoretically, there was justification to remove ten items.

Specifically, there were four items removed from the IA construct. These items displayed factor loadings <.30, indicating they were not representative of the construct. Furthermore, two of the items with poor loadings were reverse worded, and the other two demonstrated very strong language that could lead to a social desirability bias. Illustratively, item 6 stated that “The word of the senior generation is the law.” Although, anonymity was guaranteed, many respondents might be hesitant to respond to this because they do not want to speak of their predecessor and family member in such a strong tone.

Four items were removed from the paradoxical thinking construct due to poor factor loadings. All four items were correlated. Moreover, they were general, universal indicators of
paradoxical thinking that did not resonate with family business practitioners. For instance, one removed scale item stated “It is possible to always change to remain the same.”

In addition to removal of individual scale items, according to the Amos output, the model fit would improve if I allowed several within construct errors to co-vary. Therefore, I allowed the following errors to co-vary: IS 8&9, IT 21 &23, RTFT 18&20 and Tens 4&5 based upon theoretical commonalities. Illustratively, I allowed intergenerational support (IS) 8 & 9 to co-vary because they both emphasize attentiveness of the prior generation and risk taking/failure tolerance 18 & 20 because both items emphasized mistakes.

The models were then respecified to accommodate the removed items. Resultantly, the measures displayed alphas >.70 (Table 1), factor loadings greater than >.40 , standardized residuals were in appropriate bounds between 2.58 and -2.58 (Byrne, 2001), and bootstrapping confidence intervals indicate measurement items have a 95% certainty that the true values lies between the lower and upper bounds and reconfirms the standardized regression estimate (factor loading) (Table 1). Moreover, for each construct the Average Variance Extracted (AVE) met the threshold of .5 or greater (Hair et al., 2006) and all constructs demonstrated sufficient reliability of .7 or greater (Nunnally, 1978). Therefore, after modification the individual parameters in the models displayed fit (Figures 2, 3, 4).

In addition to the individual CFA’s conducted for each latent construct, the three CFA’s conducted to determine discriminate validity displayed appropriate fit after the above modifications (Figures 2, 3, 4). The leadership CFA (Figure 2), comprised of the latent constructs intergenerational authority and intergenerational support, displayed good fit: $\chi^2_{(12.112 & p =.278)}$, Bollen Stine (p=.443), TLI (.965), CFI (.983) and RMSEA (.065). Practices
(Figure 3), comprised of material resources, risk taking/failure tolerance, and idea time, displayed good fit: $\chi^2 (42.198 & p = .294)$, Bollen Stine (p=.602), TLI (.978), CFI (.985) and RMSEA (.047). Lastly, the mindsets and tensions CFA (Figure 4), comprised of paradoxical thinking and paradoxical tensions, demonstrated overall fit: $\chi^2 (23.153 & p = .393)$, Bollen Stine (p=.669), TLI (.992), CFI (.986) and RMSEA (.032).

### TABLE 1: Pilot CFA Scale Reliability and Factor Loadings

<table>
<thead>
<tr>
<th>Construct</th>
<th>Coefficient Alpha</th>
<th>Mean Inter-Item Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intergenerational Authority (IA)-2 items (initial 6 items)</td>
<td>.826</td>
<td>.693</td>
</tr>
<tr>
<td>Intergenerational Support (IS)-5 items (initial 6 items)</td>
<td>.826</td>
<td>.487</td>
</tr>
<tr>
<td>Resources (Res) -3 items</td>
<td>.848</td>
<td>.651</td>
</tr>
<tr>
<td>Idea Time (IT) -4 items</td>
<td>.808</td>
<td>.505</td>
</tr>
<tr>
<td>Risk Taking/Failure Tolerance (RTFT)- 4 items (initial 5)</td>
<td>.884</td>
<td>.653</td>
</tr>
<tr>
<td>Paradoxical Thinking (PT)- 3 items (initial 7)</td>
<td>.642</td>
<td>.340</td>
</tr>
<tr>
<td>Tensions (Tens)- 6 items (initial 7)</td>
<td>.752</td>
<td>.332</td>
</tr>
<tr>
<td>Innovative Behavior (IB)-8 items</td>
<td>.820</td>
<td>.361</td>
</tr>
</tbody>
</table>
FIGURE 2
Final Pilot CFA Leadership Outcomes: IA & IS

Leadership CFA Outcomes: Maximum Likelihood Standard Estimation
$\chi^2=12.112$, $p=.278$  Bollen Stine=.443  TLI=.965  CFI=.983  RMSEA=.065  
All Factors Allowed to Co-vary Not Shown
FIGURE 3
Final Pilot CFA Practices: Res, RT/FT, IT

Practices CFA Outcomes: Maximum Likelihood Standard Estimation
χ²=42.198, p=.294  Bollen Stine=.602  TLI=.978 CFI=.985 RMSEA=.047
All Factors Allowed to Co-vary Not Shown
FIGURE 4
Final Pilot CFA Mindsets: Paradoxical Thinking and Tensions

Mindsets CFA Outcomes: Maximum Likelihood Standard Estimation
$\chi^2=23.153$ p=.393 Bollen Stine=.669  TLI=.977  CFI=.986  RMSEA=.032
All Factors Allowed to Co-vary Not Shown
Stage Four: Results

Final Scale Validity and Hypotheses Testing

Final Study Participants

176 family business executives completed the online survey; however, due to the aggregation issues, only 115 family firm executives were included in the analysis, representing the 115 firms that responded to the survey. The executive respondents were 83.5% male and 16.5% female. The size of the firms ranged from one employee to 50,000 employees. The executive positions varied, overall 31.3% of the executives were the CEO, 25.2% president, 10.4% vice president, 9.6% both CEO and President, 9% CFO, 9% COO, 8.7% Director, 7.8% other, and 4.3% managers. Moreover, the respondents were 29.9% second generation, 26.1% first generation, 19.3% multiple generations, 13.4% third generation, 5.9% fourth generation and .8% fifth generation, with 5% not answering to generation. Respondents cited a variety of industries: 25.9% were in the manufacturing industry, 13.9% construction, 13% wholesale/trade, 12.1% service, 7% hospitality, 6.1% financial services, 5.2% agriculture/forestry, 5.2% in other industries not listed, 3.5% multiple industries, 1.7% insurance, .9% mining/oil gas, .9% telecommunications, .9% transportation, .9% information, and .9% healthcare.

Preliminary Data Screening

Before conducting the statistical analyses, CFA and SEM, I assessed the data for normality, outliers, homoscedasticity, and missing data using SPSS 18.0 descriptive statistics (Kline, 2005).
**Missing Data**

Missing Data was analyzed using SPSS 18.0 Missing Value Analysis 18.0, with an Expected Maximization (EM) technique. Overall, 16.2% of the overall data were missing; therefore, I analyzed the data to determine if the data was Missing Completely at Random (MCAR), or Missing at Random (MAR). To determine the randomness, I utilized SPSS 18.0 Missing Value Analysis (MVA) to analyze the data for discernable patterns. As indicated by MVA, Little’s MCAR, there were no detectable patterns. Little’s MCAR was non-significant (p=.769 , Chi-Square 605.684) indicating the data is missing completely at random. Lastly, I examined the characteristic of missing data for each variable and the range of missing data was from 2.6%-16.2%. I utilized multiple imputation in SPSS 18.0 to impute the missing values since the data was MCAR.

**Non-Normal Distributions**

As discussed previously, an important assumption of SEM is that the data follow a multivariate normal distribution (Byrne, 2001). Because multivariate normality is a critical assumption when utilizing SEM, data normality was examined with SPSS 18.0 and AMOS 18.0.

Overall, the majority of items demonstrated non-normality because they were skewed with kurtosis, and was demonstrated with a critical ratio (CR) greater than 2.0 or smaller than -2.0. Furthermore, Maridia’s (1970) coefficient estimates multivariate kurtosis illustrated that the data were overall non-normal with a coefficient greater than 10.

As discussed, instead of utilizing data transformation to normalize the distribution, I employed bootstrapping techniques in AMOS 18.0. Again, bootstrapping adjusts the sampling distribution used to compute the probability values for a Chi-Square generated maximum
likelihood estimation via repeated sampling from the observed data. Bootstrapping provides a mechanism to address situations where there are smaller sample sizes and data is not normally distributed (Byrne, 2001).

Evaluation of Models

As previously discussed, the measurement models were assessed by global fit indices and model parameters estimates. I examined absolute fit indices in combination with relative fit indices. Furthermore, I assessed the Bollen Stine P value, which is considered to be a “Modified bootstrap method for the Chi-Square goodness-of-fit statistic” (Byrne, 2001:284).

Sample Size Issues

Overall the model includes 35 items, forming eight factors; thereby, requiring 134 parameters to be estimated. Yet the sample size of this study (n=115) falls below the prescribed ratio of 5:1 (Bentler & Cho, 1987). Therefore, I ran individual CFA’s for each construct, then three separate CFA’s were conducted based upon prior theoretical groupings. This significantly reduced the number of parameters required. The mindsets/tensions model required 43 parameters to be estimated; the practices required 52 parameters to be estimated, and the leadership required 35 parameters to be estimated. Therefore, the current sample size more adequately met sample size guidelines.

Following Anderson and Gerbing’s (1988) two-step approach to analysis I conducted the CFA’s, and then used structural analysis to examine the hypothesized relationships among latent constructs. Structural analysis examined the relationships among constructs to test the hypotheses proposed in chapter three. Testing was performed using the AMOS 18.0 statistical program coupled with SPSS analysis of descriptive statistics.
Confirmatory Factor Analysis

CFA’s were conducted using AMOS 18.0 and were conducted for each individual latent construct to determine reliability and convergent validity. Moreover, CFA’s were run for each theoretical grouping for the antecedents of family firm innovative behavior to determine discriminate validity and overall model fit. Initially the three models could display better fit. According to the AMOS output, allowing several within item error terms to co-vary would improve the overall model fit. Therefore, I allowed the following items to co-vary: IS e8 and e9, IT 21 and 23, RTFT 18, Tens 4 and 5 and 3 and 6 and IB items 3 and 6. Items were only allowed to co-vary if they had a theoretical commonality. For instance, I co-varied Inn 3 and Inn 6 because they both discuss idea and process novelty. Yet, as one allows terms to co-vary, there is a loss of parsimony because of fewer degrees of freedom. Additionally, I allowed several construct items to co-vary, stemming from the proposed item commonalities. For instance, I allowed the error terms 5 and 6 to co-vary among Tens and PT because they are the same statement with different anchor points.

CFA Results

After modification, allowing certain errors to co-vary, the constructs displayed adequate fit (Figures 5, 6, 7). First, all constructs displayed significant factor loadings, >.30 and reliabilities of .7 or greater, indicating convergent validity. Additionally, the majority of the bootstrapping confidence intervals indicated that the true parameter estimate value lies between acceptable ranges (no natural zero), suggesting that the items were loading onto the correct factor. Second, the goodness of fit indices indicates that the three CFA models displayed good to moderate fit: Leadership (Figure 5): $\chi^2$ (20.125, p=.017), Bollen Stine (.100), TLI (.946), CFI
(.977), RMSEA (.104), Practices (Figure 6): \( \chi^2 (45.634, p=.216) \), Bollen Stine (.216), TLI (.989), CFI (.992), RMSEA (.039), Mindsets and Tensions (Figure 7): \( \chi^2 (28.688, p=.154) \), Bollen Stine (.317), TLI (.971), CFI (.983), RMSEA (.052).

**TABLE 2: Final Scale Reliabilities**

<table>
<thead>
<tr>
<th>Construct</th>
<th># Items</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intergenerational Authority</td>
<td>2</td>
<td>.850</td>
</tr>
<tr>
<td>Intergenerational Support</td>
<td>5</td>
<td>.870</td>
</tr>
<tr>
<td>Resources</td>
<td>3</td>
<td>.916</td>
</tr>
<tr>
<td>Risk Taking/Failure Tolerance</td>
<td>4</td>
<td>.893</td>
</tr>
<tr>
<td>Idea Time</td>
<td>4</td>
<td>.795</td>
</tr>
<tr>
<td>Tensions</td>
<td>6</td>
<td>.837</td>
</tr>
<tr>
<td>Paradoxical Thinking</td>
<td>3</td>
<td>.810</td>
</tr>
<tr>
<td>Innovative Behavior</td>
<td>8</td>
<td>.842</td>
</tr>
</tbody>
</table>
FIGURE 5
Final Leadership Measurement Model: IA and IS

Leadership CFA Outcomes: Maximum Likelihood Standard Estimation
χ² = 20.125 p = .017, Bollen Stine = .100  TLI = .946  CFI = .977  RMSEA = .104
All Factors Allowed to Co-vary Not Shown
Practices CFA Outcomes: Maximum Likelihood Standard Estimation
\( \chi^2 = 45.634 \)  p= .216  Bollen Stine= .567  TLI = .989  CFI = .992  RMSEA = .039
All Factors Allowed to Co-vary Not Shown
Final Mindsets and Tensions Measurement Model: Paradoxical Thinking & Tensions

Mindsets  CFA Outcomes: Maximum Likelihood Standard Estimation
χ²= 28.688  p=.154  Bollen Stine=.317  TLI=.971 CFI=.983  RMSEA=.052
All Factors Allowed to Co-vary Not Shown
FIGURE 8
Final Innovative Behavior Measurement Model

Innovation CFA Outcomes: Maximum Likelihood Standard Estimation
\( \chi^2 = 28.868 \) \( p = .068 \) Bollen Stine=.388 TLI=.955 CFI=.969 RMSEA=.067
All Factors Allowed to Co-vary Not Shown
<table>
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<tr>
<th>Parameter</th>
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<th>Regression Weight Lower</th>
<th>Regression Weight Upper</th>
<th>P</th>
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<td>1.000</td>
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<td>.797</td>
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<td>Maximum Likelihood Estimate</td>
<td>Regression Weight Lower</td>
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<td>-----------</td>
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<td>-----------------------------</td>
<td>------------------------</td>
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<td>1.000</td>
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<td>.925</td>
<td>.659</td>
</tr>
<tr>
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<td>.687</td>
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</tr>
<tr>
<td>Inn2</td>
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<td>.452</td>
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</table>
Final Model Variables

Based upon the CFA results, eight factors were included in the final path analysis. The variables, number of items per construct, and alpha reliabilities are in Table 2. Moreover, Table 4 reports the correlations among the constructs.

<table>
<thead>
<tr>
<th></th>
<th>IA</th>
<th>IS</th>
<th>RES</th>
<th>RTFT</th>
<th>IT</th>
<th>PT</th>
<th>TENS</th>
<th>IB</th>
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<td>.071</td>
<td>.115</td>
<td>.058</td>
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<td>IS</td>
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<td>.186</td>
<td>.176</td>
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<td>.136</td>
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<tr>
<td>RES</td>
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<td>.186</td>
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<td>.382</td>
<td>.381</td>
<td>.384</td>
<td>-.201</td>
<td>.269</td>
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<tr>
<td>RTFT</td>
<td>.057</td>
<td>.335</td>
<td>.382</td>
<td>1</td>
<td>.447</td>
<td>.333</td>
<td>-.332</td>
<td>.420</td>
</tr>
<tr>
<td>IT</td>
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<td>.186</td>
<td>.381</td>
<td>.447</td>
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<td>.504</td>
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<td>.396</td>
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<tr>
<td>PT</td>
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<td>.176</td>
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<td>.459</td>
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<td>TENS</td>
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<td>-.049</td>
<td>-.201</td>
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<td>-.245</td>
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<tr>
<td>IB</td>
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<td>.420</td>
<td>.396</td>
<td>.459</td>
<td>-.206</td>
<td>1</td>
</tr>
</tbody>
</table>

**Correlation is significant at the .001 level

* Correlation is significant at the .05 level

Hypotheses Testing

In this section, I discuss the results of the path analysis conducted in AMOS 18.0 to test the aforementioned hypotheses. First, I discuss the creation of the path model using single item indicators due to sample size limitations. Second, I discuss test results for each hypothesized model.

Path Model

Based on the CFA’s conducted, all eight model variables displayed reliability, convergent and discriminatory validity; and therefore, will be utilized in the structural model. As discussed, this sample (n=115) falls short of the prescribed recommendations in utilizing SEM; therefore, the sample was not large enough to run a full information model. To reduce the number of parameters estimated, single item indicators were formed for each construct. The items for each unique variable were combined to form a single indicator via SPSS 18.0 factor reduction.
Moreover it is assumed, since the factor structures displayed convergent and discriminate validity and reliability that measurement error has been accounted for with the single item path model. As discussed and driven by the extant literature, the following exogenous variables were allowed to co-vary: IA & IS, Res, IT, & RTFT, and PT & Tens.

Results: Hypotheses 1-7

According to the AMOS output, the initial model achieved adequate fit (Figure 9): $\chi^2$ (12.816, $p=.118$), Bollen Stine (.229), TLI (.923), CFI (.978), and RMSEA (.073). Next, I examined the path coefficients, critical ratio, p-values, and bootstrap confidence intervals to determine path significance. Maximum likelihood estimates and bootstrap confidence intervals are displayed in table 5. The analysis revealed that two paths were significant (Figure 9). The path from RTFT to IB was significant ($p=.006$) with a path coefficient of .270, and the path from PT to IB was significant ($p=.001$) with a path coefficient of .311. Therefore, hypotheses five and seven were supported while hypotheses one, two, three, four and six were not supported (Table 5).
FIGURE 9
Hypothesized Model: Hypotheses 1-7

Standardized Solution Shown and All Exogenous Factors Allowed to Co-Vary (Not Shown)
**= p < 0.05; *** = p < 0.01

TABLE 5: .95 Bias-Corrected Bootstrapping Confidence Intervals

<table>
<thead>
<tr>
<th>Regression Path</th>
<th>Maximum Likelihood Estimate</th>
<th>Regression Weight Lower Bound</th>
<th>Regression Weight Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: IA → IB</td>
<td>.060</td>
<td>-.118</td>
<td>.201</td>
</tr>
<tr>
<td>H2: IS → IB</td>
<td>-.072</td>
<td>-.260</td>
<td>.116</td>
</tr>
<tr>
<td>H3: RES → IB</td>
<td>-.012</td>
<td>-.161</td>
<td>.163</td>
</tr>
<tr>
<td>H4: IT → IB</td>
<td>.122</td>
<td>-.040</td>
<td>.317</td>
</tr>
<tr>
<td>H5: RTFT → IB</td>
<td>.270</td>
<td>.099</td>
<td>.495</td>
</tr>
<tr>
<td>H6: TENS → IB</td>
<td>-.030</td>
<td>-.164</td>
<td>.107</td>
</tr>
<tr>
<td>H7: PT → IB</td>
<td>.311</td>
<td>.180</td>
<td>.446</td>
</tr>
</tbody>
</table>
Moderation: Hypothesis 8

Next, to test hypothesis eight, a moderation effect, an additional model was run (Figure 10). Again, the following exogenous variables were allowed to co-vary: IA & IS, RES, IT, & RTFT, and PT & Tens. Additionally, Tenpara & Tens and Tenpara & PT co-varied. The additional interaction, Tenpara (Tens*PT), was significant at .05 with a path coefficient of .159. Moreover, to further test the significance of the moderation, two models were run. First, the model with the interaction path, freely estimated compared with a model with the interaction path constrained to one. Again, the moderation effect was demonstrated where the unconstrained moderation model demonstrated better fit than the initial hypothesized model (Figure 10): $\chi^2 (19.759, p=0.181)$, Bollen Stine (.512), TLI (.949), CFI (.991) and RMSEA (.053). Moreover, the constrained moderator model demonstrated poor fit: $\chi^2 (82.899, p=0.000)$, Bollen Stine (.005), TLI (.326), CFI (.700) and RMSEA (.191).

Because a moderator alters the direction and/or strength of the relationship between the predictor and outcome variables (Tens & IB) (e.g. Barron & Kenny, 1986), it is important to understand how the moderator interacts with the variables. To gain insight, scholars suggest graphing the interaction effect (Aiken & West, 1996). The interaction was graphed, using ModGraph-I version 2.0, which utilizes a procedure recommended by Cohen and Cohen (1983). This procedure plots three chosen distinct levels of the continuous moderator variable (PT) against TENS and IB: High (+1SD), Medium (mean) and Low (-1SD) (Figure 11). The graph implies the following relationships: (1) when tensions are high, paradoxical thinking is high, then innovative behavior is high (2) when tensions are high, paradoxical thinking is low, then innovative behavior is low (3) when tensions are low, paradoxical thinking is high, then innovative behavior is high (4) when tensions are low, paradoxical thinking is medium, then
innovative behavior is medium or (5) when tensions are medium, paradoxical thinking is high, then innovative behavior is high. These results reaffirm extant theory, suggesting paradoxical thinking enables innovative behavior when tensions are high. Alternatively, innovative behavior is lower when tensions are high and actors do not engage in paradoxical thinking.

![Diagram](image)

**FIGURE 10**

Hypothesized Moderation Model: Hypothesis 8

Standardized Solution Shown and All Exogenous Factors Allowed to Co-Vary (Not Shown)

χ²=19.759, p=.181, Bollen Stine=.512, TLI =.949, CFI=.991, RMSEA=.053

** = p < 0.05; *** = p < 0.01
### TABLE 6: Summary Hypotheses Tests

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statement</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Intergenerational authority is negatively related to family firm innovative behavior.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H2</td>
<td>Intergenerational Support is positively related to family firm innovative behavior.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H3</td>
<td>Family firm members’ perception of the provision of resources is positively related to innovative behavior.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H4</td>
<td>Family firm members’ perception of the provision of idea time is positively related to innovative behavior.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H5</td>
<td>Family firm members’ tolerance for risk and failure are positively related to innovative behavior.</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>The level of paradoxical tension family firm members’ experience will influence innovative behavior.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H7</td>
<td>Family firm leaders’ paradoxical thinking is positively related to innovative behavior.</td>
<td>Supported</td>
</tr>
<tr>
<td>H8</td>
<td>Family firm leaders’ paradoxical thinking moderates the relationship among paradoxical tensions and innovative behavior.</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Alternative Models: Control Variables

An alternative model was run to examine the impact of the following control variables on innovative behavior: age, size, and industry (Figure 11). These variables were included to explore whether any of the hypothesized relationships’ would change in magnitude or strength. This was assessed by examining the global fit of the model to the data and the parameter estimates.

Age

Age was included as a control variable because a multitude of scholars have posited that a firm’s age impacts innovation (Kimberly & Evanisko, 1981; Roa & Drazin, 2000; Scott & Bruce, 1994). Scholars have argued that age positively and negatively impacts a firm’s innovative prowess. For instance, Roa and Drazin (2000) argued that as firms mature, they are more resistant to change and rigid, leading to less innovation. Whereas, younger firms are less routinized and beauracratized and less threatened by adoption of innovation. Contrastingly, Kimberly and Evanisko (1981) posited that older firms have more resources so they are more innovative. Yet the results of this model indicated that firm age is not significantly related to family firm innovative behavior and previously significant relationships remained unchanged (Figure 11).

Size

The second control variable was firm size. Many scholars have suggested that a firm’s size impacts its innovative behavior (e.g., Ahuja, 2000; Ancona & Caldwell, 1982; Greve & Taylor, 2000). However, empirical results about the relationship among size and innovation have been contradictory (Camison-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés & Bornonat-Navarro,
Some have suggested that the larger an organization becomes the more inert it becomes. For instance, as a firm’s size increases it becomes more resistant to change and has more difficulty processing information, leading to less innovation (Greve & Taylor, 2000; Roa & Drazin, 2000; Scott & Bruce, 1994). Yet others have argued that large firms accrue more resources (Damanpour & Evan, 1984) and are able to take greater risks (Damanpour, 1992); therefore, have the ability to be more innovative. To control for firm size, an additional path from size to innovative behavior was created. The results showed that firm size is not significantly related to family firm innovative behavior and previously significant relationships remained unchanged (Figure 11).

**Industry**

In addition to controlling for firm age and size, it is important to examine if the firm’s industry impacts the level of innovation. It is probable that there are important industry differences that lead to different norms and practices in the innovation process. Illustratively, differences might stem from divergence in the industries’ level of environmental uncertainty, whereas high environmental uncertainty likely leads to more innovation (Damanpour, 1996). To control for industry, an additional path was created from industry to innovative behavior. However, industry is a categorical variable; therefore, several dummy codes were created in SPSS 18.0. The first dummy variable represents firms in the manufacturing sector and the second dummy variable includes firms in the services sectors, including construction. These sectors were chosen because of the 16 potential industries respondents could select; only these industries had a significant number of respondents that could potentially impact innovative behavior. The results showed that the manufacturing or service industry is not significantly related to family
firm innovative behavior and previously significant relationships remained unchanged (Figure 11).

FIGURE 12
Hypothesized Model With Control Variables

Standardized Solution Shown and All Exogenous Factors Allowed to Co-Vary (Not Shown)

χ²=59.162, p=.202, TLI =.949, CFI=.967, RMSEA=.037

** = p < 0.05; *** = p < 0.01
Post-Hoc Analysis: Exploratory Analysis

Exploratory Model One

Based upon the initial hypothesized findings, paradoxical thinking (PT) and risk taking/failure tolerance (RTFT) appear to play critical roles in fostering family firm innovative behavior. Moreover, leadership (IA, IS) and practices (IT, RES) were not found to be directly related to innovative behavior, as traditionally conceptualized in extant literature. Therefore, exploratory analysis was conducted to gain further insight into the enablers of family firm innovative behavior.

Although, the initial hypothesized and moderated model demonstrated adequate fit, there are other possible relationships among constructs that emerged during this analysis. Indeed, a number of empirical investigations have found positive relationships between RES, IT, RTFT, and IB. Additionally, several constructs displayed significant correlations (Table 4), indicating possible relationships. Therefore, it is possible that IA, IS, Res, IT and Tens might be directly related to PT and RTFT and indirectly related to IB. This alternative model also examines PT and RTFT as directly related to IB. Resultantly, paths were added from IA to RTFT and PT, IS to RTFT and PT, RES to RTFT and PT, IT to RTFT and PT, and from Tens to RTFT and PT. Furthermore, this model examines plausible relations among the moderator, Tenpara, and whether RTFT is an antecedent to PT. In addition, the model examines all direct relationships between control variables (Age, Size, Manfuacedum, Servicdu) and IB. All the original variables, including the control variables, were included in this exploratory model to examine the web of complex relationships among the endogenous and exogenous constructs. Thus, this exploratory model examines possible suppression and multivariate effects between variables. Suppression
occurs when two or more highly correlated variables predict an outcome causing the least significant predictor to correlate with the error of the other predictor variables, which “purifies” the other predictor causing its significance to increase (Kline, 2005).

Theoretically, there are several justifications for adding these aforementioned new paths. First, IA and IS might indirectly impact IB. When founders or prior generations exert excessive control, it is likely that this will decrease the current/managing generation’s level of risk taking. This likely occurs because when leaders/supervisors pressure employees to think or behave in certain ways; this reduces an employee autonomy and voice, which will also reduce their risk taking propensity and willingness to think in a different manner, like paradoxical thinking. Contrastingly, it is more likely that IS will encourage actors to think freely, express their voice and feel autonomous. When employees feel they have the unconditional support of their supervisor/leaders, they will be more likely to gamble on their own ideas, hence engage in risk taking. Additionally, it is likely that actors will be more willing to think paradoxically, or in an alternative logic when they feel they have the support of their leaders to engage in novel thinking and practices.

Second, the extant literature has provided much empirical support for idea time and resources as antecedents of organizational creativity and innovation. However, the initial findings did not support that. Yet it is plausible that IT and RES have a significant direct relationship with RTFT and PT. Arguably, idea time is critical to producing novel ideas yet, if actors are given the additional time to think creatively, but have a management team or leaders that tend not to take risks and play it safe, they will not bring their creative ideas to fruition. Therefore, it is probable that when actors engage in idea time, the next step before taking the idea to market, is to actually take risks to discuss the novel idea and garner support. Additionally,
it is likely that when actors engage in idea time, they think in alternative ways to again garner support for their novel idea, engaging in paradoxical thinking.

Third, although the relationship among Tens and IB was deemed insignificant in the original model, again, as other constructs, it is plausible that this relationship is directly driven by RTFT and PT. For instance, if actors experience a high level of paradoxical tensions in the workplace, they may be less likely to take risks for fear of intensifying the tensions. Therefore this could negatively impact the level of innovation. Alternatively, if a relatively low level of tensions exists for the firm, the current firm members might be more likely to take risks. Therefore, the relationship between Tens and IB might be mediated by RTFT.

Fourth, both RTFT and PT have a significant relationship with IB and other constructs and RTFT and PT are significantly correlated (.33***); therefore, it is important to further understand the relationship among RTFT and PT. Theoretically, it is plausible that RTFT is an antecedent to PT because when actors think paradoxically they are taking inherent risks because this alternative logic is outside the conventional norm of accepted Western Ariostlian logic. To investigate this relationship, a path was added from RTFT to PT.

The results indicate that Res had significant direct effect to RTFT (.234**) and PT (.210**). IT is a significant antecedent of PT (.401*** and RTFT (.291***). Moreover, IS is significantly related RTFT (.422*** and IA (-.291**), yet not to PT. Tens is significantly negatively related to RTFT (-.291**) and not to PT. Finally, the relationship among RTFT and IB is significant (.264**) and PT to IB is significant (.305***). The interactions term, Tenpara, is significantly related to IB (.150**). Moreover, the service industry dummy coded variable (Servicedu) was moderately directly related to IB (.133). However, there are not significant
direct relationships among Tenpara and RTFT or PT. The relationship among IA, IS, TEN, RTFT and PT is non-significant. The direct paths between IA, IS, IT, Res, Tens, Manufacdum, Age, Size, and IB are all non-significant.

According to the AMOS output, the model achieved adequate fit (Figure 12): $\chi^2$ (50.222, p= .209), Bollen Stine (.325), TLI (.946), CFI (.970) and RMSEA (.038). Therefore, the results of this exploratory model indicate that the drivers of family firm innovative behavior and antecedents are more complicated than originally considered. Indeed, leadership, practices, mindsets, and tensions all impact innovative behavior. However, the relationships between leadership, practices, and innovative behavior appear to be mediated by risk taking/failure tolerance and paradoxical thinking. Furthermore, these finding confirm that paradoxical thinking and risk taking/failure tolerance directly drive family firm innovative behavior.
Standardized Solution Shown and All Exogenous Factors Allowed to Co-Vary (Not Shown)

$\chi^2 = 50.222$, p = 0.209, Bollen Stine = 0.325 TLI = 0.946 CFI = 0.970 RMSEA = 0.038

$* = p < 0.10$, $** = p < 0.05$; $*** = p < 0.01$
Based upon the findings of exploratory model one (Figure 13), further exploratory analysis can aid in unpacking the multifaceted relationships between leadership, practices, mindsets, tensions, and innovative behavior. The prior model (Figure 13) indicated that risk taking/failure tolerance and paradoxical thinking possibly mediate and moderate multiple relationships between leadership, practices, tensions, and innovative behavior. Therefore, it is important to run an additional exploratory model to gain insight into possible mediation and moderation that exists between the hypothesized drivers of innovative behavior.

Traditionally, scholars argued that mediation that occurred when the following three conditions were met: (1) the IV is significantly related to the mediator variable (2) the moderator is significantly related to the DV and (3) the relationship of the IV and DV is attenuated (decreases) when the moderator variable is in the model (Barron & Kenny, 1986). However, in this typology, Barron and Kenny (1986) argued that there must be a direct significant effect among the IV and DV for mediation to be considered. Yet scholars debate that this direct relationship among the IV and DV must exists for mediation to occur (e.g., Kenny, 2003; MacKinnon, 2009). Indeed, “There need not be a significant zero-order effect on X to Y… to establish mediation” (Zhao, Lynch & Chen, 2010: 3). Therefore, to test the significance of mediation, it is not necessary to establish the direct significant relationship among the IV and DV. Hence, to establish mediation the first step is to determine if there is a significant indirect relationship among the IV, Mediator and DV. Significance was examined by the estimated path coefficients in AMOS 18.0, coupled with bootstrap confidence intervals to test for the significant indirect effect of the IV, Mediator and DV (MacKinnon et al., 2004; Preacher & Hayes, 2004; Williams & MacKinnon, 2008). Moreover, in terms of Structural Equation Modeling, many
scholars couch the term mediation as indirect and/or direct effects. Resultantly, I discuss mediation in terms of indirect and indirect effects.

To examine the aforementioned multivariate relationships, model modification was undertaken, guided by a priori theory and exploratory model one (Figure 13) AMOS 18.0 output. Accordingly, the following non-significant paths were removed: IA, IS, Res, IT, Tens to IB; IA, IS to PT, RTFT to PT; Age, Size, Manufacdum and Servicedum to IB. Moreover, this secondary exploratory model was created to examine the potential meditational effects of RTFT and PT demonstrated in the prior exploratory model (Figure 12).

As table 7 indicates, the mean indirect effect of the bootstrap analysis indicates the indirect effects between RTTF, PT and other exogenous variables are significant with a 95% Bias Corrected Confidence Interval (CI) that does not include zero. Hence, if a CI does not include zero, it is considered to be significant. Therefore, IA, IS, Res, IT and Tens are indirectly and significantly related to IB through RTFT. Res and IT are significantly and indirectly related to IB via PT. Moreover, the moderately significant path between Tenspara and IB indicates that PT significantly moderates the relationship between TENS and IB. Again, both PT and RTFT were found to be directly and significantly related to IB. Finally, the global fit of this model is adequate with: $\chi^2 (11.833, p=.810)$, Bollen Stine (.914), TLI (1.049), CFI (.1.000) and RMSEA (.000). To further examine the significance of the indirect mediated relationships, 95% bias corrected bootstrap intervals and the associated two tailed significance values were examined (Table 7 & 8). The 95% bias corrected bootstrap intervals for the following relationships did not include zero and demonstrated significance; hence indicating a significant indirect relationship: Tens and IB (.002), IT and IB (.005), Res and IB (.006), IS and IB (.002), IA and IB (.008). Moreover, the BC CI indicated that that the following paths did not include zero and
demonstrated significance, indicating significant direct relationships between the constructs; reiterating meditational effects: Tens and RTFT (.026), IT and RTFT (.006), Res and RTFT (.021), IS and RTFT (.003), IA and RTFT (.013), IT and PT (.009), RTFT and IB (.004), PT and IB (.007).

The model demonstrated excellent fit (Figure 14): $\chi^2 (11.833, p = .810)$, Bollen Stine (.914), TLI (.1.049), CFI (1.000) and RMSEA (.000). The results indicate that the traditionally conceptualized antecedents of innovation are not directly related to innovative behavior in this context, but indirectly related through risk taking/failure tolerance and paradoxical thinking. Moreover, this model indicates that paradoxical thinking and risk taking significantly and directly impact a family firm’s level of innovative behavior. Furthermore, as extant theory suggests, the relationship between paradoxical thinking, tensions, and innovative behavior is complex, where paradoxical thinking moderates the relationship among tensions and innovative behavior as discussed earlier. These findings begin to unpack the complex relationships among leadership, practices, mindsets, tensions, and innovative behavior. Indeed, these results stress the importance of paradoxical thinking and risk taking/failure tolerance in facilitating family firm innovative behavior.
FIGURE 14
Exploratory Model Two

Standardized Solution Shown and All Exogenous Factors Allowed to Co-Vary (Not Shown)
χ² 11.833 p=.810, Bollen Stine=.914 TLI =.1.049, CFI=.1.000, RMSEA=.000
//=.10, **= p < 0.05; *** = p < 0.01
### TABLE 7: 95% Bias Corrected CI for Indirect Effects

<table>
<thead>
<tr>
<th>Regression Path</th>
<th>Regression Weight Lower Bound</th>
<th>Regression Weight Upper Bound</th>
<th>2-tailed Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEN → IB</td>
<td>-.183</td>
<td>-.040</td>
<td>.002</td>
</tr>
<tr>
<td>IT → IB</td>
<td>.131</td>
<td>.356</td>
<td>.005</td>
</tr>
<tr>
<td>RES → IB</td>
<td>.037</td>
<td>.271</td>
<td>.006</td>
</tr>
<tr>
<td>IS → IB</td>
<td>.040</td>
<td>.258</td>
<td>.002</td>
</tr>
<tr>
<td>IS → IB</td>
<td>-.173</td>
<td>-.023</td>
<td>.008</td>
</tr>
</tbody>
</table>

### TABLE 8: 95% Bias Corrected CI for Direct Effects

<table>
<thead>
<tr>
<th>Regression Path</th>
<th>Regression Weight Lower Bound</th>
<th>Regression Weight Upper Bound</th>
<th>2-tailed Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENS → RTFT</td>
<td>-.372</td>
<td>-.031</td>
<td>.026</td>
</tr>
<tr>
<td>IT → RTFT</td>
<td>.466</td>
<td>.066</td>
<td>.006</td>
</tr>
<tr>
<td>RES → RTFT</td>
<td>.091</td>
<td>.091</td>
<td>.021</td>
</tr>
<tr>
<td>IS → RTFT</td>
<td>.215</td>
<td>.663</td>
<td>.003</td>
</tr>
<tr>
<td>IA → RTFT</td>
<td>-.473</td>
<td>-.092</td>
<td>.013</td>
</tr>
<tr>
<td>TENS → PT</td>
<td>-.269</td>
<td>.009</td>
<td>.057</td>
</tr>
<tr>
<td>IT → PT</td>
<td>.228</td>
<td>.569</td>
<td>.009</td>
</tr>
<tr>
<td>RES → PT</td>
<td>-.035</td>
<td>.380</td>
<td>.098</td>
</tr>
<tr>
<td>RTFT → IB</td>
<td>.101</td>
<td>.493</td>
<td>.004</td>
</tr>
<tr>
<td>PT → IB</td>
<td>.198</td>
<td>.598</td>
<td>.007</td>
</tr>
</tbody>
</table>
CHAPTER 6: DISCUSSION

The purpose of this study was to examine the antecedents of family firm innovation. The reported data is from 115 family business leaders. The data were analyzed with SPSS 18.0 and AMOS 18.0, utilizing structural equation modeling. This chapter discusses the findings and implications of this study. The findings discussion includes two sections. First, I discuss findings from the original hypotheses testing. Second, I discuss the results of the exploratory, post-hoc analysis. Finally, the implications section discusses the limitations and contributions of this study, and offers a conclusion.

FINDINGS

Hypothesized Model of Family Firm Innovative Behavior

The original model demonstrated adequate fit according to AMOS 18.0, whereas the global fit indices with bootstrapping (Figure 9) indicated that the observed data realistically reflected the hypothesized model. Of the seven proposed drivers of innovative behavior, risk taking/failure tolerance and paradoxical thinking were significantly related to innovative behavior. Additionally, paradoxical thinking moderated the relationship between tensions and innovative behavior. In the following paragraphs, I explore the results of each individual hypothesis tested in the original hypothesized model.

Leadership Hypotheses:

As discussed (Chapters 2 & 3), extant organizational innovation literature asserted that leadership control and support directly impacts a firm’s innovative performance. However, few studies have examined how traditional leadership models translate into specific contexts, such as a family business. Therefore, this study seeks to test whether the traditional hypothesized
relationship between leadership and innovation translates to family business intergenerational leadership. This study takes a creative leap to examine leadership in the tenuous context, where leadership practices are confounded by multiple affective roles, multiple identities, and multiple generations. Hence, this study, specifically hypotheses one and two, attempts to gain insight into how researchers might map this complicated relationship.

IA → IB. Although scholars have suggested leadership control stymies innovation (e.g., Amabile, Schatzel, Moneta & Kramer, 2004; Mumord, Scott, Gaddis, & Strange, 2002), this study did not find support that intergenerational authority (IA) is directly related to innovative behavior (IB). Scholars traditionally argued that supervisory control reduces an employee’s autonomy and voice, which undermines intrinsic motivation, an essential component of creative ideation. Within the family business literature, scholars have adapted the leadership discussion to address “intergenerational authority”, where the founding generation exerts and maintains control over the managing generation. This control leads to conflict over autonomy, likely more deeply rooted because of familial ties than traditional leadership contexts. Resultantly, family business theorists have hypothesized that family firms with a high degree of control tend to be less adaptive and more rigid (Bjornberg & Nicholson, 2007) and less innovative (Chapters 2 &3).

IS → IB. In addition to leadership control, scholars have argued that leader support is a significant driver of firm innovation (e.g., Amabile et al., 1996; Hunt, Stelluto & Hooijberg, 2004; West, Borrill, Dawson & Brodbeck, 2003). Yet this study did not support a direct relationship among intergenerational support (IS) and innovative behavior (IB). Empirical investigations have demonstrated that high LMX (leader member exchange), characterized by autonomy and idea exchange, lead to higher levels of innovation (Scott & Bruce, 1994).
Moreover, studies have demonstrated that leaders exhibit specific behaviors that foster creativity and innovation (Amabile et al., 2004). For instance, a leader that monitors, clarifies roles, and sets mutual objectives is considered supportive. In the family business context, researchers have discussed leadership support as an intergenerational phenomenon. Conceptualizing support as the level of “attention” the prior generation gives to the current generation, finding that attention is critical to family business functioning (Bjornber & Nicholson, 2007). Furthermore, family business theorists reiterate that attention is critical in fostering family firm performance because it impacts the socialization of successors (Chapters 2 & 3).

However, in both instances, intergenerational authority (IA) and intergenerational support (IS) were not directly related to a family firm’s innovative behavior. This non-significant finding likely stems from the complexity of intergenerational, familial relationships juxtaposed with a business context. Hence, there are several plausible reasons why a significant direct relationship among IA, IS and innovative behavior (IB) did not occur. First, prior studies have rarely examined leadership, as it pertains to innovation, in the family business context. Second, the relationship among leadership and innovation appears to be much more complex in this alternative context. Third, familial relationships are emotionally charged, while business is more rationally driven; hence, there is a tension between rational logic and emotion guiding business decisions. Finally, there are institutionalized norms and values that may dictate how family members should behave, which are in stark contrast to prescribed acceptable business behavior.

First, scant attention has been given to innovation and leadership in the family business context. As discussed, family firms are imbued with multiple tensions stemming from divergent yet complementary identity, roles, and demands. Therefore, in the family firm, leadership is multifaceted. Resultantly, when examining family firm leadership it is important to capture the
intergenerational relational effect on leadership practices. Otherwise, research paints an incomplete picture, missing key dynamics that drive leaders’ behaviors in family firms.

Second, the extant organizational creativity and innovation literature suggests that the relationship among leadership control and innovation might be more complex than a simple direct effect (Chapters 2 & 3). Again, scholars have purported that excessive leadership/supervisory control negatively impacts actors’ intrinsic motivation through a lack of autonomy, in turn negatively impacting innovative behavior. Therefore, there might be multiple mediators or moderators between IA and IB. In a similar vein, the relationship between IS and IB might be more complex. It is plausible that the perceived level of support the current generation receives from a prior generation is impacted by other intervening constructs. For instance, support might lead to increased autonomy which leads to an increase in intrinsic motivation that directly impacts innovative behavior. Hence, there could be multiple mediators or moderators that impact the relationship between IS and IB.

Third, because familial relationships are complex, there are values and norms that have not been addressed in the mainstream organizational literature; hence, there could be additional, non-rational emotions, and ideologies impacting behavior. For instance, there may be competing organizing logics, paternal fairness versus rational meritocracy and competing identities complicating the relationship. Indeed, Nicholson (2008) posited that the “Sentiments of kinship… sit uneasily alongside the Weberian and classical management principles of rational order on which the modern corporation is founded” (73). Whereas a family business might embrace nepotism and fairness, traditional organizations favor meritocracy and rational decision making, free from emotional entanglements. Overall, family business systems can be driven first by emotions and second by economics
Moreover, because of the emotional slant driving familial relationships, it is possible that a succeeding family member’s generation might engage in non-rational rebellion. Indeed, “Emotions can outweigh rational considerations in decision making and other cognitive processes” (Baron, 2008: 331). Resultantly, a key issue in family dynamics and business dynamics are emotional issues of control and power, where families have multiple control interactions: “dominating, reactive, and collaborating” (Danes, Rueter, Kwon & Doherty, 2002). Within the reactive domain, rebellion is a response that family members will utilize to react to control from one another. Hence, a family member perceiving excessive control might rebel against the senior generation. Indeed, scholars have suggested during intergenerational succession, the successor might react by rebelling against their predecessor, much like a parent-child rebellion (Kets de Vries, 1984, 1987), and this rebellion can lead to strategic functioning issues for the firm. These affective parental relationship reactions are likely because in family business leadership, intergenerational succession is usually characterized by a large span in age and experience between the old and new leaders; therefore, successors might be more emotionally immature (Handler, 1994). Indeed, the immaturity of the successor and affective-based parental relationship render successor leadership rebellion more likely to occur (Kets de Vries, 1984, 1987).

Finally, there are other drivers of behavior in the family firm, such as institutionalized family scripts, norms, etc. Indeed, just as organizations are institutionalized, so are family businesses, where certain scripts, behaviors, and responses become the institutionalized, taken-for-granted norm guiding familial relationships and business actions. Institutionalization can be described as “Cognitive, normative, and regulative structures and activities that provided stability and meaning to social behavior” (Scott, 1995: 33). Resultantly, family businesses, as
organizations, have both symbolic meanings and structures that do not always support the strict rationality of efficiency (Leaptrott, 2005). Therefore, family firm leadership has a set of institutionalized cultural norms that guide their behavior in the family business. Indeed, there are roles that are fostered in the family over time such as roles of rebellion and dominance (Liepolt, 2005). Hence, if a successor and predecessor prior relationship is characterized by conflict where the successor assumes the role of a rebellious child, the successor is likely to transfer this rebellious role to their position as family firm leader. Therefore, it is probable that in a family business if a founder suggests to their managing son/daughter a strategic direction, the child might non-rationally rebel against the parent’s direction. Consequentially, rebellion might indirectly impact the relationship between IA and IB.

*Practices Hypotheses*

Traditionally, innovation practices such as resource provision, idea time and risk taking/failure tolerance have been highly supported in extant literature. However, in this study, the relationship was found to be more complex; whereas, idea time and resource provision were not direct antecedents of innovative behavior.

RES → IB. Scholars suggest that there is a direct relationship among material resource availability and innovation (Chapters 2 & 3); however, this study did not support the direct relationship. Scholars have argued that access to resources fuels innovation because it encourages organizational experimentation (March, 1981) and impacts an actor’s perceived intrinsic value (Ekvall, 1996), which ultimately impacts innovation. Furthermore, scholars have posited that actors need three types of resources for innovation to flourish: access to time, autonomy, and access to options (Dougherty et al., 2005).
IT → IB. Scholars suggest that idea time is essential to fueling innovation (Chapters 2 & 3); however, this study did not find a significant direct relationship between idea time (IT) and innovative behavior (IB). This appears contrary to previous findings that idea time is a critical resource to fuel innovation (e.g., Amabile & Gryskiewicz, 1987; Ekvall, 1996; Leonard & Swapp, 1999) because the majority of innovations begin with a novel idea or creative ideology (Amabile et al., 2006).

RTFT → IB. Scholars purport the importance of risk taking and failure tolerance in creating a climate to stimulate innovation (Chapters 2 & 3). Although resources and idea time were not found to be direct drivers of family firm innovative behavior, risk taking/failure tolerance (RTFT) was significantly related to innovative behavior (IB). Indeed, tolerance for risk taking and failure are critical enablers of organizational creativity and innovation (e.g., Ahmed, 1998; Andriopoulus, 2001). Moreover, multiple empirical investigations have demonstrated that risk taking is an antecedent of innovation (e.g., Smith, Collins, & Clark, 2005; Wan, Ong, & Lee, 2005). Furthermore, a culture that is failure tolerant, promotes risk taking (e.g., Brash, Capozzi, & Davidson, 2008; Martins & Terblanhe, 2003) by treating failure as a learning experience and source of information. Therefore, as predicted from other literatures, RTFT was found to significantly predict innovative behavior in family firms.

Although idea time and resources were not found to be directly related to innovative behavior, just as leadership control and authority, it is probable that idea time and resources ultimately impact innovative behavior via other mechanisms. Arguably, actors must have access to resources to be innovative; whether it is money, physical space, or time. Again, scholars have suggested that the relationship between resources and innovation might be mediated through intrinsic value and other constructs.
**Tensions and Paradoxical Thinking**

In addition to extending prior theory by examining empirically validated drivers of innovative behavior, this study sought to investigate the interplay of paradoxical tensions and paradoxical thinking’s impact on family firm innovative behavior. This relationship was examined to help shed light on the complexity of managing inherent tensions that either foster or hinder innovation. Whereas paradoxical mindsets are critical in driving creativity and innovation, they are also vital to managing the paradoxical demands stemming from the juxtaposition of two divergent contexts-family and business. Hence, this study confirmed prior theory, finding that paradoxical thinking not only is significantly related to innovative behavior but also moderates the relationship between tensions and innovative behavior.

**TENS → IB.** Scholars suggest that paradoxical tensions either stymie or enhance firm innovation (Chapters 2 & 3). Yet paradoxical tensions (Tens) was not found to be directly related to innovative behavior (IB). Although not significant, the direction was negative, inferring that tensions negatively impact IB. Many family theorists have argued that family businesses are imbued with pervasive paradoxical tensions, stemming from two systems with complementary yet competing goals, values and ideologies (e.g., Tapies & Ward, 2008; Ward, 2005). Scale items in this study examined specific paradoxical tensions discussed in the extant literatures: tradition vs. change, family liquidity vs. business growth, and control vs. autonomy. Overall, respondents indicated that these paradoxical tensions indeed exist in their respective firms yet the findings did not indicate that the tensions alone directly impacted innovation.

**PARA → IB.** This study supports scholars who suggest that paradoxical thinking is a requisite component of creativity and innovation (e.g., Christopher, 2007; Martin, 2007; Rothernberg,
1979). Specifically, these findings are two-fold. First, the responses indicate that firms confirm the existence of paradoxical tensions, as discussed above. Second, leaders who engage in PT are able to leverage these inherent tensions to behave more innovatively. Hence, PT enables leaders to manage the inherent tension of family business to become more innovative.

TENS → PARA → IB. Scholars also suggest that paradoxical thinking (PT) either exaggerates or attenuates the relationship among tensions (Tens) and innovative behavior (IB) (Chapters 2 & 3). Indeed, PT was found to be a significant moderator of the relationship between tensions and innovative behavior. Although tensions were not significantly, directly related to innovative behavior, when juxtaposed with paradoxical thinking, it is a significant predictor of innovative behavior. Therefore, paradoxical thinking strengthens the relationship between tensions and innovative behavior. As demonstrated in the results, when the level of perceived paradoxical tensions is high and paradoxical thinking is high, innovative behavior is high. Alternatively, when the level of paradoxical tensions is high and paradoxical thinking is low, innovative behavior is low. This indicates that paradoxical thinking enables leaders to leverage tensions to become more innovative. Alternatively, if a firm’s leadership does not think paradoxically, not managing inherent tensions, the firm becomes less innovative. Indeed, scholars have purported that thinking paradoxically enables managers to frame tensions in a new, positive light; instead of seeing the tensions as negative and polar opposites, they envisage tensions as complementary allowing them to guide strategic decision making accordingly (Smith & Tushman, 2005). Moreover, other studies have demonstrated how successfully creative firms value tensions (Ingram, Lewis, Andriopoulos & Gotsi, 2008).
These findings indicate that paradoxical thinking is a significant predictor of family firm innovative behavior. Moreover, when the leaders in family firms think paradoxically, it enables them to manage inherent family business tensions, allowing them to become more innovative.

Post-Hoc Exploratory Findings

Exploratory models were conducted to gain further insight into the relationships among the proposed exogenous and endogenous variables. Overall, two additional models were run (Figures 13, 14), and exploratory model two demonstrated the best fit (Table 13). These models extend the prior findings, suggesting that there are multiple mediators that impact the relationship between leadership control, leadership support, idea time, resources, paradoxical tensions, paradoxical thinking, and innovative behavior. These results confirm that traditionally conceptualized drivers of innovative behavior are more complex in the family business.

Overall, the exploratory model indicates the following: (1) intergenerational leadership is indirectly related to innovative behavior, (2) innovation practices are indirectly related to innovative behavior, (3) risk taking/failure tolerance directly drives innovative behavior, (4) paradoxical thinking directly drives innovative behavior, and (5) paradoxical thinking moderates the relationship between tensions and innovative behavior.

\( IA, IS \rightarrow RTFT \rightarrow IB. \) The initial hypothesized model did not find a direct relationship between intergenerational authority (IA), intergenerational support (IS), and innovative behavior (IB). However, this exploratory model found a significant indirect relationship between IA, IS, and IB through risk taking/failure tolerance (RTFT). As discussed previously, this relationship is more complicated than traditionally conceptualized. These findings suggest that a leader’s level of risk taking and failure tolerant practices within the family firm will significantly impact the effect of
prior generational leadership authority and support on a current generation’s innovative behavior. For instance, when the current managing generation perceives support from a prior generation, they will be more likely to take risks and therefore behave more innovatively.

RES, IT → RTFT → IB. Again, the initial hypothesized model did not find support for a direct relationship between material resources (Res), idea time (IT), and innovative behavior (IB). However, the exploratory model confirmed that this relationship is more complicated within the family business context. Findings suggest that both Res and IT are important to IB, yet the relationship is mediated by both RTFT and PT. Hence, a firm needs to ensure that employees have access to material resources and provide time for idea generation. Yet, if firm leadership does not also embrace risk taking coupled with the provision of these aforementioned practices, innovative behavior will not be enhanced.

RTFT → IB. Exploratory findings reiterate the importance of leadership embracing risk taking and failure tolerance (RTFT) to enhance innovative behavior (IB). Findings indicate that RTFT is positively and directly related to IB.

PT → IB. Exploratory findings emphasize the importance of paradoxical thinking (PT) in enhancing a family firm’s innovative behavior. Findings demonstrate a direct, positive relationship between PT and IB; confirming that PT is an antecedent of IB.

Tens → PT → IB. This model re-affirmed the findings from the prior hypothesis testing. Paradoxical thinking (PT) moderated the relationship between tensions (Tens) and innovative behavior (IB). As the graph in chapter four (Figure 11) indicates, the relationship is complicated. However, these findings support extant theory; suggesting paradoxical thinking is an essential factor in managing inherent tensions for the family firm.
Overall, as discussed, these findings begin to map the complexity of innovation for family firms. Within the family firm, there are multiple tensions stemming from competing in ideologies, values and systems; therefore, an added layer of complexity. Hence, family businesses are challenged to manage these tensions. Yet this study sheds lights and suggests that for family businesses to leverage these inherent tensions, leadership needs to embrace paradoxical thinking and promote a climate that fosters risk taking. Moreover, traditionally conceptualized antecedents of innovation are more complex in the family business. Whereas, resources, idea time, leadership support and authority are traditionally conceptualized as direct drivers of a firm’s innovative behavior, in this context, these antecedents are still important, yet mediated by leaders’ thinking and behaviors. Specifically, to enhance innovative behavior, it is essential that family business leaders embrace risk and think paradoxically.

**IMPLICATIONS**

**Limitations**

This study has several limitations that should be addressed. First, there are inherent limitations stemming from cross sectional, static data. Second, there is a potential issue of common method variance. Third, as discussed, there are sample size limitations.

**Cross-Sectional Data**

First, the data for this study was collected over a single time period; hence is cross-sectional. Cross-sectional design has an inherent limitation because there is a validity threat of “ambiguous temporal precedence” (Shadish, Cook, & Campbell, 2002) where the cause might actually be the effect. Therefore, causality among variables cannot be determined. To overcome
this limitation, a longitudinal study of family firm innovation would explicate changes in the variables over time and allow for casual inferences.

**Common Method Variance**

Second, research involving cross-sectional data, such as the data collected in this study, that is self-report is subject to common method bias. Common method variance (CMV) stems from the way the data were measured rather than variance from the actual construct. This can cause systematic measurement error that exacerbates the bias of the estimates among the constructs (Spector, 2006). Indeed, scholars have suggested that when there are self-report items, the problem of common method bias is associated with data where a single respondent is used for both the independent and dependent variables (Campbell & Fiske, 1959). Common method variance (CMV) can be a substantial issue for the measurement validity in any survey with self-report. In this study, family firm executives were used to obtain observed data for both the exogenous and endogenous variables; therefore, it is probable that common method bias could be present. However, efforts were made during the design of the measures to overcome such bias. For instance, items were worded to avoid social desirability and the dependent variable was positioned after the independent variables in attempt to reduce the impact of consistency artifacts (Salancik & Pfeffer, 1977). Moreover, different scale anchors were utilized for the independent and dependent variables (Podsakoff et al., 2003).

Furthermore, to assess the instrument for CMV, several recommended post-hoc tests were conducted (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). First, Harman’s (1976) one-factor test for CMV was conducted with exploratory factor analysis (EFA) in SPSS 18.0. All variables were entered into the EFA to determine the number of factors necessary to account for
the variance in the latent construct. Because one single factor did not emerge and multiple factors accounted for the covariance among variables, then it is likely that a significant amount of CMV is not present (Podsakoff & Organ, 1986; Podsakoff, Todor, Grover & Huber, 1984). Moreover, nine distinct factors emerged with eigenvalues greater than 1.0. These factors accounted for 75.167% of the total variance. Additionally, the first, largest factor did not account for the majority of the variance (24%); therefore, there is no single general factor. Second, a confirmatory factor analysis with a single factor was conducted to detect common method bias. The model demonstrated poor fit ($\chi^2=248.323$, $p=.000$, Bollen Stine=.005, TLI=.000, CFI=.000, RMSEA=.263.), again indicating that a single factor does not account for the data. Both Harmon’s single factor test and CFA indicate that common method variance is not likely confounding the results interpretation.

Sample Size

Third, as discussed, when utilizing SEM to test hypotheses, there are certain sample size recommendations. Indeed, Bentler and Cho (1987) recommended that there should be at least five observations for each model parameter estimated. However, the sample size ($n=115$) fell short of this recommendation for CFA and Path Analysis. To account for this limitation, separate CFA’s were conducted according to prior theory and single item indicators were created to test the hypotheses. This substantially reduced the number of parameters required; thereby, the models were significantly closer to meeting the five observations to one parameter ratio recommendation (Bentler & Cho, 1987).
Contributions of the Study

Contributions to Research

This study offers several contributions to the extant organizational innovation, paradox, and family business literatures. First, this study created and validated a new measure of family firm innovative behavior; thereby, operationalizing new and existing constructs. Second, this study captured a rare opportunity to examine the relationship among paradoxical thinking, tensions, and innovative behavior. Third, this study offers a new perspective on the complexity of intergenerational leadership and innovation in the family firm. Finally, this study empirically validities prior hypothesized antecedents of firm innovation; yet demonstrates the relationships are more complex than originally hypothesized.

First, this study created a novel measure that quantifies innovative behavior in family firms. Additionally, new construct measures were created to measure paradoxical tensions and paradoxical thinking. These validated scales can be applied to prior qualitative studies to empirically validate the existence of paradoxical tensions and paradoxical thinking, aiding in generalizable findings. However, because this study only gave a static snap shot to enhance generalizability and deepen understanding, future studies might examine this multi dimensional family firm innovation construct over time, to infer causality.

Second, this study seized a rare opportunity to investigate the inherent tensions in family firms and their management. Findings empirically demonstrated that family businesses do have inherent tensions, which have been anecdotaly discussed to date. These firms’ illustrated tensions surrounding the level of tradition or change they should undertake, how to reinvest
profits, and control and autonomy between the generations. Moreover, this work investigated the type of thinking leadership utilizes to either foster or stymie innovative behavior, empirically investigating paradoxical thinking. Results confirmed assertions that when firm leaders’ engage in paradoxical thinking, they are more likely to manage these tensions to become innovative. Hence, this study suggests that paradoxical thinking plays a pivotal role in encouraging innovative behavior. Moreover, the findings reveal that there is an intricate relationship among tensions, paradoxical thinking and innovative behavior; whereas paradoxical thinking is essential in managing the inherent tensions of family businesses to fuel innovation.

Third, this study extends the importance of other empirically validated antecedents of firm innovation; yet highlights, in this specific context, how the inferred causal relationships are more complicated. Indeed, scholars have touted that leadership control will stymie a firms innovative efforts and leadership support will enhance its innovative prowess. However, in this tension filled, intergenerational context, leadership is not that simple. This study highlights the intricacy of intergenerational leadership, demonstrating that family leaders need to embrace risk taking to be innovative. In addition, this study also suggests that the prior generations’ perceived support only drives innovative behavior to the degree that the current, managing generation embraces risk taking. Again it is likely that the more the current generation perceives support from the prior generation, the more likely they will engage in taking risks and the more likely they are to behave innovatively. Hence, the relationship between leadership authority, support and innovative behavior is multi-dimensional. Resultantly, future research should further complicate understandings when viewing leadership in the family firms.

Finally, innovation-supportive practices have been identified in the extant literature, yet they have not been examined in the family business context. In contrast, this study examined
touted enablers of innovation, yet found more complex relationships. For instance, risk taking and failure tolerance mediate the relationship among idea time, material resources, tensions and innovative behavior. Moreover, if a firm provides resources and adequate time to generate ideas, but leadership does not think paradoxically, the firm’s innovative behavior will be stymied. Therefore, future studies should attempt to replicate these findings and also examine potential intervening variables not examined in this study.

Contributions to Practitioners

To date, scant attention has been given to innovation in the family firm. There has been discussion of pervasive tensions impacting family firm performance, yet these discussions have been anecdotal. Further, there has been limited discussion about how to manage these tensions and how family business practitioners should think to fuel innovative behavior. In response, this study offers several useful insights for managers. First, this study highlights enablers of innovative behavior for family firms, stressing the importance of providing support, resources and time to enable innovative behavior. Hence, it is imperative for practitioners to gain insight into how their firm is or is not leveraging these enablers to enhance the strategic soundness of their firm. Second, this study highlights the importance of a leader’s ability to think paradoxically. Third, this study reiterated the importance of risk taking and failure tolerance for enabling innovation. Finally, this study called attention to the complexity of intergenerational leadership’s impact on family firm innovation. Therefore, leaders are challenged to manage the complexities of familial relationships in driving innovation.

First, for intergenerational leadership, providing material resources, support, and time for idea generation is critical to enhance innovative behavior. However, this study found that even
more important is leadership’s ability to cultivate an attitude to find solutions by thinking paradoxically. The measure developed in this study provides a tool for practitioners to assess the existence of tensions and management’s response—an innovation audit. This is important for multiple reasons. First, lack of strategic planning has been a key issue in family business success or failure, and this tool will give them a snapshot of their firm’s key drivers of innovative behavior; allowing them to identify areas for improvement which they then can incorporate into their prospective strategic plan. Second, the results of this audit will enable family firm leaders to ask and address the following strategic questions that not only drive innovative behavior but also enable firm success: (1) Where is the strategic control in the firm and how are decisions made? (2) Are resources plentiful and how are they allocated? (3) Does this firm allot time for new idea generation or are we too busy? (4) Do organizational members experience a high level of paradoxical tensions? (5) Does leadership embrace risk taking? (6) Does leadership think about seemingly contradictory, tension-filled business demands?, and (7) Is the firm innovative?

Second, as stated, the existence of tensions, as demonstrated in the survey, can either enhance or stymie innovation. Therefore, it is important the practitioners recognize and learn how to cope with these paradoxical demands (e.g., Kanter, 1989, Lewis, 2000, Quinn, 1998, Quinn & Cameron, 1988). It is widely accepted that executives are the chief strategists of firms, and strategy lies in the leader’s mind; therefore, mental frames enable leaders to direct and provide necessary resources, support creative ideation, and fuel the innovation process. Moreover, to deal with increasing paradoxical tensions, an alternative thinking style is necessary, where paradoxical thinking is a solution to dealing with the inherent complexities and tensions embedded in contemporary organizations (e.g., Lewis, 2000; Smith & Tushman, 2005). Many scholars have suggested that paradoxical thinking is a requisite component of creativity and
innovation (e.g., Christopher, 2007; Martin, 2007; Rothermberg, 1979), and this study found that paradoxical thinking positively impacts innovative behavior. Hence, it is imperative that leaders embrace alternative mindsets; exploring whether two things that appear contradictory might indeed be complementary. Moreover, practitioners can utilize this novel measure to conduct innovation audits and assess their firm’s innovative behavior. After assessment, practitioners can leverage insight about their firm’s leadership, mindsets, and practices surrounding innovative behavior to develop training and development programs.

Third, encouraging risk taking and failure tolerance is a vital component of innovation (e.g., Ahmed, 1998; Andriopoulos, 2001). Therefore, to foster an innovative climate, leaders must be able to encourage experimentation, reward risk and accept that failure is a part of learning. Leadership’s task is not to stymie risk or prevent it but to build a responsive learning environment when failure occurs. Such tolerance can be expressed in many ways, such as: showing interests in their employees’ ideas and work, expressing support for taking risks, providing rewards for intelligent failures, and giving supportive feedback to help employees learn from the failure. This climate enables employees to feel safe to engage in creative ideation, which ultimately supports innovative behavior.

Finally, this study revealed that intergenerational leadership support and authority is vital to nurturing a climate of risk taking which promotes innovative behavior. However, the results suggest the way in which intergenerational leadership impacts innovative behavior is complex. Earlier research suggested a direct relationship between prior generation authority and support with innovative behavior, yet these findings suggest that is an oversimplification of the relationship in family firms. Rather, this study found that relationship is mediated by risk taking and failure tolerance. Therefore, the prior generation’s support in terms of constructive feedback,
positive monitoring, open communication, recognition of performance and general attentiveness to the current managing generation is important. Yet this support further enables a climate that promotes risk taking which drives innovative behavior. Hence, prior generation support is important in fostering firm innovation. Contrastingly, the prior generation must seek a delicate balance and not be overly authoritative with the current generation. Again, this study found when prior generation needs and goals are placed ahead of the managing generation, then the current generation is less likely to engage in risk taking and therefore likely to be less innovative.

CONCLUSION

This dissertation aimed to gain insight into the drivers of family firm innovation. Inquiring into how family businesses manage inherent tensions from the juxtaposition of two competing yet complementary systems: family and business. This study examined traditional drivers of innovation: leadership control and support, material resource provision, idea time provision and risk taking/failure tolerance, while exploring new antecedents of innovative behavior- paradoxical thinking and tensions. Overall, findings demonstrated that there are a myriad of factors that influence family firm innovative behavior. Moreover, paradoxical thinking is a significant driver of innovation coupled with risk taking and failure tolerance, allowing actors to engage in this alternative thinking style. In sum, family firms grapple with a myriad of tensions, yet if leadership embraces risk taking and paradoxical thinking, firms can leverage these paradoxes to foster innovation.
REFERENCES


MacCallum, R. C, Browne, M. W., & Sugawara, H. M. 1996. Power analysis and


Poole, M.S. 2004. Central issues in the study of change and innovation. In M.S. Poole & Van De Ven (Eds.), *Handbook of Organizational Change and Innovation*. Oxford: Oxford University Press.


Ward, J.L. 2005. *Unconventional wisdom successful family firms do not view the family and business*. West Sussex: John Wiley & Sons Ltd.


APPENDIX 1: Most Recent Institutional Review Board Approval

May 20, 2010

Amy Ingram
Dept. of Management
UL # D100

UCIRB #16-04-004-UE "Innovation and the Family Firm: Leadership, Workload, Practices and \nTenure"

The University of Cincinnati IRB #5 - Social and Behavioral Sciences (UC IRB-S) has reviewed your research project and has granted approval. Your Exemption category 46 CFR 48.110.

APPROVAL DATE: May 16, 2016
EXPIRATION DATE: May 15, 2011

The following document versions are included in this approval:

Protocol: v. 5-18-10
Consent Information Sheet: v. 5-18-10

The research MUST be conducted EXACTLY as approved. You must report to the Chair of the UC IRB-S any changes affecting the protocol upon which this certification is based. No changes may be made without prior approval by the Board ex officio, those necessary to eliminate immediate hazards.

Attached you will find some or all of the following:
1. APPROVED consent inform. document is locked and shows the IRB approved/expired date stamp. You MUST use this version (with IRB approved/expired date stamp) with your participants.
2. Investigator Responsibilities: these apply to all UC research team members involved with human subject research.

Should your project extend beyond the expiration date, you must submit a Progress Report Form A MONTH BEFORE THE EXPIRATION DATE indicating that the project is continuing. You will need to attach to the Progress Report a copy of the final signed consent (with IRB approved/expired date stamp) to document use of the approved version.

IT IS YOUR RESPONSIBILITY to keep track of your project's expiration date and to submit a Progress Report either to continue or to close out your study. If the IRB-S does not approve your extension by the specified expiration date, ALL research activities MUST STOP, including recruitment and enrollment of participants, interviews and interactions with current participants, collection of data, and data analysis.

Julie Watez, Co-Director, BSN, MPH, COI
Chief, UC IRB-S

This protocol has been reviewed and approved by the University of Cincinnati Institutional Review Board (IRB) in compliance with the ethical principles and regulatory requirements of the Health Insurance Portability and Accountability Act (HIPAA), the Federal regulations of the Code of Federal Regulations (21CFR50, 46, 49), and the Common Rule. This institution is in compliance with the IRB and COI regulations for all research involving human subjects.
APPENDIX 2: Consent

Title of Study: Innovation and the Family Firm: Leadership, Mindsets, Practices and Tensions

Introduction:
You are being asked to take part in a research study. Please read this paper carefully and ask questions about anything that you do not understand.

Who is doing this research study?
The person in charge of this research study is Amy Ingram of the University of Cincinnati (UC) Department of Management at the College of Business. Amy is being guided in this research by her faculty advisor, Marianne Lewis.

What is the purpose of this research study?
The purpose of this research study is to determine and understand what enables family firms to be innovative.

Who will be in this research study?
About 500 people will take part in this study. You may be in this study if you are family member of a family business, are a non-family member executive, and are over 18 years of age.

What if you are an employee where the research study is done?
Taking part in this research study is not a part of your job. Refusing to be in the study will not affect your job. You will not be offered any special work-related benefits if you take part in this study.

What will you be asked to do in this research study, and how long will it take?
You will be asked to fill out an online survey. It will take about 20 minutes. The research survey will take place over the internet.

Are there any risks to being in this research study?
Although all possible precautions will be made to protect confidentiality, the researcher cannot promise that information sent by the internet or email will be private. Therefore, confidentiality will be maintained to the degree permitted by the technology used. No absolute guarantees can be made regarding the confidentiality of electronic data. Otherwise, there are no foreseeable risks related to the participation in this study. We hope that you chose to participate to increase the general knowledge of how family firms can engage in certain practices that will enable innovative behavior.

Are there any benefits from being in this research study?
You will probably not get any direct benefit from taking part in this study. But, being in this study may help family firms understand what drives innovation.

Will you have to pay anything to be in this research study?
You will not have to pay anything to take part in this study.

What will you get because of being in this research study?
You will not be paid (or given anything) to take part in this study.

Do you have choices about taking part in this research study?
If you do not want to take part in this research study you may simply not participate. Also, you may close out of the program at any time prior to pressing the submit tab and your answers will not be recorded. You have a choice whether or not to take part in this survey. There is a place at the end of the paper to mark your choice.

**How will your research information be kept confidential?**
Your responses to this survey will be kept strictly confidential. Further, you may choose to not answer any question, and simply leave it blank. To ensure confidentiality, your name and e-mail address have been “coded”, and this code will only be used to determine who should receive reminder emails. Additionally, the master coding list of e-mail addresses, participant names, and ID numbers will be in separate locations. Your information will be kept in a password protected electronic format. Finally, the master coding lists (kept separately) will be stored on a secure computer for three years, after that the information will be de-identified and archived. Results of this survey will be reported in aggregate, summary form only where no individual responses will be reported. The results of this survey may be published; however, no firm or employee will be identified by name. These procedures are intended to minimize the potential for breach of confidentiality. Agents of the University of Cincinnati, may inspect study records for audit or quality assurance purposes. The researcher cannot promise that information sent by the internet or email will be private.

**What are your legal rights in this research study?**
Nothing in this consent form waives any legal rights you may have. This consent form also does not release the investigator, the institution, or its agents from liability for negligence.

**What if you have questions about this research study?**
If you have any questions or concerns about the survey, please contact Amy Ingram (ingramae@mail.uc.edu; 513-556-7153), her advisors, Dr. Marianne Lewis (LEWIMR@UCMAIL.uc.edu; 513-556-5499), or the Chairperson of the University of Cincinnati Institutional Review Board at 513-558-2086.

The UC Institutional Review Board – Social and Behavioral Sciences (IRB-S) reviews all nonmedical research projects that involve human participants to be sure the rights and welfare of participants are protected. If you have questions about your rights as a participant or complaints about the study, you may contact the Chairperson of the UC IRB-S at (513) 558-2086. Or, you may call the UC Research Compliance Hotline at (800) 889-1547, or write to the IRB-S, 300 University Hall, ML 0567, 51 Goodman Drive, Cincinnati, OH 45221-0567, or email the IRB office at irb@ucmail.uc.edu.

**Do you HAVE to take part in this research study?**
No one has to be in this research study. Refusing to take part will NOT cause any penalty or loss of benefits that you would otherwise have. You may start and then change your mind and stop at any time. To stop being in the study, you should tell Amy Ingram at ingramae@mail.uc.edu, 513-556-7153.

BY COMPLETING THE SURVEY YOU INDICATE YOUR CONSENT FOR YOUR ANSWERS TO BE USED IN THIS RESEARCH STUDY. PLEASE KEEP THIS INFORMATION SHEET FOR YOUR REFERENCE.