EFFECTS OF MARRIAGE AND CHILDREN ON FINANCIAL RISK TOLERANCE: A SYNTHESIS OF FAMILY DEVELOPMENT AND PROSPECT THEORY

by

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Abstract

Research has attempted to explain perceptions of financial risk using demographic variables as predictors. This study differed by using family stages to predict an individual's tolerance toward financial decisions that have uncertain outcomes. Within a Family Development Theory and Prospect Theory framework, a novel approach, this study attempted to explain variability in financial risk tolerance for distinct family stages. In addition, gender, age and income were expected to moderate the main effects of marital status and children. Data were collected from respondents (n = 76) who lived in a university housing community and who volunteered to participate in the 1999 Family and Couples Relationship Survey. Two dependent variables, employment risk and investment risk, were analyzed using two parallel multi-stage Ordinary Least Squares Regression procedures. Results supported the theoretical model in the following ways: children have a direct effect on investment risk tolerance, age moderates marital status for employment risk tolerance, and income moderates the effect of children on employment risk tolerance. Moreover, respondents considered employment and investment risk as separate constructs. Findings were seldom consistent across the two dependent variables. An age x gender effect requires further investigation. Future research should test the theoretical model with a larger and more varied sample. Findings indicate that financial planners and educators may increase their understanding of financial behaviors within families by going beyond demographic data. This study indicates that interactions of demographic variables and family stages have the potential to explain financial risk tolerance beyond what is currently known in the literature.

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Chapter I

Introduction

State social systems and labor market conditions are shifting the responsibility of financial well-being and security from the government and employer to the individual. Thus, people are expected to successfully manage their economic careers (Cutler & Devlin, 1996; Hinz, McCarthy & Turner, 1997). A key concept in financial planning is risk tolerance. An individual's financial risk tolerance plays an important role in achieving financial goals such as financial security.

Frequently researchers and financial planners ask individuals about their willingness to make financial decisions that have an uncertain outcome, and the result is a measure of their financial risk tolerance. Risk taking as a concept can be defined as "any action having at least one uncertain outcome" (Fischhoff, 1992, p.136). In this broad context, financial risk taking is any financial decision involving an uncertain outcome. However, decisions under uncertainty call for evaluation of the desirability of possible outcomes and their likelihood of occurring (Kahneman & Tversky, 1979; Yates, 1992). Researchers often analyze the relation between demographics and willingness to take financial risk to understand how attitudes play a role when individuals are confronted with financial decisions that have uncertain outcomes. Often, demographic factors such as age, income, marital status, gender, and education are found to affect an individual's financial risk tolerance. As individuals go through family transitions, risk tolerance changes (Leimberg, Satinsky, LeClair, & Doyle, 1989). Therefore, family development plays a crucial role in the understanding of a person's willingness to take financial risks that ultimately have consequences for immediate and future economic states.

Financial risk tolerance has not been investigated from the point of view of families and their developmental transitions. The objective of this research was to provide a more complete picture of family and resource management professionals' understanding of financial risk tolerance by incorporating concepts from two theoretical paradigms: Family Development Theory and Prospect Theory. Specifically, the goal of this study was to determine the interaction

of family structure with gender, age and income on the propensity to take financial risk at various stages in the life span. Further, few studies have attempted to explain how children have the potential to influence changes in an individual's willingness to accept risk. This research did so.

In addition, few studies have analyzed interaction effects on financial risk tolerance as a means to explore the phenomenon. For example, researchers have investigated one or two interaction effects using age with income and knowledge or gender with marriage (Grable & Joo, 1997; Grable & Lytton, 1998; Hinz, McCarthy & Turner, 1997). In this study, six interaction effects (marital status with gender, age and income; children with gender, age, and income) were assessed.

Conceptualization of Financial Risk Tolerance

The concept of risk can be defined as "the possibility of incurring misfortune or loss" while tolerance is "the capacity to endure something"(Collins Concise Dictionary, 1989). As well, risk has been defined as both the exposure to and the reaction to a chance of loss (Fischhoff, 1992; MacCrimmon & Wehrung, 1986). However, risk also has a psychological component, perception, that incorporates the phenomenon of tolerance. As perception, risk is a notion that is all in the mind and is not directly observable (Holzheu & Wiedemann, 1993). When tolerance is juxtapositioned with risk, one distinguishes the willingness to accept risk (perception) from the state of affairs of an event (probabilistic exposure to an uncertain outcome) and the taking of risks (behavior).

Although, it is generally accepted that the term *risk* " refers to potential events whose concrete manifestation cannot be foreseen with any certainty" (Holzheu & Wiedemann, 1993, p. 10), as a perception, risk is subjectively construed. Further, "if risk is seen as a subjective construct, it becomes the result of a perception and judgment process which although it does not rule out the possibility of a world existing independently of our perception, always makes risk into something construed" (Holzheu & Wiedemann, 1993, p. 10). As mentioned previously, the judgment process calls for evaluation of the desirability of possible outcomes and their

likelihood of occurring (Holzheu & Wiedemann, 1993; Tversky & Kahneman, 1992; Yates, 1992).

From the lens of economists, risk preferences are manifestations of individuals' attitudes toward risk of which perceptions are part. Therefore, financial risk tolerance is an attitude toward exposure to financial decisions involving uncertain outcomes. This attitude may be positive, negative or neutral and is captured in the notion of one's perception of the capacity or willingness to accept risk. For the purpose of the present investigation, the attitudinal or perceptual component of financial risk is defined as subjective risk tolerance.

Since financial risk tolerance can be conceptualized on a continuum (Leimberg et al., 1989), high levels of risk tolerance would indicate someone who is willing to accept high exposure to risk. Conversely, low levels of risk tolerance or risk aversiveness would indicate someone who requires a lower chance of loss and tolerates less uncertainty (Holzheu & Wiedemann, 1993; MacCrimmon & Wehrung, 1986). In this context, financial risk tolerance changes as individuals go through life stages (Leimberg et al., 1989) and becomes a reference for accepting a mode of behavior for conditions of uncertainty (Holzheu & Wiedemann, 1993). Thus, financial risk tolerance can be defined as the amount of risk one is willing to accept when confronted with financial decisions that have uncertain outcomes.

Literature Review

Financial Risk Tolerance

The balance of research on financial risk tolerance is heavily weighted in economic theory where risk is explained through the concept of risk aversion or low tolerance to accept risk. From this theoretical framework, many researchers have measured risk aversion as the ratio of risky assets to wealth (Grable & Lytton, 1998; Hanna & Chen, 1997; Riley & Chow, 1992; Schooley & Worden, 1996; Wang & Hanna, 1997). Individuals who are high in risk tolerance hold a proportionally higher ratio of risky assets compared to individuals low in risk tolerance. As well, individuals who are high in risk tolerance should be able to tolerate the uncertainty of

dips and peaks in security markets (Grable & Lytton, 1998; Leimberg et al., 1989). While risky assets have been defined as assets that have an uncertain cash flow (Wang & Hanna, 1997), the scope of risky assets is very broad. For example, while many scholars have restricted their definition of risky assets to include household investment vehicles characteristic of stocks and bonds (e.g., Jianakoplos & Bernasek, 1998; Zhong & Xiao, 1995), others have included human wealth and pensions (e.g., Schooley & Worden, 1996). Investigating financial risk tolerance within an economic perspective may introduce systemic bias. For example, young people will be found to be risk averse within this paradigm because they are at the life stage when income starts its initial incremental climb leaving little discretionary income to invest.

Financial risk tolerance can be thought of as the inverse of risk aversion (Barsky, Juster, Kimball, & Shapiro, 1997; Hanna & Chen, 1997). From family resource management and financial planning perspectives, financial risk tolerance plays an important role in guiding individuals towards a satisfactory and comfortable investment (Grable & Lytton, 1998). To further the goal of successful counseling and accurate assessment of an individual's risk tolerance, it is often necessary to consider the attitudinal component of risk as well as measuring relative risk aversion. The attitudinal component of risk tolerance, for the purpose of this research, refers to subjective risk tolerance. In contrast, relative risk aversion has frequently referred to objective financial risk tolerance. The distinction between subjective and objective financial risk tolerance is essential because evaluating the two concepts involves different measures. As noted previously, objective risk tolerance is a fairly precise estimation determined from a household's balance sheet. Conversely, subjective risk tolerance is somewhat difficult to measure and often has been based on heuristics that used demographics to classify individuals into risk tolerance categories (Cutler, 1995; Grable & Lytton, 1998). Grable and Lytton have

suggested that this procedure might mismatch individuals' tolerance for risk and their financial objectives.

Several difficulties arise when researchers attempt to determine subjective financial risk tolerance. One obstacle is the dynamics of risk; risk changes according to the situation, both from a behavioral and attitudinal stance (MacCrimmon & Wehrung, 1985). For example, a household may hold several types of insurance for property but at the same time carry a heavy debt load. Or, individuals may feel that they cannot take a gamble with potential monetary losses but will engage in a risky activity such as skydiving. Another obstacle is finding a reliable and valid measure that is suitable for broad audiences who are likely to have limited knowledge about financial risk tolerance. Further, risk tolerance changes as individuals go through life stages such as addition of family responsibilities and wage increases (Leimberg et al., 1989).

Although "investor risk tolerance tends to be subjective rather than objective, and somewhat difficult to measure"(Grable & Lytton, 1998, p. 61), it is imperative to acknowledge subjective risk tolerance in household financial planning. Subjective constructs of financial risk tolerance are likely to ensure that individuals are satisfied with their financial decisions, trust those decisions, and receive accurate financial information (Grable & Lytton, 1998; Leimberg et al., 1989). For example, individuals who are misclassified into a higher risk category may sell their investments at a loss while those who are misclassified into a lower risk category may fail to meet their goals and objectives (Grable & Lytton, 1998).

Studies using both subjective and objective risk tolerance measures indicate that demographic variables have equivocal effects on households' financial risk tolerance. Moreover, the relative importance of subjective and objective measures remains equivocal in the financial risk tolerance literature. For example, Riley and Chow (1992) state that measuring objective risk tolerance is superior to asking individuals about their propensity to take financial risk because how people feel and what they do are different. Conversely, other academics argue that both

objective and subjective measures are required to accurately assess an individual's financial risk tolerance (Grable & Lytton, 1998; Schooley & Worden, 1996).

Age

The most broadly researched demographic determinant of risk has been age (Grable & Joo, 1997). Age is a demographic factor indirectly associated with developmental life cycle stages such as families with young children in households. One body of research that explored subjective risk tolerance found that age, and therefore, life cycle stages were unrelated to risk (Cutler, 1995; Grable & Joo, 1997; Grable & Lytton, 1998; Sung & Hanna, 1996). Cutler (1995) claims that there are two dimensions to subjective risk tolerance, tolerance for financial speculation and the need for financial guarantee. Based on the 1987 National Investment Risk Survey[1], Cutler found that 84% of respondents required a need for a financial guarantee regardless of age. However, there was a modest connection between tolerance for financial speculation with older individuals indicating less speculative tolerance. Financial speculation is related to one's willingness to take risks when one perceives a situation as risky (MacCrimmon & Wehrung, 1986).

Conversely, several researchers who used subjective measures reported a relationship between age and financial risk tolerance (MacCrimmon & Wehrung, 1986; Schooley & Worden, 1997). MacCrimmon and Wehrung (1986) found that older managers were lower in risk tolerance compared to younger managers. Further, older managers perceived themselves as risk averse[2]. Schooley and Worden's (1997) analysis of the 1989 Survey of Consumer Finances revealed that individuals who were 45 years or older were unwilling to take any risk in order to earn substantial returns on their investments.[3] As well, older individuals held less risky assets compared with younger individuals. Indeed, couples in their family formation years held the highest portfolio of risky assets (Schooley & Worden, 1997). Schooley and Worden suggested

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[1] A private American firm conducted The National Investment Risk Survey. The survey contained 10 items on financial risk tolerance and one item on self-assessment. Results were based on 801 respondents from a national sample.

[2] This study was based on the reports of 509 top-level American and Canadian business executives.

[3] However, Schooley and Worden (1997) point out that the reason for this high percentage could be that the respondents were not given an opportunity to choose a below average risk response from the subjective risk item.

that family responsibilities do not influence financial risk tolerance when demographic factors such as income, race, gender and employment status are held constant.

When researchers use objective measures to explore the relations between age and risk, they find equivocal results. People are risk tolerant until they retire. On retiring, people become increasingly risk averse (Bajtelsmit & Van Derheir; Jianakoplos & Bernaseck, 1998; Riley & Chow, 1992; Schooley & Worden, 1997). In contrast, Barsky et al. (1997) found that the youngest and oldest cohorts were more risk tolerant than the middle-aged cohort[4]. On the other hand, Wang and Hanna (1997) found that risk tolerance continued to increase until the age of 80. However, when Jianakoplos and Bernaseck (1998) investigated the relation of risky assets to age, they found that single women had a decline in risk tolerance when they reached the ages between 36 and 40 years.

From an objective financial risk tolerance perspective, age has the potential to influence individuals in the following ways. When people are young, they appear low in risk tolerance because they do not have the capital to invest (estimates of their ratio of risky assets to wealth probably equal zero) and cannot endure investment loss because they are unlikely to be in their peak earning years (Wang & Hanna, 1997). Earnings are greatest during the middle years as careers advance. Therefore, risk tolerance is likely to increase because individuals have the time and the capital to recover from losses (Riley & Chow, 1992). Conversely, a low level of risk tolerance is a rational response for older individuals becuase they have a shorter time to recover losses relative to younger and middle-aged adults (George, 1999; MacCrimmon & Wehrung, 1986). Further, older individuals have less chance of generating more income to offset losses.

Conflicting results from the above investigations may be explained by inconsistent research designs and interpretations. For example, Riley and Chow (1992) and Schooley and Worden (1996) used objective measures (holdings of risky asset) to verify levels of risk tolerance while Barsky et al. (1997) and Grable and Joo (1997) used questionnaires specifically designed

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[4] Barsky et al. (1997) classified cohorts as being in the middle when respondents were between the ages of 50-70 years. The youngest cohort included anyone under of the age of 50 while the oldest cohort included anyone over the age of 70.

to measure subjective risk tolerance. Overall, when objective measures are used to determine financial risk tolerance, age is significant while subjective measures give inconsistent results. However, measures, variables, and year of data collection vary, making comparisons difficult (see Appendix A).

Family Structures

Children. Although, age has been extensively investigated, a review of financial literature indicates a paucity of research that examines the relation of children in the household to financial risk tolerance. Further, many financial risk researchers have treated family structure as either single or couple households without indicating the presence of children in either. However, in investigating the effects of life cycle stages on financial asset ownership, Xiao (1996) found that most households with young children do not hold risky assets. Conversely, households with children in their middle years (6–11 years) and young adolescent years (12-17 years) tend to be less risk averse (Xiao, 1996). A plausible explanation for the latter finding is that households with older children have wage earners who have sufficient income to cover losses. In contrast, households with young children need their income for short-term goals and are unlikely to be investing in either long-term or risky ventures (Gregg, 1992). Further, Warner and Cramer's (1995) investigation of the first wave of Baby Boomers revealed that, as parents, Baby Boomers are unwilling to take financial risk and prefer safety as a primary characteristic when evaluating investments.[5]

MacCrimmon and Wehrung (1986) reported that managers who have children are unwilling to take financial risks compared to childless managers. Managers with children need to consider the effect of losses on others. In contrast, Jianakoplos and Bernaseck (1998) reported that as the number of young dependents increased in a married household, the proportion of risky assets to wealth increased. However, in single female households, holdings of risky assets decreased as the number of children increased. In their study, Jianakoplos and Bernaseck used

[5] In Warner and Cramer's (1995) research, Baby Boomers were defined as the cohort born between 1946 and 1955.

the number of people under 18 years in a household as their independent variable and recognized that dependents could have been younger siblings or relatives.

In summary, it is difficult to make accurate statements about the effects that children have on financial risk tolerance because much of the research on children has used saving motives as dependent outcomes (Gregg, 1992; Warner & Cramer, 1995; Xiao, 1996). Moreover, as indicated above, the empirical research on children remains equivocal.

Marital Status. Several studies have found that marital status is not significantly related to risk tolerance (Grable & Joo, 1997; Riley & Chow, 1992).[6] Other studies reported that marital status influences the level of financial risk that individuals are willing to take (see Barsky et al., 1997; Grable & Lytton, 1998; Hinz, McCarthy & Turner, 1997; Schooley & Worden, 1996; Zhong & Xiao, 1995). When the ratio of risky assets to wealth is compared for both groups, single households are less risk tolerant than couple households (Schooley & Worden, 1996).[7] Married couples are likely to possess more risky assets than single individuals because married households probably have two wage earners (Schooley & Worden, 1996). In addition, Hinz et al. (1997) reasoned that married persons would be risk tolerant because marriage provides insurance through income pooling.

Grable and Lytton (1998) stated that single individuals are more risk tolerant than married couples because the former have fewer losses to assume. Grable and Lytton reasoned that if married individuals invest in uncertain ventures, they risk providing optimally for their children and thus, face negative social esteem as poor providers. However, Hinz et al. (1997) found that married women are the least risk tolerant, married men and single women are moderately risk tolerant, and single men are the most risk tolerant. In contrast, when Barsky et al. (1997) compared the risk tolerance of couples, they found that most spouses had similar risk

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[6] Note that Grable and Joo (1997) investigated subjective financial risk tolerance while Riley and Chow (1992) investigated objective financial risk tolerance indicating the link between attitudes about risk and behavior.

[7] In their investigation, Schooley and Worden (1996) included employment as a risky asset since unemployment was a possible outcome during a respondent's work career. Further, 38 % of single respondents were no longer in the labor force and were retired, thus eliminating employment as a risky asset.

tolerance scores. Nonetheless, when spouses did differ in their tolerance to risk, they tended to hold more conservative assets.

The relation of marital status and financial risk tolerance reveals contradictory findings. As suggested above, possible explanations for discrepancies in findings may be accounted for when interaction effects of marital status and gender are investigated. For example, being single and male may indicate that a person would be willing to accept financial risks but when a man marries his propensity for risk may change.

Gender

Although gender, as a determinant of financial risk tolerance, remains controversial (Bajtelsmit & Bernasek, 1996), recent studies indicate that women are less risk tolerant than men (Bajtelsmit & Van Derhei, 1997; Barsky et al., 1997; Belsky, 1992; Grable & Lytton, 1998; Hinz et al., 1997; Kahn, 1997; Morse, 1998; Riley & Chow, 1992; Schmitt, 1996; Sung & Hanna, 1996; Wong & Carducci, 1991). Bajtelsmit and Bernasek (1996) and Grable and Lytton (1998) propose that gender differences in financial risk tolerance are the result of systemic discrimination. Compared to women, men are thrill seekers and should be willing to take more risk (Wong & Carducci, 1991).[8] Further, women are less risk tolerant due to lower investments in human capital, greater caregiving responsibilities, and less experience with risk. In addition, women on average have lower wealth and social security than men. Therefore, women need to conserve their resources over a longer period due to the difference in longevity between the sexes (Jianakoplos & Bernaseck, 1998).

When Morse (1998) investigated gender as a determinant of financial risk tolerance, he found that men report more familiarity with various financial risk options and prefer different risk categories than women. However men tend to overestimate their financial risk tolerance while women do not.[9] Schmitt (1996) commented that women are becoming more informed about investing, yet they still tend to be less risk tolerant than men. In addition, Kahn (1996)

[8] Indeed, in an empirical investigation of undergraduate students, men were generally higher sensation seekers than women. High sensation seekers were more willing to take risks in everyday financial matters (Wong & Carducci, 1991). Note that this may be a cohort effect and may not generalize to men and women in general.

[9] Cutler (1995) found that generally people underestimate their financial risk tolerance.

reported that 24% of women shareholders were unwilling to take any risks with their money compared with 11% of men. Of those individuals who were willing to take risks, 40% of men were willing to take substantial risks to earn above average returns compared with 25% of women. Indeed, when Hinz et al. (1997) controlled for salary, other family income, age, and marital status, they found that men are still more likely to invest in risky assets, however, marriage does have a significant negative effect on holdings of risky assets. In addition, Schmitt (1996) found that young women tend to be more aggressive with their investments than women in general.

Belsky (1992) and Bajtelsmit and Bernasek (1996) commented that further investigation is necessary to explain the relation between gender and financial risk tolerance. For instance, in an interview of 1,003 men and 1,018 women, only 14% of men and 10% of women said that they believe that investing is a man's job (Belsky, 1992). Moreover, interviewees claimed that most family financial decisions are made jointly.[10] Although 82% of women believed that they will be solely responsible for their financial well-being at some time, they felt that they would avoid risk because conserving capital is a key factor in their investing strategies.

Income

When researchers use objective and subjective measures to determine people's financial risk tolerance, they find equivocal results. For example, Barsky et al. (1997) found a relation between income and subjective financial risk tolerance while Grable and Joo (1997) did not. Jianakoplos and Bernaseck (1998) found a relation between income and objective financial risk tolerance while Schooley and Worden (1996) did not.

One body of literature has found that as income increases, risk tolerance increases (for example, Riley & Chow, 1992). Very low-income individuals indicated the lowest levels of risk tolerance. For low-income individuals, low levels of risk tolerance does not necessarily mean that they are unwilling to take risks but that they have little flexibility with their budgets as they

[10] Researchers who used large data bases such as the Survey of Consumer Finances have found that explaining the effects of marital status and gender is problematic because it is difficult to determine who is the decision maker in households (for example see Barsky et al., 1997).

attempt to meet everyday financial demands (Riley & Chow, 1992). However, Schooley and Worden (1996) found that when wealth and other demographic variables are held constant, income does not influence the holding of risky assets.

When investigating the characteristics of families who held stocks and bonds (risky assets), Zhong and Xiao (1995) reported that high-income families hold much larger investments in these instruments. Indeed, Avery and Elliehausen (1986) found that one characteristic of high-income families is their willingness to take above average risk to earn higher returns and these families hold risky assets that are more diversified than the general population. Barsky et al. (1997) found that 65% of respondents would not gamble on lifetime income but when respondents were willing to take risks, they had reached the middle of the income distribution. MacCrimmon and Wehrung (1986) postulated that high-income earners take more financial risks because they have the resources to overcome bad outcomes.

Discrepancies in the above findings may stem from the interconnectedness of income and wealth. Individuals who have higher income earnings over their working careers have the opportunity to accumulate wealth. Wealth accumulation is associated with family stages. For example, couples in their early family formation years are usually not experiencing their maximum earning years. As well, these couples have short-term financial goals such as paying off mortgages and keeping up with everyday living expenses. It makes sense that these households would have a low wealth to risky assets ratio regardless of their willingness to take financial risks.

Interaction Effects

Only a few studies have analyzed interaction effects: (a) Grable and Joo (1997) reported insignificant interaction effects of age and income, and age and knowledge, (b) Hinz et al. (1997) reported an insignificant interaction between gender and marital status, and (c) Grable and Lytton (1998) reported a significant effect between gender and education.

In summary, researchers who have explored the risk tolerance of individuals and households have not come to a consensus. Scholars recommend that further investigations are

required to explore how family structure, gender, age, and income may influence the construct (Bajtelsmit & Bernasek, 1996; Grable & Joo, 1997). This study adheres to these recommendations.

Chapter II

Theoretical Framework and Hypotheses Formulation

Previous research has not made a distinction between demographic variables and family developmental stages when attempting to explain financial risk tolerance. Assets and demographics alone do not explain the complexity of risky attitudes held by individuals and households (Nagy & Obenberger, 1994). The basic premise of this study is that the patterned and systematic change between family stages provides a more complete explanation of financial risk tolerance than demographic explanations. Both Family Development Theory and Prospect Theory, a psychological reformulation of Risk Theory, were used to explore the concept of financial risk tolerance in family members.

As separate entities, both Family Development Theory (White, 1991; 1999) and Prospect Theory (Boon & Griffin, 1996) have been used to predict probabilities of events that influence an individual's life history. Because both Family Development Theory and Prospect Theory are concerned about probabilities of events, they make good companions to explain one's propensity for financial risks. Within the scope of Family Development Theory, normative expectations "serve to highlight the inner climate of particular segments of family life with respect to consumer decisions ..." (Aldous, 1990, p. 572). Moreover, the family development approach accounts for expectations within and between social spheres that affect the individual and the family unit (Aldous, 1990; Klein & White, 1996; White, 1991). As an alternate to demographic variables, expectations for within family stages and sequencing of family and cross-institutional stages have the potential to add to an explanation about financial risk tolerance. For example, married individuals would want certainty in their financial decisions and would want to avoid financial losses because losses may prevent one from being on time for both starting a family and sequencing normative financial careers. Overall, Family Development Theory relates to expectations and probabilities of events that influence how one perceives financial risks. Support for this approach comes from Xiao (1996) who commented that a common approach to

investigate financial risk is to treat family life cycle variables as a set of exogenous variables when, in fact, family life cycle variables may be related to financial risk.

How one perceives and evaluates risk is the topic of Prospect Theory (Kahneman & Tversky, 1979) and by definition the substance of financial risk tolerance. Kahneman and Tversky state that although gains and losses are defined by the amount of money obtained from a current asset position when a prospect is played, "there are situations in which gains and losses are coded relative to an expectation or inspirational level" (p. 286). Expectations then become changes in reference points that alter the preference order of outcomes where losses loom larger than gains. Therefore, the theory is readily applicable to choices involving other attributes (Kahneman & Tversky, 1979) such as normative expectations within distinctive family stages and the sequencing of family and cross-institutional events. Both Family Development Theory and Prospect Theory propose that decisions are associated with the perceived likelihood that an event will happen. For example, if one marries, the likelihood of having children is greater than if one remains single. As a parent, one is likely to prefer a choice that has both a certain and positive financial outcome as a means to fulfill normative expectations that accompany the parental role. Clearly, both theories deal with expectations and probabilities of outcomes.

Family Development Theory

Klein and White (1996) define Family Development Theory as "the systematic and patterned changes experienced by families as they move through stages of their family life course" (p. 120). Specifically, the theory deals with changing social roles in the family with the passage of time. However, within the framework of family development, it is important to distinguish the conceptual level(s) one is attempting to explain (Bulcroft & White, 1997; Klein & White, 1996; Rodgers & White, 1993; White, 1991). Family Development Theory incorporates five levels of analyses within statements about family process: the individual, the dyad, the family as a unit, the population of families and the institution of the family. White (1991) points out that "the relationship between change is quite clear once we identify what is changing and in regard to which level of analysis" (p. 43). The hallmark of Family Development Theory is the

norm because it is the commonality at all five levels of analysis and is distinctive to Family Development Theory.

The focus of this study is based on the individual level of analysis because: (a) the unit of analysis is the individual; (b) the level of analysis must correspond with the level of analysis of Prospect Theory, i.e., the individual; and (c) the individual level pertains to feelings and attitudes, the focus of financial risk tolerance.

According to Family Development Theory, one would expect variability in an individual's[11] financial risk tolerance because as people traverse family stages, created by addition or deletion of members, they internalize norms that are age-graded and stage-graded, which in turn influence financial expectations both for present and future economic states (Klein & White, 1996; Rodgers & White, 1993; White, 1991). Moreover, one may predict a consistent pattern for an individual's present and future family and financial expectations because norms stem from modal (institutional) states of behavior that are expressed by the individual (White, 1991). Hence, the four stages that were investigated in this study (single/ married and childless/presence of children) are expected to be qualitatively different with distinctive tolerances for financial risks and are informed by the following propositions derived by Family Development Theory as stated by Rodgers and White (1993):

Proposition 1. "*Family development is stage dependent because there exists institutional sequencing norms*" (p. 244). Rodgers and White (1993) define a sequencing norm as a process[12] or timing norm that regulates the ordering of family events and stages.

Proposition 2. "*Role relationships within the family change with the family stage*" (p. 244).

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[11] Although financial risk tolerance is measured at the individual level, it is pertinent to an explanation of variance in financial risk tolerance between family stages because of the assumption that individuals and the groups that they form are interdependent.

[12] The inclusion of process norms in Family Development Theory allows one to investigate single and childless individuals under the rubric of family stages because "process norms…reinforce the view that being single or married without children is indeed a transitional stage for the family" (Rodgers & White, 1993, p. 247). Rodgers and White (1993) and White (1991) define a family as a minimum of one consanguineal relation governed by institutional norms.

Proposition 3. "*Role relations develop over time, in part as a function of family stages*" (p.244). Proposition three follows from proposition one and two. Family Development Theory points to the temporal interdependencies of family members (Aldous, 1990) created by a family's morphogenic capacities.

Proposition 4. "*The normative demands of any institution must be in line with the stage of the family, otherwise the family is strained*" (p. 244). Institutional norms such as those of work and education are cross-institutional norms that must be sequenced and timed so that they are synchronized with family stages.

From the venue of Family Development Theory, proposition one, individuals are expected to follow, at minimum, stage sequencing composed of expansion, stability, and shrinkage (White, 1991). If one believes that future events are based on this normative sequencing, then one expects financial resources to wax and wane over the life course. For example, Nach (1997) and Voydanoff (1990) claim that as individuals traverse specific family stages they experience a *life cycle squeeze* in which "a family's economic needs and aspirations are relatively greater than its resources" (Voydanoff, 1990, p. 1102). Early adulthood when individuals are allocating resources for young children while earning low-incomes appears to be the most susceptible stage for a life cycle squeeze (Voydanoff, 1990). On the other hand, individuals are expected to face financial comfort before children enter and after children leave the family unit (Nach, 1987). Therefore, individuals are expected to be financially risk intolerant when they have children present in the household to conserve resources that are available to them. However, people without children or those who have fulfilled their financial duties toward their children are expected to relax their risk intolerance.

Propositions two and three state that behavioral expectations within a family are dependent on stage and age norms. Further, "what goes on within a stage is defined by the norms composing the role relationships in the family" (White, 1991, p. 57). For example, deviation from norms governing the provider role has greater sanctions between the child-parent dyad than the husband-wife dyad. If a partner of the marital dyad does not receive adequate support, the

partner can terminate the relationship whereas a child remains helpless. However, as children and parents age, their role relationships change as children become less dependent on their parents for resources, thus decreasing the need for sanctions. From the point of view of people's willingness to take risks, this implies that individuals with young children will have low levels of risk tolerance because financial loss would hinder the protection and security of family members. Conversely, higher levels of risk tolerance may be an expected attitude when families are preparing to launch their children because the need for protection and security is replaced with goals such as increasing retirement funds.

Proposition four suggests that the sequencing of family and economic stages are synchronized by normative cross-institutional timing and sequencing norms. Therefore, individuals form their role expectations according to normative patterns of behaviors to minimize such risks as psychological distress (Menaghan, 1989) and economic strain (Voydanoff, 1990). Voydanoff lists depression, psychosomatic symptoms, and anxiety as forms of psychological distress and defines economic strain as "an evaluation of current financial status such as perceived financial adequacy, financial concerns and worries, adjustments to changes in one's financial situation, and one's projected financial situation" (p.1104). Within the institution of the family, sequencing norms are necessary for the synchronicity between role expectations and the family's economic life cycle. In an economic life cycle, individuals and families are expected to sequence their financial behavior in the following order: *accumulation, acceleration and preservation* (Mittra, 1990). Family stages are often synchronized with family economic stages. Transitions in family stages or changes in the family structure, as they relate to financial goals and family economic life cycles, act as forces that change attitudes toward risk.

According to Mittra (1990), the first stage, accumulation, begins at the start of an individual's financial life and carries with it goals such as protecting a growing family and providing for education. Therefore, one would expect individuals with young children to show low levels of risk tolerance because resources are limited and will be allocated to present family goals. The second stage, acceleration, is described as peak earning years when families feel

secure about meeting the basic needs of their households. During this period financial attitudes may change from risk intolerance to risk tolerance because people believe they have both the resources and time to recover from losses (Mittra, 1990). Mittra's final stage is preservation in which the family structure has often diminished to a married couple. At this point, households are preparing for retirement and are past their peak earning years. Risk tolerance should decrease as preservation of capital becomes a salient goal. Moreover, resources and time to recover from losses decrease.

Further, the sequencing of these stages is not invariant since financial events (losses or gains) may force one into a previous or future stage. Within family stages, off-time events have consequences for future economic expectations. For example, losses during the accumulation stage of the family's financial life course could mean that by the time individual family members are preparing for retirement, there are inadequate resources to provide income. As well, "when expectations are moved from one age to another, others (such as spouses) have their age and stage expectations disappointed" (White, 1991, p. 68).

The sequencing of economic stages with family stages, as an explanation for variance in financial risk tolerance, can be demonstrated in the following scenario. Normatively, a husband in his early family formation stage is expected to be in an accumulation stage of his economic career while a father who is about to launch children is expected to be in an acceleration stage in his economic career. At the earlier point in time, one would expect a husband to be financially risk intolerant because he needs to conserve capital to establish a household. However, a father in an accelerated stage may be risk tolerant because taking financial risks has the potential to reach financial goals in a shorter time horizon and he is expected to have resources to recover from a loss.

When one uses a cross-sectional design within a family development framework, one must be aware of alternate explanations for variance in financial risk produced by age, period and cohort effects. This is especially pertinent to risk tolerance because individuals' sum of experience with financial loss and gain will affect their expectations in their present and future

family states (White, 1991). Period or history effects such as lower retirement age, forced retirement, the baby boom, and economic down-turns may be experienced with differing impacts by individuals depending on their age of birth (birth cohort). For example, older individuals may be less risk tolerant because they formed their attitudes about financial risk when there was greater uncertainty in the stock market while younger individuals may appear more risk tolerant because of a booming economy with greater opportunities to participate in the stock market (especially with the introduction of evaluating and trading stock via the World Wide Web). Therefore, individuals may be risk tolerant or intolerant due to compelling factors within the larger social milieu regardless of age and stage-specified norms.

In summary, Family Development Theory provides a context to the understanding of one's propensity to take financial risk. Social norms regulate expectations and behaviors of actors as they travel through family stages. Transitions in and out of family stages require actors to adjust their propensity for financial risk to accommodate changes in family structures.

Prospect Theory

In the arena of economics, risk "typically involves probabilities that actual future returns will be below expected returns" (Leimberg et al., 1989, p. 229). The basic tenet of Risk Theory is that when people are confronted with decisions that have uncertain outcomes, they will choose options that have maximum utility (value).[13] Often, individuals violate this maximum utility model of risk taking (Tversky & Fox, 1995) because risk generally involves emotional and financial abilities to withstand losses (Mittra, 1990). Further, people evaluate risky decisions according to the desirability of outcomes and probability of the outcomes (Tversky & Fox, 1995). Although other economic theories may be useful in the development of a model of

[13] Maximum utility is calculated as follows:
Choice A, compute the value of a win by multiplying the probability of a win and the value of the win. Compute the value of a loss by multiplying the probability of a loss and the value of the loss. Subtract the value of a gain from the value of a loss to obtain the overall utility of choice A.
Choice B, compute the value of a win by multiplying the probability of a win and the value of the win. Compute the value of a loss by multiplying the probability of a loss and the value of the loss. Subtract the value of a gain from the value of a loss to obtain the overall utility of choice A.
Maximum utility is the option that has the greatest value between choice A and B (Leimberg, Satinsky, LeClair & Doyle, 1988).

financial risk taking, Prospect Theory (Kahneman & Tversky, 1979) is suitable for an explanation of subjective financial risk tolerance because it is a psychological model. Generally, feelings and attitudes about risk are not the subject of economic models.

Four propositions formulated by Kahneman and Tversky (1979) are useful to explore the variability in financial risk tolerance associated with family structures:

Proposition 1. *People prefer a sure gain to an uncertain gain even if the mathematical outcome of the risky decision is higher.* Kahneman and Tversky (1979) define this preference as *the certainty effect* because people show "risk aversive preference for a sure gain over a larger gain that is merely probable" (p. 268).

Proposition 2. *People prefer an uncertain loss to a sure loss.* When faced with a loss, people will take the risky option rather than a sure loss because it is more important to avoid a loss than avoid risks (Kahneman & Tversky, 1979; Leimberg et al., 1989).

Proposition 3. *Magnitudes of gains and losses are relative to a reference point.* Therefore, people, as actors and reactors, weigh the probability of an outcome (Kahneman & Tversky, 1979) so that certain gains become even more desirable and certain losses become even more aversive (Larrick, 1993). Kahneman and Tversky describe this as part of the editing process in choices where editing functions to "organize and reformulate the options so as to simplify subsequent evaluation and choice (p. 274). From the venue of financial risk tolerance in family members, reference points become points in time depicting family stages and their economic stages.

Proposition 4. *When an outcome involves the probability of a loss and a gain, individuals perceive the loss and discount the gain.* As part of the choice process, individuals assign a value level (or decision weight) to their decision that is separate and does not coincide with stated probabilities of events. A characteristic of value levels is that "losses loom larger than gains" (Kahneman & Tversky, 1797, p. 279). Kahneman and Tversky claim "the aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount (p. 279). Losses have the potential to interfere with immediate and

future financial well-being while gains have the potential to realize financial goals in a shorter time span. As actors and reactors to life chances, one would expect individuals to desire adequate financial resources across the life span rather than to be ahead of schedule for goals.

The above propositions were used to predict variability in an individual's propensity to take financial risks. Most people would prefer to avoid any financial loss and would prefer certainty in their financial gains (Kahneman & Tversky, 1979). However, people are expected to differ in attitudes toward losses and gains because they have different points of reference. For example consider the following analysis: Individual A is a parent with a young child and is in the accumulation stage of his economic career. Individual B is a parent launching children and is in the acceleration economic stage. Individual B would perceive a loss of $2,000 as minimal because norms to provide for a child are loosening and increased financial resources allow recovery of a financial loss. Individual B has the potential to be risk tolerant. However, Individual A would perceive the loss as disastrous because losses interfere with stage specific norms dealing with young children. In addition, a financial loss during the accumulation stage of the family economic life cycle throws the individual off-time for expectations about future economic states.

People who have a stable and above average income (for example, $80,000) may be risk tolerant at any stage of a family career since a loss of $2,000 will not interfere with their goals while a gain of $2,000 would shorten the time horizon of realizing goals. The risk taking of individual A with a $30,000 income follows the assumption that most people prefer certainty in their outcomes and are unwilling to accept the probability of a gain (or loss). In addition, losses are overweighed compared with gains (Kahneman & Tversky, 1979). Therefore, individual A will put more relevance on the potential loss rather than the potential gain.

Integration of Theories

This investigation concerns variability in financial risk tolerance within four distinct family stages. As mentioned previously, a single person and a married couple do not fit into the definition of a family and therefore by definition are not family stages. However, process norms

include these childless states because normatively, these stages are precursors to family formation (Rodgers & White, 1993; White, 1991).

Single individuals are not governed by the norms constituting the institutions of marriage or marriage and the family. Therefore, the state of being single is qualitatively distinct from being married or being a parent (definition, Rodgers & White, 1993). However, single people are expected to heed social norms such as getting an education and a job so that they become financially independent from their family of procreation (proposition 2 and 4, Rodgers & White, 1993). If singles follow the normative sequencing of family and economic stages, they can expect to have incremental increases in their income with time and will need to conserve resources at a future point in time (proposition 1 and 4, Rodgers & White, 1993). Nevertheless, compared with married couples and parents, singles are expected to have the least interdependent relationships (proposition 3, Rodgers & White, 1993). As actors and reactors, single individuals are expected to consider the consequence of a financial loss or gain relative to their family state and their economic circumstance (proposition 3, Kahneman & Tversky, 1979). Because singles face fewer norms concerning interdependencies, have time to recover financially, and remain on time for sequencing their economic careers, they may discount losses for potential gains (proposition 1, 2, and 4, Kahneman & Tversky, 1979). Therefore, single people are expected to be high in risk tolerance.

When single people enter into marriage, they become part of a dyad with distinctive norms for interacting (Rodgers & White, 1993). From the stance of financial risk tolerance, three norms are salient to economic expectations: the dyad is expected 1) to acquire resources to set up a household, 2) to provide for each other, and 3) to have consensus in their financial decisions. Compared to being single, a married person forms new expectations about financial risk because potential financial losses or gains have consequences for both spouses (propositions 2 and 3, Rodgers & White, 1993). Early marriage usually accompanies the accumulation stage of the couple's economic career (proposition 1 and 4, Rodgers & White, 1993). Financial losses during this stage of family development may result in an off-time transition to the acceleration stage of

an economic career because available resources are needed to fulfill immediate needs. Therefore, the extent to which needs are met depends on the management of economic activities with low risk (Gregg, 1992) and decisions with certain outcomes.

As actors and reactors in a marital dyad, spouses are expected to prefer a certain outcome rather than a probable outcome of larger value (proposition 1, Kahneman & Tversky, 1979) because certainty provides security for a potentially unstable relationship[14] (Rodgers & White, 1993) and increases the chance that individuals follow normative family sequencing careers (i. e., become parents). Compared to financial certainty, financial losses have the potential to provoke dissatisfaction in the relationship when goals are not met (proposition 4, Rodgers & White, 1993). Therefore, losses have a greater influence than gains (propositions 3 and 4, Kahneman & Tversky, 1979) because losses have the potential to disappoint normative expectations. Compared to single people, spouses are expected to be less willing to take financial risks.

With the birth of a child, the family structure and role relationships change as individuals take on roles of parents and form child-parent dyads (proposition 2 and 3, Rodgers & White, 1993). Norms from the institution of marriage and the family require that parents provide resources for physical maintenance of their children and that parents socialize their children for roles both within and outside the family (Mattessich & Hill, 1987). These norms set limits on the financial behaviors of a parent because of newly acquired interdependencies (proposition 3, Rodgers & White, 1993). Not only is the individual expected to contribute to the financial security of the marriage but also is required to meet the financial needs of a child. Compared to the marital dyad, parents have more at stake if they suffer financial losses. First, they have the potential to create dissatisfaction within the marital dyad and second, they may fail to accomplish financial goals required to adequately sustain their children. Therefore, financial losses will take precedence over gains (proposition 4, Kahneman & Tversky, 1979).

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[14] Rodgers and White (1993) propose that the marital dyad is unstable because coalitions are not possible; therefore only negotiations can resolve differences (p. 248).

The orderly sequencing of economic family stages means that as parents take on responsibilities for their children's well-being, they are likely to be faced with a life cycle squeeze (proposition 1, Rodgers & White, 1993). Therefore, conserving resources is imperative. As a step toward financial security, individuals will prefer a gain that is certain to a larger uncertain gain (proposition 1 and 3, Kahneman & Tversky, 1979). If financial risk tolerance is measured on a continuum or in ordinals, one would expect individuals with children to be less risk tolerant than singles or married couples.

Main Effect Hypotheses

Hypothesis 1: *Married individuals are less risk tolerant than single individuals.*

Married couples are governed by norms of the institution of marriage (Klein & White, 1997) that encompass roles and tasks concerned with the marital relationship and the household (White, 1991). These norms include support and maintenance, ownership of resources, and consensus in decision-making (White, 1991). In the provider role, one or both partners are expected to ensure that the household is financially viable over the life course. In addition, spouses are expected to accomplish goals such as establishment and maintenance of households (Lunt & Livingstone, 1992). Spouses may feel that conserving income is very important because income is a means to fulfill roles and accomplish goals such as following normative family stage sequencing. Further, losses will loom greater than gains since losses prevent couples from fulfilling roles and have the potential to put spouses off-time for future economic events. Moreover, if losses do occur, both spouses experience the effects (Aldous, 1990). Losses are perceived as more negative than gains are perceived as positive (Kahneman & Tversky, 1979). Consequently, if a married household suffers losses, the partners will be dissatisfied. As well, if the decision was not mutual, the spouse who did not consent will be even more dissatisfied with the outcome (Poduska, 1993). Because spouses perceive consensus and trust as means to marital satisfaction (Poduska, 1993), financial losses occurring during this stage may undermine both trust and consensus in the marital relationship. Therefore, it is advantageous for partners to be unwilling to take risks and prefer a certain outcome as compared to a probable outcome. Further,

if losses occur, couples have the potential to deviate from expected behavior (e.g. provider role) and may face censorship from family members and the community, thus reinforcing options for sure outcomes. Indeed, "one of the most frequent consequences of breaking family rules is distancing by the other family members" (Poduska, 1993, p. 28). Overall, one would expect married people to be low in risk tolerance.

Compared to married people, single individuals have fewer social norms that regulate their behavior. Single persons are expected to comply with norms of adulthood but are free from the institutional norms of marriage and the family. Indeed, singles have fewer roles to perform and losses in these roles are likely to provoke fewer negative sanctions from others. Therefore, singles have more options when it comes to financial losses or gains. For example, single people may be willing to take risks to receive a probable larger gain than a certain smaller gain (Kahneman & Tversky, 1979). If a loss does occur, it is income and likely not the loss of a relationship. Because single people assume fewer social losses (Grable & Lytton, 1998), they are likely to under estimate probabilities of losses such that losses will not greatly influence decisions with uncertain outcomes. Consequently, singles are expected to favor options that have a perceived greater value and are expected to hold high levels of risk tolerance.

Hypothesis 2: *Individuals with children are less risk tolerant than those without children.*

With the birth of a child, the couple becomes a dyad within a three-person family group with new tasks and new social roles of father and mother (Klein &White, 1991). Changes in family structure require the reorganization of roles and rules as stipulated by norms from the institution of marriage and family. These norms guide behavior and influence values and goals (White, 1991). Parents are expected to follow stage-specific norms to provide security, to nourish and to socialize their children because society has a tremendous stake in the survival and socialization of new members (Klein & White, 1996). Unexpected losses may strain resources needed to adequately fulfill these parental roles. Moreover, parents expect to follow normative cross-institutional sequencing stages along their life paths. Therefore, when parents are confronted with financial decisions that have uncertain outcomes, they will choose certain

outcomes since certainty is likely to be associated with security, less strain on resources, and minimal risk of being off-time in family and economic careers. As well, losses will have a greater influence then gains (Kahneman & Tversky, 1979) since losses have the potential to jeopardize development of children (Eichler, 1997). Indeed, the greater the causal role attributed to parents in the success or failure of children, the more parents will be unwilling to take financial risks because the greater the guilt experienced by parents if children are perceived as failures (Nye, 1979).

At the institutional level, concerns have increased about poverty among children. As a result, social norms concerning parents and their childcare roles have been strengthened by mandates such as child support and welfare reforms (for example, the Canadian Government established *Federal Child Support Guidelines* in 1997 and the Ministry of Attorney General in British Columbia maintains *a Family Maintenance Enforcement Program*). In response, parents are likely to prefer certain financial outcomes and to be unwilling to accept losses (Kahneman & Tversky, 1979).

Interaction Effect Hypotheses

Research indicates that gender, age and income influence a person's willingness to take financial risks (e.g., Barsky et al., 1997; Belsky, 1992; Grable & Lytton, 1998; Jianakoplos & Bernasek, 1998; MacCrimmon & Wehrung, 1986; Schooley & Worden, 1995; Warner & Cramer, 1995). These demographic variables will be held constant in order to investigate the interaction of gender, age and income with family structures on the propensity to take financial risk. The following section discusses why gender, age and income may be viewed as immediate factors that act on financial risk tolerance, and then formulates hypotheses about their interaction effects when combined with family structures.

Gender. In general, research has shown that women hold conservative attitudes toward risky situations and prefer certain outcomes in their financial careers (Jianakoplos & Bernasek, 1998). In the arena of financial planning "conserving capital is key" (Belsky, 1992, p. 77) for many women so that losses loom greater than gains (Kahneman & Tversky, 1979). This attitude

is illustrated by the following comment made by one female investor, "Before thinking about making money, you have to worry about losing it" (Belsky, 1992, p. 77). One explanation for women's conservative attitudes is the current gender gap in wages that indicates women are earning much less income than men (Cutler, 1992), thus women have a greater need to protect their incomes. As mentioned previously, women are unwilling to take financial risks because they have less invested in human capital, are responsible for dependent care, and face discrimination in employment and credit eligibility (Bajtelsmit & Bernasek, 1996; Moen, 1996; Vella, 1994). Generally, people are unwilling to take above average risk to reap financial gains (Leimberg et al., 1988) but compared to men, women are unwilling to take any risk with their money (Heinz et al., 1997; Kahn, 1996).

Family Development Theory would explain gender differences in the following manner: "gender specific norms are found in every social institution" (White, 1991, p. 171) and for women "gender is an area where cross-institutional norms have considerable force" (White, 1991, p. 171).

Age. Individuals can accept risk during their early adult years since they have time to recover from unexpected financial losses (Grable & Lytton, 1998; Riley & Chow, 1992). As well, young adults do take financial risks. For example, young people have more credit card debt than older persons, lose track of their debts, and often claim that they have no idea how to pay debts (Lunt & Livingstone, 1992). In their study, Lunt and Livingstone classified individuals as young if they were under 35 years of age, were not living as a couple or family, and were not cohabiting, widowed or parents.

As individuals become older, they gain financial experience and become more knowledgeable about their financial limitations. Indeed, young adults are rewarded with the psychological satisfaction that comes from confidence in understanding and managing wealth (Gregg, 1992). As people gain life experiences, they learn adaptive responses to environmental uncertainties (Featherman, 1992). Financial risk can be counted as an environmental uncertainty. As well, older persons become more conservative as a rational response to time (George, 1999)

because when individuals approach mid-life and beyond, they have a shorter horizon to recover financial losses. In the realm of financial risk tolerance, older people will have less tolerance for financial speculation (Cutler, 1995) and will perceive more situations as risky because adjustment to outcomes may not coincide with financial planning horizons (MacCrimmon & Wehrung, 1986). Generally, older individuals will make decisions that avoid risk but when faced with a risky situation, they will act on it (Okun, Stack & Ceurvorst, 1980).

In addition to shorter time spans for recovering from financial losses, when people approach their mid years and beyond, they are more likely to take on caregiving responsibilities of older family members and need to adjust their financial planning to accommodate these demands (Poduska, 1993). As persons age, their family members become susceptible to chronic diseases and physical disabilities that require assistance from younger generations. Indeed, the 45-54 age group provides the most help to family, friends, and organizations and next to spouses, sons and daughters provide the highest amount of help (Marshall, McMullin, Ballantyne, Daciuk, & Wigdor, 1995). Thus, financial losses are detrimental to the individual and to their abilities to provide intergenerational transfers. Therefore, as individuals become older, it is beneficial for them to become less risk tolerant because time and the impact of intergenerational dependencies are salient concerns.

Income. As mentioned previously, financial risk tolerance varies according to incomes earned in households (Avery & Elliehausen, 1986; Barsky et al., 1997; Grable & Lytton, 1998; MacCrimmon & Wehrung, 1987) because income levels act as reference points for financial gains and losses by magnifying their effects (Kahneman & Tversky, 1979). Further, as income increases, gains may be highly valued because they magnify the financial success of households. Further, gains may be very important to individuals' expectations that their living standards remain stable over the life course. Therefore, people who have high-incomes should be risk tolerant and the higher the income, the greater the propensity to take risks.

For low-income households, losses are more salient than gains since losses will interfere with capacities to fulfill immediate demands (Gregg, 1992). Indeed, low-income households may

wish to be risk takers but do not have flexibility in their budgets (Riley & Chow, 1992). Therefore, individuals with low-incomes are expected to be unwilling to take financial risks.

Hypothesis 3 a: *The effect of marital status on financial risk tolerance will be greater for men than women.*

Hypothesis 1 predicts that married individuals are less willing to take risk than single individuals. As noted earlier, women tend to be more risk averse than men due to socialization and systemic discrimination in their social milieu. Therefore, marital status is not expected to influence women's attitudes toward risk as strongly as it does for men. Single men have a greater potential for change in financial risk tolerance than single women. Also, when they marry, men are more likely to adjust their willingness to take risk downward and become more conservative in their attitudes (Barsky et al., 1997) because marriage requires accountability of both partners (Poduska, 1993). When single women marry, they tend to adjust their risk tolerance slightly upward to establish consensus in their relationship. Marriage has the potential to reduce gender difference in risk tolerance (Hinz et al., 1997). See Figure 1 for predicted directions.

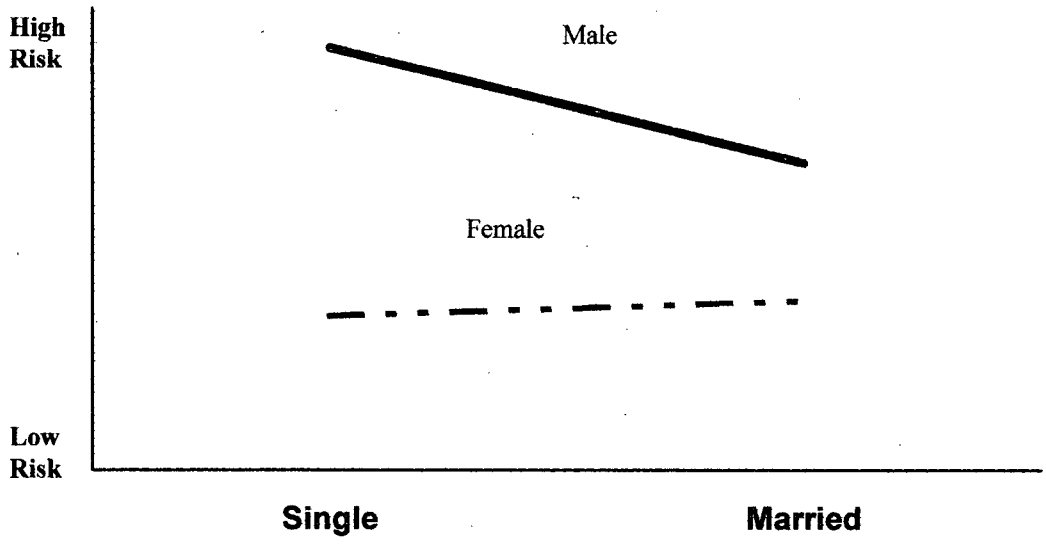

Figure 1. Hypothesized direction for the interaction effect of gender x marital status on financial risk tolerance.

Hypothesis 3 b: *The effect of marital status on financial risk tolerance will decrease with age.*

"Individuals age (mature) and the social groups they form do the same thing" (White, 1991, p. 68). Moreover, " the norms composing expectations about family roles change with the passage of time" (Klein & White, 1996, p. 120). As discussed earlier, when people are young and single they tend to be risk tolerant, but as they age they become less risk tolerant because of social forces and shorter longevity. In contrast, married individuals have low level of risk tolerance during their early formation years but as they age, they will become even more risk intolerant because they face the same forces as single people (time and intergenerational transfers). Married individuals have lower risk tolerance at earlier ages and so age effects should be less pronounced. Indeed, in later stages of the family life cycle risk tolerance should increase. In addition, non married people have a greater potential to adjust their risk tolerance and have more at stake for losses than married individuals because single siblings are expected to take on caregiving activities for family members before their married siblings (Brody, Litvin, Hoffman & Kleban, 1995; Connidis, 1989; Silverstein & Litwak, 1993; Stoller, 1983). Moreover, non-married individuals lack the resources provided by spouses across the lifespan. Spouses are the primary providers of caregiving and resources (Marshall et al., 1995; Moen, 1996). Therefore, financial losses have a greater impact on non-married households so that lowering their risk tolerance becomes a means to preserve financial well-being (see Figure 2).

Hypothesis 3 c: *The effect of marital status on financial risk tolerance will decrease with increased income.*

As reasoned earlier, single individuals will be more risk tolerant than married couples when income is held constant. However, when income increases for singles, their propensity for risk increases but not as much as married individuals because they have less potential for change.

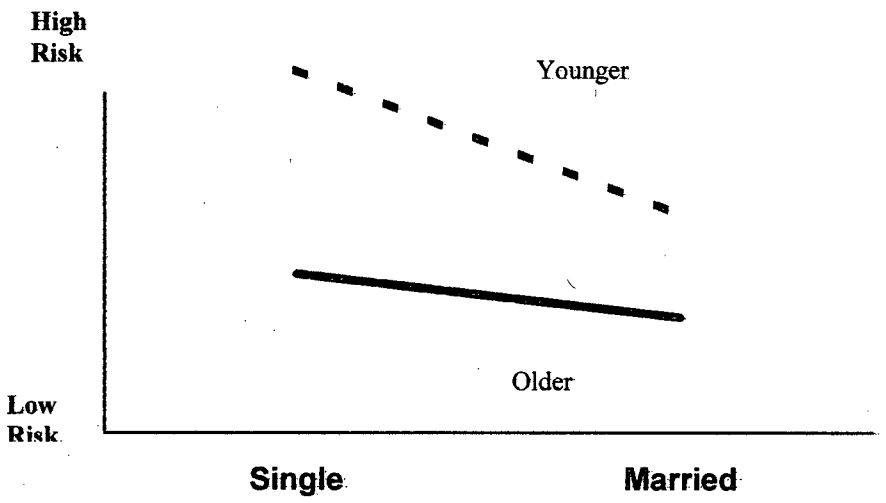

Figure 2. Hypothesized direction for the interaction effect of age x marital status on financial risk tolerance.

Conversely, married households with low-income will be risk intolerant because losses have the potential to force them into poverty thus magnifying the effects of losses. However with high-incomes, married people will have a greater potential to adjust their risk tolerance upward and will be less concerned about losses due to a greater margin for loss. Therefore, married

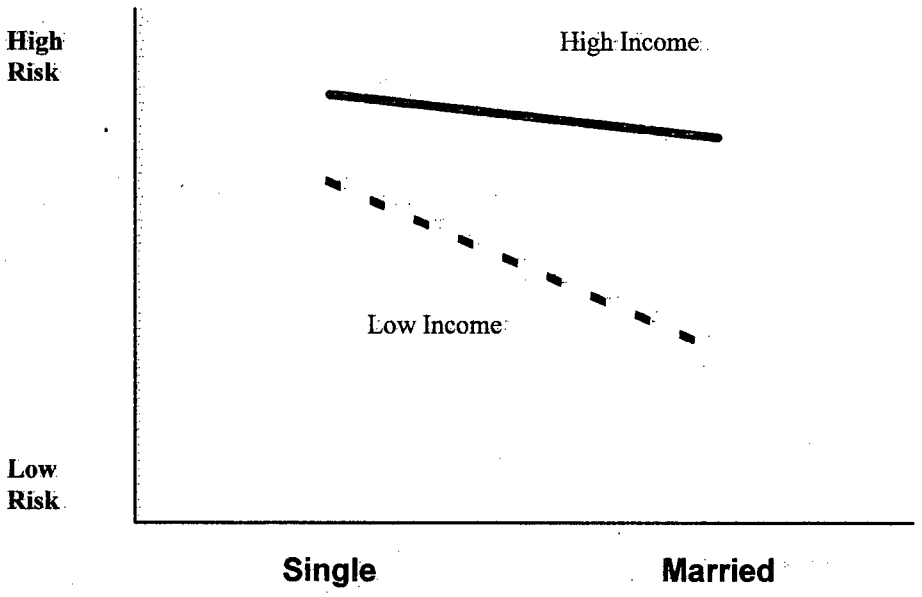

Figure 3. Hypothesized direction for the interaction effect of income x marital status on financial risk tolerance.

individuals with high-incomes increase their willingness to take risks, thus decreasing the risk tolerance levels between married and single people (see Figure 3).

Hypothesis 4 a: *The effects of parenthood on financial risk tolerance will be greater for fathers than mothers.*

Hypothesis 2 claims that parents are expected to be less willing to take financial risks than childless couples. Further, research indicates that women are more risk averse than men. When children enter the household "parents experience a shift in their roles and identities" (Cowan & Cowan, p. 17) that is expected to influence their attitudes toward financial risk. Traditionally, women have assumed the protector role and men the provider role and social norms both within and outside the family reinforce these roles (Cowan & Cowan, 1992). Women value their role as protector (Lampert & Yassour, 1992) both within the family unit and the larger social milieu (Cowan and Cowan, 1992). Therefore, compared to women without children, mothers will adjust their tolerance downward as a means to ensure security (including financial security) for their children.

In contrast, when men become fathers, their provider role takes on more importance because the role of husband-father has traditionally dictated that men are responsible for the economic well-being of their wives and children (Eichler, 1997; Moen, 1996). Indeed, a father's adequacy as a parent is often measured in economic terms (Eichler, 1997). Therefore, fathers are expected to put emphasis on goals that fulfill this role. Moreover, if a father becomes successful in his provider role, he is rewarded with respect both from his spouse and his children (Blumstein & Schwartz, 1983; Wilkie, 1993).[15] Not only will fathers consider the risk of changing jobs to become successful providers (Cowan & Cowan, 1992), they will also be expected to take risk for career opportunities (Kurzwell, 1998; Umiker, 1997)[16]. As well,

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[15] Although there is a trend toward men approving of spouses sharing the provider role (Wilkie, 1993), men still want to make more money than their partners (Zuo, 1997). Further, despite the ideology of egalitarian provider roles, in actual practice fathers do fulfill the provider role (Gill, 1993). Blumstein and Schwartz (1983) claim that the fathering role infuses more meaning into a man's working role and inspires him to be more serious about becoming a success.

[16] Umiker (1997) claims that in the current labour market refusing to take risks assures failure and "there is no longer safety in the status quo" (p. 2).

research indicates that asset income,[17] gained from a father's financial strategies, influences employment outcomes for their children (Corak, 1998; Mackey, 1996). Consequently, financial gains are more important to fathers than non-fathers. Fathers will be likely to emphasize gains and discount losses. Although married men are expected to be less risk tolerant then single men, when men become fathers they are expected to adjust their risk tolerance upward because the potential benefits of taking risks are greater for fathers (see Figure 4).

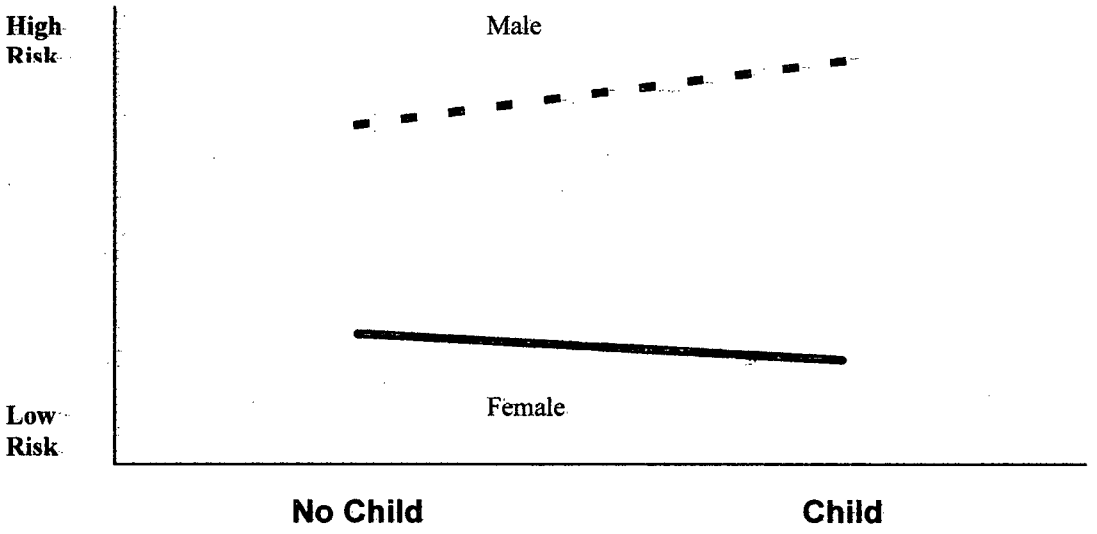

Figure 4. Hypothesized direction for the interaction effect of gender x children on financial risk tolerance.

Hypothesis 4 b: *The effect of child presence on financial risk tolerance will decrease with increased age of parents.*

As mentioned previously, age decreases financial risk tolerance in married and single individuals. However, individuals with children are expected to increase their risk tolerance as their children age. As children age, their parents age as well so that parents' ages often act as

[17] Statistics Canada defines asset income as net income from interest and investments, net income from real estate, dividends from Canadian corporations and taxable capital gains/losses.

proxies for children's ages and life-cycle stages. As children get older, norms governing parental responsibilities and roles change to adjust for advances in development within the family (Poduska, 1993; Rodgers & White, 1993; White, 1991). Indeed, when children are in their late teens, parents are likely to be in an acceleration stage of their financial life cycle so feel confident that they have the capacity to meet demands such as providing for the costs of university education (Mittra, 1992). Therefore, parents' tolerance for uncertain outcomes should increase because increased family resources are security against unexpected losses and experience gives parents more confidence to plan for demands required by children. Further, parents will increase their propensity to take risk, as children get older, in response to more sophisticated child development (see Figure 5).

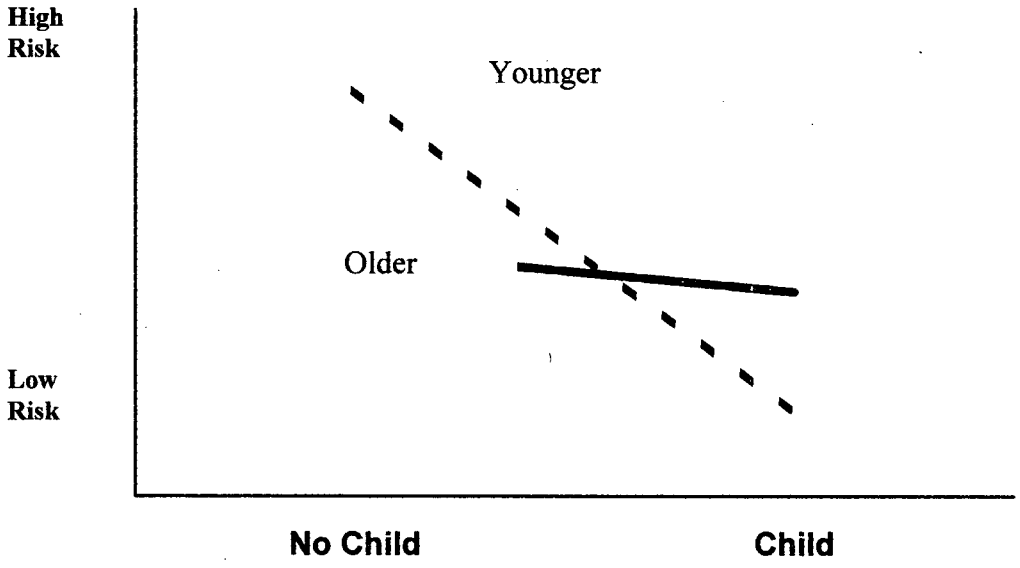

Figure 5. Hypothesized direction for the interaction effect of age of parent x children on financial risk tolerance.

Hypothesis 4 c: *The effect of child presence on financial risk tolerance will decrease with increased income.*

As discussed previously, even with lower incomes, childless individuals can afford to be riskier than married people with children because they have fewer roles to assume with fewer

consequences if losses occur. Therefore, when income increases for childless individuals, their propensity for risk increases but not as much as people with children because their risk levels are already high.

Households with low-income and with children can be expected to be unwilling to take risks since reserves are not available to cover financial losses (Riley & Chow, 1992). Moreover, Poduska (1992) states that families may be overwhelmed by the increasing costs of raising children. For example, the Manitoba government (Department of Agriculture) estimated that the 1999 cost of raising a child for 18 years in Canada is approximately $154,000.

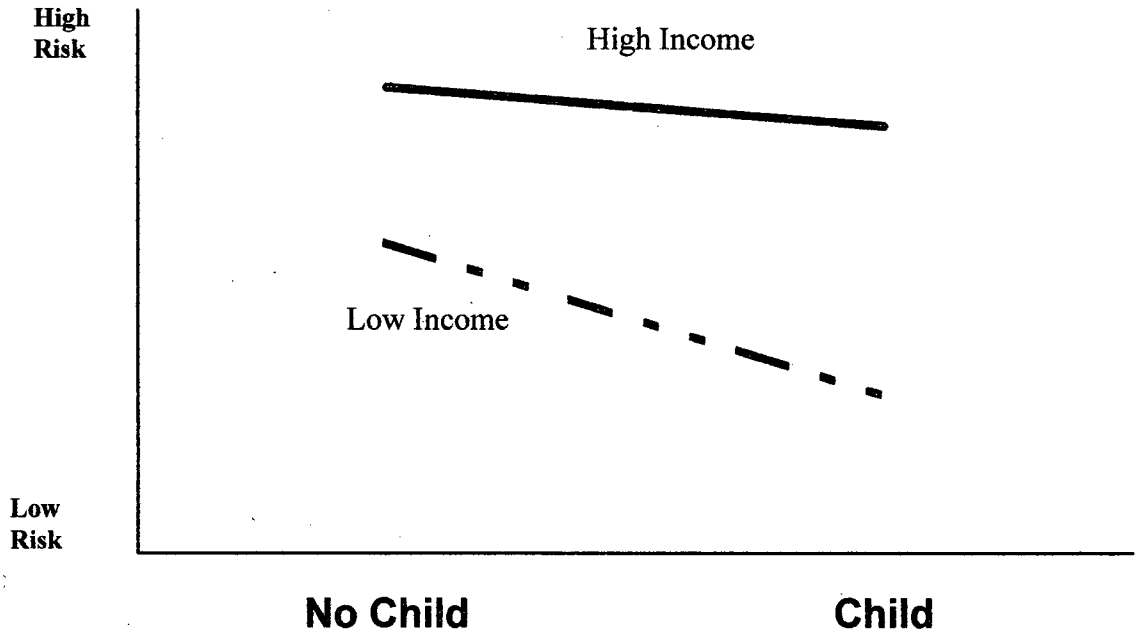

Figure 6. Hypothesized direction for the interaction of income x children on financial risk tolerance.

High-incomes should allow individuals to fulfill goals with few consequences for family members if unexpected losses occur. Further, since losses have fewer consequences for high-income people, deviation from norms is unlikely. Accordingly, high-incomes provide security for households with children to be risk tolerant. In addition, " the higher the prestige and income

of parents, the greater the correspondence in behavior, values and belief between parents and children" (Nye, 1979, p. 73). Moreover, when gains do occur as the result of choosing risky options, parents can raise their expectations for intergenerational transfers. Further, individuals with children and high incomes have a greater potential to adjust their financial risk tolerance compared to childless individuals (see Figure 6).

Chapter III

Method

Sample and Data Collection

The 1999 Family and Couples Relationship Survey (FCRS) was conducted as part of a graduate research course assignment at the University of British Columbia. The purpose of the survey was to examine adjustment to stress, well-being, risk-taking and interpersonal interactions within family and couple relationships. The FCRS was administered to households who qualified for residency in the University of British Columbia Student Housing (516 units) and Faculty and Staff Housing (268 units). One adult member in each household was asked to complete the questionnaire. Although random sampling techniques were originally proposed and executed, after three attempts to get a meaningful sample size the survey became a convenience sample. The response rate was 9.5%. However, the participants were representative of households residing in the community, i.e., 64% were students and 36% were either faculty or staff.

As shown in Table B1, the majority of respondents were female, married and had children. The sample was fairly well distributed for age and income. The mean age of respondents was 33 years (S. D. = 6.57). Average income was approximately $40,000 (S. D. = $2,000) ranging from 0 - $100, 000. To determine if the residents of the University of British Columbia (UBC) sample were representative of people between the ages of 23 – 52 years who resided in the City of Vancouver, statistics were obtained from the 1996 census conducted by Statistics Canada. As shown in Table B1, the UBC sample was not representative of the population of the City of Vancouver. In comparison to the City of Vancouver, the UBC sample had fewer men, had lower incomes, had younger respondents, and had fewer single respondents. However, the UBC sample was comparable to the City of Vancouver data on presence of children in the household.

Measuring Financial Risk Tolerance

Investigation of financial risk tolerance from a family developmental stance requires a subjective measure. If an objective measure (ratio of risky assets to wealth) is used, some groups would be excluded from the analysis. For example, young people and families in their early formation years would be unlikely to have wealth or hold risky assets (Mittra, 1990; Poduska, 1993). On the other hand, most participants, regardless of their financial situation, would be likely to have formed attitudes toward financial risk.

Seven items commonly used in financial risk questionnaires were used to get an overall scale of risk tolerance (see Appendix C). Analysis of the seven items resulted in an alpha of .5374 with intercorrelations ranging from .0137 to .5746. Therefore, these items did not create a scale. However, two items did measure the concept of financial risk tolerance as defined for this study. The two items were: 1) Risk 1 measuring income risk and 2) Risk 2 measuring investment risk.

Employment Risk (Risk 1). The first item used to measure the dependent variable was modeled after a risk item included in the 1992 Health and Retirement Study (HRS). The question in the 1992 HRS asked, "suppose that you are the only income earner in the family, and you have a good job guaranteed to give you your current (family) income every year for life..." The question in the present study asked, "You are the only income earner in the family and have a good job guaranteed to give you an income of $50,000 every year for life. Unexpectedly, you are given the opportunity to take a new and equally as good position with a 50-50 chance it could double your yearly income..." Specifically, an income of $50,000 was chosen because it was anticipated that the UBC sample would earn more than the average ($37, 465) or median ($33,326) Canadian income (Statistics Canada, 1996). This modification made the question less vague and gave respondents a frame of reference or anchor point. The HRS measure gave respondents three risky options to choose compared to the four options included in Risk 1. More choices had the potential to increase the variability in financial risk tolerance. Risk 1 was stated as follows:

The following are some hypothetical situations. For each situation, consider how it would apply to you and please indicate how you would be likely to act.

a. You are the only income earner in the family and have a good job guaranteed to give you an income of $50,000 every year for life. Unexpectedly, you are given the opportunity to take a new and equally good position with a 50-50chance it could double your yearly income and a 50-50 chance it could cut your income by half. Would you take the new position?.....

b. Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by a third? Would you take the new position?.....

c. Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by 20 percent. Would you take the new position?....

d. Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by 10 percent. Would you take the new position?....

The intent of Risk 1 was to measure hypothetical situations where gambles on financial risk could improve one's future income. Respondents were given the option to answer "yes" or "no" to chances of always doubling their yearly income or decreasing their income by 50%, 30%, 20% or 10%. Risk 1 was recoded so that individuals who answered only one of the four options would be included in the analyses (see Appendix D for scoring procedure). The recoding produced five scores on employment risk tolerance: 1 indicating low risk tolerance and 5 indicating high risk tolerance. Most respondents were unwilling to take a gamble that would decrease their income by 20%. However, 25% said they would take a 50% chance to double their yearly income. The mean was 3 and the standard deviation was 1.45 for Risk 1 (n = 76).

A potential criticism of this measure is its susceptibility to a status quo bias because respondents might value their current jobs for reasons other than income flow. Therefore, the estimate of risk tolerance would be reduced because individuals may express risk aversion for reasons other than to take a gamble (Barsky et al., 1997). Only three of the 76 commented that

other factors beside income were important when considering changes in employment (these respondents wrote comments in the margins of the questionnaire).

Risk 2. The second item used to measure financial risk tolerance was a hypothetical question that explored respondents' willingness to invest in ventures that ranged from low to high risk in order to get low to high returns on their investment strategies. The question was:

> If $20,000 came to you unexpectedly, what would you do with the money? (Choose one)
>
> 1 Deposit in a regular savings account
> 2 Buy a Canada Savings Bond
> 3 Invest it in a safe bond with a fixed term
> 4 Invest it in a mutual fund with average returns
> 5 Invest it in the stock market to earn high returns

Categories of risk were adapted from those suggested by Leimberg et al. (1989) and illustrated in Figure 7.

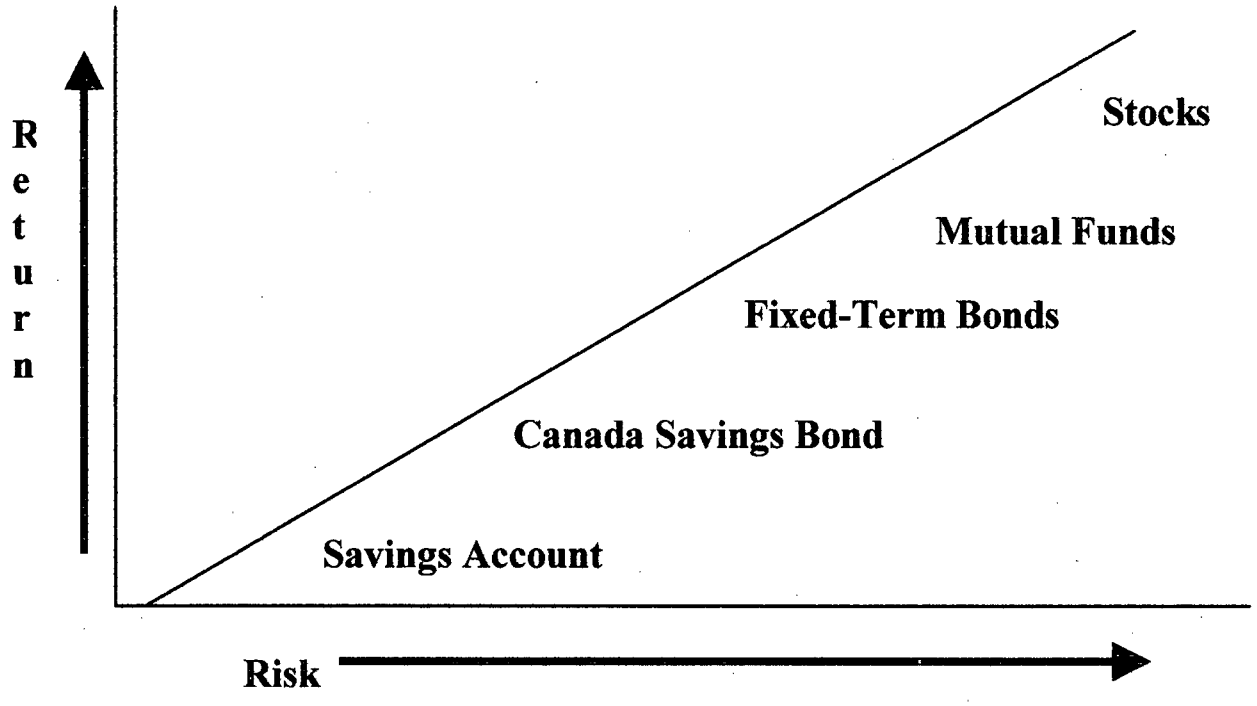

Figure 7. Risk -return trade-off adapted from Leimberg et al. (1989) p. 229.

Respondents could choose from five options with 1 indicating very low risk to 5 indicating high risk tolerance. Responses to the low risk category (Canada Savings Bond) were insufficient to be used in regression analysis ($\underline{n} = 3$). Therefore, the no risk and the low risk categories were combined into a single category consisting of 18 responses. Canada Savings Bonds (CSB) operate similar to savings account because they have similar rates of interest and are easily converted to cash. They are dissimilar in that CSB require a minimum to be invested (Brown, 1994). When respondents were asked to choose an investment channel for a windfall of $20,000, 25% chose option one indicating that they were not risk tolerant. The favoured option was mutual funds (47% chose this option). The mean was 2.47 and the standard deviation was 1.01 for Risk 2 ($n = 72$).

In contrast to other research designs that have used one item to measure financial risk tolerance (e.g., Avery & Elliehausen, 1986; Barsky et al., 1997; Grable & Lytton, 1997; Schooley & Worden, 1996; Sung & Hanna, 1996; Warner & Cramer, 1995), this study included two dependent variables: employment risk (Risk 1) and investment risk (Risk 2). The correlation between the dependent variables was -. 003 indicating that the two are separate concepts. Thus, financial risk tolerance is not a single construct: there are separate constructs for employment financial risk tolerance and for investment risk tolerance. Researchers who investigate the nature of financial risk (for example see MacCrimmon & Wehrung, 1985; Yates, 1992) claim that risk varies according to the context in which it appears. Therefore, on face validity, employment and investment risk are separate constructs that may be perceived with differing levels of tolerance.

Variables

Marital status and presence of children were used to capture mutually exclusive family stages as well as shrinkage and expansion of family structure. The four family stages that resulted from this categorization are: single versus married and childless individuals versus individuals with children present in the household. These four distinct states formed the independent variables and were analyzed to test for the main effects of family structure on

financial risk tolerance. Gender, age and income were designated as control variables and were used in combination with the independent variables to test for interaction effects.

Marital status. Marital status was dummy coded into a currently married variable (married) with 0 = single and 1= married. The single group included never married, legally separated, widowed, and divorced status because of the low numbers in each of these categories. There were 55 married respondents and 21 unmarried respondents in the study.

Children. The question, "have you or your partner ever given birth to, fathered, or adopted any children in your lifetimes?" was used to determine if respondents had children residing in the household. Although four respondents who answered yes to the question did not actually have children residing in their households, they were included because their children were young (1 – 15 years) so parents were expected to be financially responsible for their child's well-being. A dummy variable was created with 1 = children present in the household and 0 = no children. There were 57 cases with children residing in the household and 19 cases without children.

Gender. The sample had 60 women (n = 43 for married and n = 17 for single) and 16 men (n = 12 for married and n = 4 for single). A dummy variable was created with 0 = women and 1 = men.

Age. Two groups were formed with individuals under 32.5 years and those over 32.6 years. This division was based on research findings indicating that changes in risk started showing marked differences between the ages of 30 years (Hanna & Sung, 1997) and 35 years (Jianakoplos & Bernasek, 1998). For the sample, the mean age was 33 years and the median age was 32.5 years. Respondents less than 32.5 years were coded 0, respondents more than 32.5 years were coded 1. Two respondents did not answer this item resulting in 51 % under 32.5 years and 49% over 32.5 years.

Income. Total income of all household members from all sources, before deductions during 1998 was used for the control variable, income. Respondents could choose from ten categories that ranged from 0-$10,000 to $90, 001- $100,000. To examine if high or low income

influenced financial risk tolerance, this variable was divided at the $20,001 - $30,000 point. This division was the median for the sample. Fifty-four percent of respondents fell below this cutoff. Income was coded as a dummy variable, 0 = low income and 1 = high income.

Analyses

As noted earlier two constructs of financial risk tolerance will be used in parallel analysis using two multi-stage analyses. Although significant results are reported, because of the small sample size and the low response rate, the determining factor for discussing results is the meaningfulness of a variable's contribution (above 1%) to the explained variance. This decision rule is based on Kerlinger and Pedhazur's (1973) suggestion that interpretation of results should also consider the meaningfulness of the findings. Meaningfulness depends upon the situation. For example, with a small and non-random sample size, results may not be significant even though the effect size may be large enough to be meaningful. For descriptive purposes, the effects will be interpreted in relation to the effects that have been found in similar research that had a larger and more random sample, and more variability in measures than in the current study. For example, research by Grable and Lytton (1998) found that the effect of individual variables ranges from 1 to 4% and the set of variables accounts for 20% of the total variance in financial risk tolerance. In the descriptive analyses that follow, a 1% change per variable in $\underline{R^2}$ (Beta of .10 or greater) will be discussed as meaningful.

The analysis consisted of the following four steps:

1. All main effects were entered (age, gender, income, marital status and children).

2. Interaction terms for the control variables were entered (gender x age, gender x income, and age x income).

3a. Main effect variables, significant interaction variables (if any) from step 2 and the interaction variables for marital status (marital status x gender, marital status x age, and marital status x income) were added. Main effects for children and interaction terms that were not significant were omitted from this step.

3b. Main effect variables, significant interaction variables (if any) from step 2 and the interaction variables for children (child x gender, child x age, and child x income) were added. Main effects for marital status and interaction terms that were not significant were omitted from this step.

In order to interpret interaction terms, predicted means were calculated for groups defined by those terms by substituting in dummy variable values and regression coefficients into the regression equation. For example, if the interaction term between age and gender was significant, the following equations and procedures would be used to calculate predicted means and to interpret the interaction:

$\hat{Y} = a + b_1D1 + b_2\ D2 + b_3D3 + b_4D4 + b_5D5 + b_6D3D4 + b_7D3D5 + b_8D4D5$:

where a is the constant and b_n are the estimated slopes. D1 is the dummy variable for marital status (0 = single, 1 = married), D2 is the dummy variable for child presence (0 = no child, 1 = child), D3 is the dummy variable for gender (0 = female, 1= male), D4 is the dummy variable for age (0 = younger, 1 = older), D5 is the dummy variable for income (0 = low income, 1 = high income), and D3D4 is the interaction term for gender x age (0 = else, 1 = older males).

To get the predicted mean for young (D4 = 0) females (D3 = 0), the equation reduces to:

$\hat{Y} = a + b_1D1 + b_2\ D2 + b_5D5$

Because D3D4 = 0, D3D5 = 0, and D4D5 = 0.

To compute the predicted mean for young male:

$\hat{Y} = a + b_1D1 + b_2\ D2 + b_3D3 + b_5D5 + b_7D3D5$

To compute the predicted mean for older female:

$$\hat{Y} = a + b_1D1 + b_2\ D2 + b_4D4 + b_5D5 + b_8D4D5$$

To compute the predicted mean for older male:

$$\hat{Y} = a + b_1D1 + b_2\ D2 + b_3D3 + b_4D4 + b_5D5 + b_6D3D4 + b_7D3D5 + b_8D4D5$$

Once these values were obtained, they were presented in graphic form.

$$\hat{Y} = a + b_1D1 + b_2\ D2 + b_3D3 + b_4D4 + b_5D5 + b_6D3D4 + b_7D3D5 + b_8D4D5$$

Chapter IV

Results

Results of the multi-stage regression procedures will be discussed using the following format: 1) significance and meaningfulness (1% criteria) of main effect hypotheses using both dependent variables and 2) significance and meaningfulness (1% criteria) of interaction hypotheses using both dependent variables. Results for employment risk (Risk 1) are reported in Table 1 and results for investment risk (Risk 2) are reported in Table 2 (values and directions of partial regression coefficients, b, are reported in these tables. The standardized regression coefficients (β) are reported in Appendix E.

Main Effects

Hypothesis 1: *Married individuals are less risk tolerant than single individuals.*

Contrary to this hypothesis, marital status had no meaningful or significant effect on either employment or investment risk. In both analyses, the direction of the effect was in the predicted direction, but in neither analyses did the partial regression coefficient achieve a level of .10 or greater (see Appendix E).

Hypothesis 2: *Individuals with children are less risk tolerant than those without children.*

Contrary to this hypothesis, the presence of children did not have a meaningful effect on employment risk, but consistent with the hypothesis, the presence of children had a strong and significant effect on investment risk ($\beta = -.37$). Thus, based on the unstandardized regression slope ($b = -.84$), the presence of children predicts a decrease in investment risk tolerance by a factor of .84 units of risk.

Interaction Effects

As reported in Tables 1 and 2 (step 2), there was a significant interaction effect for the set of control variables for investment and employment risk. Gender x age was the only

Table 1

Unstandardized O L S Estimates and Standard Errors for Marital Status and Children on Employment Risk Tolerance Controlling for Gender, Age, Income

	Step 1		Step 2		Step 3a		Step 3b	
	b	S. E.	b	S. E.	b	S. E.	b	S. E.
Variables								
Constant	2.86	.47	2.96	.51	2.93	.47	3.40	.60
Gender (male)	.07	.43	1.19*	.71	1.76*	.97	1.11	.96
Age[a] (older)	.45	.41	.42	.56	-.54	.71	-.51	1.55
Income[b] (high)	.47	.39	.07	.55	.44	.59	-.67	.74
Marital Status (married)	-.17	.40	-.23	.40	-.39	.69	-	-
Children (present)	-.22	.47	-.34	.47	-	-	-1.12	.70
Gender x Age			-1.49*	.85	-1.59*	.85	-1.07	.97
Gender x Income			-.55	.90	-.47	.90	-.23	.91
Age x Income			.87	.72	.56	.74	.40	.95
MS x Gender					-.87	.97	-	-
MS x Age					1.45*	.80	-	-
MS x Income					-.11	.13	-	-
Child x Gender							-.38	1.12
Child x Age							1.13	1.43
Child x Income							1.28	1.08
R^2 Change	.06		.08		.06		.05	
Significance of R^2 Change	.56		.16		.23		.29	

[a]n = 73. [b]n = 74

*$p < .10$.

Table 2

Unstandardized O L S Estimates and Standard Errors for Marital Status and Children on Investment Risk Tolerance[a] Controlling for Gender, Age, Income

	Step 1		Step 2		Step 3a		Step 3b	
	b	S. E.	b	S. E.	b	S. E.	b	S. E.
Variables								
Constant	2.85	.30	2.69	.32	2.16	.32	2.61	.37
Gender (male)	.10	.28	1.09**	.44	.76	.60	.88	.54
Age[b] (older)	.16	.27	.56	.35	.48	.46	.85	.76
Income[c] (high)	.54**	.25	.57*	.34	.68*	.35	.51	.45
Marital Status (married)	-.20	.26	-.18	.25	-.31	.47	-	-
Children (present)	-.84***	.31	-.88***	.29	-	-	-.89**	.43
Gender x Age			-1.62***	.53	-1.50**	.52	-1.80***	.61
Gender x Income			-.23	.56	-	-	-	-
Age x Income			-.08	.45	-	-	-	-
MS x Gender					.43	.64	-	-
MS x Age					-.57	.52	-	-
MS x Income					.04	.09	-	-
Child x Gender					-	-	.29	.69
Child x Age					-	-	-.29	.78
Child x Income					-	-	-.11	.53
R^2 Change	.24		.11		.02		.00	
Significance of R^2 Change	.004		.029		.63		.95	

[a] n = 72 [b] n = 73. [c] n = 74

*p < .10. **p < .05. ***p < .01.

was the only interaction variable in the set that was significant for employment risk (β = -.36) and investment risk (β = -.54). Gender x income (β = -.10) and age x income (β = .26) had a meaningful effect on employment risk but not investment risk. Younger women are less risk tolerant than younger men. However, older women are more risk tolerant than older men. Older male respondents scored .85 less on employment risk and .76 less on investment risk than older female respondents (gender x age interaction). The predicted means for gender x income indicate that women with low incomes ($\hat{Y}$ = 2.81) are less willing than women with high incomes ($\hat{Y}$ = 2.88) to take employment risks. However men with low incomes ($\hat{Y}$ = 3.99) are more willing than men with high incomes ($\hat{Y}$ = 3.52) to take employment risks. The predicted means for age x income indicate that younger respondents with low incomes ($\hat{Y}$ = 3.58) are less willing than older respondents with low incomes ($\hat{Y}$ = 4.00) to take employment risks. As well, younger respondents with high incomes ($\hat{Y}$ = 3.65) are less willing than older respondents with high incomes ($\hat{Y}$ = 4.81) to take employment risks.

Results of the hypothesized interaction effects on the predictor variable, marital status, are reported in step 3a in Table 1 and 2.

Hypothesis 3 a: *The effect of marital status on financial risk tolerance will be greater for men than women.*

Consistent with this hypothesis, there was a meaningful effect of marital status on employment risk tolerance that was greater for men than women (β = -.23), but contrary to the hypothesis, the gender x marital status interaction had neither a significant nor a meaningful effect for investment risk tolerance. The predicted mean for single men was $\hat{Y}$ = 4.59 and for married men was $\hat{Y}$ = 3.72 while the predicted mean for single women was $\hat{Y}$ = 2.83 and for married women was $\hat{Y}$ = 2.44.

Hypothesis 3 b: *The effect of marital status on financial risk tolerance will decrease with age.*

Consistent with this hypothesis, the effect of marital status on employment risk decreased with age. The effect was both significant and meaningful (β = .49). Contrary to the hypothesis,

the interaction of age x marital status was neither significant nor meaningful for investment risk tolerance (see Table1 and Appendix E). As expected younger single respondents ($\hat{Y} = 2.88$) are more risk tolerant than younger married respondents ($\hat{Y} = 1.52$) while older married respondents ($\hat{Y} = 3.78$) are more risk tolerant than older single respondents ($\hat{Y} = 3.30$). However, older single respondents are more risk tolerant than younger single respondents. As a result the gap between the married groups increased.

Hypothesis 3 c: *The effect of marital status on financial risk tolerance will decrease with increased income.*

Consistent with this hypothesis, there was a meaningful effect of marital status on employment risk tolerance that decreased with increased income ($\beta = -.19$) but contrary to the hypothesis, the income x marital status interaction had neither a significant nor a meaningful effect for investment risk tolerance. The predicted mean for single respondents with low incomes was $\hat{Y} = 4.15$ and for married respondents with low incomes was $\hat{Y} = 3.76$ while the predicted mean for single respondents with high incomes was $\hat{Y} = 4.59$ and for married respondents with high incomes was $\hat{Y} = 4.09$.

Results of the hypothesized interaction effects on the predictor variable, presence of children in the household are reported in step 3b in Table 1 and 2.

Hypothesis 4 a: *The effects of parenthood on financial risk tolerance will be greater for fathers than mothers.*

Contrary to this hypothesis, the interaction variable, child presence x gender, had no meaningful or significant effect on either employment or investment risk. Moreover, the direction of the effect was opposite to what was predicted (see Tables 1 and 2 and Appendix E).

Hypothesis 4 b: *The effect of child presence on financial risk tolerance will decrease with increased age of parents.*

Contrary to this hypothesis, although there was a meaningful effect of child presence on employment risk tolerance ($\beta = .39$), the direction was opposite to what was predicted. Older parents were less willing than younger parents to take employment risks. As well, the interaction, child presence x age, had neither a significant nor a meaningful effect on investment risk tolerance. Older respondents with children were less willing ($\hat{Y} = 3.34$) than older childless respondents ($\hat{Y} = 3.33$) to take employment risks. However, the predicted means indicate that the difference is not remarkable. Younger respondents with children were less willing ($\hat{Y} = 3.39$) than younger childless respondents ($\hat{Y} = 3.84$) to take employment risks.

Hypothesis 4 c: *The effect of child presence on financial risk tolerance will decrease with increased income.*

Consistent with this hypothesis, the effect of child presence on employment risk tolerance had a significant and a meaningful effect ($\beta = .40$) that decreased with increased income, but contrary to the hypothesis, child presence x income had neither a significant nor a meaningful effect on investment risk tolerance (see Table1 and 2 and Appendix E). Childless respondents with high incomes ($\hat{Y} = 3.94$) had higher levels of financial risk tolerance than childless respondents with low incomes ($\hat{Y} = 3.43$). As well, respondents with children and high incomes ($\hat{Y} = 4.29$) had higher levels of financial risk tolerance than respondents with children and low incomes ($\hat{Y} = 2.24$).

Chapter V

Discussion

The goal of this study was to elucidate an understanding of subjective financial risk tolerance as it pertains to individual family members. Recent changes in government and workplace policy mean that people are expected to take responsibility for their financial well-being throughout their life course. How individuals feel about taking financial risk affects outcomes in financial states (Schooley & Worden, 1996). As well, this study used a novel integration of a family theory and a psychological version of economic theory (Family Development Theory and Prospect Theory) to determine the variability in financial risk tolerance across individuals experiencing four distinctive family stages.

Individuals Respond Differently to Risk Constructs

Single and married respondents appear to regard employment risk (Risk 1) as separate from investment risk (Risk 2), thus there is seldom correspondence between the two dependent variables (see Table 4). Married individuals in the older age group were more willing than older singles to risk changing their jobs in order to increase their yearly incomes but were not significantly different from single people in their propensity to take risks to increase returns on investments. As well, income appears to influence investment risk but not employment risk.

Individuals with children are less willing to take investment risk than childless individuals but are not dissimilar to childless individuals in their propensity to take employment risks. Individuals with children who are in the high-income group are more willing than individuals who are childless and in the high-income group to increase their risk tolerance for employment risk whereas, individuals with children in the low-income group are less willing than childless individuals to increase their risk tolerance. The only independent variable that has a significant effect across employment and investment risk is the interaction variable, age x gender.

Table 3: Summary of Results.

Main Hypotheses	**Employment Risk**	**Investment Risk**
H_0 1. *Married individuals are less risk tolerant than single individuals*	ns	ns
H_0 2. *Individuals with children are less risk tolerant than those without children*	ns	β = -.37*** (child) β = .28** (income)
Interaction Hypotheses[b] (Marital Status)		
H_0 3a. *The effect on financial risk tolerance will be greater for men than for women* (MS x gender)	β = -.23	ns
H_0 3b. *The effect of marital status on financial risk tolerance will decrease with age* (Ms x age)	β = .49*	ns
H_0 3c. *The effect of marital status on financial risk tolerance will increase with decreased income* (Ms x income)	β = -.19	ns
Interaction Hypotheses (Child Presence)		
H_0 4a. *The effect of parenthood on financial risk tolerance will be greater for fathers than for mothers* (Child presence x gender)	ns	ns
H_0 4b. *The effect of child presence on financial risk tolerance will decrease with increased age of parents* (Child presence x age)	β = .39	ns
H_0 4c. *The effect of child presence on financial risk tolerance will decrease with increased income* (Child presence x income)	β = .40	ns
Interactions Control Variables		
Gender x Age	β = -.38*	β = -.54***
Gender x Income	β = -.10	ns
Age x Income	β = -.19	ns

These inconsistent findings support claims that how financial risk tolerance is measured affects results (for example see MacCrimmon & Wehrung, 1985, 1986; Yates, 1992). The arena of financial risk comprises many separate constructs: two of them are employment and investment risk. Therefore, the probability of finding similar patterns across the constructs is unlikely. Nevertheless, compared to people in general who tend to be unwilling to take financial risks (Leimberg et. al., 1989) respondents report that they are willing to take some risk to improve their yearly incomes and to get high returns on their investments. For example, the mean response for respondents is: they are willing to take a 50% chance on a new job to double their yearly income with an alternate outcome of decreasing their income by 20%. As well, respondents are willing to take moderate risks to get average returns on investments (investment risk). The favored option for investing is mutual funds. This finding is not surprising because we are constantly being bombarded through the media about the benefits of mutual funds such as *Freedom Fifty-Five* with little information about the risks. Indeed, Morse (1998) found that investment choices for a financial product were not related to risk-return preferences but that choices are made on familiarity. As well, mutual funds encompass a wide variety of risk options depending on the type of fund.

Family Stages and Moderators Influence an Individual's Financial Risk Tolerance

Family stages. Single and married respondents do not differ significantly on employment or investment risk, a finding observed by Grable and Joo (1997). Plausible explanations for lack of differentiation by marital status are: 1) most single respondents are young, are in the low-income group, and have at least one child and 2) most people in a university community are likely to hold similar values and goals. Therefore, respondents in both family stages would show similar attitudes towards financial risk because children are the determining factor rather than marital status.

Presence of children in the household affected investment risk but not employment risk. Compared to individuals without children, individuals who have children are less risk tolerant and are assumed to require certainty in their returns on investments (MacCrimmon & Wehrung,

1987; Warner & Cramer, 1995). A plausible explanation for the lack of differentiation by presence of children for employment risk is that both groups hold similar expectations about jobs because of the nature of the labor market and these expectations remain stable regardless of children. Existing labor market conditions have forced many employees to change jobs frequently due to corporate downsizing and the changing demands of technology. Therefore, people may expect to change their jobs regardless of the risk factors. Moreover, the norm that individuals remain in a job with lifetime tenure may be in transition so that multiple changes are normative expectations throughout work careers. Indeed, recently the Prime Minister of Canada informed the Canadian public that employment changes should now be accepted as a way of life.

Interactions with marital status. Gender, age and income were expected to moderate marital status for both employment and investment risk. These interaction effects hold for employment risk but not for investment risk. Compared to single men, married men adjust their employment risk downward. As well, married men make a greater adjustment than married women in their employment risk tolerance. Contrary to predictions, married women compared to single women adjusted their employment risk tolerance slightly downward. Nevertheless, marriage does reduce gender differences in employment risk tolerance. Thus, findings support the prediction that married people prefer certainty in their financial decisions as a means to comply with norms from the institution of marriage. However, findings in this study do not support those of Hinz et al. (1997). When Hinz et al. investigated the interaction effects of gender and marital status on employment risk, they found that the interaction variable was not statistically different from zero. The result found in this study requires further investigation because there are only four single men in the sample so that gender effects cannot be determined.

Age moderates the effect of marital status for employment risk; both older single and older married respondents are more willing to take a risk to increase their yearly income than are younger people. Further, older married respondents are more risk tolerant than older single respondents. This finding is unusual because, in general, younger people are expected to tolerate risk more than older people (Bajtelsmit & Van Derheir; Jianakoplos & Bernaseck, 1998; Riley &

Chow, 1992; Schooley & Worden, 1997) and single people are more risk tolerant than married people (Barsky et al., 1997; Grable & Lytton, 1998; Hinz, McCarthy & Turner, 1997; Schooley & Worden, 1996; Zhong & Xiao, 1995).

The unpredicted direction of age on marital status may be accounted for by: 1) sampling procedures, 2) history effects, and 3) characteristics of older marriages. First, the sample was dichotomized at the median so that the older group consisted of respondents who were between 32.5 and 53 years of age. As well, 28 out of 36 respondents in this group were less than 40 years old. In general, this group is considered to be either approaching or at middle-age when losses are tolerated and increased risk taking is expected (George, 1999; Schooley & Worden, 1996). Second, this particular older group may not be anticipating future responsibilities for family members because their parents are not likely to have reached life circumstances where they require assistance. Finally, older married people are likely to have stable marriages (White, 1991) and thus have partners who can provide resources when losses occur. Single people are likely to be without extra resources that spouses provide.

As expected, the difference between married and single individuals' employment risk tolerance decreases with increased income. This finding corresponds with a large body of research finds that as income increases financial risk tolerance increases (for example, Avery & Elliehausen, 1986; Barsky et al. 1997; Grable & Lytton 1998; MacCrimmon & Wehrung, 1987). With increased income, both single and married individuals adjust their risk tolerance upward, but there is a greater increase for married individuals compared to single individuals. For both groups, increased income provides a greater margin to recover from unexpected losses.

Contrary to expectations, gender, age and income did not moderate the effects of marital status on investment income. These findings are unexpected because the preponderance of research finds that women are more risk averse than men (Bajtelsmit & Van Derhei, 1997; Barsky et al., 1997; Belsky, 1992; Grable & Lytton, 1998; Hinz et al., 1997; Kahn, 1997; Morse, 1998 Riley & Chow, 1992; Schmitt, 1996; Sung & Hanna, 1996; Wong & Carducci, 1991). Possible explanations for the non-significant findings of gender, age and income on marital

status and investment risk are: 1) sample demographics, 2) human capital investments, 3) current social trends, and 4) income and wealth status. First, there are only four single men in the sample. Therefore, any interaction results that are based on comparisons of single men are statistically invalid because low cell counts greatly increase the probability that the null hypothesis is accepted when in fact it is false.

Second, likely the women in this sample are investing or have invested as much in human capital as the men. Therefore, both male and female respondents may perceive they have the resources to overcome unexpected investment loss.

Thirdly, women in this study may be aware of social trends that require them to be as aggressive as men with their financial decisions. For example, women have a high probability of managing their financial well-being at some time during their life course (Belsky, 1992) because of divorce, greater longevity than men, choosing to remain single, and lower lifetime earning potential than men (Diamond, 1995; Grable & Lytton, 1998).

Finally, income may not influence married or single people's investment risk preferences because many respondents are not income earners so any investment regardless of risk will increase their wealth status. Mutual funds are chosen because respondents are familiar with this investment vehicle as means to increase wealth. Further, compared to high-income groups in general, respondents in the sample high-income group[18] may not consider themselves as high-income earners so will exhibit attitudes similar to low-income earners.

Interactions with child presence. Gender, age, and income were expected to moderate child presence for both employment and investment risk. Age and income do affect employment risk tolerance but not investment risk. However, the effect of age on child presence for employment risk is so slight that both older individuals with and without children are similar. As stated previously, the sample does not contain older individuals so that this effect requires further investigation with a large and more varied sample.

[18] The criteria for placing respondents in the high-income group was that they earned $30,000 or more yearly. This was the median of the income distribution.

Both people with and without children and with high incomes are more willing to take risk in their investments than are people in the low-income groups. This finding is supported by research findings that risk tolerance increases with income (Avery & Elliehausen, 1986; Barsky et al., 1997; Grable & Lytton, 1998). Therefore, it is reasonable to claim that respondents with children and high-incomes hold similar risk attitudes as childless high-income individuals because respondents with children have resources to cope with unexpected losses that may be detrimental to their children.

Contrary to expectations, gender, age and income did not moderate the effects of child presence in the household on investment risk. Further, gender did not moderate the effects of employment risk. Probable explanations for the lack of differentiation between the group with children and the group without children are: 1) characteristics of respondents and 2) sample size. First, theory and research suggest that women's risk tolerance will decrease slightly when they have children because in general all women tend to require certainty in their financial decisions. However, the women who participated in this study are likely to be more risk tolerant than women in general because of their greater investment in human capital so they have the potential resources to cope with unexpected losses. Therefore, the gap between preferences for risk tolerance for men and women with children is not great enough to detect.

Second, there are only four men without children and two respondents who are over 32.6 years of age who do not have children. An accurate assessment of the interaction of age and children or gender and children is not feasible or valid. Therefore, it is impossible to assess whether individuals with children adjust their risk tolerance upward for employment and investment risk which would reduce the gap between their risk tolerance and that of older childless individuals. Further, explanations for both the significant interaction (employment risk) and insignificant interaction (investment risk) of children x gender are speculative because of the cell count for men without children is insufficient.

Control Moderators Influence Employment and Investment Risk

There is a significant and meaningful effect of gender x age for both employment and investment risk. Older males are less risk tolerant than older females. This may be an artifact created by the sample because men are more risk tolerant than women (Bajtelsmit & Van Derhei, 1997; Barsky et al., 1997; Belsky, 1992; Grable & Lytton, 1998; Hinz et al., 1997; Kahn, 1997; Morse, 1998 Riley & Chow, 1992; Schmitt, 1996; Sung & Hanna, 1996; Wong & Carducci, 1991) and older people are less risk tolerant than younger people (Grable & Lytton, 1998; Riley & Chow, 1992). This result needs to be evaluated using a larger more representative sample.

As well, there is a meaningful effect of gender x income and age x income for employment risk but not for investment risk tolerance. Men are more willing than women to take employment risk regardless of income. However, men with high incomes are less willing than men with low incomes to take employment risks. Again, this may be an artifact created by the sample size and the income variable. There are only five men in the sample with high incomes. As well, income included all family income so that individuals may regard family income different from personal income. Older individuals with high incomes are more willing to take employment risks than younger individuals with high incomes. However, as stated above, older individuals are less risk tolerant than younger individuals, but this sample does not contain older individuals. As with the gender x age variable, the gender x income and the age x income effects need to be evaluated using a larger more representative sample.

The Family Development/ Prospect Theory Paradigm

This study examines an individual's financial risk tolerance within a family context using a Family Development Theory /Prospect Theory paradigm. It was reasoned that normative expectations within and across family stages and other social institutional stages would act as reference points that account for how people perceive and evaluate financial gains and losses. The model is partially supported by this research.

In summary, the study supported the following hypotheses that were based on the theoretical model: 1) individuals with children are less risk tolerant than those without children,

2) the effect of marital status on financial risk tolerance will be greater for men than for women, 3) the effect of marital status on financial risk tolerance will decrease with age, 4) the effect of marital status on financial risk tolerance will decrease with increased income, and 5) the effect of child presence on financial risk tolerance will decrease with increased income. These hypotheses were supported for employment risk tolerance but not for investment risk tolerance. As well, the only hypotheses that were statistically supported were: the main effect for child presence and the interaction effect, marital status x age. The remaining hypotheses were supported in that they were meaningful. The study did not support the model in the following hypotheses: 1) married individuals are less risk tolerant than single individuals, 2) the effect of parenthood on financial risk tolerance will be greater for fathers than mothers, and 3) the effect of child presence on financial risk tolerance will decrease with increased age of parents. A plausible explanation for the lack of correspondence between theory and results is that the sample limited testing of the hypotheses. As well, a cross-sectional design limits statements about individual and family change overtime. As pointed out by Aldous (1990) and White (1991) a cross-sectional design does not account for the historical milieu that affects family events (cohort effect) because social changes are perceived and experienced differently according to the age and stage of individuals at a point in time. Therefore, one should not discount the results based on the theory of this study without further investigation especially one using a more varied sample and a longitudinal methodology.

Limitations

Three major components of this study impose limitations to conclusions: 1) the research design, 2) the sample, and 3) the dependent measures. As mentioned above, the cross-sectional design potentially confounds observed results with historical, age, and cohort effects. Individuals are constantly being exposed to differing amounts and kinds of financial risks and market changes. Where people are situated in their family structure and life course will influence their values and beliefs about financial risk. For example, older cohorts may have formed their attitudes about financial risk at a time when the economy was depressed and unstable while

younger cohorts are forming their attitudes about financial risk during a period of economic growth with opportunities to invest in the market (especially with the advent of mutual funds and the prospect to use the World Wide Web to access information).

Respondents who participated in this study were not chosen randomly. Therefore, it is impossible to be assured that the sample is not subject to selection bias. Because the study had a 9% response rate, it is very likely that those respondents who did participate had characteristics that are different from the general population of the UBC housing community. Moreover, the characteristics of the sample did not correspond to the larger community in which it resides (Vancouver). These characteristics limit making claims about financial risk tolerance for other populations (i.e., external validity is compromised). However, in spite of this limitation, the fact that some of the results are potentially significant, the paradigm does substantiate that further research should include more than demographic variables as explanations for variance in risk tolerance.

Sample size is also problematic. Considering the number of dichotomous groups (six) that were formed to test hypotheses, a larger sample would confirm the statistical power of the analyses, i.e., statistical conclusion validity (Cook & Campbell, 1979). Cook and Campbell frame statistical power as the following question, "Is the study sensitive to permit reasonable statements about covariance" (p. 39). The likelihood of making an incorrect no-difference conclusion (i. e., a type II error of accepting the null hypothesis when it is false) increases when sample sizes are small and alpha is set low (Cook & Campbell, 1979). Further, a larger sample size improves the chances of detecting a significant result because there is less variability in possible outcomes (i.e., sampling error decreases). Before results found in this study can be rejected with any degree of certainty, the analysis should be carried out with a larger sample and heterogeneous groups (Cook & Campbell, 1979).

Another limitation is the measurement of financial risk tolerance. The two dependent variables used in this study are not correlated and as such there was seldom correspondence of within subject responses. Therefore, classifying individuals into categories of risk tolerance is

not feasible. Indeed, the difficulty of measuring risk is that different relationships between risk propensity and independent variables are found when different risk measures are used (MacCrimmon & Wehrung, 1985). MacCrimmon and Wehrung state:

> It would be desirable to have a standardized way to measure risk propensity. The dependence of risk propensity on the type of situation it is assessing means that using a single measure of risk propensity will be inadequate, no matter how strongly it is based in theory. Developing a portfolio of risk measures in a variety of situations is imperative (p. 24).

The lack of strong relationships among the risk measures means that studies using different measures may have very different results even though they seemingly are related measures (MacCrimmon & Wehrung, 1985). This study supports this claim. Because financial risk tolerance is domain specific, one or two measures are insufficient to safely label an individual as a risk seeker (high in risk tolerance) or risk averter (low in risk tolerance).

The hypothetical content of the risk measures are at risk for threats to internal validity. For example, the probability that one receives $20,000 unexpectedly to use for personal investing (Risk 2) or that one receives an offer to change jobs with both a loss and increase in income (Risk 1) may be out of the realm of reality for most people. Therefore, reports of risk tolerance may be unreliable because individuals will not accurately assess their subjective attitudes given that they will not experience the results of their decisions. Further, the reliability of one-items measures cannot be statistically confirmed. The advantages of the two measures are that the questions are standardized and attempted to be relevant to the target population. In support of hypothetical questions, Kahneman and Tversky (1979) argue:

> The reliance on hypothetical choices raises obvious questions regarding the validity of the method and the generalizability of the results. We are keenly aware of these problems. However, all other methods that have been used to test utility theory also suffer from severe drawbacks. Real choices can be investigated either in the field, by naturalistic or statistical observations of economic behavior, or in the laboratory. Field studies can only provide for rather crude tests of qualitative predictions, because probabilities and utilities cannot be adequately measured in such contexts. Laboratory experiments have been designed to obtain precise measures of utility and probability from actual choices, but these experimental studies typically involve contrived gambles for small stakes, and a large number

> of repetitions of very similar problems. These features of laboratory gambling complicate the interpretation of the results and restrict their generalizability (p. 265).

These observations remain as apt today as they did two decades ago (Liaison & Zeckhauser, 1998).

Conclusions and Implications

As a means to further the understanding of financial risk tolerance this study used a multidisciplinary approach by incorporating Family Development Theory and Prospect Theory in its framework. This approach has the potential to provide evidence that there is a relationship between how individuals perceive and evaluate risky financial situations and normative family expectations. Specifically, this research attempts to explain how individuals within a family context vary in their willingness to take financial risk that ultimately will affect their economic well-being. Therefore, understanding financial risk tolerance is a prime concern for individuals who assist families in their financial planning.

Findings indicate that future research using a larger and if possible random sample is necessary to explore the effects of family structure and moderators on financial risk tolerance. This study indicates that some variables possibly act as moderators on family members' financial risk tolerance. Therefore, researchers should include reasonable interaction effects into their design, an approach that is often overlooked. Indeed, individual variables do become statistically insignificant when put into a model that uses moderator variables. Further, variables that are commonly used to explore financial risk tolerance do not give an adequate explanation. As Grable and Lytton (1998) pointed out, demographic variables explain 20% of the variance in financial risk tolerance. Future researchers may be more successful if they explore the relation of individuals' normative expectations within the context of their families. Indeed, a promising avenue to explore is the effect of children on financial risk tolerance. As well, family beliefs and values differ according to culture and race. These factors may make important contributions to the variance in financial risk tolerance especially when explored as interaction effects with individual family members in various family stages across family careers.

Researchers should strive to get a valid and reliable risk measurement to verify and generalize findings. Indeed, according to Leimberg et al. (1989) many of the risk measures that are available have not been subjected to rigorous procedures that are necessary to demonstrate reliability and validity. In addition, researchers should strive to get a measure that is suitable for broad audiences who are likely to have limited knowledge about financial risk tolerance.

The theory and findings of this study have implications for social policy. Certain groups are more unwilling to take financial risks than others that in turn contributes to the gap in present and future financial well-being of individuals and families. Policy makers may narrow this gap by providing educational programs about financial risk that are readily available and accessible (e.g., the work place and schools). Indeed, Garman, Kim, Kratzer, Brunson and Joo (1999) found that workplace financial education improved the financial well-being of employees. At risk groups are those who will probably not seek the services of financial planners or investment managers because their resources are allocated to fulfill other family commitments. If this generation and those that follow are expected to take over responsibility of their own and family members' allocation of resources, measures should be put into place such as tax breaks so that individuals have more flexibility to make appropriate financial decisions.

Rather than relying on demographic variables alone to assist and educate family members, family educators and investment mangers should consider the following implications:

1. Some family structures do make a difference in an individual's propensity to take financial risks. Individuals who have children are less likely to be risk tolerant than those who are childless regardless of their age or gender. However, a parent that has a high income is likely to be risk tolerant. The influence of children on financial risk tolerance has two implications: 1) over time the gap between individuals who have children and those that do not will widen for financial well-being and 2) all people with children can not be correctly classified as preferring choices that are low in risk.

2. If individuals with children remain risk averse throughout their child-raising years, they are likely to put their future economic states at risk. Parents now have shorter economic

careers and are required to plan for longer retirement years. According to Zhong and Xiao (1995) and Sung and Hanna (1996) individuals should invest some of their assets in high yielding stocks and bonds especially if there is a long time horizon before assets are required. Prudent use of risky investments should not throw individuals off-time for future family and economic careers. Individuals who are not willing to take any financial risks likely do not understand the performance of risky assets over the long-term. Moreover, attention needs to be given to individual changes in incomes to ensure that people with children and high incomes have portfolios that compliment their risk tolerance.

3. Age has often been a heuristic for classifying people into risk categories with the assumption that risk tolerance is the inverse of age (Garble & Lytton, 1998). However, age is not always a differential factor for financial risk tolerance. Age may not influence the willingness to take financial risks for either childless individuals or individuals with children. Therefore, regardless of age, individuals with children require financial education. Young parents who invest too conservatively over the long term or those in their mid-years who assume too much risk may be disappointed with their expectations for future family and economic careers. For example, expectations for financial well-being in retirement years will be disappointed. Indeed, individuals may be off-time in their transition to retirement especially as the normative age for retirement is in a state of flux with many people expecting to retire before the age of 65.

4. Historical and generational effects have the potential to influence how individuals perceive expectations about financial losses and gains within family stages. A present concern is the effect that the baby boom will have on issues concerning allocation of resources within the family. Factors that affect this concern are the trends for later marriages, lower fertility, high divorce rates, changing labor market conditions and social policy. Therefore, there is a need to look at future family stages and the expectations of family members. How family members handle their financial affairs may not only depend on their risk tolerance but on expectations that they take over supplying family resources that were managed collectively or institutionally.

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Appendix A

Review of Recent Findings on Financial Risk Tolerance by Authors and Data Sets

Author/ Date	Data Set	Subjective/ Objective	Marital Status	Children	Gender	Age	Income
Avery & Elliehausen, 1986	1983 Survey of Consumer Finances	Subjective					x
MacCrimmon & Wehrung, 1987	Study of American and Canadian Managers	Subjective and Objective		x		x	x
Riley & Chow, 1992	1984 Survey of Income & Program Participation	Objective	x		x		x
Warner & Cramer, 1995	1983 Survey of Consumer Finances	Subjective		x			
Cutler, 1995	1987 National Investment Risk Survey	Subjective and Objective				o	
Zhong & Xiao, 1995	1989 Survey of Consumer Finances	Objective	x				x
Schooley & Worden, 1996	1989 Survey of Consumer Finances	Subjective and Objective	x			x	o
Kohn, 1996	Survey of mutual fund owners by Investment Company Institute	Subjective			x		
Sung & Hanna, 1996	1992 Survey of Consumer Finances	Subjective	x		x	o	
Wang & Hanna, 1997	1983-89 Survey of Consumer Finances	Objective				x	
Bajtelsmit & Van Derhei, 1997	Large U. S. firms, employee records	Objective			x	x	
Barsky, Juster, Kimbal & Shapiro, 1997	1992 Health and Retirement Study	Subjective	x		x	x	x
Grable & Joo, 1997	Exploratory risk measure	Subjective	o		o	o	o
Hinz, McCarthy & Turner, 1997	1990 Survey of Thrift Savings Plan	Objective	x		x		x
Grable & Lytton, 1998	1992 Survey of Consumer Finances	Subjective	x		x	o	x
Jianakoplos & Bernaseck, 1998	1989 Survey of Consumer Finances	Objective		x		x	x

X = significant finding, O= non significant finding, blank space = variable not tested in study.

Appendix B

Table 1 B

Comparison of the City of Vancouver and the Sample From the University of British Columbia Housing Residents

	Vancouver[a] %	University of British Columbia[b] %
Gender		
Male	49	21
Female	51	79
Marital Status		
Married	56	72
Single	33	28
Age		
Less than 32.5 years	31	51
More than 32.5 years	71	49
Income		
Less than $30,000	22	54
More than $30,000	78	46
Presence of children		
Households with children	74	75
Households without children	26	25

Note. Single includes legally separated, divorced or widowed

[a]City of Vancouver N = 24812 Data was collected for individuals ages 23-52 years to match ages of sample. [b] University of British Columbia Staff and Faculty and Student Housing, n = 76 .

Appendix C

Items Included in Questionnaire for a Financial Risk Tolerance Scale

51. The following are some hypothetical situations. For each situation, consider how it would apply to you and please indicate how you would be likely to act.

		Yes	No
a.	You are the only income earner in the family and have a good job guaranteed to give you an income of $50,000 every year for life. Unexpectedly, you are given the opportunity to take a new and equally good position with a 50-50 chance it could double your yearly income and a 50-50 chance it could cut your income by half. Would you take the new position?.....	1	2
b.	Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by a third? Would you take the new position?.....	1	2
c.	Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by 20 percent. Would you take the new position?....	1	2
d.	Suppose the chances were 50-50 that it would double your income and 50-50 it would cut your income by 10 percent. Would you take the new position?....	1	2

52. Suppose you were offered 2:1 odds on the flip of a coin. Which bet would you make?

1 None
2 One Dollar (Either win $2 or lose $1)
3 Ten Dollars (Either win $20 or lose $10)
4 Fifty Dollars (Either win $100 or lose $50)
5 Five Hundred Dollars (Either win $1,000 or lose $500)

53. If $20,000 came to you unexpectedly, what would you do with the money? (Choose <u>one</u>)

1 Deposit in a regular savings account
2 Buy a Canada Savings Bond
3 Invest it in a safe bond with a fixed term
4 Invest it in a mutual fund with average returns
5 Invest it in the stock market to earn high returns

54. If you were on a game show and given the opportunity, which would you choose?

1 An instant $1,000 in cash
2 A 75% chance at winning $2,500
3 A 50% chance at winning $5,000

Appendix C (continued)

4 A 25% chance at winning $10,000

5 A 5% chance at winning $100,000

55. Please indicate the degree to which each of the following statements describes the kind of person you are.

	Not Like Me		Somewhat		Very Like Me
a. I normally avoid activities that are dangerous.....	1	2	3	4	5
b. I am fairly cautious and think of safety first.....	1	2	3	4	5
c. I am rather adventurous and like to take chances in various situations.....	1	2	3	4	5

Appendix D

Scoring Procedure for Risk 1

Items were recoded: yes = 1, no = 0

```
COUNT
  ones = q51a q51b q51c q51d  (1)  .
EXECUTE .
COUNT
  ones = q51acor q51bcor q51ccor q51dcor  (1)  .
EXECUTE .
IF (MISSING(q51a) and ones  >= 1) q51acor = 2 .
EXECUTE .
IF (MISSING(q51a) and ones  >= 1) q51bcor = 2 .
EXECUTE .
IF (MISSING(q51c) and ones  >= 1) q51ccor = 2 .
EXECUTE .
IF (MISSING(q51b) and ones  >= 1) q51bcor = 2 .
EXECUTE .
IF (MISSING(q51d) and ones  >= 1) q51dcor = 2 .
EXECUTE .
FREQUENCIES
  VARIABLES=ones
  /ORDER  ANALYSIS .
```

ONES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	16	23.5	23.5	23.5
	1	17	25.0	25.0	48.5
	2	16	23.5	23.5	72.1
	3	8	11.8	11.8	83.8
	4	11	16.2	16.2	100.0
	Total	68	100.0	100.0	

```
COMPUTE q51tot = 1 .
EXECUTE .
IF (q51dcor = 1) q51tot = 2 .
EXECUTE .
IF (q51ccor = 1) q51tot = 3 .
EXECUTE .
IF (q51bcor = 1) q51tot = 4 .
EXECUTE .
IF (q51acor = 1) q51tot = 5 .
EXECUTE .
FREQUENCIES
  VARIABLES=q51tot
  /ORDER  ANALYSIS .
```

Appendix D

Scoring Procedure for Risk 1 (continued)

Q51TOT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	23.5	23.5	23.5
	2	14	20.6	20.6	44.1
	3	15	22.1	22.1	66.2
	4	6	8.8	8.8	75.0
	5	17	25.0	25.0	100.0
	Total	68	100.0	100.0	

The recoded of answers resulted in a reverse coding. Respondents who answered "no" to all items in question 51 were assigned a "1" meaning that they were very low in financial risk tolerance. Respondents who answered "yes" to question 51d but "no" to the other items in question 51 were assigned a "2" indicating that they fell between very low and moderate level of financial risk tolerance. This procedure was repeated for all items in question 51 until 51a. Respondents who answered "yes" to this item were assigned a "5" indicating the highest level of financial risk tolerance.

Appendix E

Standardized O L S Estimates for Marital Status and Children on Employment Risk Tolerance Controlling for Gender, Age, Income

	Step 1 β	Step 2 β	Step 3a β	Step3b β
Variables				
Gender (male)	.02	.34	.51*	.32
Age[a] (older)	.16	.14*	-.19	-.18
Income[b] (high)	.13	.02	.15	-.24
Marital Status (married)	-.05	-.07	-.09	-
Children (present)	-.07	-.10	-	-.34
Gender x Age		-.36*	-.38*	-.26
Gender x Income		-.10	-.08	-.04
Age x Income		.26	.17	.12
MS x Gender			-.23	-
MS x Age			.49*	-
MS x Income			-.19	-
Child x Gender				-.09
Child x Age				.39
Child x Income				.40

[a]n = 73. [b]n = 74

*p < .10. **p < .05.

Appendix E (continued)

Standardized O L S Estimates for Marital Status and Children on Investment Risk Tolerance[a]

Controlling for Gender, Age, Income

	Step 1 β	Step 2 β.	Step 3a β	Step3b β
Variables				
Gender (male)	.04	.44**	.31	.36
Age[a] (older)	.08	.28	.24	.42
Income[b] (high)	.28**	.29*	.33*	.25
Marital Status (married)	-.09	-.08	-.14	-
Children (present)	-.37***	-.39***	-	-.39**
Gender x Age		-.54***	-.50**	-.59***
Gender x Income		-.06	-	-
Age x Income		-.04	-	-
MS x Gender			.16	-
MS x Age			-.27	-
MS x Income			-.12	-
Child x Gender				.10
Child x Age				-.14
Child x Income				-.05

[a]n = 72 [b]n = 73. [c]n = 74

*p < .10. **p < .05. ***p < .01.