INFLUENCES OF AGE AND INVESTOR

CHARACTERISTICS ON WOMEN'S

RETIREMENT INVESTMENT

DECISIONS

By

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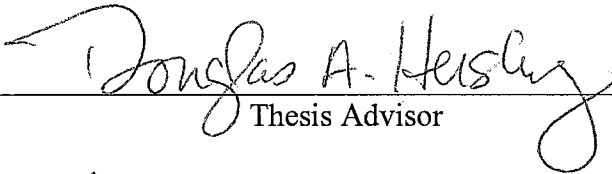Bellarmine College
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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
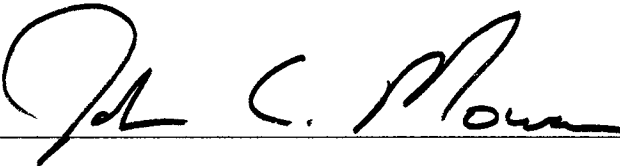the Degree of
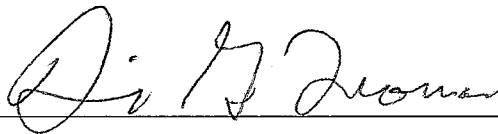DOCTOR OF PHILOSOPHY
August, 2003

Thesis
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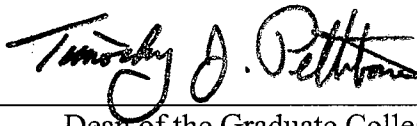RETIREMENT INVESTMENT

DECISIONS

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PREFACE

Due to the aging of members of the baby boom generation and their lack of

retirement savings, there has been a substantial increase in the literature on how

demographic and psychological factors influence individuals' investment practices.

Unfortunately, much of this literature has focused on men; therefore, little is understood

about women's retirement investment behaviors. Additionally, few studies have

examined the combined influence demographic and psychological factors have on

individuals' retirement investment decisions. In the present study, 130 women (aged 25-

65 years) completed two hypothetical investment tasks. In the first task, they were asked

to suggest how a younger and an older hypothetical individual should allocate $2,000

across five plans within an Individual Retirement Account (IRA). In the second task,

they were asked how they would allocate $2,000 in the IRA for themselves. Following

each investment decision, participants were asked to indicate the importance of the

information they considered when making their decision. Based on these tasks, there

were two main goals of the dissertation. The first was to examine how participants' age

and knowledge of retirement planning influences the way in which women allocate funds

within the IRAs of the two hypothetical investors. The second goal was to better

understand how women's personal investment decisions are related to a variety of

demographic and psychological factors. The demographic variables investigated

included age, income, marital status, and educational level. The psychological factors

investigated included knowledge of retirement planning and investing, goal clarity, future time perspective (FTP), and risk tolerance.

The results of the study revealed that developmental differences exist in how psychological variables influence women's investment allocations and the information they consider when making investment allocations. The hypothetical investor task revealed that women with more knowledge of retirement planning were more risky in their allocations for the younger hypothetical investor than those with low knowledge of retirement planning. It was also shown that women allocated funds among more options for the younger hypothetical investor than the older. Several age-related differences were also found in the information women considered when making the allocations on behalf of hypothetical investors. Regression analyses for the self-investment task failed to show that the demographic variables have a direct influence on allocation risk. However, subjective risk tolerance was positively related to allocation risk and there was a significant age by knowledge interaction. Overall, 37% of the variance in allocation risk was able to be explained. It was shown that for young women greater knowledge of retirement planning was associated with greater allocation risk. However, for older women, knowledge of retirement planning was not related to investment risk. Examination of the information considered during the self-investment allocation task revealed several significant age effects. Overall, findings suggest the programs aimed at improving women's investment decisions should target women based on their age, knowledge of retirement planning, and risk tolerance.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

V. DISCUSSION

LIST OF TABLES

LIST OF FIGURES

CHAPTER I:

INTRODUCTION

According to the U.S. Social Security Administration (1997), the number of

individuals over 65 will nearly double during the next three decades to represent 20% of

the population. As a result, a substantially larger proportion of Americans will be living

in retirement. Unfortunately, many of these individuals will find themselves ill-prepared

to shoulder the financial burden that will accompany their departure from the workforce

due to a lack of planning and inadequate savings. Studies have indicated that baby

boomers are only saving at a rate of 33% of what will be needed to fund their retirement

(Glass & Kilpatrick, 1998a), and younger baby boomers are saving less than older

boomers (Warner, 1996). In fact, Warskawsky and Ameriks (2000) predicted that half of

individuals aged 25-71 will not have enough savings to support themselves in retirement.

Furthermore, Yuh, Hanna, and Montalto (1998) projected that only 42-52% of

households will have accumulated the funds necessary to support themselves throughout

their retirement. These findings paint a bleak picture for future retirees' late-life financial

stability, which has led investigators to explore the factors that influence retirement

savings behaviors.

Many have argued that understanding the factors that influence individuals'

retirement savings strategies is especially important because many retirees will have to

rely on income from personal savings in order to be financially secure. For instance, it

has been shown most individuals do not plan to work for income in retirement (Sterns,

1998), only 3-4% of retirees receive income from family members (Kotlikoff & Morris,

1989; Ferraro & Su, 1999), and the shift from defined benefit plans to defined

contribution plans has reduced the amount of income individuals can expect to receive from company-sponsored pensions during retirement (Blank, 1999). (Defined benefit plans are company-sponsored plans in which the amount of money a worker receives in retirement is based on the number of years of employment with the company. In defined contributions plans, individuals invest a portion of their earnings and the company may or may not make a matching contribution). In general, retirees that have defined benefit plans receive approximately 19% of the their income from that source (Kleinman, Anadarajan, & Lawrence, 1999). In addition, the amount of income one can expect to receive from Social Security varies greatly. For example, those with a pre-retirement annual income of $15,000 can expect Social Security to supply 45% of their retirement income, whereas those earning $45,000 a year can expect it to supply only 25% of their retirement income (Wiatrowski, 1993). These facts highlight the reality that personal savings is an important component to funding one's retirement.

In the present study, women between the ages of 25-65 years old were asked to complete two retirement investment tasks. One task involved making investment allocations on behalf of two hypothetical investors. In the second task, women were asked how they would allocate funds within an IRA if they were investing on behalf themselves. The main goals of the study were two-fold. The first was to better understand how women's age and knowledge of retirement planning and investing, as well as the age of a hypothetical investor influence investment decisions. The second was to better understand how both demographic and psychological factors influence how women allocate funds within an IRA. Women's investment decisions were evaluated in terms of the level of risk they tolerated and the number of plans in which they felt funds

should be invested. In addition to these goals, the information women used to make investment decisions was also examined.

Women's retirement investment decisions have been selected as a focus of this dissertation for several reasons. First, women tend to outlive men (Rix, 1990), and therefore, will generally live longer in retirement, which suggests they will need to save more money than men to support themselves in retirement. Second, women are more likely than men to spend time out of the workforce (England & Farkas, 1986; Glass & Kilpatrick, 1998a), which can potentially reduce Social Security benefits, pension benefits, and the amount of personal income available for savings purposes. Third, women tend to earn less income across the lifespan than men (United States Census Bureau, 2000a), which also reduces the amount of income they could potentially save for retirement. Fourth, women receive less income from Social Security during retirement than men, but are generally more dependent on that income (Devaney & Su, 1997). Fifth, women who are eligible for income from defined benefits plans often receive less income from that source in retirement than men (Talaga & Beehr, 1995). Sixth, women are more likely than men to experience poverty in old age (Keith, 1985; Levine, Mitchell, & Moore, 2000; Weir & Willis, 2000). Finally, women are less likely than men to plan and save for retirement (Costa, 1998; Prentis, 1980; Quick & Mowen, 1998) and perceive planning as less important (Kragie, Gerstein, & Lichtman, 1989). Taken together, these findings suggest women are at greater risk for experiencing financial hardships in retirement than men. What is even more troubling is that the way women make retirement investment decisions is poorly understood.

3

In a recent study of retired men and women, Quick and Moen (1998) found that 53.1% of men, as opposed to 36.6% of women, reported they had spent a significant amount of time planning for retirement. They also found that 15.6% of women, in contrast to 6.2% of men, had not planned for retirement at all. Much of the early research on the factors that influence retirement planning focused on men (Coyle, 1990; Richardson, 1993; Sterns & Gray, 1999; Szinovacz & Washo, 1992), because women have not historically represented a large segment of the workforce. Recent increases in the number of women in the workforce combined with the findings outlined above indicate that understanding women's retirement savings practices should be a priority for researchers (Coyle, 1990; Richardson, 1993).

Rather than focusing on women's retirement planning behaviors, the present thesis focuses on women's retirement investment strategies. This is because in addition to the amount of money one saves, *how* money is saved (i.e., the strategies one uses) can have a large impact on the funds that will be available when one exits the workforce. When making investment decisions, women must decide whether they should tolerate the risks associated with investments that can potentially offer large returns, accept the security associated with accounts that typically offer low returns, or find some middle ground. These investment decisions will largely determine the amount of money one will have available during retirement. For example, a woman who invests $2,000 per year in high return investment vehicles can generally expect to have more money when she retires than someone who has invested in vehicles that generate lower rates of return (Yuh & Olson, 1997). Because of the impact investment strategies can have on late life

financial stability, it is important to understand the factors that influence women's retirement investment allocations.

Research on retirement savings behaviors indicates that pre-retirees' investment strategies are influenced by a number of demographic and psychological variables. In the current study, four demographic and four psychological variables were examined in relation to women's retirement investment strategies. The four demographic variables included: a) age, b) income, c) martial status, and d) educational level. The four psychological factors included: a) knowledge of retirement planning, b) goals for retirement, c) future time perspective (FTP), and d) risk tolerance. This is by no means an exhaustive list of the range of demographic and psychological factors that influence personal savings and investment strategies. For instance, household size, health status, conscientiousness, emotional stability, and self-efficacy have all been shown to influence planning. Although there are a relatively large number of factors that influence savings investment strategies, the eight factors listed above were focused on because each has been shown to have a large impact on retirement savings and investment practices. The introduction to this dissertation is roughly evenly divided between a review of the literature on the four demographic variables and the four psychological variables, and the way in which each of these factors are related to gender and investment strategies.

Demographic Indicators and Investing

Age

Age is a demographic factor that has been shown to have a dramatic impact on individuals' retirement savings and investment decisions. One recent study that examined financial planners' recommendations regarding retirement savings practices

revealed that individuals should accumulate 18% of the income they will need for retirement by the age of 30. It was further suggested that by the age of 50, workers should have obtained 59% of their future income, and by age 60, they should have saved 85% of the resources they will need to fund themselves throughout their retirement (Greninger, Hampton, Kitt, & Jacquet, 2000). However, research on actual savings patterns suggests most individuals do not come close to achieving these financial goals. For instance, Poterba and his colleagues demonstrated that most individuals had only accumulated assets worth less than two times their pre-retirement annual income upon reaching retirement age (Poterba, 1996; Poterba, Venti, & Wise, 1996). In a different study, Wise (1996) reported that the average savings of individuals nearing retirement was $7,000. Devaney and Su (1997) reported that compared to older individuals, younger people are less likely to save. In fact, they "dissave" by going into debt. Furthermore, among baby boomers, those aged 45 to 51 tend to save more than those in the 32 to 41 year age bracket (Warner, 1996). Despite this fact, older baby boomers are still not saving enough to ensure financial stability in retirement (Mitchell & Moore, 1998).

Investigations of how age influences the retirement planning practices of men and women have shown that savings rates increase with age for both genders, but the savings rates of women are lower than those of men across all age groups (Glass & Kilpatrick, 1998b). This could be due in part to women's lower levels of income across the lifespan. Data from the Census Bureau (2000a) revealed that age is related to annual income levels of both men and women, with women consistently earning less than men across the lifespan. However, if you compare the earnings for men and women who were employed

on a full-time basis for the entire year, the gap in income is substantially reduced. For instance, the income gap for men and women employed on a full-time basis between the ages of 18 and 24 is $3,861 in favor of men, for those between the ages of 25 and 44, men earned $2,516 more than women, and for the oldest group (aged 45-64), men earned an average of $8,277 more than women.

It has been found that younger men and women are less likely to participate in defined contribution plans than older men and women (Bassett, Fleming, & Rodrigues, 1998). Similarly, Gale and Scholz (1994) revealed that most individuals with an IRA are over the age of 59. In a survey of university employees, Grable and Lytton (1997) found participation in IRA plans increased with age, but age had no effect on participation in 403b accounts (similar to 401(k) accounts). This suggests that unless behavioral patterns shift dramatically in the near future, compared to older workers, younger workers will receive less income from personal investment accounts upon retirement.

Most financial planners recommend that individuals adjust the risk profile of their investment portfolio as they approach retirement (Kim & Wong, 1997). Specifically, it has been suggested that young workers should be willing to tolerate greater levels of risk, and therefore invest in high-risk vehicles such as the stock market. As workers age and move closer to retirement, conventional wisdom suggests they should shift their assets to less risky options such as bonds and real-estate options. Although such a shift reduces the rate of return the individual could expect to receive, lower risk vehicles are less likely to result in the catastrophic loss of the individuals' retirement nest egg (Greninger, et al., 2000; Kim & Wong, 1997). However, research has shown that most individuals do not adopt this graded investing strategy when planning for retirement.

Early investigations of age and investment decisions have revealed mixed results. For instance, Baker and Haslem (1974) reported risk tolerance in investing decreased with age, whereas Cohn, Lewellen, Lease, and Schlarbaum (1975) found that risk tolerance typically increased with age. More recent research by Barsky, Juster, Kimball, and Shapero (1997) found that younger individuals (aged 51-55 years) and individuals 70 and older were more risk tolerant in their investment strategies than individuals between the ages of 55 to 70. In a sample of workers between the ages of 30 to 59, Glass and Kilpatrick (1998b) found that the percentage of both high risk and low risk investments increased with age for both men and women. However, Sunden and Surette (1998) failed to find age differences in the probability that individuals would hold most of their assets in stocks. Vora and McGinnis' (2000) investigation of individuals' IRA asset allocations revealed older workers were less likely than their younger counterparts to invest in high risk options. However, when focusing solely on the investment strategies of younger individuals, it was found that many often failed to invest in high return options; they simply held their assets in cash accounts. This study also revealed that regardless of age, individuals often took an all or none approach to investing, placing all of their resources in either high or low return investments vehicles. From these studies, it appears many individuals do not appropriately change their investment strategies as they age; indeed some take risks when they should not, whereas others fail to take risks when they should.

Income

One's level of income is a second demographic variable that can have a profound impact on retirement savings behaviors. One study found that when asked why they were not actively saving for retirement, younger individuals often reported they did not have

any "extra" money available to save (Devaney & Su, 1997). Other studies have demonstrated that income is positively related to retirement savings (Bassett et al., 1998; Grable & Lytton, 1997; Jacobs-Lawson & Hershey, 2002). Clearly, one's level of income can have a dramatic impact on the amount of discretionary funds an individual has available to invest, but an individual's income adequacy can also be an important determinant of savings behaviors. Income adequacy refers to the amount of expendable income an individual has available (George, 1992). For example, someone with a relatively high income may have a low income adequacy due to a large household to support (i.e., many dependents) or prior overspending on costly consumer items. Such an individual may have little or no discretionary income available for savings purposes.

In general, it has been suggested that an individual's replacement ratio (i.e., the percentage of one's income the year prior to retirement that will be needed each year in retirement to ensure financial stability) should be between 65-89% (Greninger et al., 2000). However, other research indicates one's actual replacement ratio should be based on the amount of one's income just prior to retiring. For instance, Mitchell and Moore (1998) recommended that individuals in the lowest income bracket need a replacement ratio of about 80%, whereas those in higher brackets can expect to need less, as little as 55% of their pre-retirement income. This suggests that over the life-course, low-income individuals should be saving a larger proportion of their earnings for retirement than those with higher incomes. However, numerous studies have shown the amount of individuals' retirement savings increases as a function of income (Glass & Kilpatrick, 1998b; Basset et al., 1998; Devaney & Su, 1997; Grable & Lytton, 1997), which generally leaves those in lower income brackets with less in the way of post-employment

resources. Furthermore, as will be shown below, there are differences in the investment strategies used by high and low income individuals.

As previously stated, women's earnings across the life course tend to be lower than men's. This discrepancy can be traced to two main causes. First, women are more likely than men to spend time out of the workforce to raise a family or care for a family member (Glass & Kilpatrick, 1998a; Levine et al., 2000). Second, women are more likely to be employed in lower paying jobs than men (Patterson, 2000). Both of these reasons suggest that compared to men, women may not be as active in saving due to a pattern of lower overall earnings during the working years.

In a recent book developed to assist women with financial planning for retirement, Patterson (2000) suggested women should expect to need a replacement ratio of 100%. Although this suggestion might appear to overestimate most women's needs, several findings suggest this value may be accurate for many women. The reason for this is that most women have lower earnings during the working years than men, they receive lower Social Security benefits in retirement, and they are less likely to be employed in jobs that offer retirement benefits (Glass & Kilpatrick, 1998a; 1998b). Taken together, these factors create an increased risk of poverty in retirement, which suggests women need to save more throughout their working careers in order to meet their late life financial needs.

One's current income can impact individuals' investment strategies in several ways. First, workers with lower incomes are less likely to be employed by companies that offer 401(k) plans (Poterba & Wise, 1996). In their analysis of the 1993 Current Population Survey, Bassett et al. (1998) found that only 15% of individuals earning less

than $15K were eligible to participate in 401(k) plans. This percentage increased to 33% for those earning $15-25K, 47% for those in the $35-50K income bracket, and 62% for those in the highest income bracket (i.e., > $50K). Second, when compared to individuals with higher levels of income, those with lower incomes are less likely to participate in 401(k) plans even when they are available. The same has been shown to be true for other retirement savings vehicles such as IRAs (Grable & Lytton, 1997). Third, lower income individuals who participate in 401(k) plans make smaller contributions than those who earn more (Bassett et al., 1998).

The above findings indicate that individuals with lower levels of pre-retirement income are less likely to receive significant income from defined contribution plans such as 401(k) plans (Francis, 1998). Basset et al. (1998) speculated that one reason lower income individuals have a lower rate of participation in 401(k) plans is that they lack the incentive to save because they are already in a low tax bracket, and thus, they would not benefit from the tax benefits associated with 401(k) investments. Moreover, these same individuals can expect Social Security benefits to account for a larger percentage of their retirement income, and they have less in the way of discretionary income available for investing than those in higher income brackets. These too serve as disincentives when deciding whether to invest to a defined contribution plan.

In their examination of the relationship between income and investment strategies, Blume and Friend (1975) found that compared to low income individuals, high income individuals are willing to adopt more risky investment profiles in order to maximize long-term gains. This finding was further supported by Cohn et al.'s (1975) research. However, Barsky et al.'s (1997) analysis of the Health and Retirement Survey

11

dataset revealed that risk tolerance decreased as a function of income for those earning less than $33K, and increased thereafter. By differently contributing to investments that have low rates of return, low income individuals may further limit the income they can expect to receive in retirement from personal savings. Furthermore, when low income individuals change jobs, they are more likely than higher income individuals to take a lump sum payment of their 401(k), rather than rolling it over into an IRA or 401(k) account (Bassett et al., 1998). This short-sighted strategy allows individuals to use their resources in the present, rather than saving it for the future.

Marital Status

In addition to age and income, marital status represents a third demographic variable that has been the focus of numerous investigations of financial savings and investment decisions. In one study of retired women, Dorfman and Moffett (1987) reported that perceived income adequacy in retirement is an important predictor of retirement satisfaction, regardless of one's marital status. From this, one might assume that both married and unmarried individuals would focus on accumulating sufficient savings to support themselves in retirement. However, married individuals are less likely to experience poverty in old-age than single, widowed, or divorced persons. In fact, Rix (1990) reported that the poverty rate for retired single men and women is three and a half times greater than that of married individuals. This finding could be due to married individuals pooling their financial resources during the working years, thereby increasing the amount of income that can be saved for retirement (Henkens, 1999). This proposition is further supported by the finding that married individuals are more likely to save for

retirement than single individuals (Yuh & Olson, 1997). However, this does not mean both spouses share equally in the financial planning responsibilities.

Among many married couples, the husband is typically the primary financial planner (Meier, Kirchler, & Hubert, 1999). Even when the wife is employed and contributes to the household income, the husband often tends to dominate the financial decisions and the wife is unaware of the value of their current savings and how that money is invested. This can prove to be detrimental for the female because it is likely she will outlive her husband, and may find herself living in poverty after his death because she does not know how she should handle her finances (Hurd & Wise, 1989). Perkins (1993) interviewed retired women seeking employment due to a need for income, and asked them why they had not planned more appropriately for retirement. One subject responded, "I thought that my husband would live to support me." Another said, "I didn't think about it and was shocked when my husband died" (p. 142).

Divorce rates in the United States are currently higher than in the past. (Honig, 1998; U.S. Census Bureau, Family and Living Arrangements, 2001). It is estimated that half of all baby boomer's marriages will end in divorce, and approximately three-quarters of these divorcees will remarry (Cornman & Kingson, 1996). Although being married tends to be positively related to adaptive retirement savings practices for women, being divorced has a decidedly negative impact on financial savings tendencies (Morgan, 1992). One recent study indicted that 89% of divorced women were not financially prepared for retirement (Glass & Kilpatrick, 1998a), suggesting they are at risk of living in poverty after leaving the workforce. Glass and Kilpatrick (1998b) also found that regardless of marital status, the lowest level of savings for men was higher than the

highest level of savings for women. Furthermore, these investigators found that the largest gap in retirement savings exists between widowed men and women, and the smallest gap in savings was between single men and women. Presumably, this latter effect is because single women's careers are more similar to men's, which means higher incomes and greater opportunities for savings.

A number of studies have not only revealed that marital status influences savings practices, but that marriage also differentially influences the types of investments men and women are likely to make. For instance, Bassett et al. (1998) found married individuals are less likely to participate in 401(k) plans than single individuals, even after controlling for income. Early research on investment decisions and marital status revealed that married individuals were more likely to invest in risky options than non-married individuals (Cohn et at., 1975). However, results from recent research are not consistent with this finding.

Using survey data collected by the National Center for Women and Retirement Research, Glass and Kilpatrick (1998b) found married men were more likely to invest in low risk options than single men. These researchers also found that separated, widowed, and divorced women not only had the smallest amount of retirement savings, but they were also the most likely to invest in low risk accounts. Consistent with these findings, Sunden and Surette's (1998) analysis of the 1992 and 1995 Survey of Consumer Finances revealed that single women and married men were both less likely than single men to invest primarily in stocks. Their results also revealed that married women were the least likely to have a 401(k); however, for those that did have one, contributions did not differ

from those made by single persons or married men. Vora and McGinnis (2000), however, failed to find differences in investment strategies based on marital status.

Meier et al. (1999) examined how married couples made investing decisions to determine whether the husband or the wife was more dominant in the decision process. Their study revealed that if the wife had more expertise with high risk investments, she exerted greater dominance over the decisions than instances in which both spouses were of equal expertise, or the husband was more knowledgeable. However, when it came to non-high risk investment decisions and purchasing life insurance policies, they found that decisions were still male dominated.

Educational Level

Educational level represents a fourth demographic variable that has received a good deal of attention in the retirement planning literature. Singleton and Keddy (1991) found that educational level was related to the age at which individuals plan to retire. Specifically, they found those with a doctorate degree wanted to retire after the age of 65, whereas those with a master's degree or less preferred to retire before age 65. Consistent with this finding, they also found that those with less than a doctorate believed retirement planning programs should be offered at a younger age than those with a doctorate. However, there were no educational differences found in the willingness to attend pre-retirement planning programs. In a survey of men aged 55 to 64, McPherson and Guppy (1979) found that education was positively related to the amount of thought individuals had given to retirement, but it was unrelated to actual planning activities. More recent research has shown that educational level is positively related to retirement savings behaviors (Yuh & Olson, 1997).

15

According to the United States Census Bureau (2000b), of individuals aged 25 years and older, an equivalent percentage of men and women attended some college or received a bachelors degree. In addition, the percentage of men and women that received postgraduate degrees were 10% and 7%, respectively. Thus, men and women currently have roughly equal levels of education. Data from the same census also revealed that regardless of educational level, the percentage of women in the workforce was lower than that of men. Among women, however, workforce participation increased with one's level of educational attainment. This suggests that women with higher levels of education may be better off in retirement than those with lower levels of education, because presumably, they should be eligible for more in the way of Social Security benefits and have more income available for savings purposes. Furthermore, an examination of recently retired women's stress levels revealed that educational level was negatively related to level of financial stress (Logue, 1991). This negative correlation was presumably attributable to differences in adaptive pre-retirement savings behaviors that led to a feeling of financial security for those with higher levels of education.

Behling, Kilty, and Foster (1983) interviewed professional men and women about their retirement planning practices. The results of this study revealed that compared to men, women were less likely to hold venturesome investments (classified as business or real-estate investments) and were involved in fewer financial activities in general. These investigators did not find gender differences in the number of traditional investments held (classified as stocks, bonds, mutual funds, bank accounts, bank certificates, or annuities). However, because they did not examine how much was contained in the various savings

vehicles, conclusions about gender differences in the value of retirement savings could not be drawn.

It has been demonstrated that individuals with low levels of education are less likely to receive pension income than those with higher levels of education (Devaney & Su, 1997). This lack of income from pensions for less educated workers may be explained by their lower participation rates in defined contribution plans. In their analysis of a survey of university employees, Grable and Lytton (1997) found that individuals with at least a 4-year college degree were more likely to participate in a defined contribution plan than those who were less educated. However, educational level was not found to be associated with whether or not individuals held an IRA. Of those who participate in 401(k) plans, more educated individuals are more likely to roll their 401(k) over into a different retirement savings account when changing jobs as compared to those with lower levels of education (Basset et al., 1998).

At least two studies have failed to find a relationship between educational level and how funds are allocated within retirement savings programs (Cohn et al., 1975; Sunden & Surette, 1998). However, Hariharan, Chapman, and Domian (2000) and Vora and McGinnis (2000) found that individuals with higher levels of education are more likely to invest in high risk options than those with lower levels of education. This may help to explain why individuals with higher levels of education receive more income from personal savings; they are willing to take greater risks during the pre-retirement planning years, and thus, able to accumulate more resources than less educated individuals who typically opted for lower risk investments.

Knowledge of Financial Planning for Retirement

Of the psychological variables that have been studied in relation to financial savings and investment strategies, perhaps none has received as much attention as the topic of financial knowledge. Hayslip, Bezerlein, and Nichols (1997) argued that young adults tend to show high levels of retirement anxiety because they lack accurate information about retirement. Consistent with that proposition, Mitchell and Moore (1998) report one reason individuals do not plan for retirement is because they lack sufficient knowledge. Loewenstein, Prelec, and Weber (1999) found that pre-retirees indicated they feared they would not have enough money in retirement, they should have calculated their retirement savings need, and they should have become more knowledgeable about retirement savings and investments. Hershey, Brown, Jacobs-Lawson, and Jackson (2001) also reported that retirees often indicate they should have become more knowledgeable about the financial aspects of retirement. Following a brief educational intervention, Hershey, Walsh, Brougram, Carter, and Farrell (1998) found that individuals made better decisions about whether a hypothetical individual was financially able to retire, although the improvement in performance was not statistically significant. This suggests many workers nearing retirement age may lack the knowledge required to make informed decisions about whether it is financially feasible to leave the workforce.

It has previously been demonstrated that knowledge is positively related to retirement planning activities (Ekerdt, Hackney, Kosloski, & DeViney, 2001) and financial savings practices (Hershey & Mowen, 2000; Yuh & DeVaney, 1996). It has

also been shown that individuals who have attended pre-retirement planning programs are more knowledgeable and more active in retirement planning than those who have not (Kamouri & Cavanaugh, 1986). Furthermore, individuals who seek assistance from financial advisors are more likely to report personal savings will be an important source of funding in retirement (Devaney & Su, 1997). However, most individuals do not rely on information from financial advisors when making investment decisions (Mitchell & Moore, 1998).

Research on gender differences in retirement knowledge indicates that compared to men, women rate themselves as less knowledgeable about planning and are less knowledgeable about investing (Alexander, Jones, & Nigro, 1998; Goldsmith & Goldsmith, 1997; Goldsmith, Goldsmith, & Heaney, 1997), less likely to know what their financial needs will be in retirement (Behling et al., 1983), and less confident in their ability to plan (Powell & Ansic, 1997). Expanding on the proposition that women are generally less confident than men, Estes and Hosseini (1988) examined gender differences in individuals' confidence in their ability to make investment decisions. The results of the study revealed that even after controlling for knowledge level, age, portfolio value, business experience, and decision quality, women were still less confident than men in their ability to make financial investment decisions.

When asked why they were not financially better prepared for retirement, many women cite a lack of knowledge as a key reason (Glass & Kilpatrick, 1998a). Furthermore these investigators reported that women who were more proactive in seeking financial and retirement information were more likely to have saved for the future. Unfortunately, many women do not actively seek out the kind of information that will

increase their understanding of financial planning and investing. For instance, in one study of retired women, Slowik (1991) found that 58% of the sample had not sought out any information about retirement planning before they exited the workforce. Of those that did, the most common form of information considered was printed material about retirement finances and health. The study also revealed that women who had attended pre-retirement financial planning seminars were more satisfied with their retirement than those who had not.

When asked what types of retirement information they would like to know, women reported they would like to better understand how to plan and budget, how to invest, and how employment and Social Security benefits work (Kaye & Monk, 1984; Keddy & Singleton, 1991). An important question is that if women want to comprehend these topics, why is it that many of them do not actively seek out this knowledge? One reason may be found in Glass and Kilpatrick's (1998b) observation that women often feel financial planning materials fail to address their specific needs and concerns, focusing instead on the financial needs of males and couples. In addition, it has been shown that financial professionals often treat women and men differently. For instance, financial planners spend more time with men, they present men more investment options, and they focus more attention on recruiting male clients (Schulz, Rosenman, & Rix, 1999). These findings are disturbing because women often feel that they need help from others when making financial decisions, and they are more likely than men to seek advice from financial planners when making any type of financial decisions (Stinerock, Stern, & Solomon, 1991). Furthermore, women are also likely to adopt the advice of others because of their lack of knowledge (Glass & Kilpatrick, 1998a). This means that if

financial planners are spending less time with women and not offering them a range of available options, then they may be partly to blame for women's relative lack of savings.

Grable and Lytton (1997) found that investment knowledge is positively related to savings behaviors. In a survey of individuals who held mutual funds, Alexander et al. (1998) found that the most common forms of information individuals considered when making investment decisions was a prospectus, followed by employer materials, newspaper and magazine articles, and the advice of family and friends. However, Mitchell and Moore (1998) reported that the most common source of investment knowledge individuals receive is from friends and relatives, and that only one-fourth of individuals seek investment knowledge from financial planners. One problem, however, is that the information individuals receive from family members and friends can be biased or inaccurate. In fact, Mitchell and Moore (1998) found that the savings practices of individuals who sought advice from family and friends did not differ from those who had not sought advice. Those individuals who sought advice from financial planners, however, were the most likely to have invested in stocks.

It has also been shown that investment knowledge can have a significant impact on the quality of one's investment decisions. Hershey, Walsh, Read, and Chulef (1990) found that when compared to novices, expert financial planners were more likely to focus on key information, and were more organized in their information search processes when determining if a hypothetical individual should invest in an IRA. It has also been shown that experts and older individuals are more accurate in determining how much money should be invested in a 401(k) account as compared to novice financial planners and younger individuals, respectively (Walsh & Hershey, 1993). In a related study, Hershey

and Walsh (2000/2001) found that experts made better investment decisions than novices, but trained novices who had been taught to understand the "deep structure" of the problem outperformed both experts and novices. Taken together, these findings indicate that one's level of knowledge (i.e., expertise) with financial planning for retirement can have a profound effect on the quality of one's investment decisions.

Goals for Retirement

Personal goals represent a second psychological dimension that has been shown to influence planning behaviors and future performance. In fact, most theories on goals share one common theme: goals motivate individuals to act or make plans (Austin & Vancouver, 1996). For instance, in Beach's Image Theory (1995) it is proposed that individuals have an ideal "image" of what they would like to achieve (e.g., being financially stable in retirement, having a good job), and they work toward achieving those goals. Therefore, according to this theory, having clear goals and knowing what one wants in retirement should lead that person to take the appropriate steps to research those goals. Naylor and Ilgen (1984) proposed that an individual's level of goal commitment –that is how much effort they are willing to expend to achieve a goal – also has an influence on behavior. Specifically, when one is highly committed to a goal, the individual will work hard and expend energy to meet that goal. This basic idea that goals motivate individuals has clearly been demonstrated in the retirement planning literature.

Research has shown that the clarity of one's retirement goals is a strong predictor of retirement planning and savings practices. For example, Devaney and Su (1997) found that having goals for retirement was positively related to retirement savings behaviors. Similarly, in a recent study of individuals between the ages of 25 and 45,

Mowen, Hershey, and Jacobs-Lawson (2000) found that retirement goal clarity (i.e., how clear one's retirement goals are) was positively related to the amount of retirement planning individuals engaged in, and that planning, in turn was a strong predictor of savings practices. In a different study using a wider age range than Mowen et al. (2000), Stawski and Hershey (2001) found that goal clarity had a positive impact on planning activities, which again influenced savings tendencies.

Hershey, Jacobs-Lawson, and Neukam (2002) asked pre-retirees, aged 20-67 years, to list their goals for retirement. They found that younger individuals listed more goals for retirement than older individuals, and that the type of goals individuals described tended to vary with age. Younger workers indicated that attainment of possessions was a goal more often than middle-aged or older workers, and the goals of older individuals' were found to be less concrete than those of middle-aged individuals. Although this study described developmental differences in the nature of individuals' retirement goals, it failed to account for how important those goals were, or how much thought or effort had been put into achieving them.

Other studies have shown that individuals often fail to develop long-term goals for retirement, in particular, many fail to set specific goals regarding how much will need to be saved (Devaney & Su, 1997; Loewenstein et al., 1999). Moen (1996) suggested that the absence of retirement goals or a lack of clear goals could be due to the fact that as a society, we lack clear norms regarding the roles that individuals are expected to adopt in retirement.

The influence of goals on retirement savings behaviors is a topic that has only recently been introduced in the psychological literature. Studies that have focused on

gender differences in retirement goals have shown that women are less likely than men to know how much they will need in retirement (Behling et al., 1983), and women possess fewer long-term financial goals than men (Glass & Kilpatrick, 1998b). Furthermore, many women believe they do not need to plan for retirement until after they retire (Slowik, 1991). From these findings, it would seem plausible that because women do not feel the need to plan for retirement, they may think it is unimportant to cultivate clear, long-term savings goals.

In addition to identifying age differences in retirement goals, the Hershey et al. (2002) study reported above also sought out evidence of gender differences in goal content. They found that the number of retirement goals individuals held did not differ as a function of gender, but men had more concrete retirement goals than women. The study also revealed that women were more likely to mention the goal of contact with others, and focus on self-oriented goals more often than men, but men were twice as likely as women to report having leisure-related retirement goals. It has been suggested that women's lack of clear financial goals may be due to the lack of clear role models to look to when developing their plans and goals for the future (Patterson, 2000). It is also possible that women's less concrete retirement goals may be rooted in their future time perspective, a topic that will be addressed in more detail below.

It is clear that the nature of one's goals can affect whether or how adequately one saves for the future (Furnham & Argyle, 1998; Ramaswami, Srivastave, & McInish, 1992). If for example, one is concerned about having money available for emergencies, one may opt to save in an account in which funds are easily accessible. If one's goal were to save for retirement, however, there would be a greater tendency to contribute to

longer-term, higher-yield investment vehicles, at the cost of accessibility. Therefore, the nature of individuals' savings goals are likely to determine the nature of one's investments.

In an experimental task, McDougal (1995) evaluated how monetary goals influenced college students' level of risk tolerance. The results indicated that risk tolerant and risk aversive participants did not differ in the level of risk they tolerated when the investment goal was high. However, when a monetary goal was not provided (or when the goal was small), risk tolerant participants were found to make more risky decisions. Although this study did not examine financial investing for retirement *per se*, the results suggest that one's savings goals could impact how resources are invested. For instance, individuals with relatively substantial retirement savings goals may be more likely to invest in high return—high risk vehicles, regardless of their level of risk tolerance. However, when savings goals are low or unknown (which is often the case since individuals typically do not calculate how much will be needed for retirement), one's existing level of risk tolerance will likely dictate how funds are invested.

Future Time Perspective (FTP)

FTP is a third psychological variable that has received attention in the recent financial planning literature. In particular, FTP is a measure of the extent to which individuals focus on the future rather than on the present or past. In the economic and psychological literatures, not only has time preference been studied in different ways, but the terms used to refer to the construct vary. In the psychological literature, time preference is often referred to as FTP, and in the economic literature it is often referred to as patience or planning horizon.

Studies that have examined how time preference influences preparation for retirement have shown that it is related to both planning and savings practices. For instance, in one study of individuals aged 35-88 years, Hershey and Mowen (2000) found that individuals' level of FTP was positively associated with perceived financial preparedness for retirement. A second study by Mowen et al. (2000) revealed a similar effect. In addition, Lusardi (1999) found that individuals with a short planning horizon had lower net worths and expected less in the way of personal savings accumulations by the time they retired. Similarly, economic research indicates that individuals' level of patience (i.e. willingness to postpone spending and save money for later) is related to saving for retirement (Bernheim, Skinner, & Weinberg, 1997; Burtless, 1999). Specifically, individuals who avoid spending early in life have more in the way of savings at retirement than those who are predisposed to spending. This research provides clear support for the notion that how far one looks into the future will have an impact on savings behaviors.

Unfortunately, there has been a dearth of research examining how time preference differentially influences men's and women's retirement savings and investment decisions. The work that has been completed to date suggests that women are less likely to look into the future than men (Glass & Kilpatrick, 1998a). A recent study by Jacobs-Lawson, Hershey, and Neukam (in press) revealed that FTP plays an important role in predicting the amount of retirement planning men and women had engaged in, but this bivariate effect was stronger, although not statically different, for men than it was for women. One tentative explanation for women's lack of focus on the future is that they are more likely than men to deny the aging process (Glass & Kilpatrick, 1998b).

There is little in the way of research that focuses on how individuals' time preference influences their investment strategies. However, some studies may provide insights into the relationship between these two variables. A study by Anderson and Settle (1996) examined how investment period impacted undergraduates' investment decisions. Participants were instructed to make a hypothetical investment decision using a specified sum of money for ten years, and they were shown either the one-year return rate and risk level associated with the investment, or the 10-year return rate and risk level. Results indicated that participants opted for riskier investments when the return rates were presented in the 10-year context, as compared to the one-year context. Although this study did not directly address the issue of retirement investment strategies, its findings may have important implications for how people approach retirement investing.

It may be that those low in FTP are focused more on the immediate returns, and the risks associated with those investments. If this is true, then like the participants in Anderson and Settle's (1996) study, individuals low in FTP may differentially invest in financial vehicles that are more conservative with lower rates of return, whereas those that prefer to look toward the future may focus more on aggressive, high return alternatives. Therefore, the lack of a tendency to look toward the future can leave individuals with insufficient retirement funds (Bernheim et al., 1997). This has idea has received some empirical support in the literature. For instance, Vora and McGinnis (2000) suggested that one's investment time horizon is important to consider when contributing to a retirement plan, and one's time horizon is likely to determine how investment allocations are made.

Risk Tolerance

The concept of risk tolerance has been studied in a number of different contexts. For example, risk has been studied in terms of physical danger, gambling, and everyday life experiences (see Bromiley & Curely, 1992; and Byrens, Miller, & Shafer, 1999 for reviews). An individuals' risk tolerance indicates how willing he or she is to accept various degrees of risk. In general, those less willing to take risks are typically referred to as risk averse, whereas those more willing to take risks are labeled risk tolerant. According to Lopes (1997), individuals' level of risk tolerance depends on two factors: a) security versus potential, which refers to individual's focus on gains or losses and b) aspiration level, defined as what the person hopes to achieve. Lopes has argued that risk averse individuals focus on security and place more importance on the worst outcomes rather than the best outcomes. Risk tolerant individuals, in contrast, focus on the potential for growth and they more heavily weigh the gains that can be achieved. The second factor, aspiration level, is related to individuals' goals. Here the following question is posed: does the individual want the best possible outcome, or solely what he or she needs? A risk averse individual would focus on simply meeting needs, whereas the risk tolerant individual would tend to focus on achieving the best possible situation.

Bromiley and Curley (1992) have suggested that individuals' level of risk tolerance depends on a combination of both personal characteristics and the unique characteristics of the situation. Similar to Lopes, they too suggest that individuals' aspiration level plays a role in the level of risk one is willing to accept. With respect to retirement planning, one's level of risk tolerance can have a substantial impact on the amount of money one is likely to accumulate. This assertion is supported by the work of

Yuh and Devaney (1996), who found that the amount of the defined contribution plans of risk tolerant individuals was larger than those of risk adverse individuals.

Examinations of gender differences in risk tolerance have consistently shown that women are more risk averse than men (Johnson & Powell, 1994; Wong & Carducci, 1991). In a study of undergraduate students, Goldsmith and Goldsmith (1997) found that women were more risk averse than men, and less likely to report that they would buy stocks in the future. This finding has also been confirmed in the literature on investing (Antonides & Van Der Sar, 1990). Specifically, compared to women, men are more likely to make venturesome investments such as business and real estate investments, (Behling, et al., 1983), and more likely to hold risky investments such as stocks (Sunden & Surette, 1998). In contrast, women are more likely to invest their assets in low risk accounts such as certificates of deposit (Glass & Kilpatrick, 1998b). Mitchell and Moore (1998) found that women aged 51-61 years held an average of 9% of their assets in equities, whereas men held 15% of their assets in equities. Basset et al. (1997) also found that women were less risk tolerant in their investments than men.

Although it may appear that women are wise not to take risks by avoiding high risk investments, they are actually reducing their earning potential, which can have a detrimental effect on the amount of resources they can expect to accumulate for retirement (Bajtelsmit, Bernasek, & Jianakoplos, 1999; Hariharn et al., 2000; Sunden & Surette, 1998). Furthermore, Mitchell and Moore (1998) estimated that the future value of women's savings investments will be somewhat less than that of men. One exception to the general finding that women tend to be more risk averse in their investing practices came from a study that examined the savings behaviors of university employees (Grable

& Lytton, 1997). These researchers found that gender was not related to whether or not an individual held an IRA account, and gender had only a small effect on the likelihood of holding funds in a 403(b) plan.

Several studies have attempted to uncover the reasons why women's investment decisions are more risk averse than those of men. Powell and Ansic (1997) hypothesized that findings regarding gender and risk tolerance may be influenced by two factors-- how problems are framed in experimental studies of investing and women's lack of skill and investment knowledge. To test this idea, they presented male and female undergraduate and postgraduate business students with two investment tasks, one that was familiar and one that was not (neither were retirement specific). They also framed the problems in such a way that one focused participants' attention to gains, whereas the other focused on losses. Because both genders were equally knowledgeable and skilled on the two tasks, they expected that both genders would display the same degree of risk aversion. However, their results revealed that regardless of task familiarity or how the problem was framed, women tended to be more risk averse. They concluded that women generally try to avoid the worst possible situation (i.e., losses), whereas men try to achieve the best possible outcome (i.e., gains). This explanation was supported in work by Glass and Kilpatrick (1998a), who argued that women have a greater fear of losing money. Other research has shown that it may be a lack of financial knowledge that leads women to hold assets in less risky accounts.

Schulz et al. (1999) reported that women feel they understand less risky investments (e.g., savings bonds and private bank certificates) but they were less comfortable with high risk investments (e.g., mutual funds and stocks). In fact, women

30

were least confident in their knowledge of stocks. It may well be that a lack of knowledge about high risk options, combined with their understanding of and comfort with low risk options, leads women to allocate the majority of their resources into low risk, low return investment vehicles. However, research has yet to investigate this speculative explanation.

As seen from the above discussion, investment strategies can have an appreciable impact on the income one can expect to receive from personal savings in retirement. When investing, individuals must weigh the relative risk against the corresponding rate of return (Snelbecker, Roszkowski, & Cutler, 1990). Those that opt for more risky investments such as stocks, increase the possibility that their money will grow rapidly (Mitchell & Moore, 1998). Among individuals who are risk tolerant, the potential for growth psychologically outweighs the risk of loss. For those who are more risk averse, in contrast, conservative vehicles (such as treasury bonds) are attractive because the potential for loss is minimized. However, even the most conservative (i.e., least risky) investments are rarely guaranteed and can lead to losses.

Most financial planners suggest that to maximize growth potential and reduce the risk of catastrophic loss, individuals should diversify their portfolio in such a manner that a portion of one's assets are in low risk options, and the remainder of resources are allocated to high risk vehicles (Vora & McGinnis, 2000). Based on recent research, however, it does not appear that individuals appropriately diversify their portfolios in line with this prescription (Waggle & Englis, 2000). It has further been suggested that the proportion of funds in each option should reflect the investors' age and the level of

comfort with investment risk (Greninger et al., 2000). However, as previously indicated, individuals often fail to follow these recommended guidelines.

Summary

As can be seen from the preceding literature review, both demographic and psychological factors clearly influence individuals' retirement investment strategies. In terms of demographic variables, it was shown that investment strategies are related to age, income, education, and marital status. Specifically, it has been demonstrated that the tendency to choose high risk investments increases with income and educational level, and that single men are more likely than married men and women (regardless of marital status) to invest in high risk options. Furthermore, research on age and investment strategies has revealed that younger individuals are less likely to participate in defined contribution plans (Bassett et al., 1998). However, due to equivocal findings in the literature, it is unclear as how age influences the way in which individuals allocate funds within retirement savings accounts. Several psychological variables have also been shown to influence individuals' investment strategies. Specifically, one's level of knowledge, retirement goals, FTP, and risk tolerance have all been shown to be related to allocation decisions. However, much of the research on investment strategies has not been retirement specific. Therefore, it remains unclear in many cases how demographic and psychological factors combine to influence individuals' retirement investment strategies.

Research has shown that women are less likely to save for retirement than men, more likely to experience poverty in retirement, and more likely earn lower incomes during their working years. In addition, it has been demonstrated that women are more

likely to invest in accounts that have low rates of return, they are less knowledgeable about high risk investments, and less likely to establish clear savings goals for retirement. However, nearly all of the studies that have focused on women and investing have examined the role of demographic *or* psychological factors, rather than how both factors jointly influence investment decisions. Furthermore, there is a lack of research that has examined how women's retirement investment decisions change over the lifespan.

There were two major goals of this dissertation. The first was to examine how participants' age and knowledge of retirement planning as well as the age of a hypothetical investor influence women's investment allocation decisions. The second goal was to explore how demographic and psychological factors jointly influence the in which women indicate they would invest the funds for themselves. For this second goal, the demographic factors examined included age, income, educational level, and marital status. The psychological factors investigated included knowledge, goal clarity, FTP, and risk tolerance. In both the hypothetical investor task and self-investment task, allocation decisions were measured based on the overall level of risk associated with the allocation, and the number of plans in which funds were invested. In addition, age differences were examined in the information women use to make their asset allocations. It is hoped that this information will help provide further insights into the reasons behind women's financial decisions.

CHAPTER II:

Design Overview and Hypotheses

Design Overview

In the present study, women (aged 25-65 years) completed two investment tasks where the objective was to determine how $2,000 should be invested in an IRA account. The IRA account offered to participants contained five different plan options that varied with respect to the type of investment, its risk level, and rate of return. In the first task, participants were asked to make investment decisions on behalf of two hypothetical investors. In the second task, they were asked how they would invest the money for themselves. Following completion of the three investment decisions, participants were asked to complete a survey containing psychological scales and demographic items.

In the hypothetical investor task, participants indicated how a 35-year-old and a 55-year-old investor should allocate $2,000 across five plan options associated with an IRA account. In order to allow them to make informed decisions, participants were provided with an investor profile sheet for each hypothetical individual containing information about the investor's age, financial situation, and retirement goals. Immediately after making each decision, participants indicated the importance of the information they considered using two different types of measures. One measure asked participants to rate the importance of the various types of information provided (demographic characteristics, retirement specific information about the investor, and information about the plans within the IRA). The second measure asked participants to identify specific pieces of information they felt were critical to the investment decision.

As stated above, in the second investment task participants were asked to make a hypothetical decision in which they allocated $2,000 within a hypothetical IRA plan for themselves. For this task, participants were given a blank investor profile form (lacking information regarding the investor's age, financial situation, and retirement goals), and they were instructed to consider how they would complete the blank form before proceeding to make the self-investment decision. The purpose of this step was to get the participant to reflect on her financial situation and retirement goals before engaging in the self-investment task. Similar to the hypothetical investor task, participants completed the dual set of importance measures for the self-investment task.

Following completion of the three investment decisions, participants completed a survey, containing items to measure knowledge of retirement planning and investing, goal clarity, FTP, and subjective risk tolerance. In addition to these psychological measures, demographic information were also collected.

Hypotheses

Hypothetical investor asset allocation task. One unique aspect of this study was that both younger and older women were asked to make investment decisions on behalf of younger and older hypothetical workers. The first set of hypotheses focuses on the main effects of the age of the hypothetical investor, the participants' age, and knowledge of retirement planning and investing on participants' investment strategies. Of particular interest is the possibility of two- and three-way interactions between these factors. Two different indicators will be used to assess the nature of individuals' investment strategies. The first is based on the overall risk and return level of the allocation and the second is the number of plans invested in on behalf of each of the hypothetical investors.

However, because the results of previous studies on this topic have been inconclusive and primarily focused on men, it was unclear as to how the above factors would influence investment strategies in the present investigation. For instance, some studies have shown that with age individuals tend to become more risky in their investments (Glass & Kilpatrick, 1998b), whereas others have shown that risk tolerance tends to decrease developmentally (Baker & Haslem, 1974). Studies have shown than knowledge can also have an effect on savings. For women, however, it is unclear as to what effect their knowledge level will have on how they are likely to invest a hypothetical individual's funds. Therefore, rather than making directional hypotheses regarding the nature of the possible age and knowledge effects, it is simply proposed that asset allocations will be influenced by the age of the hypothetical investor, and the participants' age and knowledge level.

In addition to the above hypotheses, the information considered to be important to the investment decisions will be examined as a function of participants' age group and knowledge levels, and the hypothetical investors' age. It is expected that the age and knowledge level of the participant as well as the age of the investor, will influence the magnitude of individuals' importance ratings of the three types of information provided to assist them with the decision. The three types of information include demographic information about the hypothetical investor, retirement specific information about the investor, and information regarding the characteristics of the plan options. It is also expected that the specific pieces of information participants consider to be critical to the decisions will be related to both participants' age and the hypothetical investors' age. However, because little research has examined the information individuals consider when

making investment allocations, non-directional hypotheses are made regarding participants' ratings of the three general types of information as well as the specific pieces of information considered.

Self-investment task asset allocations. As described above, women were also asked to make a hypothetical investment decision on behalf of themselves. The purpose of this was to be able to examine how psychological and demographic factors affect women's personal investment decisions. As with the hypothetical investor task, two measures will be used as indicators of investment strategy: a) overall risk and return rate of the allocation, and b) diversification as indicated by the number of plans the funds were allocated across.

Demographic factors hypothesized to influence self-investment strategies include age, income, educational level, and marital status. Specifically, it is expected that allocation risk will be positively related to income (Barsky et al. 1997, Blume & Friend, 1975; Cohn et al. 1975) and educational level (Hariharan et al. 2000; Vora et al. 2000). However, due to equivocal prior findings regarding the role of age and marital status on investment strategies, it is unclear as to how these two factors will be related to individuals' allocation risk level. These four demographic factors are also hypothesized to influence the number of accounts in which funds are invested. Unfortunately, there is a dearth of research that has examined how age, income, marital status and educational level influence the degree of diversification when making investment decisions, therefore all hypotheses related this are non-directional.

The psychological variables hypothesized to influence women's allocations include FTP, knowledge, goal clarity, and subjective risk tolerance. It is expected that

FTP (Anderson & Settle, 1999), knowledge of retirement planning and investing (Schulz et al. 1999), and subjective risk tolerance (Greninger at al., 2000) will all be positively related to individuals' allocation risk level, such that as these variables increase so will the overall risk and return rate of the allocations. Due to a lack of prior research it is difficult to predict on an *a priori* basis how women's retirement goal clarity will influence their investment decisions. Therefore, a directional hypothesis is not made for this variable. Additionally, it is expected that each of the above psychological variables will have an impact on the number of plans in which funds are invested. However, as with the demographic variables, a lack of prior research led to the adoption of non-directional hypotheses.

In addition to the relationships described above, it is hypothesized that age may interact with FTP, knowledge, goal clarity, and subjective risk tolerance to influence allocation risk levels and the number of plans funds are allocated across. These interactions are focused on in this investigation because the primary goal of the dissertation is to better grasp how age influences women's investment decisions. However, because these relationships have largely been ignored in the retirement planning and investing literature, it is unclear as to how they will be related to asset allocations.

Hierarchical regression techniques will be used to examine participants' asset allocations (i.e., allocation risk level and number of plans selected). This will allow for a test of the impact of the psychological variables on investment strategies after first controlling for the demographic factors. Additionally, the analyses will determine if the

inclusion of the interaction terms account for additional variability in asset allocations after controlling for both demographic and psychological variables.

As a follow-up to the hypotheses outlined above, the information women consider when making the self-investment allocation will also be examined. As with the asset self-allocation analyses, hierarchical regression techniques will be used. The goal will be to determine how the demographic factors, psychological variables, and the interactions between age and the four psychological variables are related to importance ratings of the three general types of information (demographic information, retirement specific information, and information regarding plan characteristics). It is also expected that the specific pieces of information women consider when the making investment decision will be related to age. However, because few studies have examined variables related to the types of personal and financial information individuals consider, non-directional hypotheses are made for the importance ratings of the three general types of information used on the self-investment task, as well as the specific pieces of information considered.

CHAPTER III:

METHOD

Participants

Participants included 130 women between 25 to 65 years of age. All individuals were employed at least 20 hours a week, and were not retired or currently receiving any retirement benefits. The mean age, educational level, and household income level of the sample were 43.9 years old (SD = 9.7), 16.3 years (SD = 2.8), and $63.5K ($SD$ = $28.1K) respectively. In addition, 71% of the sample indicated that they were married. The ethnic composition of the sample was as follows: 90% were white, 1.5% were African American, 1.5% were Asian, 4.6% were Native American, and 2.3% were Hispanic. Participants were sampled from North Central Oklahoma through personal solicitations and fliers posted at local businesses. The study took approximately 30-60 minutes to complete, and upon completion each participant received a $10 honorarium.

Given the developmental focus of this dissertation, a series of *t*-tests were conducted to probe for age differences in the sample across several key variables. Specifically, analyses were conducted to determine if younger (aged 25-44) and older (aged 45-65) participants differed with respect to income level, educational level, knowledge of retirement planning and investing, goal clarity, FTP, and subjective risk tolerance. These analyses revealed that younger women's goals were not as clear as those of older women, $t(128) = -2.57, p = .01$). All other test failed to reveal statistically significant effect of age. Mean scores and standard errors for each of the variables (except for marital status, given its dichotomous nature) are reported in Table 1 as a function of age group.

Materials

The materials in the study included asset allocation worksheets, investor profile sheets, two types of importance rating sheets designed to tap two different levels of information considered, and a survey containing psychological scales and demographic questions. Each of these measures are described in detail, below.

Asset allocation worksheet. The asset allocation worksheet described the characteristics of five different investment options associated with a typical IRA plan (see Appendix A). The five columns on the worksheet each represent a different plan, and the rows presents the plans' characteristics. The information provided for each option included a general description of the investment, separate ratings of the relative risk and typical rate of return, and the five- and ten-year average rates of return. The final row in the table, labeled "Percentage of Investment Allocation," is where the participant wrote the percentage of the $2,000 she felt should be invested in each of the plans. The asset allocation worksheet used for the hypothetical and the self-investment tasks were identical.

Investor profile summary sheets. The hypothetical investor profile sheets provided details about the characteristics for the two hypothetical investors (see Appendix B). The profile sheets each contained demographic information (e.g., income, marital status), and retirement specific information (e.g., goals for retirement, and the amount of the investor's current retirement savings). These descriptive elements were selected because they have been shown to be important considerations when making investment decisions.

41

The profile sheets for the 35-year-old and the 55-year-old investor were developed in such a way that the general characteristics and financial situation of the older investor were constrained to be equivalent to that of the younger investor assuming that the younger individual was now 20 years older. Furthermore, the information used to create the personal and financial profiles was based on "real world" data. That is, income values were selected on the basis of age-specific average income data published by the United States Census Bureau (2000a). The projected age of retirement was based on the actual age the younger and older individuals would eligible for full Social Security benefits. The FICA benefits each hypothetical investor was projected to receive during retirement was determined based on current income levels. Finally, the value of the investors' retirement savings was calculated by estimating the amount each individual would have saved, had if they begun saving at the age of 25, and invested the same amount each year since that time. These different financial characteristics for the two investors were age-graded in this manner in order to increase the realism of the task.

To encourage participants to reflect on their own situation before completing the self-investment task, they were provided with a blank investor profile form (See Appendix C). The instructions indicated that they would be making a hypothetical investment on behalf of themselves, rather than for a hypothetical individual. The set of elements listed on this sheet were identical to those listed on the hypothetical investor profile sheets, except that for the self-investment profile sheet, all values had been removed.

Importance ratings. Participants were asked to indicate the importance of the information they considered following each of the three investment decisions using two

separate measures. The first was the Information Type Rating Sheet, and the second was the Information Checklist.

The purpose of the Information Type Rating Sheet (see Appendix D) was to ascertain how critical each of the three general types of information (demographic information about the investor, retirement specific information about the investor, and information about the five different plans within the IRA) were for each of the hypothetical investor decisions. To complete this form, participants were asked to distribute 100 points across the three information categories. To aid them with the task, a detailed list of the information associated with each category was provided. This measure served as a quantitative marker of the perceived importance of the three general classes of information contained in the investment tasks.

The second measure, the Information Checklist (see Appendix E), was designed to be a qualitative measure of the information participants felt was important when making their decisions. This checklist contained a brief description of all the information presented during the hypothetical investment task, after having omitted case-specific details. For example, one of the characteristics of the investor on the investor profile sheet was the individual's age. On the Information Checklist, only the word "age" appeared, not the investor's actual age. To complete the form, participants simply checked off each piece of information they felt was important to the asset task.

Participants also completed an Information Type Rating Sheet and Information Checklist for the self-investment task. These sheets were equivalent to those provided for the hypothetical investor task, with the exception that all references to the "investor" on the Information Type Rating Sheet were changed to "yourself."

Psychological and Demographic Survey. The post-task survey (see Appendix F) contained items designed to measure participants' level of knowledge about retirement planning and investing, FTP, retirement goal clarity, and subjective risk tolerance. In addition to these measures, the survey also contained a number of demographic questions. Each of the psychological measures are briefly described below.

Two different scales were used to measure participants' knowledge of retirement planning. One scale contained 5 items designed to assess general knowledge of retirement planning, which was a revised version of a scale used by Hershey and Mowen (2000) and Mowen et al. (2000). A sample item from this scale is "I am very knowledgeable about financial planning for retirement." The second knowledge scale, designed to tap knowledge specific to investing for retirement, contained nine items. A sample item from this measure is "I am confident in my ability to make retirement investment decisions." This scale was developed after reviewing commercial investment materials to identify the types of items commonly used to assess investing knowledge. Both scales use a 7-point Likert-type response format (1 = strongly disagree, 7= strongly agree). Prior to conducting any analyses using these two constructs, an exploratory factor analysis was conducted to examine the factor structure of the items. Results revealed that the items from each of the scales loaded on a single factor, indicating that the items tap a single latent construct. Therefore, items from both scales were collapsed into a single measure of retirement and investing knowledge. A reliability analysis of this combined scale indicated that one item needed to be omitted due a low item to total correlation. This reduced the pool of items to 13. The coefficient alpha level for the scale was .96 and the minimum item-total correlation was .64 ($M_{ITC} = .80$).

FTP was measured using six items designed to tap the extent to which individuals like to think about and plan for the future (Hershey & Mowen, 2000; Mowen et al. 2000). Participants were asked to rate how well each of the statements described them, using a 7-point Likert-type response format (1 = never, 7 = always). The scale was not specific to the topic of retirement, but rather, it was a more general measure of this personality dimension. A sample item from the FTP measure is "I enjoy thinking about how I will live in the future." The coefficient alpha level for the scale was .77, and the minimum item-total correlation was .38 (M_{ITC} = .51)

The retirement goal clarity scale was the same measure used by Mowen et al. (2000), Hershey, Mowen, and Jacobs-Lawson (2003), and Stawski and Hershey (2001). It contained five items scored using a 7-point Likert-type response format (1 = strongly disagree, 7 = strongly agree). Items were designed to measure the clarity and development of individuals' goals for retirement. A sample item from this measure is "I have set specific goals for how much will need to be saved for retirement." The coefficient alpha level for the scale was .89, and the minimum item-total correlation was .63 (M_{ITC} = .73).

The subjective risk tolerance construct was measured using six items designed to tap individuals' attitudes toward risk taking when investing for retirement (Hershey, 2002). Each of the items used a 7-point Likert-type response format (1= strongly disagree, 7 = strongly agree). A sample item is "As a rule, I would never choose the safest investment when planning for retirement." The items were developed after examining the ways risk taking has been measured in previous studies, and by considering risk scales distributed by commercial financial institutions. The coefficient

alpha level for this scale was .86, and the minimum item to total correlation was .53

$(M_{ITC} = .66)$

The final pages of the survey (omitted from Appendix F) contained questions about demographic characteristics. Participants were asked to report their age, income, marital status, and educational level, as well as other information designed to be used for classification purposes.

Procedure

Participants were first given a brief oral description of the research and asked if they were interested in participating in the study. Upon volunteering, individuals were given an envelope that contained: a) a letter describing and the study and instructions for completing the study, b) consent forms c) booklets for the two investment tasks, d) the survey, and e) an addressed stamped envelope. The instructions also contained a general description of the IRA accounts that was written in layperson's language, including information on penalties for early withdrawal and details about the tax status of funds invested in an IRA.

The investment tasks were organized such that participants were asked to complete the hypothetical investor task prior to completing the self-investment task. Because two investment allocations were made for hypothetical investors (one young, one old), to control for the possibility of order effects, the order in which participants completed the two scenarios was counterbalanced. For each of the investment allocation decisions, the booklets were organized as follows: a) a cover page describing to the participant the order in which the booklet should be completed, b) an Investor Profile Sheet, c) an Allocation Worksheet, d) an Information Type Rating Sheet, and e) an

Information Checklist. The psychological and demographic survey was always administered last. Upon completion of the study, participants were debriefed and given the $10 honorarium.

Data Analysis

Two different indicators were used to examine how the $2,000 was distributed among the five plan options. First, an overall estimate of allocation risk was calculated for each investment decision by weighting the percentage of funds invested into each plan by the plan's stated level of risk and rate of return. As seen on the Asset Allocation Worksheet, the risk of loss and typical rate of return for each plan is rated on a five-point scale that ranges from low to high. These two sets of values are designed to covary perfectly. The allocation risk weight for each plan was assigned as follows: Plan A = 1, Plan B = 2, Plan C = 3, Plan D = 4, and Plan E = 5. To achieve a single indicator of overall investment risk for each of the three investment decisions, the percentage invested into each plan was multiplied by the appropriate weight, and these values were summed across the five options. This summed value will hereafter be referred as the "allocation risk." Possible values for this variable ranged from 1 (low risk) to 5 (high risk). The second indicator of investment strategy was the number of plans participants used to distribute the $2,000. This indicator was independently calculated for each of the three investment decisions.

Due to conceptual differences in the research questions addressed for the hypothetical investor and self-investment tasks, two different analytical approaches were used. For the hypothetical investor task, a series of mixed design ANOVAs, and tests of independent and dependent proportions were used. For the self-investment task, in

contrast, hierarchical regression techniques and tests of independent proportions were employed. For the self-investment regression analyses, with the exception of marital status, all independent variables were treated as continuous predictors (for these analyses, marital status was dummy coded as follows: 0 = not married, 1 = married).

For the hypothetical investor ANOVAs, participants' age and knowledge of retirement planning and investing were dichotomized. Specifically, participants were classified either younger women (aged 25–44, $n = 65$, $M = 35.94$, $SD = 5.66$), or older women (aged 45–65, $n = 65$, $M = 51.94$, $SD = 5.17$). In order to separate the sample into high and low levels of knowledge, a median split was performed on this variable. This resulted in 66 participants being classified as having a low level of knowledge ($M = 2.25$, $SD = .72$), and 64 participants as having a high level of knowledge ($M = 4.65$, $SD = .80$).

CHAPTER IV:

RESULTS

Prior to analysis, all distributions were visually checked for evidence of

normality, as well as any abnormal skew or kurtosis. As stated in the method section,

different techniques were used to evaluate participants' asset allocations for the

hypothetical investor and the self-investment tasks. Furthermore, there are conceptual

differences in the research questions addressed for each of the tasks. Therefore, the

results stemming from the two are presented separately, below.

Hypothetical Investor Task

In the hypothetical investor task analyses, the first goal was to understand how

women's age, knowledge level, and the age of the hypothetical investor influenced how

the $2,000 was allocated across the five plans. The second goal was to better understand

the types of information women considered when making investment decisions. Due the

to large number of effects for each of the analyses, only significant effects are reported in

the text. However, all effects are reported in tables that correspond to particular text

passages. The tables also contain the effect size and observed power level for each

effect. For all statistical tests computed, the critical alpha level was set to be $p < .05$.

Asset Allocations for Hypothetical Investor Task

To address the first research question, separate 2 (age of participant) x 2

(knowledge level of participant) x 2 (age of hypothetical investor) mixed-model

ANOVAs were computed using allocation risk and number of plan options used as

dependent variables.

Allocation risk scores. The mixed-model ANOVA using allocation risk as the

dependent variable revealed a significant main effect of age of the hypothetical investor,

$F(1,126) = 21.38, p = .01$ (see Table 2). Specifically, allocation risk levels were higher

for the young investor ($M = 3.09, SD = .77$) than for the older investor ($M = 2.75, SD =$

.71), indicating that risk levels decreased as the age of the hypothetical investor

increased. However, this significant main effect was overshadowed by a two-way

interaction between knowledge level and the hypothetical investors' age, $F(1,126) = 4.74,$

$p = .03$. A simple effects analysis revealed that for the young hypothetical investor,

individuals with higher levels of knowledge ($M = 3.27, SD = .71$) had higher allocation

risk scores than those with low levels of knowledge ($M = 2.92, SD = .80$), $F(1, 128) =$

$6.91, p = .01$ (see Figure 1). However, for the older hypothetical investor, the allocation

risk for high knowledge individuals ($M = 2.73, SD = .72$) did not differ from those with

low levels of knowledge ($M = 2.77, SD = .70$), $F(1, 128) = 0.11, p = .74$.

Number of plans selected. The 2 (age of participant) x 2 (knowledge level of

participant) x 2 (age of hypothetical investor) mixed-model ANOVA for number of plans

selected revealed a significant main effect of the hypothetical investors' age, $F(1, 126) =$

$6.73, p = .01$ (see Table 3). As shown in Figure 2, women invested the funds across

fewer plans for the older investor than they did for the younger investor.

Information Considered for Hypothetical Investor Task

The second goal of the hypothetical investor task was to examine the types of

information individuals considered when making the retirement investment decisions. As

indicated in the method, participants were asked to rate the importance of the three

general types of information provided (i.e., demographic, retirement specific, and plan

information), and indicate the specific pieces of information they considered when making the investment decisions. For the importance ratings, three separate 2 (age of participant) x 2 (knowledge level of participant) x 2 (age of hypothetical investor) mixed-model ANOVAs were conducted, one for each general category of task information. For the information checklist task, the percentage of individuals that considered each the pieces of information was explored, and tests of independent and dependent proportions were conducted to explore the effect age has on information considered.

Information importance ratings for the hypothetical investor task. For the ratings of the importance of demographic information, a 2 (age of participant) x 2 (knowledge level of participant) x 2 (age of hypothetical investor) mixed-model ANOVA showed a statistically significant effect for the hypothetical investors' age, $F(1, 129) = 7.45, p = .01$ (see Table 4). As shown in Figure 3, participants rated demographic information as more important when making the investment decision for the younger hypothetical investor than for the older hypothetical individual.

For the retirement specific information importance ratings, the 2 (age of participant) x 2 (knowledge level of participant) x 2 (age of hypothetical investor) mixed-model ANOVA revealed a statistically significant effect of age of hypothetical investor, $F(1, 129) = 4.52, p = .04$ (see Table 5). Inspection of the means revealed that women rated retirement specific information for older hypothetical investor as more important than they did for the younger hypothetical individual (see Figure 4).

The 2 (age of participant) x 2 (knowledge level of participant) x 2 (age of hypothetical investor) mixed-model ANOVA for the importance of plan information failed to reveal any significant main effects or higher order interactions (see Table 6).

51

However, there was a marginal main effect for knowledge level, $F(1, 126) = 3.37$, $p = .07$. Inspection of the means revealed that participants with low levels of knowledge ($M = 34.71$, $SD = 16.86$) rated plan information as more important than individuals with higher levels of knowledge ($M = 29.77$, $SD = 11.80$).

Information checklist for the hypothetical investor task. On average, participants considered 11.46 different pieces of information when making investments on behalf of the hypothetical investors. A 2 (age of participant) x 2 (knowledge level of participant) x 2 (age of hypothetical investor) mixed-model ANOVA failed to reveal any significant effects regarding the number of informational cues considered (see Table 7). For the entire sample, across both hypothetical scenarios, the four most commonly cited pieces of information were: age of the hypothetical investor (92.6%), level of risk associated with the plan options (85.9%), number of years until retirement (84.8%) and typical return rate of the plan (66.8%) and age the investor plans to retire (66.8%). The individual pieces of information that were least likely to be considered included: investor occupation (27.3%), number of children (28.5%), assets other than those for retirement (28.5%), and that age at which the individual is entitled to receive full Social Security benefits (32.0%).

To further explore how age was related to the information women considered when making investment decisions, data from the Information Checklist were complied into a table showing the percentage of young and old participants that considered each different piece of information for the young and old hypothetical investors (see Table 8). Inspection of the table shows that the percentages ranged from a low value of 20.3% to a high value of 98.4%. Given the developmental focus and emphasis on risk in the present study, of particular interest was whether participants' age or the hypothetical investors'

age was related to the likelihood of considering: a) the age of the hypothetical investor, b) typical return rate of the plan options, and c) risk level of the plan options. To examine participant age differences in the likelihood of selecting these three items, tests of independent proportions were used that compared the average of columns 1 and 3 to the average of columns 2 and 4 in Table 8. Additionally, three tests of dependent proportions were conducted that compared the average of columns 1 and 2 to the average of columns 3 and 4 to evaluate the effect of the age of the hypothetical investor on the likelihood of indicating whether these three pieces of information were important.

The tests of independent proportions revealed significant age group differences in the likelihood of considering the age of the hypothetical investor ($z = 3.10, p < .05$), and the typical return rate of the plan ($z = 2.26, p < .05$). Specifically, it was shown that older individuals were more likely to consider the age of the investor (97.7%) than younger participants (87.5%). However, younger individuals were more likely to consider the typical rate of return (73.4%) than older individuals (60.2%). This analysis failed to show age group differences in the likelihood of indicating that risk level was a significant cue ($z = 1.08, p > .05$).

The tests of dependent proportions revealed that the likelihood of considering the typical return rate ($z = 1.62, p > .05$) and age of investor ($z = .33, p > .05$) did not differ across the young and old hypothetical investor conditions. However, there was a significant difference across the hypothetical investor conditions in the likelihood of considering the risk level of the plan options ($z = 2.83, p < .05$). Specifically, women were more likely to consider the level of risk in the older hypothetical investor condition (90.6%) as compared to the younger hypothetical investor condition (81.3%).

Self-investment Task

The main goal of the self-investment task was to examine how four demographic and four psychological variables were related to women's investment decisions made on behalf of themselves. Given the developmental focus of this dissertation, of particular interest were any significant interactions between age and the psychological variables. A second goal was to explore how the same sets of variables were related to information women consider when making those decisions. Hierarchical regression analyses were used to test the hypothesis presented in chapter 2. In these analyses, demographic variables (i.e., age, income, education, and marital status) were entered in the first level of the model, followed by the psychological variables (i.e. knowledge of retirement planning, retirement goal clarity, FTP, and subjective financial risk tolerance) in the second level, and the four age-related two-way interactions were entered in the last level (age by knowledge, age by goal clarity, age by FTP, age by risk tolerance).

Asset Allocations for Self-investor Task

As previously stated, two measures served as indicators of women's self-investment decisions, the degree of risk associated with the allocation and the number of plans across which funds were invested. The results of the regression analyses for each of these criterion measures are presented separately, below.

Allocation risk scores. The first hierarchical regression examined the impact of the demographic and psychological variables on women's level of allocation risk. Results revealed that the first level of the model was not statistically significant, $F(4, 125) = 1.03$, $p = .40$, $R^2 = .03$, and the regression coefficients for all four demographic predictors failed to obtain (all $p > .05$; see Table 9). However, the addition of the

54

psychological variables in the second level lead to a significant change in the explained variance, $F_\Delta(4, 121) = 4.08, p = .01, R^2_\Delta = .26$. Examination of the regression coefficients revealed a significant positive relationship between subjective risk tolerance and allocation risk, $\beta = .50, t(121) = 5.50, p = .01$. All other psychological predictors failed to obtain. The addition of the interaction terms (i.e., age x psychological variables) in the third level again led to a significant increase in variance accounted for in the allocation risk scores, $F_\Delta(4, 117) = 3.36, p < .05, R^2_\Delta = .07$. This significant increase in the explained variance was largely due to a significant age by knowledge interaction, $\beta = -.32, t(117) = -3.19, p = .01$. None of the other two-way interactions were found to be significant. Taken together, all three sets of predictors in the model accounted for 37% of the variability in allocation risk.

The significant two-way interaction between age and knowledge was decomposed using simple slope analysis based on the recommendations outlined in Cohen, Cohen, Aiken, and West (2003). In this analysis, allocation risk was first regressed on knowledge at one standard deviation above the mean of participants' age, representing the effect of knowledge for older women. Next, allocation risk was regressed on knowledge at one standard deviation below the mean of age, which was representative of the effect of knowledge for younger women. These tests revealed that knowledge was not significantly related to allocation risk for older women ($\beta = .17, t(126) = 1.59, p = .11$), but it was related to risk level for the allocations of younger women ($\beta = .55, t(126) = 4.52, p = .01$, see Figure 5). This suggests that among younger women, knowledge level is positively related to asset allocations.

Number of plans selected. The second analysis involved regressing the number of

plans funds were invested across on the set of demographic variables (level one),

psychological variables (level 2), and age by psychological variable interactions (level 3).

Results revealed that the first level was not significant, $F(4, 125) = 1.56, p = .19 \ R^2 = .05$.

Furthermore, inclusion of the second and third levels in the model failed to lead to a

significant increase in variance accounted for, $F_\Delta(4, 121) = 1.36, p = .25, R^2_\Delta = .04$, and

$F_\Delta(4, 117) = 0.49, p = .75, R^2_\Delta = .02$, respectively. Due to the lack of variability explained

in the model, individual regression coefficients were not examined. Overall, the mean

number of plans women invested in when making allocations on behalf of themselves

was 3.27 ($SD = 1.21$).

Information Considered for Self-investment Task.

The next step in the analysis plan involved examining the general information

importance ratings, as well as the specific pieces of information women considered. The

three hierarchical regression analyses for women's information importance ratings were

structurally analogous to those used to examine allocation risk and number of plans in

which funds were allocated for the self-investment task. In addition to these analyses, the

percentage of younger and older women that considered each specific piece of task

information was examined.

Information importance ratings for the self-investment task. The hierarchical

regression that used ratings of the importance of demographic information as the criterion

failed to reveal any statistically reliable relationships. In the first level of the model the

demographic variables failed to account for a significant amount of variance, $F(4, 125) =$

$0.74, p = .57, R^2 = .02$. Furthermore, the inclusion of psychological variables in the

second level, and the interactions between age and the psychological variables in the third level, failed to lead to statistically significant increases in explained variance, $F_\Delta(4, 121)$ = 0.56, $p = .69$, $R^2_\Delta = .02$, and $F_\Delta(4, 117) = 1.29$, $p = .28$, $R^2_\Delta = .04$, respectively. Because all three levels of the model failed to account for a significant amount of variability, individual regression coefficients were not interpreted.

The analysis of importance ratings for retirement specific information also failed to show reliable relationships between the criterion and predictors. Neither the first level variables, $F(4, 125) = 0.23$, $p = .92$, $R^2 = .01$, the second level, $F_\Delta(4, 121) = 1.41$, $p = .24$, $R^2_\Delta = .04$, nor the third level, $F_\Delta(4, 117) = 1.24$, $p = .30$, $R^2_\Delta = .04$, was found to account for a significant amount of variance in the model. Due to a lack of explained variance, individual regression coefficients were not interpreted.

In the final hierarchical regression, importance ratings for plan characteristics were regressed on the demographic variables (level 1), psychological variables (level 2), and age by psychological interaction terms (level 3). The first level of the model failed to obtain, $F(4, 125) = 0.17$, $p = .95$ $R^2 = .01$. Furthermore, the addition of the psychological variables in the second level failed to lead to a significant increase in variance accounted for, $F_\Delta(4, 121) = 0.99$, $p = .24$, $R^2_\Delta = .04$. However, inclusion of the age-based two-way interaction terms did lead to a significant change in R^2, $F_\Delta(4, 117) = 2.93$, $p = .02$, $R^2_\Delta = .09$. Across all three levels, 13% of the variance in the importance ratings for plan characteristics was explained.

Inspection of regression coefficients for the importance of plan characteristics model revealed that both the age by goal clarity interaction, and the age by FTP interaction were statistically significant, $\beta = .39$, $t(126) = 2.87$, $p = .01$ and $\beta = -1.63$,

$t(126) = -3.14, p = .01$ (see Table 10). Again, based on the recommendation of Cohen et al, (2003), these two-way interactions were decomposed through simple slope analysis, to examine how the relationship between the psychological variable (FTP and goal clarity) and the importance ratings differed for younger (i.e., 1 SD below the mean of age) and older individuals (i.e., 1 SD above the mean of age). The first of these two analyses revealed that for younger women, goal clarity was negatively related to plan importance ratings, $\beta = -.27, t(126) = -2.08, p = .04$. For older women, however, goal clarity was unrelated to plan importance ratings, $\beta = -.03, t(126) = -.548, p = 0.80$ (see Figure 6). Furthermore, examination of the relationship between FTP and the importance of plan information revealed FTP was not related to importance ratings for younger individuals, $\beta = .01, t(126) = 0.06, p = .95$. However it was negatively related to the importance ratings of older individuals, $\beta = -.23, t(126) = -1.96, p = .05$ (see Figure 7).

Information checklist for the self-investment task. The final series of analyses for the self-investment task focused on the specific pieces of information women considered. On average, women reported they considered 12.02 ($SD = 5.20$) pieces of task information. The four most commonly selected pieces of information were risk level (90.8%), age (89.2%), number of years from retirement (80.0%), and typical rate of return (76.2%). The four pieces of information least likely to be considered were: other assets (35.4%), amount to be invested (32.3%), number of children (33.1%), and occupation (20.8%).

A hierarchical regression analysis was conducted to determine whether demographic variables, psychological variables, or interactions between age and the psychological variables were related to the amount of information women considered.

The first level of the model was not significant, $F(4,125) = 1.52$, $p = .20$, $R^2 = .05$, and the second and third levels failed to lead to an increase in R^2, $F_\Delta(4, 121) = 0.29$, $p = .89$, $R^2_\Delta = .01$ and $F_\Delta(4, 117) = 1.02$, $p = .40$, $R^2_\Delta = .03$, respectively.

In order to more closely examine the specific pieces of used to make the allocation decision, the percentage of women that considered each cue was calculated as a function of age group (see Table 11). Again, given the focus of this dissertation on developmental differences and risk tolerance, it was of particular interest to see whether younger and older women differed in the likelihood of considering age, risk level, and typical return rate of the plan. A test of independent proportions failed to reveal participant age differences in the likelihood of indicating age was important ($z = 0.80$, $p <$ .05). However, there were significant differences in the likelihood of indicating that risk level and typical return rate were important, $z = 2.57$, $p < .05$, and $z = 2.04$, $p < .05$, respectively. Specifically, compared to older individuals, younger individuals were more likely to consider the level of risk and the typical return rate when making asset allocations on behalf of themselves.

CHAPTER V:

Discussion

The main goals of this dissertation were two-fold. The first was to examine developmental differences in how knowledge of retirement planning and the age of a hypothetical investor were related to women's asset allocations. The second was to examine how demographic and psychological variables influenced women's investment decisions when asked to make allocations on behalf of themselves. Moreover, within each of these goals, the types of information women considered when determining how funds should be allocated was of interest. Because of conceptual differences in the research questions investigated, the discussion of the results is organized as follows: a) findings related to the hypothetical investor task, b) findings related to the self-investment task, c) a general discussion, d) limitations and future directions, and e) conclusions.

Hypothetical Investor Task

In this study women were asked to make investment decisions on behalf of a young and an old hypothetical investor. The purpose of this was to determine how participants' age and knowledge of retirement planning, as well as the age of hypothetical investor influenced a) the level of risk associated with the allocations, b) the number of plans in which funds were invested, and c) the information women considered when making investment decisions for hypothetical investors.

Previous findings on the relationship between age and investment decisions have been inconclusive. For instance, Sunden and Surette (1998) found that age was unrelated to risk, Vora and McGinnis (2000) reported that investment risk decreases with age, and

Cohen et al. (1975) reported that risk tolerance increases with age. Consistent with the findings of Sunden and Surette (1998), in the present study participants' age and allocation risk were found to be unrelated. However, women were found to make riskier allocations for the younger hypothetical investor than the older investor. These two findings suggest that investment risk tolerance may not be a function of participants' age *per se* (as shown by the lack of a significant effect of participants' age), but more a function of the individuals' proximity to retirement (i.e., given that the younger hypothetical investor was further from retirement than the older hypothetical investor). However, the significant age of hypothetical investor by participants' knowledge of retirement planning interaction indicates the relationship between age and investment risk is more complex than hypotheses involving age alone.

Studies that have examined the effect of investment knowledge on allocations have shown that knowledge can have a strong impact on the quality of one's decisions (Hershey et al. 1990; Mitchell & Moore, 1998). In the present study, it was shown that compared to women with low knowledge of retirement planning, high knowledge women made riskier investments for the young hypothetical investor (see Figure 1). This finding, combined with the fact that the allocations for the older hypothetical investor did not differ as a function of knowledge, suggests that women who are more knowledgeable may understand that younger individuals should be more willing to tolerate risk, but older investors should be less risk tolerant (Kim & Wong, 1997). A second possible explanation for this combination of effects is that high knowledge women were more comfortable with riskier options for the younger hypothetical investor because they had a better understanding of those accounts. For instance, it has been shown that women are

often uncomfortable with and do not understand risky investment options (Schulz et al., 1999), and therefore do not invest in them. The age of hypothetical investor by knowledge interaction may offer some explanation as to why some studies have failed to find a relationship between age and investment risk. It could be that knowledge of retirement planning is the force that guides individuals to adjust their level of investment risk as they age, but if you fail to account for individuals' knowledge of retirement, the effect of age is not readily apparent.

Previous studies have shown that individuals are likely to invest funds in an all or none fashion. For instance, Vora and McGinnis (2000) reported that individuals often fail to allocate resources among several available options, and instead tend to invest either in a high risk or low risk vehicle. However, findings from this study provide evidence to the contrary. That is, the investments' women made on behalf of others were fairly diversified. In fact, on average, women invested funds in 3.29 plans. It was also shown that women's investment allocations were more diverse for the younger hypothetical investor than for the older individual (see Figure 2). From these findings, it would appear that women are aware of the benefits of diversification and understand that not all of one's retirement nestegg should be held in a single investment vehicle.

Relatively few previous studies have sought to examine the types of information individuals consider when making investment allocations. One of the goals of the present thesis was to address this gap in literature. The findings from the present study revealed that women considered demographic information to be more important when making investment decisions for the young hypothetical investor, as compared to the older hypothetical individual (see Figure 3). In contrast, retirement specific information was

rated as more important when making allocations on behalf of the older hypothetical investor than the younger hypothetical person (see Figure 4). These differences may have been due to what is perceived to be differences in economic focus of younger and older hypothetical individuals. In general, young individuals are focused on purchasing a home, supporting their children, and establishing a career. In contrast, older individuals have already tended to accomplish these tasks (Devaney & Su, 1997). Therefore, it would seem logical that the current socioeconomic status of the individual would be of greater importance when investing on behalf of a younger individual. However, as the investor's age draws nearer to retirement, concerns may shift from the investor's current financial situation, and instead focus on the expected future streams of retirement income. Therefore, for the older hypothetical investor characteristics such as the amount of current retirement savings, projected Social Security benefits, and the types of current retirement investments take on increased importance. Although the developmental shift in focus from current financial situation to the future financial situation may be a logical change in processing strategy, it may not necessarily be wise.

It has been suggested that investments should be made in line with an individual's savings need, which are based in part on factors such as the number of years until the person will retire, income from other sources, and the current value of one's savings (Devaney & Su, 1997; Loewenstein et al., 1999). However, data from this study suggest that women place less importance on this information when an investor is young, and further away from retirement. This is problematic because the women are unable to make informed decisions as to how the funds should be invested. For example, imagine two young investors with identical demographic characteristics who have the same

amount of funds available to invest. However, one investor has high a retirement savings need and the other has a relatively low savings need. Ideally, in order for these two individuals to reach their respective savings goals, funds would be invested in high risk vehicles for the individual with high savings needs but in low risk accounts for the individual with low savings needs. However, because women tend to be risk averse (Antonides & Van Der Sar, 1990; Basset et al., 1997), it is likely that the savings goals of the low need individual would be met, but the individual with high savings goals end up with inadequate savings. Unfortunately, this shortfall in savings will not be apparent until the person nears or reaches retirement, when in all likelihood it will be too late to take the steps necessary to make-up the additional savings need. Had the savings need and investment risk level been appropriately addressed when the investor was younger, then this problem would be less likely to arise. One potential solution to this problem would be to ensure that women of all ages are aware that retirement specific information, such as retirement goals and current savings, should be given careful consideration when making investment decisions.

Ideally when making investment allocations, individuals should take into account not only the investor's age, but also the risk level and typical rate of return associated with various account options. Specifically, it is recommend that the rate of return should be an important consideration for young investors, whereas the risk level of different options should be of greater concern for older investors who are closer to retirement (Greninger et al. 2000; Vora & McGinnis, 2000). However, the findings from this study suggest women may not fully understand or appreciate the intricate relationships between age, risk level, and rate of return.

In the present study, women did consider the risk of the plan more frequently for the older hypothetical investor than the younger hypothetical investor. This suggests that overall women understand that the risk associated with investments is more important for older individuals. However, they were not more likely to consider the rate of return when making the investment decision for the younger hypothetical investor than the older hypothetical investor. Additionally, compared to older women, younger women were less likely to consider the investors' age, and more likely to consider the rate of return of the various accounts. By placing more attention on rate of return and less attention to age, young women could potentially find themselves making investment decisions that are more risky when they are older than they should. Taken together, these findings suggest that some women's investment decisions could be improved through educational programs that stress the different types of information that should be considered when making investment decisions, and how that information should be weighted in terms of relative importance. It should be noted, however, that the majority of women did consider the age of the investor, the risk level, and the typical rate of return when making the investments; therefore, it appears that only a minority of women may be prone to the errors discussed above. However, for these women, failure to consider an appropriate set of information could have a detrimental impact on their future financial stability.

In sum, the findings from this task revealed that the age of the hypothetical investor had a significant impact on how women invested the funds, as well as the types of information they considered when making their decisions. Findings also indicate that age differences exist in relation to the information women considered when making allocations on behalf of others.

Self-Investment Task

Most studies of investment strategies have focused on the way in which demographic variables such as age, income, marital status, and educational level, influence women's investment decisions. Far fewer studies have examined how psychological variables such as knowledge, FTP, goal clarity, and subjective risk tolerance influence asset allocations. The main goal of the self-investment task was to examine how *both* demographic and psychological variables influence investment tendencies. Given the developmental focus of the present study, of particular interest were age differences that emerged in relation to psychological variables and asset allocations. The second goal was to examine the information women considered when making the hypothetical investment decisions on behalf of themselves, as indexed by the three types of information importance ratings they made and the specific pieces of information they considered.

One of the reasons women's retirement assets are less than those of men is that women tend to be risk averse when making investments. One could argue that women should just ignore their discomfort with risky investments, and simply invest in accounts that tend to be more aggressive. However, encouraging women to invest outside of their comfort zone could lead to anxiety, and to reduce this anxiety they may shift funds to more conservative accounts (Greninger et al., 2000). Similar to Yu and Devaney (1996), the present study revealed that subjective risk tolerance was a positive predictor of allocation risk. This suggests that changing women's psychological predispositions could increase their willingness to invest in riskier accounts. However, changing attitudes toward risk could prove to be a difficult task, because it is unclear what

psychological factors underlie women's risk aversion. If this disposition is biological in nature as suggested by Harlow and Brown (1990), then it may be next to impossible to change women's attitudes toward investment risk. However, if risk aversion stems from a focus on loss (Powell & Ansic, 1997), fear of losing money (Glass & Kilpatrick, 1998a), and lack of knowledge, then perhaps cognitive restructuring techniques could be combined with educational interventions to effectively increase the willingness to make aggressive investments. In any event, future studies are warranted that seek to determine the factors that underlie women's aversion to risk.

As previously indicated, findings regarding the relationship between age and investment risk have been equivocal (Baker & Haslem, 1974; Barsky et al., 1997; Glass & Kilpatrick, 1998b). However, it has repeatedly been shown that individuals' knowledge of investing for retirement is related to their investment allocations (Hershey et al., 1990; Mitchell & Moore, 1998). However, the present study suggests that these two variables (i.e., age and knowledge) alone are insufficient to explain women's investment decisions. Rather, it appears to be the combination of the two that influence allocation behaviors.

As shown in Figure 5, young women's level of allocation risk was influenced by their knowledge of retirement planning and investing. For older women, however, knowledge was found to be unrelated to allocation risk. This seems to indicate that women with a strong knowledge of retirement planning understand the benefits of investing in high-risk accounts when young, as well as the need to shift to more conservative accounts as they age. It is possible that young women with a poor knowledge of retirement planning opted for less risky plans based on an inadequate

understanding of high risk investment vehicles (Schultz et al., 1999). Although educational materials exist on high risk investments, women often report these materials are either male or couple focused, and thus, fail to address their unique needs and concerns (Glass & Kilpatrick, 1998b). Based on the present findings, young women could benefit from programs designed specifically for them that aim to increase their understanding of high risk investment vehicles.

Demographic variables such as income (Bassett et al., 1998; Blume & Friend, 1997; Gale & Scholz, 1994), educational level (Grable & Lytton, 1997; Hariharan et al., 2000), and marital status (Bassett et al., 1998; Glass & Kilpatrick, 1998b) have all be shown to be related to investment decisions. The literature has also shown that FTP (Anderson & Settle, 1996) and individuals' goals (McDougal, 1995; Ramaswani et al., 1992) are related to asset allocations. In the present study, however, these variables were not found to influence allocation risk. One possible reason for this discrepancy may have to do with the fact that this study focused solely on women.

Although some studies have included women as participants, the large majority of published findings are based on data collected from men. Therefore, it is possible that gender differences may be responsible for the lack of observed relationships between the variables listed above and allocation risk. For illustration purposes imagine two studies, one that includes high and low income men, and another that the focuses on high and low income women. The women are likely to have a poorer understanding of retirement planning and investing (Alexander et al., 1998; Kaye & Monk, 1984; Keddy & Singleton, 1991), as well as higher levels of risk aversion (Basset et al., 1997; Johnson & Powell, 1994), whereas men's scores on these variables are more likely distributed across a

broader range. This combination of effects for women is likely to restrict their range of investments, thereby reducing the likelihood of a significant relationship between their income (or other demographic or psychological variables for that matter) and asset allocations. However, the tendency among men to be more variable on these two factors is likely to result in their making a broader range of investments, thereby increasing the probability of a relationship between income and allocation risk. However, future studies are warranted to determine whether this is empirically supported.

The above findings highlight the importance of considering demographic characteristics and psychological variables when seeking to understand the factors that underlie women's asset allocations. Had only demographic variables been considered, women's allocation risk scores may have appeared to be random. More importantly, however, had the interaction terms been excluded it would have appeared that women's allocations were solely determined by subjective risk tolerance. By including the three sets of variables (demographic, psychological, and interaction terms), 37% of the variance in women's allocation risk scores was explained. These findings lead to two important conclusions. First, in order to best understand women's investment allocations, future studies should continue to explore how demographic variables and psychological variables jointly influence the decision making process. Second, findings from the present study suggest that programs designed to target women based on their knowledge of retirement planning, subjective risk tolerance levels, or age could be more effective than those that are currently in place which use a one-size-fits-all approach to retirement education. The creation of specialized programs for women would perhaps encourage more women to participate in them.

Contrary to expectations, none of the three sets of predictors (i.e., demographic, psychological, or interaction terms) were significant indicators of the number of plans selected on the self-investment task. However, women's allocations were found to be fairly diversified. In fact, on average, women allocated funds across 3.27 of the five possible options and only 5% participants invested all of their funds in a single option. This level of diversification was not anticipated in light of previous research that found individuals tend to invest the majority of their funds in a single option (Waggle & Englis, 2000). Thus, it appears that when making investment decisions for themselves, women, regardless of their demographic background and psychological predispositions, may have a better understanding of the principle of diversification than had previously been thought.

In addition to examining asset allocations, the types of information women considered on the self-investment task were investigated. Contrary to expectations, it was shown that neither the demographic variables nor the psychological variables were related to perceptions of information importance rating regarding plan characteristics. However, the age by goal clarity interaction (see Figure 6) and age by FTP interaction (see Figure 7) were significant predictors of importance ratings. For young women, goal clarity was negatively related to plan information importance ratings, and FTP was unrelated to importance ratings. In contrast, for older women, goal clarity was unrelated to ratings of the importance of information about the plan characteristics and FTP was negatively related to the importance ratings. Taken together, these findings indicate that efforts to inform women about various investment options should be tailored so that they target women based on their age and psychological predispositions.

When determining how funds should be allocated in the self-investment task, women considered 12 different pieces of information on average. Furthermore, 89.2% of participants considered their age, and 80.0% considered the number of years they had until they retired. This seems to indicate that young and old women understand that their age should play a role in how they invest their funds. However, younger women were more likely than older women to consider the level of risk associated with the accounts, which suggests that older individuals may be underestimating the importance of a critical aspect of the task (see Table 12). Older individuals that fail to focus on plan characteristics may inadvertently find themselves investing in plans with unacceptably high levels of risk, which could lead to a catastrophic loss in their nestegg that cannot be easily or quickly recovered. Therefore, when discussing retirement planning with older women, the importance of evaluating the risk associated with the options should be stressed. Although, younger women were more likely to consider typical return rates of the options, 25% of the women failed to consider this information. Therefore, in developing programs for younger women, retirement educators should encourage them to place a greater emphasis on the rate of return, and deemphasize the risk level of certain investments.

Taken together, findings from the self-investment task indicate that developmental differences exist not only in the way in which psychological variables are related to women's investment allocations, and but also information they consider when making those decisions. These findings suggests the effectiveness of retirement intervention programs could be increased if they were designed to target the specific needs of women.

General Discussion

In the present study women completed two qualitatively different investment tasks that were designed to answer very different research questions. However, several parallel findings emerged across the two tasks. One important similarity across the hypothetical investor and self-investment tasks was that age and knowledge had an impact on the level of risk women were willing to tolerate. In the hypothetical investor task, however, it was the hypothetical investors' age (not the age of the participant) that was found to interact with knowledge. This suggests that changes in risk tolerance are not necessarily a function of age, but rather, they may be based on one's knowledge and proximity to retirement. This conclusion is drawn based on the assumptions that if risk tolerance simply covaried with age, then in the hypothetical investor and self-investment tasks there should have been a significant direct effect of participants' age on allocation risk.

Comparison of the information considered across the two different types of investment decisions revealed several other important findings. First, across both types of investment tasks, women were likely to consider age, the number of years until retirement, and the risk level and return rate associated with the various investment options. This indicates that they were fully aware that personal and plan characteristics ideally play a role in how funds are invested. Second, across both tasks, the percentage of women that considered the risk level of the accounts was higher than the percentage that focused on the rates of return. This provides further support for the notion that women are more concerned with the risk of financial loss than they are with the potential for financial gain (Glass & Kilpatrick, 1998a). Third, the individual pieces of

information that were among the least likely to be considered were fairly consistent across the investment tasks.

These similarities across the tasks suggest that women use consistent information processing strategies when making investment decisions on behalf of hypothetical individuals and themselves. From an experimental standpoint, the implications of this are far reaching. One of the difficulties of conducting research on retirement planning is that without complex designs it is hard to draw cause and effect conclusions. This is because random assignment to conditions is not always an option. For instance, imagine a researcher who is interested in the effects of retirement goals on investment allocations. It would be unreasonable, and not to mention unethical, to randomly assign individuals to a high goal or low goal condition. However, one can use hypothetical scenarios in this type of study in which demographic and psychological variables have been systematically manipulated. By doing this, one can draw cause and effect conclusions, and on that basis have a greater understanding of the factors that underlie investment decisions. Once these factors are better understood, researchers can begin to build complex models that account for interrelations between the variables.

From a theoretical standpoint, the findings from this study stand to make several contributions to the literature on women's retirement planning behaviors. First, not only did age interact with knowledge to influence allocation decisions, but age also interacted with several of the psychological variables when examining the types of information women considered. This suggests that when developing theories of retirement planning, not only should the effects of demographic and psychological variables be considered, but also the dynamic interrelationships between these two classes of variables needs to be

evaluated. Second, it was demonstrated that many of the variables shown in previous research to be related to men's investment decisions did not correspond with the effects witnessed in this investigation. This raises serious questions about the generalizability of previous research findings, which have largely been based on a "male model" of retirement planning. This suggests that future theoretical models must account for gender differences if they are to provide an accurate depiction of the factors that influence allocation behaviors. Third, the present project was unique in that it examined the different types of information women use to make investment allocation, thus shedding light on the thought processes that underlie financial decisions. Understanding these thought processes could represent one key to identifying why biases associated with women's investments exist.

From an applied perspective, the present study offers suggestions as to how women's retirement planning and investing practices could be improved. First, financial planning practitioners and retirement counselors should consider adjusting existing programs to address the unique needs and concerns of women. For example, rather than taking an "all men and women are created equal" approach to retirement education, programs could be designed to target specific segments of women. Programs could be developed for say young, risk averse, low knowledge women, that would not only provide them with a clear understanding of the various aspects of investing but also address their tendency to be overly reliant on "safe" investments. Second, marketing professionals and investment firms should be encouraged to develop messages aimed at women designed to increase involvement in the retirement planning process. These messages, for example, could depict women of different ages and knowledge levels who

are actively planning and saving for the future. Investment firms in particular could develop protocols specifically for women (based on the their age, knowledge, and risk tolerance) that would help them to better understand the nature of their investments as well as the implications their decisions will have on their future nestegg. A third applied implication of this work is that employers could assist women with retirement planning by offering special seminars designed to provide them with a basic level of financial knowledge. Although employers who offer defined contribution plans provide employees with written information about the plans, women often find the details to be confusing and focused toward males (Glass & Kilpatrick, 1998b). It would be beneficial to have employers supplement these materials with brief (or even extended) discussions to help clarify women's misconceptions and aid them in making more informed decisions. In practice, the suggestions made above should help ensure that fewer women will encounter poverty in old age.

Limitations and Future Directions

There are several limitations associated with the present study. First, in the ANOVA analyses for the hypothetical investor task, for many of the tests there was relatively low power to detect significant effects. One reason for this is that the effect sizes used to compute the sample size were based on previous studies that focused on men, which could have led to an overestimation of the expected effects for women. However, as seen in Tables 2–9, in many cases it is not clear that if the power levels were higher statistically significant meaningful effects would have been identified. This conclusion is based on the relatively small eta-square values associated with many of the

tests. Nonetheless, this reinforces the fact that in future studies, issues surrounding power and effect size need to be given careful consideration.

One possible confound associated with the present study is that the measure of subjective risk tolerance was taken after participants completed the two investment tasks. It is possible that the process of making the investment decisions could have colored individuals' perceptions of risk tolerance and thus, their subjective ratings. In future studies, researchers might want to consider counterbalancing the placement of tasks and self-report measures to better ensure that possible carryover effects would be minimized.

One import issue that has been overlooked thus far, is the possible influence of historical events surrounding the timing of the present study. The data were collected during a time when the economy of the United States and the stock market were in a decline. Many Americans (and presumably some study participants) had lost substantial retirement savings. This could have affected individuals' investment strategies by leading them to adopt a more conservative stance (as opposed to times when the stock market and the economy had been stable or rising). It would be interesting to conduct a follow-up study during a period when the economy is rising (or stable) to determine whether time-of-measurement effects influenced the present findings (Donaldson & Horn, 1992).

A fourth limitation of the study is that it was based on a pair of hypothetical investment tasks rather than on individuals' actual allocation decisions. It is possible that when making actual investment decisions for themselves, individuals would make different types of allocations. In real world investment decisions, the psychological risks (of both gains and losses) are presumably greater, which may alter not only the risk

profile of an investor's portfolio but also, the types of information the individual considers when investing. Therefore, researchers should strive to investigate actual retirement investment decisions whenever possible despite the fact that it is difficult to accomplish (Bernheim et al., 1997).

One of the clear strengths of the present study was that it focused on the topic of women's investment strategies. However, this also represents a limitation in the sense that there was not a reference group to which women's performance could be compared. Having equal numbers of men and women in future studies could provide greater insights into the nature of gender differences associated with retirement planning and investing. This, in turn, could lead to the refinement of intervention techniques designed to stimulate the savings practices of men and women.

Conclusions

In sum, the findings from this study offer unique insights into developmental differences in the strategies women use when making retirement investment decisions. Given that many American women will find themselves unable to financially support themselves in retirement due to a lack of personal savings, research of this nature represents an important step toward understanding the reasons behind women's planning insufficiencies. The two most common reasons women give for not planning include a lack of knowledge, and the dependence on others to make financial decisions on their behalf. Unfortunately, high divorce rates in the United States combined with the fact most women live longer than men, suggest that many women would be well advised to cultivate their financial independence by becoming more actively involved in the planning process.

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Table 1

Means and Standard Errors (in parentheses) of Demographic and Psychological Variables Shown as a Function of Age Group

	Age Group	
Variable	Young	Old
Income (thousands of dollars)	61.22 (3.33)	65.89 (3.64)
Years of Education	16.06 (.32)	16.58 (.37)
Knowledge	3.21 (.16)	3.65 (.19)
Goal Clarity*	3.82 (.18)	4.48 (.19)
FTP	4.66 (.13)	4.97 (.14)
Risk Tolerance	3.83 (.11)	3.70 (.11)

*$p < .05$

Table 2

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on Allocation Risk Scores

Source	df	F	p	η	Power
Between					
Participant Age (PA)	1	1.37	.24	.01	.21
Knowledge (K)	1	2.85	.09	.02	.39
PA x K	1	0.00	.998	.00	.05
Error	126	(0.722)			
Within					
Investor Age (IA)	1	21.38	.01*	.15	1.0
PA x IA	1	1.10	.30	.01	.18
IA x K	1	4.74	.03*	.04	.58
PA x IA x K	1	0.09	.76	.01	.06
Error	126	(45.34)			

Note. Values enclosed in parentheses represent mean square error. * $p < .05$

Table 3

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on Number of Investment Plans Selected

Source	df	F	p	η	Power
Between					
Participant Age (PA)	1	0.53	.47	.00	.11
Knowledge (K)	1	1.55	.22	.01	.24
PA x K	1	2.05	.16	.02	.30
Error	126	(0.36)			
Within					
Investor's Age (IA)	1	6.73	.01*	.05	.73
PA x IA	1	0.97	.33	.01	.16
IA x K	1	1.59	.21	.01	.24
PA x IA x K	1	0.472	.47	.00	.11
Error	126	(0.43)			

Note. Values enclosed in parentheses represent mean square error. $*p < .05$

93

Table 4

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on the Importance Rating for Demographic Information

Source	df	F	p	η	Power
Between					
Participant Age (PA)	1	0.02	.88	.00	.05
Knowledge (K)	1	1.62	.21	.01	.24
PA x K	1	0.05	.83	.00	.06
Error	126	(368.12)			
Within					
Investor's Age (IA)	1	7.45	.01*	.06	.77
PA x IA	1	0.02	.89	.00	.05
IA x K	1	0.02	.89	.00	.05
PA x IA x K	1	0.60	.44	.00	.12
Error	126	(148.26)			

Note. Values enclosed in parentheses represent mean square error. * $p < .05$

Table 5

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on Importance Ratings for Retirement Specific Information

Source	df	F	p	η	Power
		Between			
Participant Age (PA)	1	0.71	.40	.01	.13
Knowledge (K)	1	0.58	.45	.01	.12
PA x K	1	0.87	.35	.01	.15
Error	126	(317.38)			
		Within			
Investor's Age (IA)	1	4.52	.04*	.04	.56
PA x IA	1	2.78	.10	.02	.38
IA x K	1	0.60	.44	.01	.12
PA x IA x K	1	0.21	.65	.00	.07
Error	126	(123.72)			

Note. Values enclosed in parentheses represent mean square error. *$p < .05$

Table 6

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on Importance Ratings for Plan Information

Source	df	F	p	η	Power
			Between		
Participant Age (PA)	1	0.34	.56	.00	.09
Knowledge (K)	1	3.37	.07	.03	.45
PA x K	1	1.01	.32	.01	.17
Error	126	(427.92)			
			Within		
Investor's Age (I)	1	.64	.43	.01	.12
PA x IA	1	1.96	.16	.02	.28
IA x K	1	0.33	.56	.00	.09
PA x IA x K	1	0.13	.72	.00	.07
Error	126	(144.56)			

Note. Values enclosed in parentheses represent mean square error.

Table 7

Effects of Age of Participant, Knowledge Level, and Age of Hypothetical Investor on Number of Cues Considered

Source	df	F	p	η	Power
		Between			
Participant Age (PA)	1	0.01	.93	.00	.05
Knowledge (K)	1	0.44	.51	.00	.10
PA x K	1	0.36	.55	.00	.09
Error	126	(38.36)			
		Within			
Investor's Age (IA)	1	2.42	.12	.02	.34
PA x IA	1	0.43	.51	.00	.10
IA x K	1	1.28	.26	.01	.20
PA x IA x K	1	0.62	.72	.01	.12
Error	126	(2.59)			

Note. Values enclosed in parentheses represent mean square error.

Table 8

Percentage of Young and Old Women that Selected Items on the Information Checklist for the Hypothetical Investor Task

	Hypothetical Investors' Age			
	Young		Old	
	Participants' Age Group		Participants' Age Group	
Item	Young	Old	Young	Old
Demographic Information				
Age	87.5	98.4	87.5	96.9
Marital Status	39.1	46.9	39.1	32.8
Employment Status	51.6	48.4	40.6	40.6
Occupation	26.6	35.9	25.0	21.9
Income	64.1	60.9	64.6	50.0
Number of Children	37.5	25.0	31.3	20.3
Housing Arrangements	34.4	31.3	45.3	35.9
Health Status	42.2	37.5	51.1	40.6
Other Assets	29.7	21.9	29.7	32.8
Retirement Specific Information				
Age Plan to Retire	62.5	65.6	67.2	71.9
Years from Retirement	82.8	87.5	79.7	89.1
Age Soc. Sec. Benefits	23.4	29.7	31.3	43.8
Projected Soc. Sec Benefits	20.3	34.4	40.6	46.9
Age Began Saving	46.9	46.9	34.4	37.5

Table 8 (cont.)

Percentage of Young and Old Women that Selected Items on the Information Checklist for the Hypothetical Investor Task

	Hypothetical Investors' Age			
	Young		Old	
	Participants' Age Group		Participants' Age Group	
Item	Young	Old	Young	Old
Type Current Ret. Savings	39.1	37.5	35.6	45.3
Value of Ret. Savings	45.3	40.6	59.3	68.8
Retirement Goals	56.3	56.3	56.3	54.7
Amount to Invest	40.6	34.4	39.1	39.1
Investment Plan Information				
General Summary	60.9	59.4	60.9	60.9
Level of Risk	79.7	82.8	87.5	93.8
Rate of Return	75.0	65.6	71.8	54.7
5-year return	29.7	34.4	35.9	31.3
10-year return	48.4	51.6	53.1	45.3

Table 9

Standardized Beta Weights from Regression Analysis of Allocation Risk Scores for the Self-Investment Task

Variable	β	t	p
Level 1			
Age	.02	.24	.81
Income	.16	1.40	.16
Marital Status	-.12	-1.15	.25
Education	.07	.72	.47
Level 2			
Knowledge	.06	.55	.58
Goal Clarity	-.40	-.36	.72
FTP	.11	120	.24
Risk Tolerance	.50	5.50	.01*
Level 3			
Age x Knowledge	-.32	-3.19	.01*
Age x Goal Clarity	.10	.82	.41
Age x FTP	-.16	-.37	.74
Age x Risk Tolerance	-.02	-.20	.85

*$p < .05$

Table 10

Standardized Beta Weights for Analysis of Plan Characteristics Importance Ratings on the Self-Investment Task

Variable	β	t	p
Level 1			
Age	.04	.46	.65
Income	.03	.21	.83
Marital Status	-.07	-.66	.51
Education	-.01	-.08	.94
Level 2			
Knowledge	-.06	-.46	.64
Goal Clarity	-.07	-.52	.60
FTP	-.07	-.67	.51
Risk Tolerance	-.06	-.57	.57
Level 3			
Age x Knowledge	-.05	-.46	.65
Age x Goal Clarity	.39	2.87	.01*
Age x FTP	-1.63	-3.13	.01*
Age x Risk Tolerance	-.13	-1.22	.23

*$p < .05$

Table 11

Percentage of Young and Old Women that Selected Items on the Information Checklist for the Self-Investment Task

| | Age Group | | |
Item	Young	Old	Total Sample
Demographic Information			
Age	90.8	87.7	89.2
Marital Status	46.2	47.7	46.9
Employment Status	47.7	40.0	43.9
Occupation	24.6	16.9	20.8
Income	64.6	61.5	63.1
Number of Children	44.6	21.5	33.1
Housing Arrangements	46.2	36.9	41.5
Health Status	41.5	33.9	37.7
Other Assets	35.4	35.4	35.4
Retirement Specific Information			
Age Plan to Retire	73.9	67.7	70.8
Years from Retirement	78.5	81.5	80.0
Age Soc. Sec. Benefits	29.2	44.6	36.9
Projected Soc. Sec Benefits	30.8	49.2	40.0
Age Began Saving	44.6	33.9	39.2
Type Current Ret. Savings	56.9	56.9	56.9
Value of Ret. Savings	61.5	56.9	59.2
Retirement Goals	61.5	44.6	53.1

102

Table 11 (cont.)

Percentage of Young and Old Women that Selected Items on the Information Checklist for the Self-Investment Task

Item	Age Group		Total Sample
	Young	Old	
Retirement Specific Information (cont.)			
Amount to Invest	40.0	24.6	32.3
Investment Plan Information			
General Summary	64.6	63.1	63.9
Level of Risk	95.4	86.2	90.8
Rate of Return	81.5	70.8	76.2
5-year return	33.9	43.1	38.5
10-year return	56.9	47.7	52.3
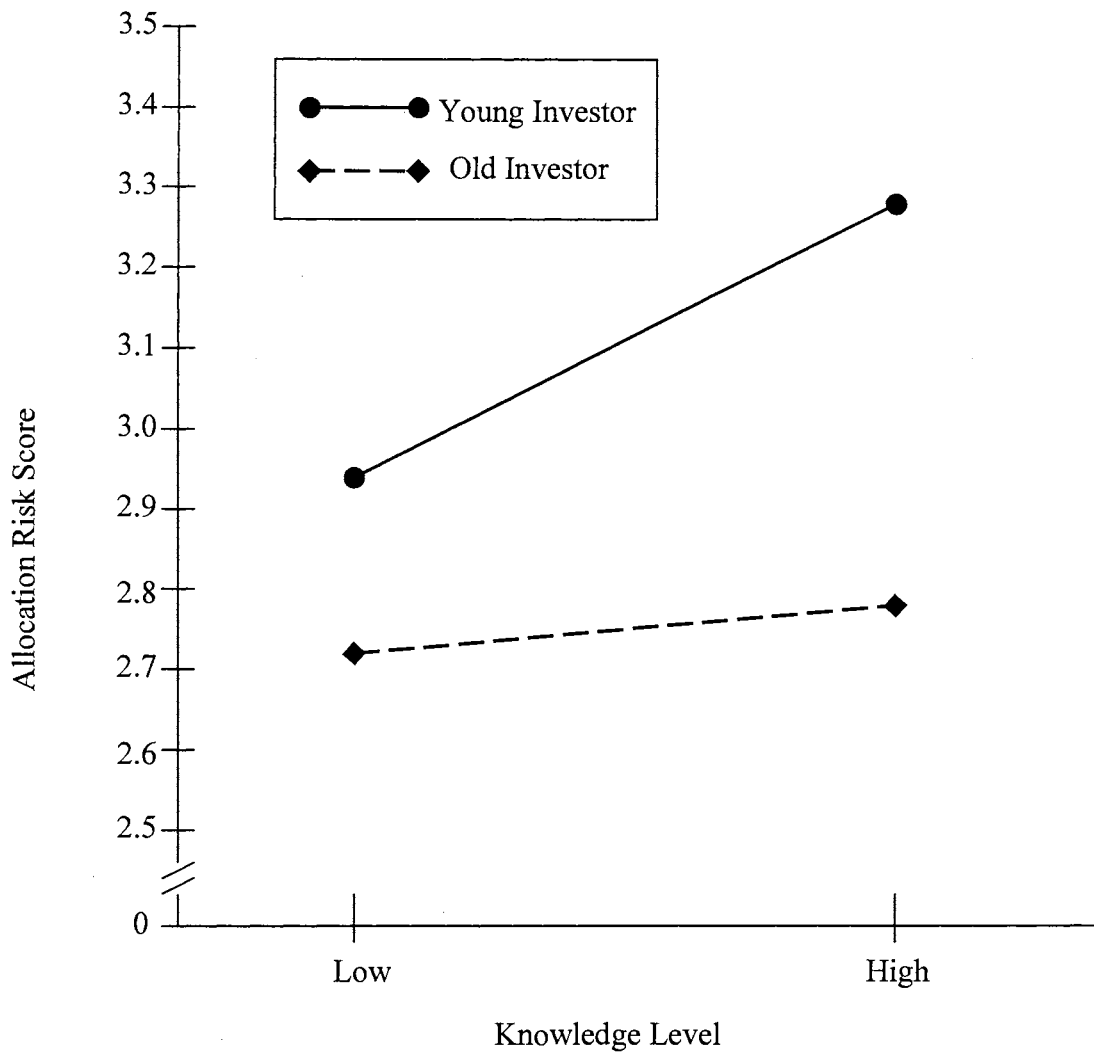
Figure 1. Simple effects of knowledge on allocation risk scores for the young and old hypothetical investor
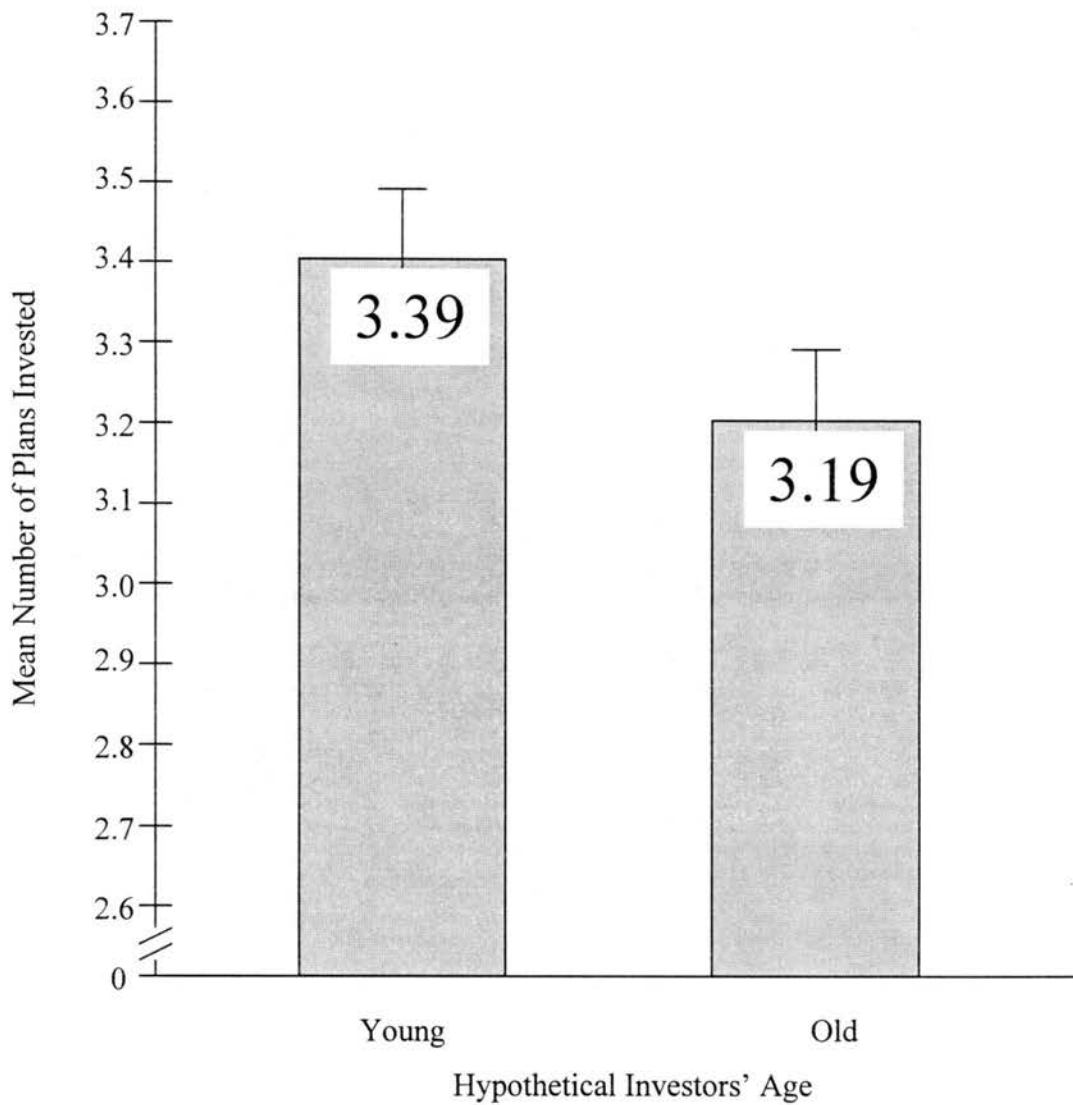
Figure 2. Main effect of hypothetical investors' age on the number of plans across which funds were invested. Bars represent the standard error of the mean.
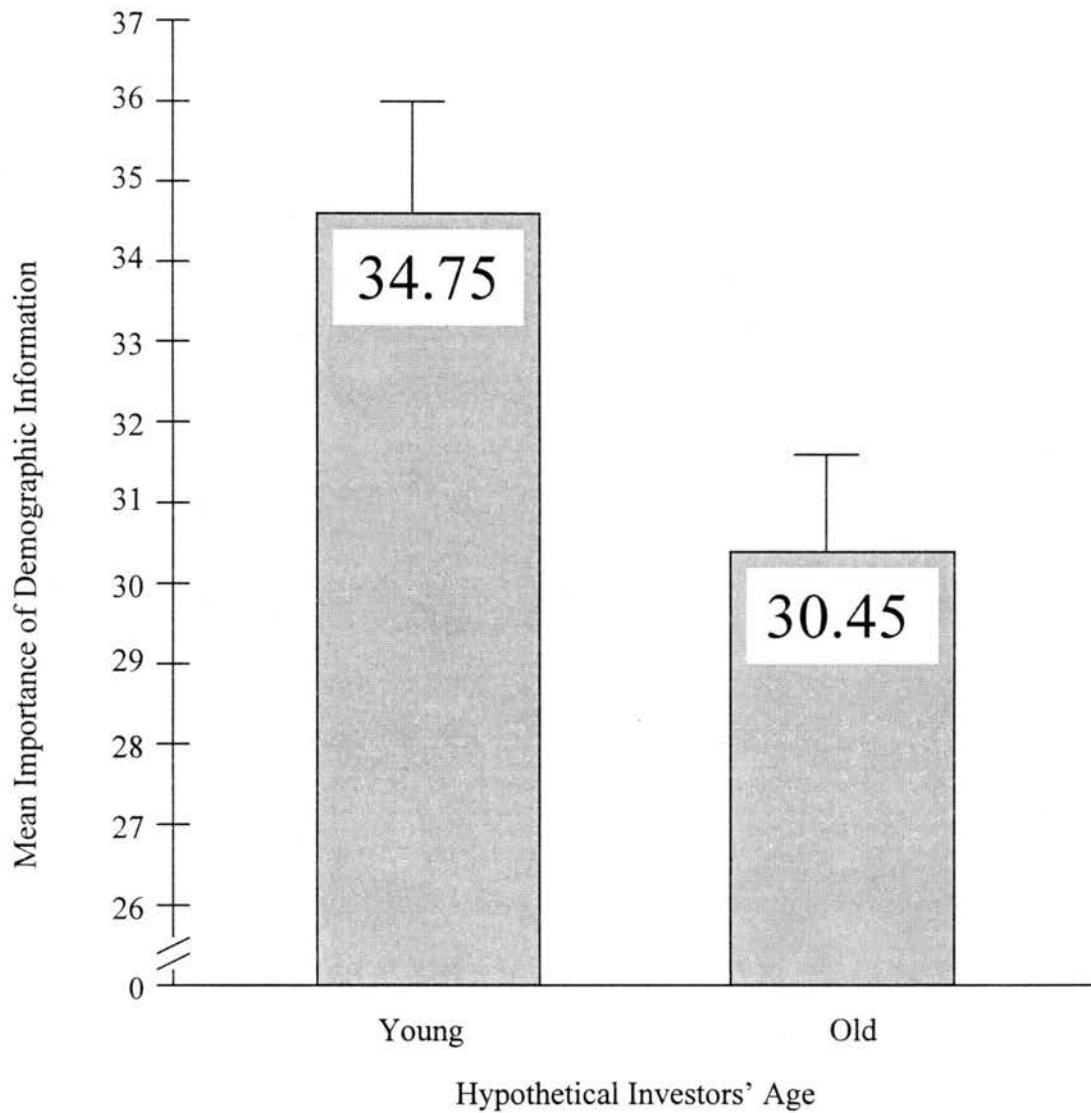
Figure 3. Main effect of hypothetical investors' age on importance ratings for demographic information.
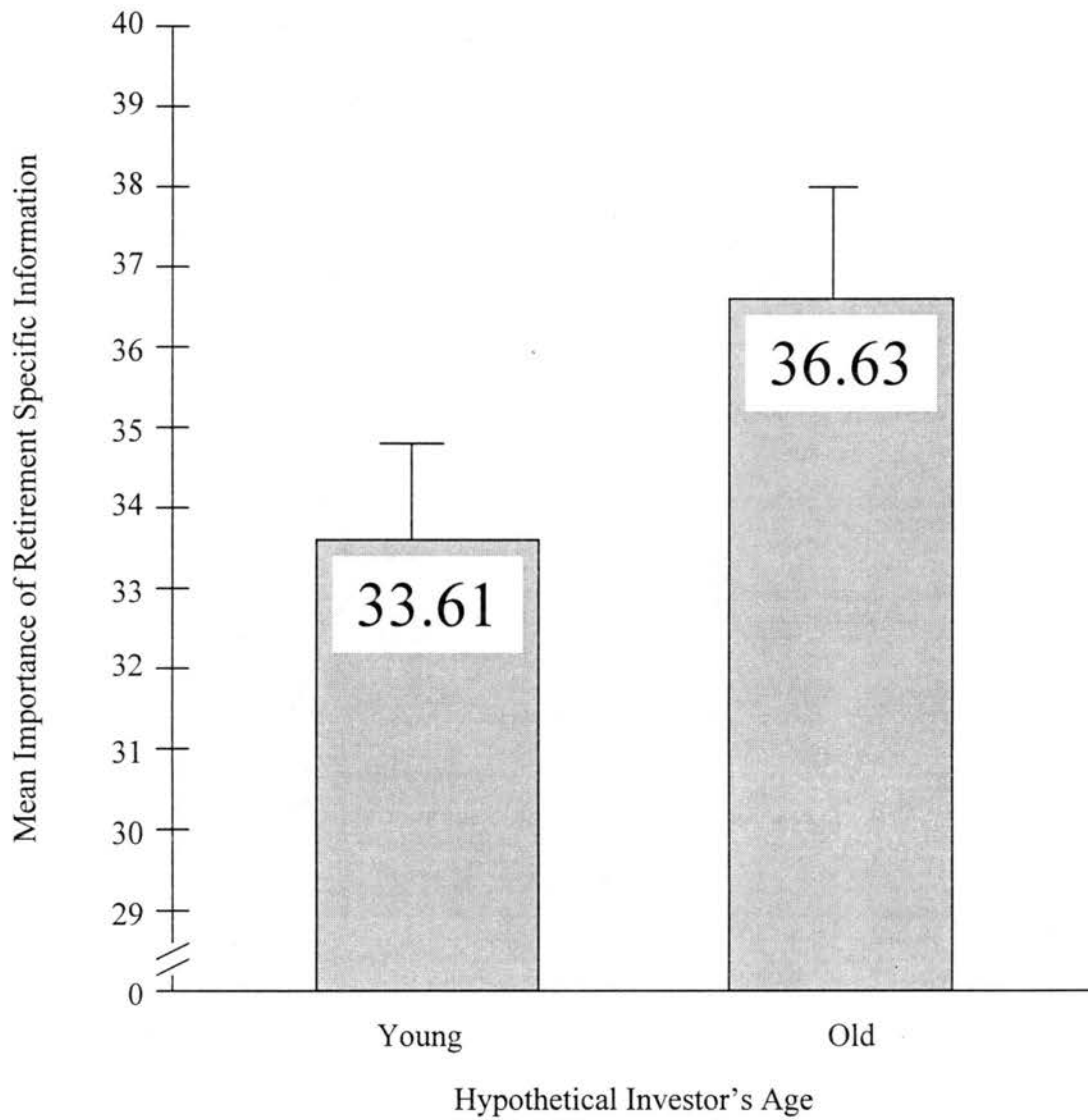
Figure 4. Main effect of hypothetical investors' age on importance ratings for retirement specific information. Bars represent the standard error of the mean.
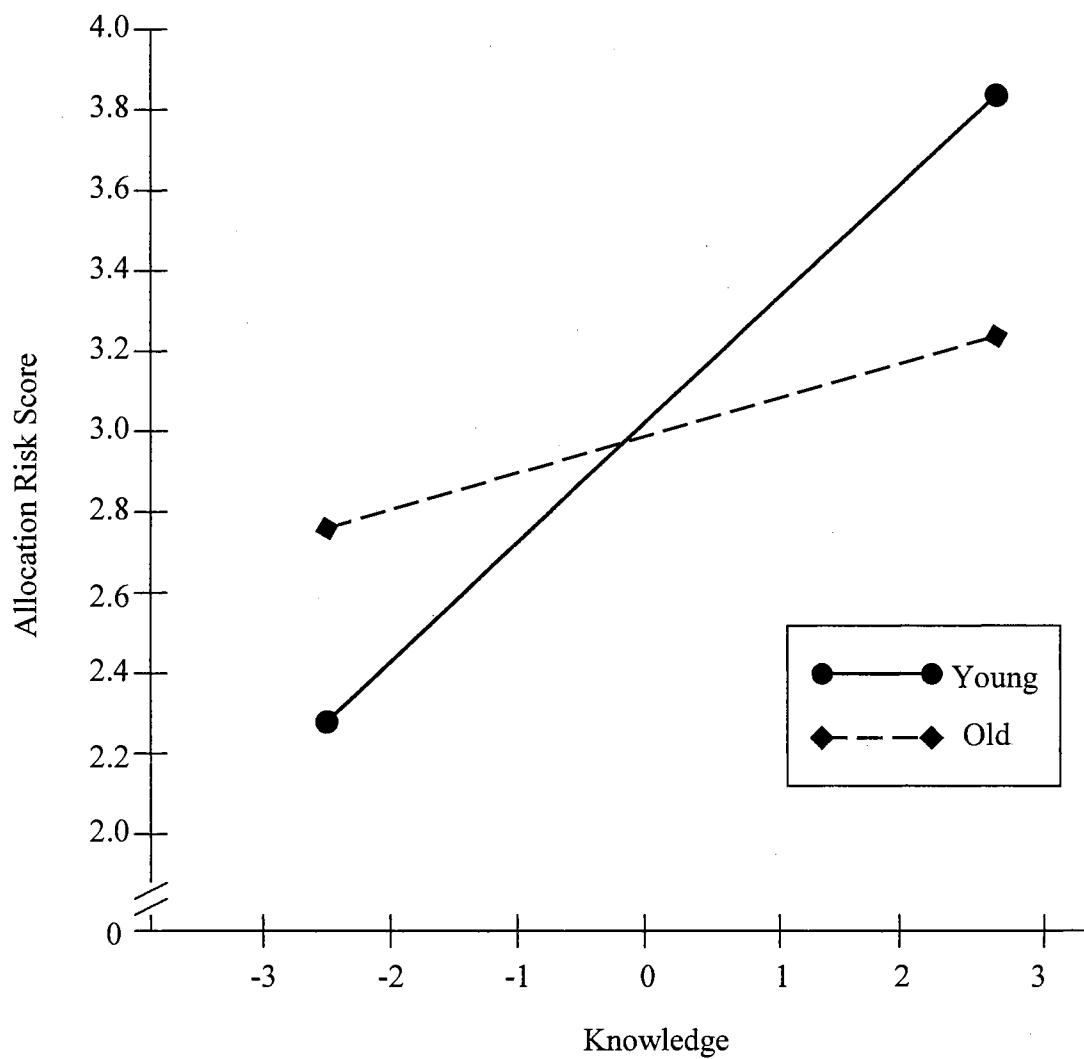
Figure 5. Simple slope analysis of the interaction between age and knowledge of retirement planning on allocation risk for the self-investment task.
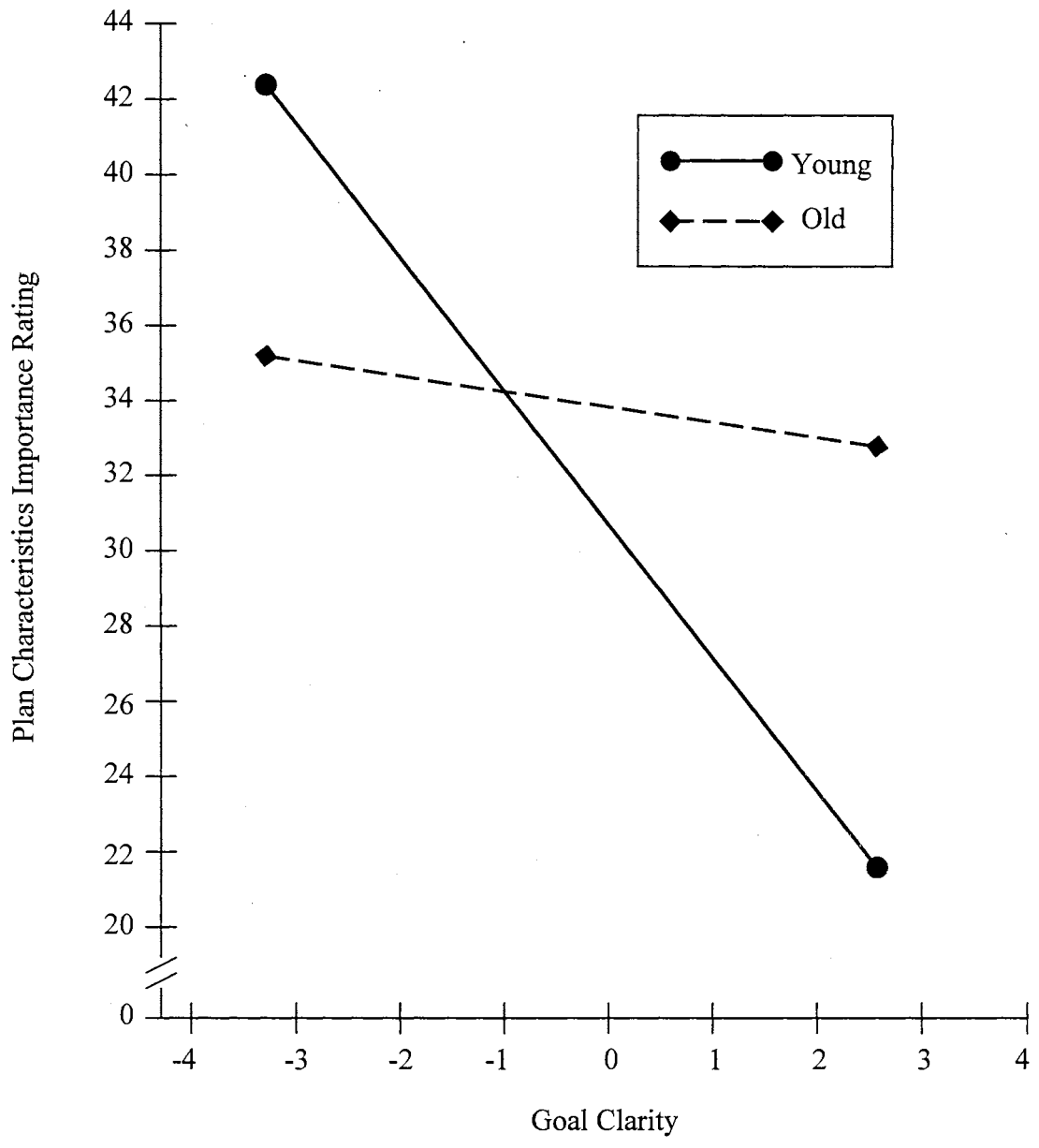
Figure 6. Simple slope analysis of the interaction between age and goal clarity on ratings of the importance of plan characteristics for the self-investment task.
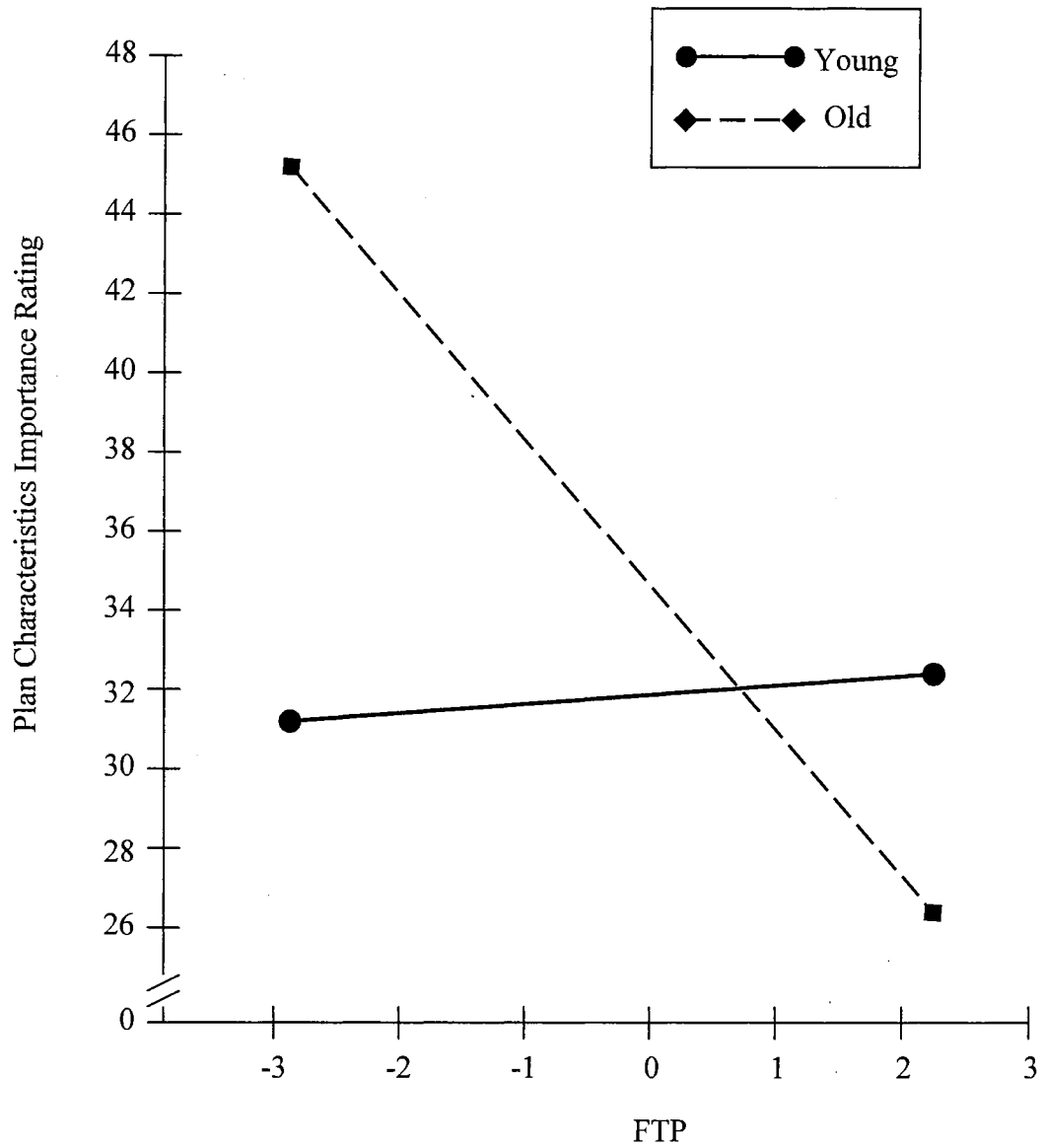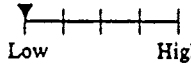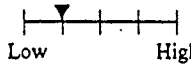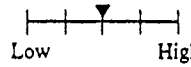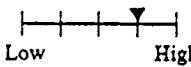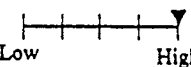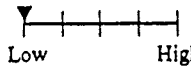
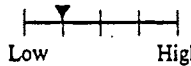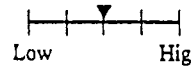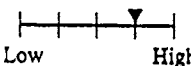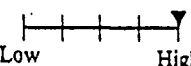*Figure 7.* Simple slope analysis of the interaction between age and FTP on ratings of the importance of plan characteristics for the self-investment task.

110

This chart provides the details of the five investment plans within the IRA. In the row labeled Percentage of Investment Allocation, which is highlighted in yellow, please write in the percentage of the $2,000 you think the hypothetical investor should contribute to each plan. Please be sure the percentages total 100%.

	Plan A	Plan B	Plan C	Plan D	Plan E
General Summary of Investment Type	Contributions to this plan are invested in government securities such as Treasury Bills and short-term government loans. This plan is similar to a traditional savings account, but it tends to yield higher rates of return than savings accounts. This plan will generally keep up with the rate of inflation.	Contributions to this plan are invested in high and medium quality fixed income securities and bonds. Investments are typically diversified across many different companies or governmental agencies. The bonds are often bought and sold rather than being held to maturity. In general, the rate of return increases when interest rates fall, and decreases when interest rates rise.	Contributions to this plan are invested in the stock market with companies that have been shown to perform well and have an above average investment potential. Returns associated with this option will fluctuate with the stock market. Due to diversification of investments, it is unlikely that the changes in any one sector of the market will have a large impact on the value of the investment.	Contributions to this plan are invested in the stock market. Shares are typically purchased and sold based on fluctuations in the S&P 500, therefore, holdings are subject to change daily. Generally, the equities in this account consist of some subset of 500 large companies that have been shown to perform well in the market.	Contributions to this plan are generally invested in companies that have a strong potential for growth, or appear to be undervalued in relation to current earnings or expected growth. Companies represented are typically small to medium in size (some larger firms may be included), and they are often either new in the stock market, have distinctive products, or are uniquely poised to take advantage of promising market conditions.
Typical Rate of Return	Low —————— High	Low —————— High	Low —————— High	Low —————— High	Low —————— High
5 Year Average Return	4.7%	7.3%	9.8%	12.7%	15.2%
10 Year Average Return	5.0%	7.8%	10.1%	13.5%	16.1%
Risk of Loss	Low —————— High	Low —————— High	Low —————— High	Low —————— High	Low —————— High
Percentage of Investment Allocation					

APPENDIX A: ASSET ALLOCATION WORKSHEET

APPENDIX B

HYPOTHETICAL INVESTOR PROFILE SHEETS

Below is a description of a hypothetical investor that has $2,000 to invest for retirement. Your task is to recommend how this individual should allocate the funds among five different IRA investment options. You may allocate the funds any way that feel is appropriate. You do not have to invest all of the money in a single option, nor do you have to invest in each option. Simply enter the percentage of the $2,000 you think the investor should contribute to each account in the investment allocation row of the Asset Allocation Worksheet on the following page. Before you make your decision please, review the characteristics of individual described in the Investor Profile Summary, below.

Investor Profile Summary

Age	35
Marital Status	Single; never been married
Employment Status	Works full-time
Occupation	Paramedic
Annual Income	$34,072
Number of children	None
Housing Arrangement	Homeowner; 29 years left on mortgage
Health Status	Good; healthy diet, regular exerciser
Age Planning to Retire	67
Years until Retirement	32
Age to Receive Full Social Security Benefits	67
Projected Monthly Social Security Benefits (if retires at age 67)	$1,227
Age Began Saving for Retirement	25
Type of Current Retirement Savings Plan	Company Sponsored 401(k) Plan
Current Value of Retirement Savings Plan	$19,404 (based on investor *and* company contributions)
Retirement Goals	Retire in comfort. Hopes to not be limited by a lack of income.
Other Savings (other than retirement savings)	Approximately $3000
Amount to be Invested in an IRA	$2000

Below is a description of a hypothetical investor that has $2,000 to invest for retirement. Your task is to recommend how this individual should allocate the funds among five different IRA investment options. You may allocate the funds any way that feel is appropriate. You do not have to invest all of the money in a single option, nor do you have to invest in each option. Simply enter the percentage of the $2,000 you think the investor should contribute to each account in the investment allocation row of the Asset Allocation Worksheet on the following page. Before you make your decision please, review the characteristics of individual described in the Investor Profile Summary, below.

Investor Profile Summary

Age	55
Marital Status	Single; never been married
Employment Status	Works full-time
Occupation	Paramedic
Annual Income	$39,510
Number of children	None
Housing Arrangement	Homeowner; 10 years left on mortgage
Health Status	Good; healthy diet, regular exerciser
Age Planning to Retire	66
Years until Retirement	11
Age to Receive Full Social Security Benefits	66
Projected Monthly Social Security Benefits (if retires at age 66)	$1,313
Age Began Saving for Retirement	25
Type of Current Retirement Savings Plan	Company Sponsored 401(k) Plan
Current Value of Retirement Savings Plan	$237,534 (based on investor's *and* company's contributions)
Retirement Goals	Retire in comfort. Hopes to not be limited by a lack of income.
Other Savings (other than retirement savings)	Approximately $3000
Amount to be Invested in an IRA	$2000

APPENDIX C

SELF-INVESTMENT TASK INVESTOR PROFILE SHEET

Now imagine that you (*not a hypothetical investor*) have $2,000 to invest for retirement. As in the previous two decisions, you are able to allocate the funds over the five accounts in any way you feel would best suit your needs. Remember, you do not have to invest all of the money in a single option. Simply enter the percentage of the $2000 you would like to see go in each account in the investment allocation row of the Asset Allocation Worksheet on the following page. Before you make your decision you may want to imagine how you would fill out the profile sheet below (You do not have to actually fill out the sheet):

Age	
Marital Status	
Employment Status	
Occupation	
Annual Household Income	
Number of children	
Housing Arrangement	
Health Status	
Age Planning to Retire	
Years until Retirement	
Age to Receive Full Social Security Benefits	
Projected Monthly Social Security Benefits	
Age Began Saving for Retirement	
Type of Current Retirement Savings Plan	
Current Value of Retirement Savings Plan	
Retirement Goals	
Other Savings (other than retirement savings)	
Amount to Invest in an IRA	$2000

INFORMATION TYPE RATING SHEET

In the investment decision you just completed there were three basic categories of information presented: (1) demographic information about the investor, (2) information about the investor's retirement plans and goals, and (3) information about the different investment plans. Imagine that you have 100 points to divide among these three types of information to indicate how important each was in your decision. Give the most important dimension the most points, and the least important dimension the fewest points. If you did not consider any of the information in a particular area, then give that dimension a score of zero. Write the number of points for each of the three dimensions in the space provided.

_____ Demographic Information

Age
Marital Status
Employment Status
Occupation
Income
Number of children
Housing Arrangement
Health Status
Other Assets

_____ Retirement Specific Information

Age Planning to Retire
Years from Retirement
Age to Receive Full Social Security Benefits
Projected Monthly Social Security Benefits
Age Began Saving for Retirement
Type of Current Retirement Savings Plan
Current Value of Retirement Savings Plan
Retirement Goals
Amount Available to Invest

_____ Investment Plan Information

General Summary of Investment Type
Level of risk associated with each plan
Typical rate of return associated with each plan
5-year average rate of return
10-year average rate of return

INFORMATION CHECKLIST

Please indicate below the information you considered when deciding how the $2,000 should be distributed across the five plans. Place an "X" on the line if you felt the information was important. If you did not consider a particular piece of information, simply leave the space blank.

Demographic Information

_____ Age
_____ Marital Status
_____ Employment Status
_____ Occupation
_____ Income
_____ Number of children
_____ Housing Arrangement
_____ Health Status
_____ Other Assets

Retirement Specific Information

_____ Age Planning to Retire
_____ Years from Retirement
_____ Age to Receive Full Social Security Benefits
_____ Projected Monthly Social Security Benefits
_____ Age Began Saving for Retirement
_____ Type of Current Retirement Savings Plan
_____ Current Value of Retirement Savings Plan
_____ Retirement Goals
_____ Amount to be Invested in an IRA

Investment Plan Information

_____ General Summary of Investment Type
_____ Level of risk associated with each option
_____ Typical rate of return associated with each option
_____ 5-year average return rate
_____ 10-year average return rate

APPENDIX F

PSYCHOLOGICAL SURVEY ITEMS

Table 12

Items Used to Measure Each Psychological Construct

Knowledge of Retirement Planning and Investing

I am very knowledgeable about financial planning for retirement.

I know more than most people about retirement planning.

I am very confident in my ability to do retirement planning.

When I have a need for financial services, I know exactly where to obtain information on what to do.

I am knowledgeable about how Social Security works.

I am knowledgeable about how private investment plans work.

I am very knowledgeable about investing for retirement.

I have a very good understanding of the stock market.

I am confident in my ability to make retirement investment decisions.

I know the risks and potential return rates of various types of retirement investment vehicles.

When investing for retirement, I am more comfortable allowing someone else to make all the decisions. (R)

I have a very good understanding of low-risk investments such as real estate, bonds, and treasury bills.

I have a very good understanding of high-risk investment such as high growth stocks.

Goal Clarity

Set clear goals for gaining information about retirement.

Thought a great deal about quality of life in retirement.

Set specific goals for how much will need to be saved for retirement.

Have a clear vision of how life will be in retirement.

Discussed retirement plans with a spouse, friend, or significant other.

FTP

I follow the advice to save for a rainy day.

I enjoy thinking about how I will live years in the future.

The distant future is too uncertain to plan for. (R)

Table 12 (cont.)

Items Used to Measure Each Psychological Construct

Future Time Perspective (cont.)

  The future seems very vague and uncertain to me. (R)

  I pretty much live on a day-to-day basis. (R)

  I enjoy living for the moment and not knowing what tomorrow will bring. (R)

Subjective Risk Tolerance

  I prefer a "sure thing" over a gamble when planning for retirement.

  I am willing to risk financial losses.

  I prefer investments that have higher returns even though they are riskier.

  The overall growth potential of an retirement investment is more than the risk level of the investment.

  I am very willing to make risky investments to ensure financial stability in retirement.

  As a rule, I would never choose the safest investment when planning for retirement.

Note: (R) means this item is reverse scored

APPENDIX G

IRB APPROVAL FORM

Oklahoma State University
Institutional Review Board

Protocol Expires: 2/27/03

Date: Thursday, February 28, 2002   IRB Application No AS0241

Proposal Title: INFLUENCE OF AGE AND GENDER ON INVESTMENT DECISIONS

Principal
Investigator(s):

Joy Jacobs-Lawson   Douglas Hershey
215 N. Murray   201 N Murray
Stillwater, OK 74078   Stillwater, OK 74078

Reviewed and
Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved
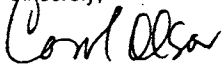

Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive Secretary to the IRB, in 203 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,

Carol Olson, Chair
Institutional Review Board

119

VITA

Joy M. Jacobs-Lawson

Candidate for the Degree of

Doctor of Philosophy

Thesis: INFLUENCES OF AGE AND INVESTOR CHARACTERISTICS ON
WOMEN'S RETIREMENT INVESTMENT DECISIONS

Major Field: Psychology

Biographical:

Education: Received Bachelor of Arts degree in Psychology from Bellarmine
College, Louisville, Kentucky in December 1997. Received Masters
of Science degree in Psychology at Oklahoma State University in
May 2001. Completed the requirements for the Doctor of Philosophy
degree with a major in Psychology at Oklahoma State University in
August 2003.

Professional Memberships: Gerontological Society of America, American
Psychological Society, American Psychological
Association, Society of Judgment and Decision
Making.