

LOW-INCOME EMPLOYEES: THE RELATIONSHIP BETWEEN FINANCIAL
BEHAVIORS AND INFORMATION FROM FORMAL ADVISORS

By

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(Under the Direction of Lance Palmer PhD)

ABSTRACT

This study examined the relationship between low-income employees' use of information from a formal advisor and their financial behaviors. A second goal was to determine if the financial behaviors of low-income employees differed from those of employees in other income segments of the workforce. A unique contribution of this study was that the income segmentation was determined by a combination of household size and income to more accurately capture an employee's financial burden. The conceptual framework underlying this study was the Andersen Behavioral Model which was adapted to financial services. This model suggests that financial information or financial services from financial professionals would have a positive influence on the financial status of an individual. Data for this study came from the 2007 Survey of Consumer Finances which was sponsored by the Board of Governors of the Federal Reserve System in conjunction with the U.S. Department of the Treasury. Furthermore, ordered logistic regression models were used to analyze data and test the study's hypotheses. The researcher found that the financial behaviors of low-income employees were significantly different from and less acceptable than the financial behaviors of middle-income and high-income employees. Likewise, the researcher found that there is a significant and positive relationship between the use of

information from a formal advisor and the acceptable financial behaviors of low-income employees.

INDEX WORDS: financial behaviors, low-income employees, formal advisor, and financial information

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DEDICATION

I'd like to dedicate this work to my family who has supported me unconditionally. I would first like to dedicate this work to my grandmother, Alice M. Austin, who was the rock of my family and who taught me to value and love education. Next I would like to dedicate this work to my mother Velma L. Harris who loves me unconditionally and who has always been proud of me no matter what avenue I pursued in life. I would like to dedicate this work to my brothers and sisters, Kim, Benny, Elania, Andre' and Aaron and my host of nieces and nephews who have always loved and supported me.

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CHAPTER 1

INTRODUCTION

Employees now must take greater responsibility for planning their financial futures, due to a transition in the retirement plan environment. Over the last few decades, American corporations have transitioned from a primarily defined benefit environment to a defined contribution environment, largely due to the substantial and uncertain mandatory expense associated with defined benefit plans (Garman & Kim, 2003; Gonyea, 2007; Krajnak, Burns, & Natchek, 2008). In a defined benefit pension plan the employer is responsible for providing retirement income to the employee and therefore bears the investment risk associated with the retirement investment portfolio (Olsen & VanDerhei, 1997). While the employee and employer may both contribute to the retirement plan, the employer is ultimately responsible to make up financial shortfalls in the plan (Olsen & VanDerhei, 1997). In contrast, a defined contribution plan shifts the majority of the responsibility and the risk associated with retirement savings from the employer to the employee (Garman & Kim, 2003; Gonyea, 2007; Olsen & VanDerhei, 1997). Consequently, employees must now decide how much to save, when to save, how to invest their funds, and how to prepare adequately for retirement (Gonyea, 2007). In other words, now employees have a much greater responsibility to plan and prepare for their own overall financial futures (Garman & Kim, 2003; Shier & Kim, 2007).

However, many employees were not prepared for this transition or additional responsibility, and little education was provided to prepare them (Garman & Kim, 2003). Furthermore, employees have confided that they are increasingly uncomfortable with retirement planning and in particular the investment aspect of retirement planning (Garman & Kim, 2003).

Within a defined contribution plan, corporations usually offer a diverse range of investment options sometimes without helping employees understand these options (Shier & Kim, 2007). Nevertheless, employees are now responsible for making these investment decisions, managing their retirement funds, and planning for their financial futures.

Low-income employees, compared to other employees, may have been the most adversely affected by this transition to a defined contribution environment and as a result may be at the greatest risk of being unprepared for retirement (Kijakazi, 2003; Munnell, Golub-Sass, Perun, & Webb, 2007). Consequently, low-income employees may enter retirement with little or no savings, because low-income employees have typically faced challenges in saving for retirement (Gonyea, 2007; Kijakazi, 2003). Only 23% of households in the bottom third of the income distribution participate in their company's retirement plan, compared to 66% of households in the top third (Munnell et al., 2007). Additionally, low-income employees tend to use retirement funds for needs other than retirement, such as emergencies, regardless of early distribution penalties (Gonyea, 2007). When low-income employees have to decide whether to roll over retirement funds, they typically spend those funds (Gonyea, 2007). Low-income employees' lower savings rates create a problem in retirement as well because they are less likely to receive pension income from a defined benefit plan during retirement (Gonyea, 2007; Kijakazi, 2003).

In addition to limited retirement savings, low-income employees also may lack the financial knowledge and skills needed to make good financial decisions, establish good credit, and achieve long-term goals (Rand, 2004). Consequently, low-income employees often tend to live from paycheck to paycheck, have little to no savings, often carry high-cost debt, utilize high-cost check-cashing services, and are typically unaware of consumer rights (Rand, 2004).

Additionally, many low-income employees had no saving and lived month to month because little was left over after expenses (Turnham, 2010). Thus, the combination of low-incomes and poor financial behaviors warrants the focus on low-income employees in this study. Of great interest are the following research questions: Are the financial behaviors of low-income employees significantly different from those of employees in other income segments of the workforce? Does information from a formal advisor positively affect the financial behaviors of low-income employees? Therefore, the purpose of this study is to determine if the financial behaviors of low-income employees are different from and less acceptable than those of employees in other income segments of the workforce and to examine the relationship between the use of information from a formal advisor and the financial behaviors of low-income employees.

Impact of Financial Information

Financial information can have a positive impact on poor financial decisions and poor financial behaviors (Hogarth, Beverly & Hilgert, 2003). Thus, researchers have found that financial information can increase financial knowledge and ultimately has the potential to improve financial behaviors (Hogarth et al., 2003). Financial educators also have acknowledged that poor financial behaviors and poor financial decisions usually are the result of low financial literacy, which could be a result of low financial knowledge (Edmiston & Gillett-Fisher, 2006; Hogarth et al., 2003). Moreover, individuals with low financial knowledge tend to earn lower wages, tend to be minorities, single, less educated, and either younger or older than the average individual (Burhouse, Grambrell, & Harris, 2004). However, low-income employees, compared to their higher income counterparts, have not had the same opportunities to receive financial

information that typically comes from formal advisors, information that has the potential to improve their financial behaviors (Loibl & Hira, 2005).

For the purposes of this study, formal advisors are considered to include financial planners, employers, bankers, brokers, accountants, insurance agents and lawyers. Thus, these formal advisors are not financial educators and should not be equated as such since formal advisors are in the business of giving specific financial information and recommendations while financial educators generally do not. However, like financial educators these formal advisors provide financial information to consumers to help them improve their financial situations. Therefore, it is assumed that financial information from any one of these formal advisors that is specific to the client's situation could have a positive impact on the financial decisions and financial behaviors of low-income employees.

The Workplace as an Information Source

The workplace has been shown to be a source of financial information from formal advisors for all employees, including low-income employees. After all, an individual spends the largest percentage of his/her time at work (Csikszentmihalyi & LeFevre, 1989). In addition, employers and/or their financial representatives often connect with employees by offering financial information seminars and retirement planning orientation programs through the workplace (Servon & Kaestner, 2008). These financial information seminars are often provided by third party formal advisors hired by the employer (Clark, D'Ambrosio, McDermid, & Sawant, 2003). The workplace could be an effective source of information because employees often view their employers as authorities or experts; moreover, many employees respect and value the workplace as a source of information, especially for information pertaining to

employee benefits (Jenkins, 2005; Krajnak et al., 2008). The workplace provides a great opportunity to expose low-income employees to information provided by a formal advisor, giving low-income employees the opportunity to gain financial knowledge and in turn an opportunity to build assets (Seidman & Tescher, 2004). Financial information provided through the workplace, if offered as an employee benefit, gives employees the opportunity to learn without setting aside extra time from their schedules or allocating funds from their already tight budgets (Edmiston & Gillett-Fisher, 2006).

As a rule, information provided through the workplace is distributed in newsletters, publications, and web-based material related to employee benefits. This information also is distributed through financial seminars either provided by the employer or by formal advisors employed by the company's retirement plan (Clark et al., 2003) An example of third party formal advisors that provide information in the workplace includes an arrangement between McDonalds and Visa to provide an employer-based financial literacy website to McDonalds employees (Russell, 2008). Another example is Motorola partnering with Price Waterhouse Coopers to design and provide financial information seminars to Motorola's employees (Boldt, 2008). There is substantial evidence that financial information provided through the workplace is effective in improving employees' financial behaviors (Bayer, Bernheim, & Scholz, 1996; Bernheim & Garrett, 2003; Clark, D'Ambrosio, McDermed, & Sawant, 2006; Garman, 1999; Joo & Grable, 2005). In addition, financial information provided through the workplace has proven to be beneficial in helping low-income employees manage their money (Bayer et al., 1996; Loibl & Hira, 2005; Rand, 2004).

Research Problem and Research Purpose

The trend of American corporations moving away from defined benefit retirement plans toward defined contribution retirement plans has caused a problem for many employees (Garman & Kim, 2003; Gonyea, 2007; Krajnak et al., 2008). This trend has caused a problem for low-income employees in particular because they tend to lack the financial skills needed to make sound financial decisions (Rand, 2004) and workers have asked for professional financial information to help them manage their money (Garman & Kim, 2003; Turnham, 2010). Thus, these questions still remain: Are the financial behaviors of low-income employees significantly different from those of employees in other income segments of the workforce? And, does financial information from a formal advisor positively affect the financial behaviors of low-income employees?

The benefits of information from a formal advisor to low-income employees should be evident in the positive effect on their financial behaviors. Thus, one purpose of this study is to determine if low-income employees' financial behaviors are different from and less acceptable than those of employees in other income segments of the workforce. A second and equally important purpose is to examine the relationship between the use of information from a formal advisor and the financial behaviors of low-income employees.

Research Hypotheses

The study's research hypotheses are as follows:

H1₁: Low-income employees' percentages of acceptable savings and acceptable cash-flow management behaviors are significantly different from and less acceptable than those of middle-income and high-income employees.

H1₀: Low-income employees' percentages of acceptable savings and acceptable cash-flow management behaviors are not significantly different from those of middle-income and high-income employees.

H2₁: There is a significant and positive relationship between the use of financial information from a formal advisor and the acceptable savings and acceptable cash-flow management behaviors by low-income employees.

H2₀: There is not a significant and positive relationship between the use of financial information from a formal advisor and the acceptable savings and acceptable cash-flow management behaviors by low-income employees.

Significance of the Study

This study is significant and necessary because low-income employees often fail to make wise financial decisions (Garman & Kim, 2003; Rand, 2004). Furthermore, the primary focus of most employer-based financial information studies has been all employees within the workplace, not low-income employees (Bayer et al., 1996; Bernheim & Garrett, 2003; Clark et al., 2006; Garman, 1999). Therefore the needs of low-income employees often are secondary to the needs of the general workforce (Garman, 1999). However, the needs of low-income employees should be considered when planning workplace financial information programs and when conducting studies (Garman, 1999). Employees earning modest incomes would especially benefit from information from formal advisors because such information could help them manage their already-stretched incomes (Kim, 2004). Furthermore, individuals at the bottom of the wealth distribution and those with less education typically benefit the most from such financial information (Lusardi, 2008). Early on, Bayer et al. (1996) found that workplace financial

information seminars had a stronger impact on the non-highly compensated employee than on the highly compensated employee.

This study adds to the body of research by providing insight into the financial behaviors of low-income employees as well as information sources that affect their financial behaviors. This research reviewed the work of researchers who have studied employees in the workplace but took a slightly different approach by defining employees' income level not only based on income but also on household size. With this approach, an employee with a household income of \$48,000 and a household size of five would be considered low-income, whereas an employee with a household income of \$48,000 and a household size of two would be considered middle-income. Therefore, by considering household size as well as income, this study provides greater insights into an employee's financial situation. Moreover, this study uses multiple financial behaviors to assess an employee's savings and cash-flow management behaviors. Finally, this study uses data from the 2007 Survey of Consumer Finances (SCF). The benefit of using the 2007 SCF is that it is a large random sample that closely represents the distribution of the U.S. population (Bucks, Kennickell, Mach & Moore, 2009).

As its foundation, this study utilized the methodology and measurements of two established financial studies: Olsen and Whitman's (2007) information source study and Hogarth et al.'s (2003) financial knowledge/financial behavior study. Olsen and Whitman's study created three information source categories, namely a formal advisor, an informal advisor, and a public source category, and used data from the 2004 Survey of Consumer Finances (SCF). The categories were based on a household's response to the following SCF question: What sources of information do you use to make decisions about saving and investments? Likewise,

the current study classified information sources into the same three categories as Olsen and Whitman.

The second study that was used as a foundation of this research was Hogarth et al.'s (2003) study related to financial behaviors. The primary purpose of Hogarth et al.'s study was to examine the relationship between financial knowledge and financial behaviors. Hogarth et al.'s study utilized a list of financial behaviors in the categories of cash-flow management, savings, investment, and credit. The current study utilized selected financial behavior variables and their measurements from Hogarth et al.'s study, along with select financial behavior indices used to rank a household's financial behavior. Expanding on Hogarth et al.'s study, this current study applied the scale Hogarth developed to different data, focusing on information from a formal advisor and focusing on low-income employees.

CHAPTER 2

LITERATURE REVIEW

The focus of this study is low-income employees' financial behaviors, which is an aspect of their financial literacy. According to Huston (2010) and Remund (2010), financial literacy is the ability to understand and comprehend personal finance information, or financial knowledge, and the ability to apply financial knowledge typically through financial behaviors. Therefore, in the first section of this literature review the researcher examined literature related to low-income employees' financial literacy. Next literature related to low-income employees' normal and desired information sources was reviewed since personal finance information is an input into the financial literacy process, according to the definition above and therefore has some effect on financial behaviors. In the next two sections, literature related to the effects of financial information from formal advisors on the financial behaviors of low-income employees as well as all employees was reviewed. For the purposes of this study a formal advisor includes an employer, a financial planner, a banker, a lawyer, and a broker.

Low-income employees' financial literacy or their ability to practice good financial behaviors as well as make wise financial decisions was the catalyst for this study. Therefore, research related to the financial literacy of low-income employees as assessed through their financial behaviors and financial knowledge was reviewed. Although both sets of literature were reviewed, only financial behavior is a factor in this current study. Again, according to Huston (2010) and Remund (2010) financial literacy is the application of one's financial knowledge as typically practiced through their financial behaviors. Therefore, reviewing literature related to a low-income employees' financial knowledge and financial behaviors was important even though

the focus of this study was only financial behaviors. For the most part, many researchers have found a significant correlation between low income and low financial knowledge as well as low income and poor financial behaviors.

Personal finance information is an input into the financial literacy process, and therefore would have an effect on financial behaviors (Huston, 2010). However, would the source of that information matter to low-income employees' financial behaviors? The next two sections reviewed literature related to low-income employees' normal financial information sources and their desired information sources. An initial review of literature suggests that low-income individuals and employees receive their information from informal sources or sources other than formal advisors (Lin & Lee, 2004; Olsen & Whitman, 2007). However, there is evidence that low-income employees' desire information from financial advisors (Garman & Kim, 2003).

Next, literature that found evidence of a significant relationship between the use of information from a formal advisor and the acceptable financial behaviors reported by low-income employees as well as all employees in the workplace was reviewed. These specific studies were primarily employer-based financial information studies because of their focus on employees and on information from formal advisors such as employers, and third party formal advisors hired by the employer. Why focus on workplace financial information studies? As a rule, information provided through the workplace is distributed through information sessions often provided by formal advisors or other professionals employed by the company's retirement plan provider (Clark et al., 2003). This literature review also examined research related to socioeconomic and demographic variables that have been correlated with the financial behaviors of low-income employees, such as planning, race, self-employment, gender, education and age.

The final section of this literature review describes the theoretical model used to guide the analysis and hypotheses of this study which is the “Behavioral Model of Financial Services Use” (Kunovskaya, 2010) which is an adaptation of the “Behavioral Model of Health Services Use” (Andersen, 1995). This model posits that after an individual makes the decision to use the financial services of a financial professional, their financial status and/or financial behaviors will be positively affected due to this use.

The Financial Literacy of Low-Income Employees

Currently, there is no universally accepted definition for financial literacy; therefore, it is necessary to first explain the definition that is the basis of this study. With this in mind, the next step is to review literature that has found a significant correlation between low-income earners and low financial literacy. In most of these studies, low financial literacy was either measured through savings behaviors or through the financial knowledge of an individual. In these studies, a common finding was that households with high-incomes also displayed high financial literacy; conversely, households with low incomes often displayed low financial literacy. This finding was usually a secondary finding; nevertheless, it was a key finding related to low-income individuals (Gonyea, 2007; Hogarth et al., 2003; Kim, Garman, & Quach, 2005; Lusardi & Mitchell, 2007; Lyons, Chang, & Scherf, 2006; Munnell et al., 2007; Zhan, Anderson, & Scott, 2006). Although there may be a strong correlation between low income and low financial literacy, many factors could improve an individual’s financial literacy and financial decisions, including financial information (Hogarth et al., 2003).

Financial Literacy Defined

As previously stated, there is currently no universally accepted standard to define and measure financial literacy; thus, researchers have proposed their own definitions. Two researchers, Huston (2010) and Remund (2010), reviewed two decades of research to develop financial literacy definitions that are strikingly similar to each other. These researchers defined financial literacy as the ability to understand or comprehend personal finance information, or to possess financial knowledge, and the ability to consistently apply and use this financial knowledge in such a way as to develop good financial skills; and the ability to use these financial skills in order to practice good financial behaviors and make sound financial decisions (Huston, 2010; Remund, 2010).

Using the above definition as a foundation, this study examined the effects of financial information as observed through the financial behaviors of low-income employees. Financial information is an input into the financial literacy process that could increase the financial knowledge of an individual; this increased knowledge is assumed to positively influence his/her financial behaviors (Huston, 2010; Remund, 2010). In addition to financial information, other factors influence financial literacy such as behavioral biases, cultural influences, self-control issues, economic factors and institutional issues (Huston, 2010).

Others also have given their definition of financial literacy (Kozup & Hogarth, 2008; Walstad, Rebeck, & MacDonald, 2010). Although various definitions have been offered, the central premise seems to be that financial information is an input meant to increase the financial knowledge of an individual, who in turn will apply this increased knowledge and ultimately practice good financial behaviors (Kozup & Hogarth, 2008; Walstad et al., 2010).

Savings Behaviors

Oftentimes, financial literacy has been measured through savings behaviors, and at times low financial literacy has been associated with poor savings behaviors. As a rule, low-income employees face challenges when saving for the future (Gonyea, 2007; Kijakazi, 2003).

Researchers have found evidence that having a low income is highly correlated with poor savings behaviors; thus, studies assessing low-income employees' savings behaviors were reviewed to inform the current research regarding previously identified relationships between information sources, income, and financial behavior.

In one previous study, Kim et al. (2005) found that household income, gender, health, and participation in financial information seminars were significant factors in an employee's and their spouse's monthly retirement savings contribution rate. Employees and their spouses with low household incomes contributed less to their retirement plan, or saved less, each month, than those with higher household incomes. The purpose of Kim et al.'s study was to examine the relationship between an employee's participation in one or more employer-based financial information seminars and an employee's and their spouse's monthly retirement savings contribution rate. Kim et al. used a field experiment that included 300 employees from a southeastern chemical company. Half of these employees, or the experimental group, participated in one or more of four financial information seminars entitled "Money Basics", "Retiring Easy", "Magic of 401k", and "Planning Plus"; while the other half, or the control group, did not participate in any of the seminars. For Kim et al.'s study, data were collected from a survey mailed to each employee's home, followed by a postcard ten days later and subsequently followed by a replacement survey three weeks later. Of the series of surveys, 178 usable surveys were collected.

Kim et al. (2005) found that gender, household income, health, and participation in workplace financial information seminars were all significant and positive influences on an employee's, and their spouses', monthly retirement savings contribution rate (Kim et al., 2005). Specifically, Kim et al. found that males, those with higher incomes and those who participated in financial information seminars contributed more, and their spouses contributed more, to their retirement savings and investments following the financial information seminar than their counterparts. Kim et al.'s study provided evidence for the current study that a significant correlation could be found between those with low income and poor financial behaviors.

Kim et al.'s (2005) field experiment was ideal as the objective was to examine changes in employees' and their spouses' savings behavior after the employees' participated in a financial information seminar. Additionally, Kim et al. used a control group. While the findings appear consistent with other financial information research, the treatment group was not randomly selected, which may have biased the results.

In another study, researchers again found evidence of a correlation between low-income earners and low savings contribution rates to a retirement plan. In a study that examined the bottom third of the income distribution, researchers found that only 23% of those in the bottom third participated in their company's retirement plan or saved compared to 66% of those in the top third (Munnell et al., 2007). Researchers at the Center for Retirement Research at Boston College produce a National Retirement Risk Index (NRRI). The NRRI provides a measurement of working households who are at risk of being financially unprepared for retirement (Munnell et al., 2007). In 2004, researchers assessed the NRRI for employees in the bottom third of the income distribution, as compared to the middle and top third of the income distribution (Munnell et al., 2007). They found that 53% of the bottom third was at risk of being financially unprepared

for retirement, compared to 40% of the middle third and 36% of the top third. This NRRI was based on a replacement rate which was calculated using data from the 2004 SCF. This replacement rate was calculated as the projected retirement income as a percentage of pre-retirement earnings and then this replacement rate was compared to a “benchmark” rate. Those employees who failed to come within 10% of this benchmark rate were deemed to be at risk (Munnell et al., 2007). Munnell et al.’s study was relevant to the current study based on its’ finding that those with low income save less.

Financial Knowledge

In Huston’s (2010) and Redmund’s (2010) financial literacy definition, financial knowledge, or the ability to understand financial information, is key to performing good financial behaviors and making wise financial decisions. Moreover, many studies measured financial literacy as financial knowledge. Several of these studies found evidence of a significant correlation between low income and low financial knowledge, and provide evidence for the current study that low income could be correlated with poor financial behaviors, since financial behaviors are an application of one’s financial knowledge (Huston, 2010; Remund, 2010). While the current study does not focus on low-income employees’ financial knowledge, it does focus on the manifestations of financial knowledge through financial behaviors. Thus literature related to understanding how financial information and knowledge may affect behavior is reviewed. Most studies that examined a change in financial knowledge established an initial financial knowledge baseline for all participants. In these studies, one common finding was that low-income individuals displayed low financial knowledge, as assessed in their initial financial knowledge baseline (Rand, 2004; Zhan et al., 2006).

One study that found a correlation between low income and low financial knowledge was a study in which Lusardi and Mitchell (2007) sought to understand the causes and consequences of financial illiteracy, and consequently examined a household's knowledge of compounding and inflation, risk diversification, and savings decisions. Lusardi and Mitchell found that those with low incomes scored low in all four areas. This particular study used data from the 2004 Health and Retirement Study (HRS) which included data on the performance of a household's financial literacy quiz. There were 1,716 individuals used in this study, all older than 50. Overall, researchers found that those with less financial knowledge were more likely to be single, less educated, minority, have low incomes, and were either younger or older than the overall population (Lusardi & Mitchell, 2007). Lusardi and Mitchell's study was relevant and provided evidence that a significant correlation could be found between those with low income and their poor financial behaviors.

Lusardi and Mitchell's (2007) intent in this study was to measure financial knowledge. However, one might question whether this study was measuring financial knowledge or financial numeracy. Numeracy is defined as the ability to reason with numbers and other mathematical concepts (Huhmann & McQuitty, 2009). Financial numeracy is defined as the ability to understand those numbers and mathematical concepts behind financial concepts (Huhmann & McQuitty, 2009). In Lusardi and Mitchell's study, participants were asked numerical questions about financial concepts such as compounding, interest and inflation. Thus, there might be some question as to whether financial knowledge or financial numeracy was actually being measured.

In a study using a convenience sample of low-income individuals participating in a financial management program, Zhan et al. (2006) found that those with low incomes also had low financial knowledge. Zhan et al. sought to examine the effects of a financial management

training program called FLLIP (Financial Link for Low-Income People) on the financial knowledge of low-income individuals. Zhan et al. tested the financial knowledge of 163 participants, specifically in the content areas of savings and investing strategies, banking practices, predatory lending practices, credit card use and interest, and employer related benefits. Low-income employees were defined as those earning less than 200% of the current poverty level. The participants received training at 10 sites and participated in 12 hours of basic financial management training. To collect and analyze data, Zhan et al. used a pre-post survey and repeated variance analysis, along with regression analysis. Zhan et al. found that low-income participants scored low on the initial financial knowledge baseline and in particular scored low on basic financial management topics and on the topics of savings and investments. However, Zhan et al. also found that the FLLIP had a significant and positive effect on the financial knowledge of these low-income participants in all subject areas as assessed by the change in financial knowledge after the financial training. Zhan et al.'s study was relevant to the current study in that it found a significant link between those with low income and low financial knowledge; thus, financial behaviors are an application of one's financial knowledge (Huston, 2010).

Finally, Hogarth et al. (2003) similarly found that those with low incomes also had low financial knowledge as assessed through their initial financial knowledge. The purpose of Hogarth et al.'s study was to examine the relationship between financial knowledge and financial behavior; as well as to examine the relationship between financial learning preferences and financial behavior. Hogarth et al. examined data from 1,004 households through a Monthly Survey of Consumers administered by the University of Michigan in November and December of 2001. In this survey, Hogarth et al. used a financial knowledge test to assess participants'

financial knowledge and created financial behavior indices to rank participants' behavior as low, medium, or high. Higher frequencies of reported positive behaviors earned participants higher scores on the indices while the lack of such reported behaviors resulted in lower scores for survey participants. Also, households were surveyed about where they obtained their financial knowledge.

Initially, Hogarth et al. (2003) assessed participants' financial knowledge and then compared participants' financial knowledge scores to their financial behavior indices and found that those with higher financial knowledge scores or those who knew more had higher financial behavior indices scores or had more positive financial behaviors. Thus, through the use of four ordered logit regression models, Hogarth et al. also found that a higher financial knowledge score increased the probability of having a high financial behavior indices score in all four tested categories - savings, investment, cash-flow management, and credit. Hogarth et al.'s study provided evidence for the current study that a significant correlation could be found between those with low income and those with poor financial behaviors.

Hogarth et al.'s (2003) study was unique in that it examined multiple financial behaviors or a pattern of financial behaviors versus one behavior. The subjective aspect of Hogarth et al.'s study was their determination of which financial behaviors were considered acceptable or unacceptable as well as their financial behavior rankings. In Hogarth et al.'s study, a low financial behavior ranking was defined as practicing 25% or fewer of acceptable financial behaviors, while a medium financial behavior ranking was defined as practicing between 25% and 70% of acceptable financial behaviors. A high financial behavior ranking was defined as practicing more than 70% of acceptable financial behaviors.

Information Sources used by Low-Income Employees

Personal finance information is an input into the financial literacy process and therefore a factor on financial behaviors (Huston, 2010; Remund, 2010). Therefore, it is imperative to understand what information sources low-income employees' use when making financial decisions. Although this is not a purpose of this study, it is important to understand this as financial information contributes to financial knowledge, which in turn influences low-income employees' financial behaviors.

Regardless of income, individuals with low financial literacy are more likely to rely on informal information sources (Van Rooij, Lusardi & Alessie, 2007). Similarly, low-income individuals, including low-income employees, are more likely to rely on informal sources for their financial information. In some studies informal sources could include family and friends, themselves, partners, spouses, or telemarketers (Hogarth et al., 2003; Olsen & Whitman, 2007). Generally speaking, individuals who are more likely to use informal advisors rather than formal advisors are typically younger, minority, less educated, have less income, and have lower levels of assets than the overall population (Lin & Lee, 2004)

Specifically, in the study by Olsen and Whitman (2007) researchers used data from the 2004 Survey of Consumer Finances and segmented information sources into three distinct categories: formal advisors, informal advisors and public sources. Information sources listed as formal advisors were lawyers, accountants, bankers, brokers, financial planners and insurance agents. Informal advisors were friends and family, oneself, partners, spouses and telemarketers. Additionally, information sources listed as public sources were calling around, magazines/newspapers, material in the mail, television/radio, online service/internet, advertisement, other personal research, shopping around, and stores/dealers. Researchers found

that those with total household income less than \$20,000 were more likely to use informal advisors for their financial information (Olsen & Whitman, 2007). According to Olsen and Whitman the cost of formal advisors was a limiting factor that prohibited this group from using formal advisors.

Likewise, in a study by Chang (2005), researchers used information from the 1998 SCF to determine the information sources of the overall population. Researchers segmented data into four distinct information sources: social networks, paid financial professionals, bankers, and media. Social network included friends and relatives, while paid financial professionals included financial planners, accountants, brokers, and lawyers. Bankers made up the third group by themselves while media included magazines and newspapers, televisions and radio, advertisement, material in the mail and the internet. Researchers found that those who had the least amount of wealth or least amount of financial resources relied on their social network, or friends and family, for their information. In this study financial resources were measured by income and liquid assets (Chang, 2005).

Additionally, in a study by Turnham (2010), two focus groups, largely consisting of low-income workers, confided that their primary source of information came from their friends and family, due to easy access, trust, and the ease of identifying those who have had financial success. There could be many reasons why these individuals are less likely to use a formal advisor or other financial professionals, but certainly the cost of a formal advisor appears to be one limiting factor (Olsen & Whitman, 2007).

Characteristics of those individuals who are more likely to use informal sources and the profiles of low-income employees are similar, suggesting that low-income employees are more likely to use informal sources and less likely to use a formal advisor for their financial

information. Based on research, low-income employees are usually individuals who work at least full time, part of the year, and have a household income below 200% of the U.S. poverty level (Acs & Nichols, 2007; Capps, Fix, Passel, Ost, & Perz-Lopez, 2003; Luce & Weinbaum, 2008). In addition, low-income employees typically are less educated than the overall workforce, with only 30% of low-income employees versus 60% of the overall workforce having education beyond high school (Acs & Nichols, 2007). Furthermore, low-income employees also are more likely to be younger than other employees in the overall workforce (Acs & Nichols, 2007; Capps et al., 2003) and more likely to be a minority (Acs & Nichols, 2007; Capps et al., 2003; Kijakazi, 2003; Luce & Weinbaum, 2008). Additionally, low-income employees and individuals are less likely to use formal advisors, as compared to their middle-income and higher-income counterparts (Bluethgen, Gintschel, Hackethal, & Muller 2007; Chang, 2005; Chatterjee & Zahirovic-Herbert, 2010; Lee & Cho, 2005; Lee & Hogarth, 2000; Lin & Lee, 2004; Loibl & Hira, 2009; Olsen & Whitman, 2007). According to Olsen and Whitman (2007) those making more than \$70,000 were more likely to use formal advisors. Likewise, Chang (2005) found that those with more wealth were more likely to rely on paid professionals as compared to those with less wealth.

Desire for Information from Formal Advisors by Low-Income Employees

Low-income employees have expressed a desire for information from formal financial advisors even though they primarily rely on informal advisors; therefore, the studies in this section were relevant because they support the claim that low-income employees desire information from formal advisors (Bernheim & Garrett, 2003; Garman & Kim, 2003; Grable & Joo, 2000; Joo & Garman, 1998). However, as previously stated the main concern seemed to be

the high cost of formal advisors (Olsen & Whitman, 2007). Additionally, there was a desire by all employees for financial information to help them manage their retirement plans as long as that information was subsidized in part or in whole (Garman & Kim, 2003). Researchers who are reviewed within this section took a unique approach and surveyed employees about their desire for financial information from formal advisors. Collectively, these studies have found that low-income employees have expressed a desire for information from formal advisors (Bernheim & Garrett, 2003; Garman & Kim, 2003; Grable & Joo, 2000; Joo & Garman, 1998).

Studies that solicited a participant's perceived need for financial assistance in managing their money were usually a part of a larger financial information study. Thus, researchers have surveyed employees about their desire for financial information from formal advisors.

Researchers have consistently found that employees want financial information from formal advisor to help them manage their money (Bernheim & Garrett, 2003; Garman & Kim, 2003; Grable & Joo, 2000; Joo & Garman, 1998). Grable and Joo (2000) specifically found that low-income employees wanted financial information from a formal advisor. Grable and Joo utilized 500 clerical workers (220 usable surveys) from a large midwestern institution to determine whether an employee's productivity was related to their personal financial behavior. As part of this research, Grable and Joo also surveyed participants about their desire to receive financial information either through workplace financial information sessions or one-on-one sessions. Using a pre-post survey research design, clerical workers were surveyed about their personal financial behaviors, financial wellness, and their desire and intentions to participate in employer-sponsored financial counseling and information workshops.

Grable and Joo (2000) found a significant link between poor financial behaviors and low employee productivity. Of those workers exhibiting poor financial behaviors, 80% were

interested in receiving financial information through a formal advisor (i.e., employer sponsored seminars or one-on-one sessions with a formal advisor). These clerical workers were particularly interested in financial information relating to debt management, budgeting, employee benefits, and some assistance in retirement planning (Grable & Joo, 2000). Grable and Joo's study supports the claim that low-income employees desire financial information from formal advisors.

Low-income employees were not alone in wanting more assistance from a formal advisor. Research has determined that all employees, regardless of their income, want information from a formal advisor. In a study by Garman and Kim (2003), employees confided that they were increasingly uncomfortable with retirement planning and investment decisions and needed more information in these areas. In addition, employees also desired more comprehensive assistance in all areas of financial planning. In this study, Garman and Kim surveyed 476 white-collar workers from an insurance company about their desire for financial information from a formal advisor. Simultaneously, Garman and Kim conducted a field experiment to determine the effect of financial information seminars on an employee's financial behavior and attitudes. Consequently, employees were exposed to a 90-minute financial information seminar as well as a 30-minute one-on-one financial session. Garman and Kim found that both the financial information sessions as well as the one-on-one financial sessions had a positive effect on an employee's financial behaviors and attitudes. In addition, employees participating in this study expressed an overall desire for financial information from formal advisors to assist them with managing their money (Garman & Kim, 2003). This previous study supports the claim that low-income employees desire financial information from formal advisors.

Joo and Garman (1998) likewise found that employees wanted assistance with their financial affairs from a formal advisor. In a field experiment, Joo and Garman used a sample of

474 white-collar employees at a large mideastern employer. Joo and Garman sought to explore possible links between employees' socioeconomic characteristics and their desire for financial information. In this study, employees were surveyed about future financial information programs they would like to see offered at their workplace and if they would participate in these programs (Joo & Garman, 1998). Subsequently, t-tests and chi-square tests were used to analyze data related to an employee's desire for financial information (Joo & Garman, 1998).

Joo and Garman (1998) found that socioeconomic characteristics had an effect on a worker's desire for and participation in specific financial information programs. In particular, those employees with higher levels of income, higher levels of education, and those who were homeowners desired and participated in financial information programs on retirement planning, investment, and estate planning (Joo & Garman, 1998). Conversely, employees with lower incomes, lower levels of education, and those who were renters were more likely to request and participate in financial information programs on budgeting, debt reduction programs, and home buying programs delivered through workshops (Joo & Garman, 1998). The relevance of Joo and Garman's study was the finding that low-income employees desire financial information from formal advisors on various personal finance topics through workplace financial information session in the future.

In a study by Turnham (2010), six focus groups were asked about their attitudes and beliefs toward savings, savings behavior, sources of financial information and preferences for financial information. Two of these focus groups consisted of low-income employees who were either participating in an individual development account (IDA) program or worked for a logistic chain for a national retailer. Individuals in both these groups thought that their employer was an excellent source of information, particularly about employee benefits such as 401k programs,

and desired financial information to help them manage their money, improve their credit and to save more for their goals (Turnham, 2010). Turnham's study was relevant because it supports the claim that low-income employees desire information from a formal advisor.

Impact of Financial Information on Low-Income Employees' Financial Behaviors

Although the primary focus of most employer-based financial information studies has been all employees within the workforce, a few studies have had low-income employees as their primary focus. Moreover, these studies have found evidence of a significant link between the use of information from a formal advisor and acceptable financial behaviors among low-income employees and therefore provide evidence for the current study that information from formal advisors could be expected to positively affect the financial behaviors of low-income employees (Gonyea, 2007; Loibl & Hira, 2005; Rand 2004). Again these formal advisors should not be equated with or considered financial educators since formal advisors are typically paid to provide specific financial information, except for bankers; however, both educators and formal advisors provide financial information to their respective audiences. The current study sought to expand on the findings of these previous studies when defining low-income employees by not only considering income but also household size. Likewise, the current study used multiple financial behaviors to measure and define low-income employees' savings and cash-flow management behaviors.

Loibl and Hira (2005) conducted a study with the purpose being to examine the effect of information type and source on financial management practices (i.e., financial behavior), the effect of financial management practices on financial satisfaction, and the effect of financial satisfaction on career satisfaction. In self-directed learning, an individual or an employee is

responsible for or takes the initiative to plan and execute his/her own learning process (Loibl & Hira, 2005). Loibl and Hira tested their hypothesis using a sample of 1,089 of the lowest-paid employees at a large insurance company.

In Loibl and Hira's (2005) study, self-directed learning was measured by the employee's use of any of four sources of financial planning material and/or information provided in the workplace: company newsletter on "Understanding Personal Finance", other financial planning publications, financial planning software, and the internet. Financial management practices or financial behaviors were measured through questions that asked if participants saved for goals, evaluated their spending, and made plans about how to use their money (Loibl & Hira, 2005). Loibl and Hira found that financial planning material that is provided through self-directed learning had a significant effect on employees' financial behaviors that employees' financial behaviors had a significant effect on their financial satisfaction, and that financial satisfaction had a significant effect on employees' career satisfaction. In Loibl and Hira's study, the key variable was self-directed learning and not the use of financial planning material. However, they found a significant link between self-directed learning, which coincidentally used financial planning material, and an employee's financial management practices or financial behaviors. Loibl and Hira's findings were relevant to the current study because the financial planning material and the company financial planning newsletter came from formal advisors, were distributed through self-directed learning, and had a positive and significant relationship with the financial behaviors of low-income employees.

Gonyea (2007) sought to explore the link between low-income employees' financial knowledge and their financial behaviors. In Gonyea's study the researcher surveyed 309 low-wage service workers from a medical facility to examine the link between employees' financial

knowledge and their retirement savings behaviors. Financial knowledge was measured through questions related to employees' knowledge of retirement savings plans, defined contribution plans, and investment knowledge; whereas financial behaviors or savings behaviors were measured through questions related to an employee's plans to save (Gonyea, 2007).

Gonyea (2007) used a logistic regression model and found that financial knowledge, job stability, workplace attachment, and income all were significant and positive factors in a low-wage service worker's retirement savings behaviors. Thus, Gonyea found a significant correlation between low-income employees' financial knowledge and their savings behavior. Although Gonyea's focus was financial knowledge and the focus of the current study was information sources, Gonyea's study was relevant because financial knowledge is the comprehension of personal finance information (Huston, 2010; Remund, 2010). Some studies that examined the link between financial information from a formal advisor and the financial behaviors of low-income employees used a field experiment. Generally, these studies exposed participants to financial information and then looked for a change in their financial behaviors. An example of one such study came from a collaborative effort between the Illinois Department of Human Services and the University of Illinois. The objective of this collaboration was to create a financial information and asset building program for low-income workers and ex-welfare recipients re-entering the workforce (Rand, 2004). Rand (2004) conducted a field experiment along with this program.

The purpose of Rand's (2004) study was to test the link between financial information seminars and the financial knowledge of a low-income worker, as well as to test the link between financial information seminars and a low-income worker's savings behavior. A low-income worker was defined as an employee with a household income less than 200% of the U.S. poverty

level. In this study, 822 low-income workers were asked to participate in a financial information seminar called “Your Money and Your Life”; workers also were asked to save a certain percentage of their earned income toward a specific goal in an Individual Development Account which matched their saving \$2 to \$1 (Rand, 2004). Of the study’s 822 participants, 652 workers completed the financial information seminar component and 170 workers completed the combined financial information seminar/savings component of the experiment (Rand, 2004). Through a pre-post survey, Rand found that the financial information seminars improved the financial knowledge as well as the savings behavior of these low-income workers. While a control group was not utilized in this study, Rand’s field study was effective in examining changes in financial knowledge and savings behavior due to financial information, based on the use of a pre-post survey and measurement of actual savings behavior changes. Rand’s study provided evidence that financial information from a formal advisor could have an impact on the financial behaviors of low-income employees.

Impact of Financial Information on all Employees in the Workforce

As previously mentioned, the primary focus of most employer-based financial information seminars has been all employees within the workforce. For the most part, these studies were successful in finding evidence of a significant relationship between the use of financial information from a formal advisor provided through the workplace and acceptable or good financial behaviors by the employees. Rather than conducting a field study and examining changes in behavior, some studies used regression analysis to examine the relationship or correlation between employer-based financial information seminars and employees’ financial behaviors. Although the primary focus of these studies was not low-income employees, they still

provide evidence for the current study that the use of information from a formal advisor could have a positive effect on an employee's financial behaviors.

One of the early and most noted financial information studies was done by Bayer et al. (1996). The purpose of Bayer et al.'s study was to examine the behavioral effects of financial information in the workplace. Bayer et al. used data from the KPMG Peat Marwick Retirement Benefit Survey which had information about 1,100 employers. These employers were surveyed about retirement plans offered to their employees as well as any employer-based financial information offered to their employees (Bayer et al., 1996). Bayer et al. used regression analysis and found that employers who offered some sort of financial information had higher retirement plan participation and contribution rates than those employers who did not offer any type of financial information. Bayer et al.'s study was relevant because it provided evidence that information from a formal advisor could be significantly correlated with the financial behaviors of all employees, including low-income employees.

In Bayer et al.'s (1996) study the "availability" of financial information in the workplace was the key independent variable. This variable, however, did not measure an employee's participation in these financial information seminars. Also, there may have been features related to an employer's 401k plan that might have encouraged or discouraged an employee to participate and contribute to their 401k plan, and therefore their contributions to the plan may not have had anything to do with availability of information in the workplace.

In a similar study, Bernheim and Garrett (2003) took a different approach and surveyed employees about their exposure to employer-based financial information. The purpose of Bernheim and Garrett's study was to examine the effect of employer-based financial information on employees' savings behaviors. Bernheim and Garrett used data from the Retirement Benefit

Survey which included information on 2,055 employees. Employees were surveyed about their exposure to employer-based financial information. Additionally, employees also were surveyed about their retirement savings and personal savings accumulation. Bernheim and Garrett found that employees who were exposed to financial information in the workplace had higher savings accumulation in their retirement plans and higher savings in general. In Bernheim and Garrett's study, financial information availability, or the financial information offered in the workplace, was a key variable. In the study's regression model, "availability" of financial information in the workplace was used as the independent variable and wealth was used as a dependent variable. Again, maybe an employee's participation in the financial information seminars may have had a different effect on an employee's wealth versus their availability to financial information. Bernheim and Garrett's study was relevant because it provides evidence that information from a formal advisor could be significantly correlated with the financial behaviors of all employees, including low-income employees.

Clark et al. (2006) conducted a field experiment using a sample of university employees to examine changes in retirement goals and savings behavior after an employee attended a retirement seminar. In this study, TIAA-CREF administered 36 retirement seminars at 24 universities and collected 633 usable surveys. University employees were invited to participate in a one-hour seminar on retirement planning and goal setting. Researchers used a three-survey process to collect information at various times in the study from employees. Survey one was administered before the seminar and collected baseline data and information about retirement goals and savings behavior. Survey two was administered after the seminar and asked employees if they planned to make changes to their retirement goals and savings behaviors due to the seminar. Survey three was administered several months after the seminar to learn if employees

actually made the intended changes they identified in survey two (Clark et al., 2006). Clark et al. found that with this financial information, a significant number of participants changed their retirement goals, modified their savings contributions, and reallocated their investment funds. Finally, surveying participants several months after the seminar was ideal to determine if contribution changes were actually made (Clark et al., 2006). Clark et al.'s study was relevant because it provided evidence that information from a formal advisor could be positively and significantly correlated with the financial behaviors of all employees, including low-income employees.

Finally in 2006, a law firm was in the process of changing its retirement provider and subsequently changing the investment options offered to its employees (Dolvin & Templeton, 2006). Consequently, all employees had to restate their asset allocations and the firm decided to simultaneously offer retirement planning seminars to its employees (Dolvin & Templeton, 2006). The law firm offered a 90-minute information session to its employees on a voluntary basis. Dolvin and Templeton (2006) conducted a clinical study with the purpose of examining the relationship between participating in retirement planning seminars and employees' asset allocation decisions. In this study, Dolvin and Templeton's sample included 100 lawyers and 125 support staff. Employees were surveyed about a number of items related to the financial information seminars and their portfolios. Employees were first surveyed about their participation in the seminar. Next information related to an employee's portfolio, which included the number of funds held in their portfolio, the portfolio's percentage of equity, the portfolio's return and standard deviation, as well as the portfolio's Sharpe Ratio was requested.

Dolvin and Templeton (2006) found that those who participated in the financial information seminars possessed more efficient portfolios in their retirement funds than those who

did not. It is not clear if researchers used a pre-post survey approach in this study. However, a pre-post survey would have been effective in determining if employees created an efficient portfolio before the seminar, and not due to the seminar. Although these studies are focused on all employees and not just low-income employees, they are relevant to this current study in that they found a significant relationship between information from a formal advisor and the financial behaviors of all employees. Dolvin and Templeton's study was relevant because it provided evidence that information from a formal advisor could be positively and significantly correlated with the financial behaviors of all employees, including low-income employees.

Influences on Financial Behaviors

Planning Variable

Researchers have found evidence of a significant relationship between planning and financial behaviors. Therefore, a planning variable should be identified and controlled for in an attempt to establish a significant relationship between the use of financial information from a formal advisor and the financial behaviors of low-income employees. Looking toward the future or being future oriented is an essential element of planning (Howlett, Kees & Kemp, 2008). Moreover, research has found evidence that individuals who plan are financially better off than individuals who do not plan (Lusardi, 2008). In a financial context, the act of planning might include retirement planning, budgeting, or planning in general. For the purposes of this study, it is important to identify those employees who have acceptable financial behaviors because they were planners, as opposed to having acceptable financial behaviors due to their information source, so that these two variables do not interact with each other. Previous studies that have

found a significant and positive relationship between planning and acceptable financial behaviors provide an indication of such a significant and positive relationship in the current study.

Research has found evidence that financial literacy and specifically good financial behaviors are significantly and positively associated with planning (Lusardi & Mitchell, 2005). The simplest act of planning, even a little bit of planning, is a significant factor in financial literacy (Lusardi & Mitchell, 2005). In 2005, Lusardi and Mitchell conducted a study that examined the financial knowledge of planners and non-planners; again, financial behavior is the application of financial knowledge (Huston, 2010; Remund, 2010). Lusardi and Mitchell utilized the 2004 wave of the Health and Retirement Study (HRS), which included participants over the age of 50. In this study, financial knowledge was assessed through three financial knowledge questions about interest compounding, inflation, and stock risk. Three planning variables were created by identifying individuals as planners, identifying individuals who developed a plan and identifying individuals who stuck to a plan. Through a probit regression model, Lusardi and Mitchell found that financial knowledge was statistically and positively associated with planning. That is, planners of all types were much more likely to give a correct answer to basic financial knowledge questions, and those who could not answer these questions were much less likely to be planners (Lusardi & Mitchell, 2005).

In a previously mentioned study by Lusardi and Mitchell (2007), there was an unanswered question as to whether researchers were measuring financial knowledge or financial numeracy. This same question could be asked for this study because researcher asked numerical question about financial concepts. If financial numeracy was being measured and not financial knowledge, those who plan may be better at financial numeracy, but this increased financial

numeracy may not affect their financial behaviors. Again, it would be important to distinguish if financial knowledge or financial numeracy was being measured.

In a similar study, Lusardi and Mitchell (2006) sought to answer the question of why some people save while others do not; specifically why some baby boomers approached retirement with little or no savings, while other baby boomers did not face such a dilemma. The purpose of this study was to examine the relationship between planning, in particular retirement planning, and wealth (Lusardi & Mitchell, 2006). This study utilized the 2004 wave of the Health and Retirement Study (HRS) and specifically studied early baby boomers or those baby boomers born between 1948 and 1953. In this study, which had a sample size of 2,660 households, Lusardi and Mitchell measured wealth through financial asset ownership, home equity, and business ownership. Planning was measured by baby boomers' self-reports about their retirement planning activities, which included developing and executing a savings plan. These researchers used regression analysis and found that planning was an important predictor of savings or wealth accumulation and investment success. Specifically, Lusardi and Mitchell found that individuals who plan have sizable wealth holdings relative to those who do not plan (Lusardi & Mitchell, 2006).

Other Variables

Researchers have found evidence of a significant relationship between socioeconomic or demographic variables and financial behaviors. Therefore, these variables should be identified and controlled for in an attempt to identify any relationship between the use of financial information from a formal advisor and the financial behaviors of low-income employees as well as to avoid spurious results. Additionally, these previous studies are relevant to this study, because they provide evidence of what the researcher expects to find related to these

socioeconomic variables and financial behaviors. Oftentimes these socioeconomic variables are not the primary focus of a study. Previous studies have found that individuals with low financial knowledge and poor financial behaviors tend to be low earners, minorities, single, less educated, and either younger or older than the overall population (Burhouse et al., 2004). Specifically financial illiteracy is particularly acute for African Americans and Hispanics as well as individuals with low-income and low-educational attainment (Lusardi, 2008). In fact, minorities, women, and other low-wage earners are among those at the greatest risk of being poor when they grow old, even after receiving social security (Kijakazi, 2003). Although several secondary variables are identified in the literature review, only a handful of variables are consistently noted and will be the focus of this section of the literature review along with corresponding studies. These variables included planning, race, self-employment, education gender and age.

In the study by Zhan et al. (2006) that examined the effect of the FLIIP program on the low-income population, Hispanic participants had the lowest pre-study financial knowledge score compared to all other races. However, Hispanic participants also showed the greatest financial knowledge gains after the information seminar of all other races (Zhan et al., 2006). This study is relevant to the current study because financial behavior is the application of financial knowledge. Additionally in this study, education was a significant and positive predictor of the pre-financial knowledge scores and participants with high school degrees and post-secondary educations obtained higher pre-financial knowledge scores than those without this level of educational attainment (Zhan et al., 2006).

In 2010, Fisher examined the gender differences in savings behavior. Fisher (2010) used the 2007 Survey of Consumer Finances (SCF) which contains 4,418 households. Fisher used a logit regression analysis and found that the financial behaviors of men and women were

significantly different. In fact, women were less likely to save, in the short term, if their health was poor; while men's savings behavior was unaffected by poor health. Likewise, women had lower risk tolerance and therefore were less likely to save over the short term and less likely to be regular savers. Additionally, with each additional year of education men were more likely to save in the short term (Fisher, 2010).

There were few studies related to the financial behaviors of the self-employed. However, most studies related to the self-employed either examined their retirement readiness and/or their risk tolerance. One particular study found that those who were self-employed tended to have larger retirement savings if they were older, had higher income, and if they conducted some retirement planning activity (DeVaney, Sharpe, Kratzer & Su, 1998). Another study found that self-employed individuals were more risk tolerance than those who were not self-employed (Sung & Hanna, 1996). As evidenced by DeVaney et al. (1998), self-employed individuals demonstrated relatively higher levels of savings behavior, particularly relating to retirement savings. Thus the current study controlled for self-employment because their savings behavior appeared to be significantly different from the general population.

Behavioral Model of Financial Services Use

This study used the Behavioral Model of Financial Services Use, which is a modification of Andersen's (1995) Behavioral Model of Health Services Use, as a guide to develop its hypotheses. The components and relationships of the Behavioral Model of Health Services Use easily can be adapted to the financial services industry. In 2010, Kunovskaya used this adaptation in her study that examined the use of financial services in Russia. Kunovskaya (2010) used this model to assert that an individual's use of financial services is a function of their

individual characteristics, which includes predisposing characteristics, enabling resources, and need characteristics. Specifically, the purpose of Kunovskaya's study was to examine the relationship between financial literacy and the likelihood of using financial services in Russia, currently and in the next two years. Kunovskaya found that financial literacy does affect the use of financial services in Russia, currently and in the future.

The Behavioral Model of Health Services Use was first presented in the 1960's, and over the span of 30 years, relevant components have been added and expanded to accommodate research within the discipline (Andersen, 1995). In its current form, the Behavioral Model of Health Services Use proposes that an individual's decision to use health services is based on individual characteristics. After an individual uses health services, which may include information or advice from a health professional, an individual's health status would more than likely be improved. For this study, the components of health services were replaced with financial services components to create the Behavioral Model of Financial Services Use which is shown in Figure 1 (Kunovskaya, 2010).

The main hypothesis of this study is that there is a significant relationship between the use of information from a formal advisor and the adoption of acceptable financial behaviors by low-income employees. The Behavioral Model of Financial Services Use predicts a similar outcome; that outcome being that financial information or financial services from financial advisors will have a positive effect on the financial status of an individual (Kunovskaya, 2010). Within Andersen's (1995) model, use of health services included use of services or information from health professionals such as doctors and nurses. Likewise, in this Behavioral Model of Financial Services Use, use of financial services includes use of information from financial advisors such as financial planners, bankers, and brokers (Kunovskaya, 2010).

In the Behavioral Model of Financial Services Use, illustrated in Figure 1, the U.S. financial system, including U.S. financial policies, has an impact on an individual's characteristics which in turn influences their decision to use financial services. These individual characteristics include an individual's predisposing characteristics, enabling resources, and need for financial services. Predisposing characteristics are those elements or socioeconomic elements that predispose an individual to use financial services (Kunovskaya, 2010). Enabling resources relate to an individual's access to financial services, which relates to an individual's access to financial institutions and financial advisors within their environment or community (Kunovskaya, 2010). The final individual characteristic is an individual's need for financial services whether that need is a perceived need by the individual or an evaluated need (evaluated by a financial professional or an authority within financial services) (Kunovskaya, 2010). These three types of individual characteristics influence an individual's decision to use financial services, including information provided by a formal advisor. After an individual uses financial services, the outcome from this use will be seen in the individual's perceived financial status, evaluated financial status, and consumer satisfaction. In other words, in the model the use of financial services is expected to result in the improved perceived and improved evaluated financial status of the individual. The feedback loops from the last or outcome box show that a positive/negative outcome would have an effect on an individual's characteristics such as their perceived need for financial services.

Again, this study used the Behavioral Model of Financial Services Use as a guide to an expected outcome; that outcome is that there will be a positive relationship between the use of information from a formal advisor and acceptable financial behaviors of low-income employees.

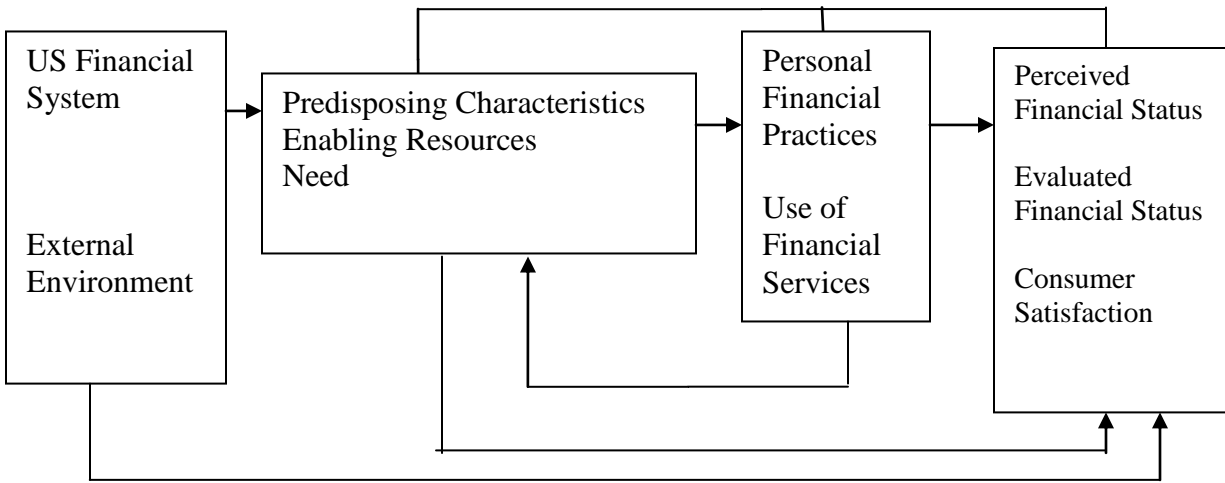


Figure 1. Kunovskaya's Behavioral Model: Adapted to Financial Services Use (Kunovskaya, 2010)

CHAPTER 3

METHODOLOGY

This study examined the relationship between the use of financial information from a formal advisor and the financial behaviors of low-income employees. This study also compared the percentage of acceptable financial behaviors of low-income employees to those of middle-income and high-income employees. These relationships were examined using data from the 2007 Survey of Consumer Finances (SCF) with results reported as a frequency analysis and as ordered logistic regression analyses. In this chapter, after stating the research questions and hypotheses, the data and sample will be described, followed by a description of the variables. Finally, all statistical procedures will be explained.

Research Questions and Hypotheses

This research will provide insight into variables that may affect the financial behaviors of low-income employees, particularly variables related to their information sources. The empirical analysis was guided by the Behavioral Model of Financial Services Use (Kunovskaya, 2010), which is an adaptation of Andersen's (1995) Behavioral Model of Health Services Use.

The first research question is as follows:

1. Are the financial behaviors of low-income employees significantly different from those of employees in other income segments of the workforce?

The hypothesis that was derived from this research question is as follows:

H1₁: Low-income employees' percentages of acceptable savings and acceptable cash-flow management behaviors are significantly different from and less acceptable than those of middle-income and high-income employees.

H1₀: Low-income employees' percentages of acceptable savings and acceptable cash-flow management behaviors are not significantly different from those of middle-income and high-income employees.

The second research question that was derived from the literature review is as follows:

2. Does financial information from a formal advisor positively affect the financial behaviors of low-income employees?

The hypothesis that was derived from this research question is as follows:

H2₁: There is a significant and positive relationship between the use of financial information from a formal advisor and the adoption of acceptable savings and acceptable cash-flow management behaviors by low-income employees.

H2₀: There is not a significant and positive relationship between the use of financial information from a formal advisor and the adoption of acceptable savings and acceptable cash-flow management behaviors by low-income employees.

Data and Sample

This study used data from the 2007 Survey of Consumer Finances (SCF). The SCF provides information about US. household finances and contains detailed information from households' balance sheet and income statement (Kennickell, 2007). Demographic and socioeconomic information such as age, gender, race, employment status, and marital status for each household also are included in the SCF. Moreover, information about a household's financial behaviors, financial attitudes, and use of financial institutions also is included in the SCF (Kennickell, 2007). The minimum age of all respondents in the SCF is 18 years old (Kennickell, 2007). Each successive survey usually adds more financial information that is of interest to policy makers and researchers (Kennickell, 2007).

Data in the Survey of Consumer Finances (SCF) are generated through an in-person or telephone survey that has been conducted every three years since 1992. The 2007 SCF contains 4,418 observations or households that were randomly selected across the U.S. (Bucks et al., 2009). This survey was sponsored by the Board of Governors of the Federal Reserve System in conjunction with the U.S. Department of the Treasury (Bucks et al., 2009). Actual interviews were conducted by the National Opinion Research Center, a research organization at the University of Chicago. Usually interviews are conducted between May and December of each survey year (Bucks et al., 2009). The 2007 SCF is a complex sample design that uses a multi-stage area probability sample and oversamples high wealth households (Kennickell, 2007).

The employee sample for this study was created by segmenting data within the 2007 Survey of Consumer Finances (SCF) based on employment status. Amongst the 4,418 households within the 2007 SCF, 3,241 are employees. Included in the employee sample were all individuals who, at the time of the survey, reported working, including those who were working

temporarily/seasonal and those who were self-employed. This larger employee sample was further segmented by the researcher to create three subsamples based on income and household size. The researcher defined low-income employees as employees with household incomes less than or equal to 200% of the 2007 U.S. poverty level. The U.S. poverty level is based on household size; therefore, these income subsamples also were based on household size. Middle-income employees were defined as employees with household incomes greater than 200% or less than and equal to 494% of the 2007 U.S. poverty level (Giminez, Glover, & Rios-Rull, 2011). Finally, high-income employees were defined as employees with household incomes greater than 494% of the 2007 U.S. poverty level. The 494% income level, used in this current study and that separates the middle-income and high-income employee subsamples was based on an income quantile created by Giminez et al. (2011) within the 2007 SCF. This income level was adjusted for household size. In Giminez et al.'s analysis, 80% of all households fell below this income level; households below this income level were in the middle and bottom tail of the distribution. Therefore, for the current study, households below this 80% income level represented the middle-income and low-income employee subsamples. In Giminez et al.'s income quantile, the remaining 20% of households above this income level were in the top of the distribution. Hence, for this study, this remaining 20% represented the high-income employee subsample. The employee subsamples' income levels by household sizes are listed in Table 1 (U.S. Department of Health and Human Services, 2007).

Table 1

Income Segmentation of the Three Income Subsamples

Household size	2007 US Poverty Level(a)	Low-Income Less than or equal to	Medium-Income Greater than	High-Income Less than or equal to	High-Income Greater than
1	\$10,210	\$20,420	\$20,420	\$50,437	\$50,437
2	13,690	27,380	27,380	67,629	67,629
3	17,120	34,240	34,240	84,573	84,573
4	20,650	41,300	41,300	102,011	102,011
5	24,130	48,260	48,260	119,202	119,202
6	27,610	55,220	55,220	136,393	136,393
7	31,090	62,180	62,180	153,585	153,585
8	34,570	69,140	69,140	170,776	170,776

Notes: a.) Adapted from *The 2007 Human Health Services Poverty Guidelines* (US Department of Health and Human Services, 2007).

Financial Behavior Variables

Researchers have stated that financial information increases financial knowledge and together have the ability to improve financial behaviors (Hogarth et al., 2003). For this reason, this study chose to examine the relationship between the use of financial information from a formal advisor and the financial behaviors of low-income employees. Hence, key variables for this study were specific financial behaviors operationalized and measured using data from selected financial behavior questions within the 2007 SCF. This study used selected savings and cash-flow management behaviors and their measurements were based on Hogarth et al.’s (2003) study. Savings behaviors were used because the SCF question asked participants “What information sources do you used when making savings and investment decisions”. Cash-flow

management behaviors or money management behaviors were used because it is essential for one to effectively manage their money in order to save and invest (Hogarth et al., 2003). Hogarth et al. used a similar cash-flow management category in their study. Nine financial behaviors were selected for this study based on their objectivity and consistency with Hogarth et al.'s methodology. Based on Hogarth et al.'s methodology, it was assumed that any one of these nine financial behaviors was equally likely to occur, and that income does not preclude the practice of any of these behaviors. These nine behaviors also represented a pattern of savings and cash-flow management financial behaviors which was preferable to using an isolated savings or cash-flow management financial behavior.

These financial behaviors all were recorded as binary variables. The decisions presented in Hogarth et al.'s (2003) study were used to determine which response was considered a *good* or *acceptable* financial behavior (coded as 1) and which response was considered a *bad* or *unacceptable* financial behavior (coded as 0). Table 2 compares the financial behaviors questions in Hogarth et al.'s study and the 2007 SCF financial behavior questions. These questions in the left column of Table 2 were used to measure in this study to measure financial behavior.

Table 2

Financial Behavior Questions in SCF and Hogarth et al.'s Study

2007 SCF Behavior Questions	Hogarth et al.'s Financial Behavior Questions
	(a)
<i>Cash-Flow Management</i>	<i>Cash-Flow Management</i>
1. First, do you have any checking accounts at any type of institution? (x3501)	1. Have checking account?

(a)

2. Now thinking of all the various loan or mortgage payments you made during the last year, were all the payments made the way they were scheduled, or were payments on any of the loans sometimes made later or missed? (X3004)

2. Pay all your bills on time?

3. Over the past year, would you say that your spending exceeded your income, was about the same as your income, or that you spent less than your income? (x7510)

3. Use a spending plan or budget?

4. Do you have any money automatically deposited into your account? (X7122)

Savings

Savings

1. Do you have any savings or money market accounts? (X3727)

1. Have a savings account?

2. Do you save regularly by putting money aside each month? (X3020)

2. Save or invest money out of each paycheck?

3. Do you have any CDs or certificates of deposit at any financial institution? (X3719)

3. Have certificate of deposit?

2007 SCF Behavior Questions	Hogarth et al.'s Financial Behavior Questions
	(a)
4. Are you included in any pension, retirement, or tax-deferred savings plans connected with the job that you just told me about? (X4135)	4. Participate in employer's 401k retirement plan?
5. Do you or anyone in your family living have any Keoghs or IRA accounts? (X3601)	5. Have IRA/Keogh account?

Notes: a.) (Hogarth, et al. 2003)

These nine financial behavior questions were operationalized and measured as savings and cash-flow management variables. In the cash-flow management category there were four financial behavior variables that represented employees' cash-flow management or money management behaviors. The financial behavior variable (CHECKING) was dichotomized to equal "1" if the employee reported that he/she had one or more checking accounts at the time of the study. Additionally, the financial behavior variable (LOANS ON TIME) was dichotomized to equal "1" if the employee reported that their loans were paid on schedule or ahead of schedule. All cash-flow management behaviors as well as their measurement are in Table 3.

In the savings category there were five financial behavior variables that represented employees' savings behaviors. The financial behavior variable (SAVINGS) was dichotomized to equal "1" if the employee reported having a savings or money market account at the time of the study. Additionally, the financial behavior variable (SAVE) was dichotomized to equal "1" if the employee reported that he/she saved on a monthly basis at the time of the study.

The last two savings behaviors were classified as investment behaviors in Hogarth et al.'s (2003) study but were classified as savings behaviors in the current study. The financial behavior variable (RETIRE PLAN) was dichotomized to equal "1" if the employee reported having money in a tax deferred or retirement account such as a pension at the time of the study. The financial behavior variable (IRA) was dichotomized to equal "1" if the employee reported he/she or anyone in the family had a Keogh or IRA account at the time of the study. All financial behavior variables and their measurements are in Table 3.

Table 3

Financial Behavior Variables

Variables	Measurements
<i>Cash- Flow Management</i>	
CHECKING	= 1 if reported having a checking account, 0 otherwise
LOANS ON TIME	= 1 if reported paying loans ahead of time or on time, 0 otherwise
SPENDING	= 1 if reported spending was less than or equal to income, 0 otherwise
AUTO DEPOSIT	= 1 if reported money automatically deposited, 0 otherwise
<i>Savings Behaviors</i>	
SAVINGS	= 1 if reported having a savings account, 0 otherwise
SAVE	= 1 if reported saving on a monthly basis, 0 otherwise
CD	= 1 if reported having certificate of deposits CD, 0 otherwise
RETIRE PLAN	= 1 if reported included in any pension, retirement, or tax deferred savings plan connected with job, 0 otherwise
IRA	= 1 if reported had money in IRA or Keogh, 0 otherwise

Next, financial behavior indices were created to rank an employee's savings behaviors and cash-flow management behaviors as low, medium, or high. A *high* index represented an employee response of "1" to 70% or more of the financial behavior variables (4 or 5 out of 5 savings behaviors; 3 or 4 out of 4 cash-flow management behaviors). As previously stated, according to Hogarth et al.'s (2003) study a "1" response represented an acceptable financial behavior. A *medium* index represented an employee's response of "1" to more than 25% but less than 70% of the financial behavior variables in a particular construct (2 or 3 out of 5 savings behaviors, 2 out of 4 cash-flow management behaviors). A *low* index represented an employee's response of "1" to 25% or less of the financial behavior variables in (0 or 1 out of 5 savings behaviors, 0 or 1 out of 4 cash-flow management behaviors). There are two financial behavior indices in this study, one representing the savings behavior (SAVINGS INDEX) and one representing the cash-flow management behavior (CASH-FLOW INDEX). These indices were used in the ordered logistic regression model and the high category was coded as 3, medium coded as 2, and the low category was coded as 1. These financial behavior indices were based on similar indices and their measurements created in Hogarth et al.'s study.

Information Source Variables

A review of the literature suggested that low-income employees typically get their financial information from informal advisors or informal sources which could include family, friends, spouses, or themselves (Olsen & Whitman, 2007). However, low-income employees have an interest in or a desire to receive information from a formal advisor as long as that information is affordable (Garman & Kim, 2003). This study examined the relationship between

the use of information from a formal advisor and the financial behaviors of low-income employees.

The information source variable (INFO SOURCE) was operationalized and measured by an employee's response to the following SCF question: "What information sources do you use to make decisions about savings and investments?" This information source variable (INFO SOURCE) was a nominal variable with three possible response categories. The formal advisor category consisted of responses that included information from a financial planner, a broker, material from work/business contact, a banker, an accountant, and a lawyer. The informal advisor category consisted of responses that included information from friends and family, self, personal experience, other personal research, do not shop around, and do not save or invest. The 2007 SCF question includes an information source options of "do not shop around" and "do not save or invest", which were difficult to interpret. The "do not shop around" response was coded as an informal advisor since the individual is only relying on themselves, which is also coded as informal adviser. Individuals that indicated they "do not save or invest" were also grouped in with the informal advisor category because they did not indicate any information source used and implicitly do not seek out information regarding saving or investing; thus, they rely largely on themselves, which is grouped with informal advisors. The public source category consisted of responses that included calling around, magazines/newspapers, material in the mail, online/internet, advertising, and TV (Olsen & Whitman, 2007). These three categories and the responses included in each category were based on a study by Olsen and Whitman (2007). The categories of Olsen and Whitman's study were used because the information sources in their formal advisor category were professionals in the business of giving specific financial information; however, all of them were not paid directly by the person receiving this

information. Thus, low-income employees may be as equally likely to use them as middle-income and high-income employees. However, this study used a later version of SCF than Olsen and Whitman, so decisions were made that were independent of Olsen and Whitman's study.

Respondents could indicate more than one response to this question and these responses could fall within multiple categories (i.e., formal advisor, informal advisor, public source). If this occurred, there would be an overlap problem in the data. A household had the option to select up to 10 responses indicating their information sources but their initial response was recorded first in the SCF. Chang (2005) utilized the same SCF question within the 1998 Survey of Consumer Finances and faced the same potential overlap problem.

To resolve this potential overlap problem, Chang (2005) compared the household's initial response category to the category of the majority of responses from that same household. Chang found that, on average, a household selected 1.83 responses out of the possible 10 and that there was little to no difference between a household's initial response category and the category of the majority of responses from that same household. Therefore, Chang used a household's initial response to categorize a household's information source.

This current study used the same approach as Chang's (2005) study. An initial analysis indicated that employees selected on average 2.2 responses to this question out of 10 potential responses. Next, this study examined all of an employee's responses and determined that there was little to no difference between an employee's initial response category and the category of the majority of responses from an employee. In fact, approximately 6% (267 out of 4,418) of all households' initial responses differed from their majority response. Thus, similar to Chang's study, the current study used an employee's initial response to categorize its information source. Table 4 contains the information source variable and their measurements. For the ordered logistic

regression analysis, only the Formal Advisor variable was used since that is the focus of the study, thus, the employees who use a formal advisor were contrasted with those who do not use a formal advisor.

Table 4

Information Source Variables

Variables	Measurements
Formal Advisor	= 1 if information sources were a financial planner, banker, lawyer, accountant, material from work/business contact, broker; 0 otherwise
Informal Advisor	= 1 if information sources were friends and family, self, don't shop around, and other personal research; 0 otherwise
Public Source	= 1 if information sources were calling around, magazine/newspaper, material in the mail, online/internet, advertising, TV; 0 otherwise

Other Variables

Researchers have found evidence of a significant relationship between other variables and financial behaviors. Therefore, these variables were identified and controlled for in an attempt to examine the relationship between the use of financial information from a formal advisor and the financial behaviors of low-income employees. One relevant variable for this study was a planning variable (PLANNING). Research has shown that planners are financially better off than non-planners (Lusardi & Mitchell, 2005). The planning variable (PLANNING) was a binary variable and was dichotomized to equal "1" if the employee either reported planning for the next few years, planning for the next 5 to 10 years or planning for longer than 10

years at the time of this study and “0” if the employee reported planning for the next year or planning for the next few months.

Additionally, it was important to identify and control for any demographic and socioeconomic variables that may influence financial behaviors. Demographic variables included in this study were age, education, gender, and race due to their noted correlation with financial behaviors. The age variable (AGE) was a continuous variable representing the chronological age of an employee at the time of the study. A dummy variable (MALE) reflected the gender of the employee, with a “1” representing an employee whose gender was male. An education variable (EDUCATION) was a continuous variable representing the years of education completed by an employee at the time of the study. The race variable (MINORITY) was a nominal variable with a “1” representing an employee’s race as African American, Hispanic or other minorities. Additionally, a self-employed (SELF-EMPLOYED) variable was a binary variable with a “1” representing an employee who reported being self-employed at the time of the survey. Table 5 lists all of the other variables used in this study and their measurements.

Table 5

Other Variables

Variables	Measurements
PLANNING	= 1 if plan for next few years, next 5-10 years, more than 10 years, 0 if plan for next year or next few months
AGE	= Chronological age of respondent
MALE	= 1 if the respondent’s gender is male, 0 if gender is female
EDUCATION	= years of education completed

Variables	Measurements
MINORITY	= 1 if race is African American, Hispanic, or other minorities, 0 if race is Caucasian
SELF-EMPLOYED	= 1 if Self-employed, 0 otherwise

Statistical Analysis

Data from the 2007 Survey of Consumer Finances (SCF) analyzed with the SAS statistical package were used in this study. The first hypothesis (H_1) was tested by comparing the percentage of acceptable savings and acceptable cash-flow management behaviors between income subsamples. Likewise, the data were used to analyze the second hypothesis (H_2) to examine the relationship between the use of financial information from a formal advisor and the percentage of acceptable savings and cash-flow management behaviors reported by low-income employees. Specifically, the data analyses for this study utilized the SAS statistical package, version 9.2.

The first data analysis step generated descriptive statistics to describe the demographic and socioeconomic characteristics of the overall employee sample as well as the low-income, middle-income and high-income employee subsamples. Since the 2007 SCF is a complex sample design, the data had to be weighted to accurately reflect the representation of smaller groups in the population, such as minorities. The second data analysis step provided information pertaining to low-income, middle-income and high-income employees' information source; in essence, statistics to describe whether low-income, middle-income and high-income employees used information from formal advisors, informal advisors or public sources. In addition, the researcher provided information which described low-income, middle-income and high-income employees' detailed information sources within these three major categories. In other words, within the

formal advisor category, do low-income employees use information from a financial planner, a broker, material from work/business contact, a banker, an accountant, and a lawyer?

The third data analysis step compared the percentages of acceptable savings and acceptable cash-flow management behaviors of low-income, middle-income, and high-income employees. The percentage of acceptable financial behaviors or the percentage of “1” responses to financial behavior variables was calculated for each income subsample for the savings and cash-flow management categories. Significant differences between percentages were determined through an independent sample t-test.

The fourth data analysis step created two financial behavior indices that were used as the dependent variables in the ordered logistic regression models. The SAVINGS INDEX was used to rank the savings behaviors of each income subsample as low, medium or high based on the percentage of acceptable savings behaviors. Those employees who reported 70% or more of the acceptable savings behaviors were ranked as having *high* savings behavior, whereas those employees who reported greater than 25% and less than 70% of the acceptable savings behaviors were ranked as having *medium* savings behavior. Likewise, those employees who reported savings behaviors that were equal to or less than 25% of the acceptable saving behaviors were ranked as having *low* savings behavior. The same measurements were used for the CASH-FLOW INDEX. These indices were used as the dependent variables in the ordered logistic regressions, and within the SAS code high behavior were assigned a value of 3, medium behavior was assigned a value of 2, and low behavior was assigned a value of 1.

The final data analysis step consisted of an ordered logistic regression analysis, which was necessary to test the significance of the relationships between the independent variables and the dependent variable within this study. Two ordered logit regression models were used to test

the relationships, in particular the relationship between information from a formal advisor variable (FORMAL ADVISOR) and the dependent variables, which were SAVINGS INDEX and CASH-FLOW INDEX.

The ordered logistic regression model was an appropriate statistical analysis since the dependent variables or financial behavior indices were ordered nominal dependent variables with more than two response categories. The response categories had a meaningful sequential order where each value was higher than the previous one (low, medium and high) and the relationship between the dependent variable and independent variables was non-linear (Stock & Watson, 2007). The ordered logistic regression model uses the probability odds model to determine the probability that the dependent variable (Y) will fall into one category versus another category, in particular the higher categories, given the independent variables.

The probability odds models are as follows:

$$\text{logit}(P1) = \log \frac{P1}{1-P1} = \alpha + Bx1 \quad (1)$$

$$\text{logit}(P1 + P2) = \log \frac{P1+P2}{1-P1-P2} = \alpha + B'x1 \quad (2)$$

$$\text{logit}(P1 + P2 + \dots Pk) = \log \frac{P1+P2+\dots Pk}{1-P1-P2-\dots Pk} = \alpha + B'x1 \quad (3)$$

The ordered logistic regression model utilizes the chi-square test to determine if an independent variable has a significant correlation with the dependent variable. Coefficients generated from the ordered logit regression model for each independent variable can be estimated by maximum likelihood. Additionally, an odds ratio estimate is generated for each independent variable (Snedker, Glynn, & Wang, 2002). It was not necessary to weigh the data

for these ordered logistic regression models due to the one to one relationship between the dependent variable and independent variables.

Two ordered logistic regression models were run using data from the low-income employee subsample to determine significant factors affecting the financial behaviors of low-income employees. For comparison purposes, these two ordered logistic regression models also were run using data from the middle-income and the high-income employee subsamples to test the relationship between the dependent and independent variables. As previously mentioned, there were two ordered logistic regression models for this study, one for each financial behavior index. These ordered logistic regression models are as follows:

$$\text{SAVINGS INDEX} = B_0 + B_1 \text{ FORMAL ADVISOR} + B_2 \text{ PLANNING} + B_3 \text{ MINORITY} + B_4 \text{ SELF-EMPLOYED} + B_5 \text{ EDUCATION} + B_6 \text{ MALE} + B_7 \text{ AGE} + e \quad (4)$$

$$\text{CASH-FLOW INDEX} = B_0 + B_1 \text{ FORMAL ADVISOR} + B_2 \text{ PLANNING} + B_3 \text{ MINORITY} + B_4 \text{ SELF-EMPLOYED} + B_5 \text{ EDUCATION} + B_6 \text{ MALE} + B_7 \text{ AGE} + e \quad (5)$$

Within the first data analysis step, which generated sample characteristics for each income subsample, data from the 2007 SCF were weighted to ensure that actual statistics, such as means and percentages of specific groups, were in line with national averages. Additionally, the 2007 SCF contains five implicates, or five duplicate sets of data that used various methods to account for missing data within the survey. To avoid analysis errors related to these five implicates, the RII technique was used. Based on the RII technique, the researcher generated individual statistics for each of the five individual implicates and then overall results and statistics were generated. In the ordered logistic regression analysis step, to again avoid analysis errors related to these five implicates, the RII technique was used. The researcher ran individual

ordered logistic regressions for each of the five implicates and then overall results and statistics were again generated. Weighted data was not used in the ordered logit regression model.

CHAPTER 4

RESULTS

Results from the empirical analysis are presented and discussed the four sections in this chapter. The first section presents socioeconomic characteristics and descriptive results for the entire employee sample as well as for the three income employee subsamples: (1) low-income employees (2) middle-income employees and (3) high-income employees. These demographic and socioeconomic characteristics and descriptive results are reported in Tables 6 and 7.

The second section presents the overall and individual information sources for the three income subsamples in Figures 2 through 5. Figure 2 describes the three major information sources identified as (1) formal advisors (2) public sources and (3) informal advisors. Figure 3 describes the individual formal advisors used by the three income subsamples; individual formal advisors include financial planners, material from work/business contacts, bankers, brokers, lawyers, insurance agents, accountants, and other institutional sources. Figure 4 describes the individual public sources of information used by the three income subsamples, while Figure 5 describes the individual informal advisors used by the three income subsamples.

The third section presents descriptive and comparative results from the financial behaviors frequency analysis related to the first hypothesis (H1). Thus, this analysis compared the three income subsamples' percentages of acceptable savings and acceptable cash-flow management behaviors. Results of this frequency analysis, as well as independent sample t-test results, are reported in Table 8.

The fourth section presents the ordered logistic regression analysis results from two models for low-income employees related to the second hypothesis (H₂). The results of the first model used to assess the relationship between the use of information from a formal advisor and the cash-flow management behaviors (dependent variable) of low-income employees are presented in Table 9. The results of the second model used to assess the relationship between the use of information from a formal advisor and the savings behaviors (dependent variable) of low-income employees are presented in Table 10. For additional insights, results from the ordered logistic regression models for middle-income and high-income employees were compared to those of low-income employees (Tables 9 and 10).

Socioeconomic and Descriptive Results

Socioeconomic Characteristics of the Employee Sample

The sample used in this study came from the 2007 Survey of Consumer Finances (SCF) and the employee sample for this study was created by segmenting these data based on employment status. There were 3,241 employees in this sample; this included all individuals who, at the time of the survey, reported working, including those who were working temporarily/seasonal and those who were self-employed. The socioeconomic characteristics of the employee sample are described in Tables 6 and 7. The majority of respondents (70%) lived in households with one to three people, while the smallest percentage of respondents (1%) lived in households with seven to ten people (Table 6). The mean household size within this employee sample was 2.8 people, and the weighted average or mean household income was \$56,623 (Table 7).

The racial make-up of this employee sample was 73% Caucasian, 12% African American, 11% Hispanics and 4% other minorities: Asians, American Indians, and Native Hawaiians (Table 6). All respondents in this employee sample were 18 years old or older. At the time of the survey, the mean age of all respondents in the employee sample was 43 years old, while the mode age was 52 (Table 7).

As for educational attainment, the largest percentage of respondents (28%) graduated from high school, while the next largest percentage of respondents (25%) graduated from high school and completed some college (Table 6). Overall, the mean number of years of education completed for respondents within the employee sample was 13.7 years (Table 7). Sample characteristics of this employee group indicated they were predominately Caucasian, male, married, smaller households, high-school graduates, with a mean age of 43, and primarily employed by someone else. Weighted data and the RII technique were used to generate the sample characteristics.

Table 6

Socioeconomic Characteristics – Employee and Income Subsamples Statistics (% of total)

	% of Total Employees (n=3,241)	% of Low- Income Employees (n=1,006)	% of Middle- Income Employees (n=847)	% of High- Income Employees (n=1,016)
Household Size				
1-3	70%	65%	70%	78%
4-6	29	33	29	22

Characteristics	% of Total	% of Low-	% of Middle-	% of High-
	Employees (n=3,241)	Income Employees (n=1,006)	Income Employees (n=847)	Income Employees (n=1,016)
7-10	1	2	1	0
Gender				
Male	77	67	82	91
Female	23	33	18	9
Race				
Caucasian	73	59	82	85
African- American	12	17	10	7
Hispanic	11	18	5	3
Other	4	6	3	5
Marital Status				
Married	67	57	70	82
Single	33	43	30	18
Education				
Less than HS	10	19	6	1
Graduated HS	28	37	27	11
Some College	25	27	29	17
College Education	22	12	26	36

Characteristics	% of Total Employees (n=3,241)	% of Low-	% of Middle-	% of High-
		Income Employees (n=1,006)	Income Employees (n=847)	Income Employees (n=1,016)
Graduate degree	15	5	12	35
Age				
18 - 30	19	29	15	9
31-50	54	51	60	55
51 and up	27	20	25	36
Employed ^(a)	85	88	89	89
Self-Employed	15	12	11	11
Planning	70	57	77	81
Non-planning	30	43	23	19

Notes: a.) Employed full time, part time or employed temporary/seasonal

Table 7

Socioeconomic Characteristics – Employee and Income Subsamples Statistics (Mean & SD)

Characteristics	Total Employee		Low-Income Employees		Middle-Income Employees		High-Income Employees	
	Mean	(SD)	Mean	(SD)	Mean (a)	(SD)	Mean (b)	(SD)
Household size	2.8	1.4	3.0	1.5	2.7 ^{***}	1.2	2.5 ^{***}	1.2
Income	\$56,623	7,458	16,549	10,814	53,518 ^{***}	21,115	143,519 ^{***}	11,757

Characteristics	Total Employee		Low-Income Employees		Middle-Income Employees		High-Income Employees	
	Mean	(SD)	Mean	(SD)	Mean (a)	(SD)	Mean (b)	(SD)
	Age	43	13	40	13	43***	11	47***
Education (Yrs. Comp.)	13.7	2.6	12.4	2.8	14.0***	2.2	15.4***	1.7

Notes: a.) Significant difference between, middle-income and low-income employees at the $p < .001$ level

b.) Significant difference between high-income and low-income employees at the $p < .001$ level

c.) *** $p < .001$, ** $p < .01$, * $p < .05$

Socioeconomic Characteristics of the Three Income Subsamples

The employee sample for this study was created by segmenting data within the 2007 Survey of Consumer Finances (SCF) based on employment status. Included in the sample were all individuals who, at the time of the survey, reported working, including those who were working temporarily/seasonal and those who were self-employed. This larger employee sample was further segmented to create three income subsamples: (1) low-income employees – the focal group (2) middle-income employees and (3) high-income employees, based on household income and household size. Thus, of the 3,241 employees, 372 could not be classified as low, middle or high-income employees due to inadequate information related to their household income, such as household incomes of 0 or less than 0. The socioeconomic characteristics of these three income subsamples are described in Tables 6 and 7. There were 1,006 low-income employees in the focal group. Low-income employees were defined as employees with household incomes equal to or less than 200% of the 2007 U.S. poverty limit, based on household size.

There were 847 middle-income employees in the sample; middle-income employees were defined as employees with household incomes greater than 200% or less than and equal to 494% of the 2007 U.S. poverty limit. Moreover, there were 1,016 high-income employees in this sample; high-income employees were defined as employees with household incomes greater than 494% of the 2007 U.S. poverty limit. The demographic characteristics of middle-income and high-income employees were compared to the focal group, low-income employees, through an independent sample t-test, and the results indicated significant differences...

The majority of respondents who were low-income employees lived in households with one to three people (65%), including themselves, while the smallest percentage of low-income employees (2%) lived in households with seven to ten people (Table 6). The mean household size of low-income employees was 3.0 people, which was significantly larger than the mean household size of middle-income employees which was 2.7 ($t(1,840) = 3.20, p < .0022$) and even larger than the mean household size of high-income employees which was 2.5 ($t(2,007) = 5.26, p < .0001$) (Table 7). However, similar to low-income employees, the majority of middle-income employees (70%) and high-income employees (78%) lived in households with one to three people, including themselves (Table 6).

As for race, the majority of low-income employees were Caucasians (59%). However, low-income employees had the largest percentage of minorities (41%), as compared to the percentage of middle-income minority employees (18%) and high-income minority employees (15%). Hispanics (18%) represented the largest percentage of minorities in the low-income employee subsample, while African-Americans represented the largest percentage of minorities in the middle-income (10%) and high-income employee (7%) subsample (Table 6). At the time of the survey, the mean age of low-income employees was 40, which was significantly younger

than the mean age of middle-income employees which was 43 ($t(1,840) = 5.63, p < .0001$) and even younger than the mean age of high-income employees which was 47 ($t(2,007) = 17.69, p < .0001$). The mean household income of low-income employees was \$16,549, while the mean household income of middle-income employees was \$53,518 ($t(1,840) = 32.52, p < .0001$) and the mean household income of high-income employees was \$143,519 ($t(2,007) = 6.29, p < .0001$) (Table 7). Results from a t-test indicated a significant difference between the comparable statistics for low-income, middle-income and high-income employees.

On average, low-income employees completed 12.4 years of education (Table 7), with 37% of low-income employees graduating from high school and only 27% graduating from high school as well as completing some college. The highest education attainment of most middle-income employees was completing some years of college. Thus largest percentage of middle-income employees graduated from high school and completed some college (29%), followed by the next largest percentage of middle-income employees who graduated from high school (27%). The highest education attainment of most high-income employees was to obtain a bachelor's degree. The largest percentage of high-income employees graduated with a bachelor's degree (36%), closely followed by those who also graduated with a graduate degree (35%) (Table 6). Results from a t-test indicated a significant difference between the comparable statistics for low-income, middle-income and high-income employees.

Information Source Results

One key variable in this study was the information sources of low-income employees. A primary question was; "What information sources do you use to make decisions about savings

and investments?” Figures 2 through 5 describe statistics that answer this question, as well as describe the information sources for middle-income and high-income employees.

Although respondents could designate up to 10 information sources, the initial response to the information source question in the SCF was used. The decision to use the initial response was based on the results of an overlap analysis that was described in the methodology section. Figure 2 describes the percentages of low-income, middle-income and high-income employees who relied on the three major categories for their financial information when making savings and investment decisions: (1) formal advisors (2) informal advisors and (3) public sources. Of these three major categories, the highest proportion of low-income employees (36.9%) relied on informal advisors, while most middle-income employees (42%) relied on public sources for their financial information. Furthermore, the highest proportion of high-income employees (45%) relied on formal advisors for their financial information (Figure 2). These percentages are based on the total sample size of 1,006 low-income employees, 847 middle-income employees, and 1,016 high-income employees. Although most low-income employees relied on informal advisors and most middle-income employees relied on public sources for their financial information, both groups also used formal advisors. In fact, 26% of low-income employees used formal advisors for their financial information, while 33% of middle-income employees used formal advisors. Additionally, the least amount of middle-income (25%) and high-income employees (20%) relied on informal advisors for their financial information.

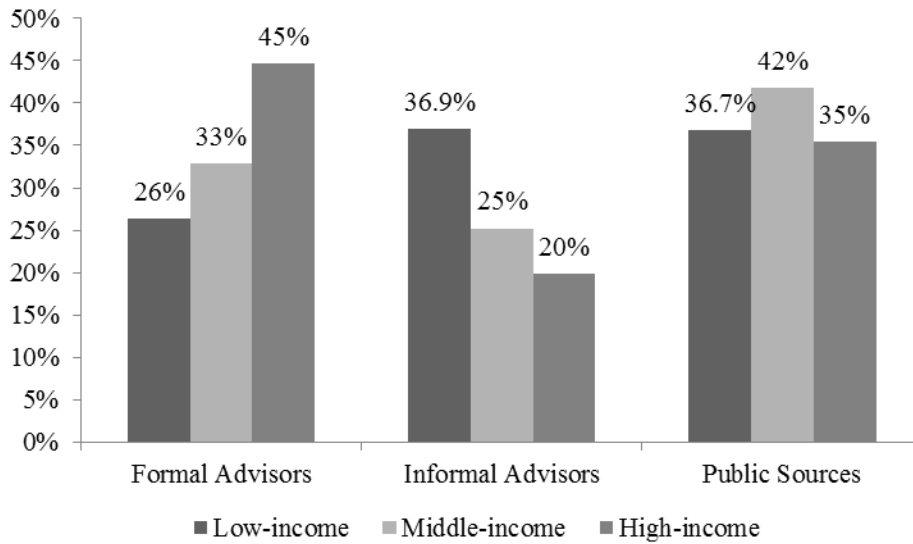


Figure 2. Percent of Each of the Three Income Subsamples by Category Primary Information Source (% of total categories)

Figure 3 describes statistics about individual formal advisors as information sources. Bankers, followed by financial planners, were the formal advisors relied on by more employees within all three income subsamples for financial information compared to the other formal advisors. The highest percentage of low-income employees (52%) and middle-income employees (35%) used bankers compared to other formal advisors, while more high-income employees (41%) used financial planners for their information source. Although most high-income employees used financial planners, the second highest percentage of high-income employees used bankers as their source of information (24%). Furthermore, brokers were also a popular formal advisor information source for all three subsamples. More high-income employees (16%) used information from brokers compared to the other two income subsamples, followed by the percentage of low-income employees (13%), and middle-income employees (12%) who used information from brokers (Figure 3). These percentages were based on the total

number of low-income employees (266), middle-income employees (280) and high-income employees (457) that used formal advisors for their information source.

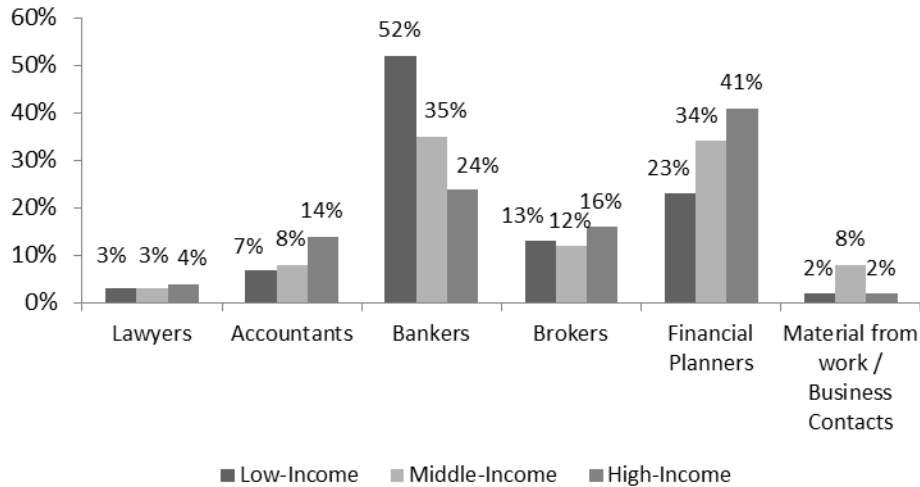


Figure 3. Specific Information Sources within the Formal Advisor Category (% of total formal advisors)

Figure 4 describes statistics about individual public sources as information sources such as the internet, TV/radio, calling around, material in the mail, advertisements and magazines/newspapers. As previously stated, the highest percentage of middle-income employees (42%) relied on public sources for their financial information, followed by the percentage of low-income employees (36.7%), and high-income employees (35%) (Figure 2). Within the public source category, most low-income employees (41%) and middle-income employees (45%) *called around* for their financial information. In contrast, among the individual public sources, the highest percentage of high-income employees (32%) used magazines/newspapers for their financial information. However, 19% of low-income employees and middle-income employees also used magazines/newspapers for their financial information. The internet was also a popular public source of information for all three income subsamples.

Among the three subsamples, a higher percentage of high-income employees (29%) used the internet as an information source, followed by middle income employees (24%), while the least number of low-income employees (20%) used the internet (Figure 4). These percentages were based on the total number of employees who used public sources for their information, which was 369 low-income, 355 middle-income and 356 high-income employees.

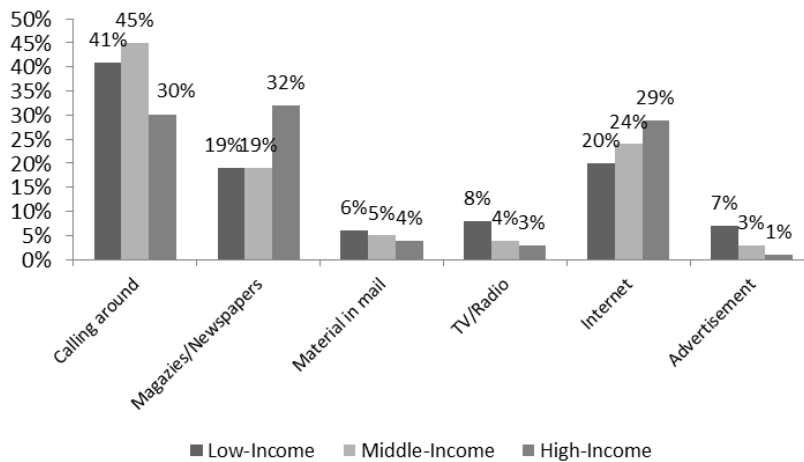


Figure 4. Detailed Information Sources within the Public Source Category (% of total public sources)

Figure 5 describes statistics about informal advisors as information sources. These informal advisors include: friends and family, self (i.e., employees relied on themselves for financial information), other personal experiences, don't shop around, and do not save. Of the three income subsamples, most low-income employees (36.9%) relied on informal advisors, followed by middle-income employees (25%) and the smallest percentage of high-income employees (20%) (Figure 2). Among informal advisors, more than half of all low-income (53%) and middle-income employees (60%) primarily used friends and family for their financial information. On the contrary, only 47% of high-income employees used friends and family as

their information source. The informal advisor relied on by the most high-income employees (52%) was themselves (Figure 5). These percentages were based on the total number of employees who used informal advisors for their information source which was 371 low-income, 212 middle-income and 203 high-income employees.

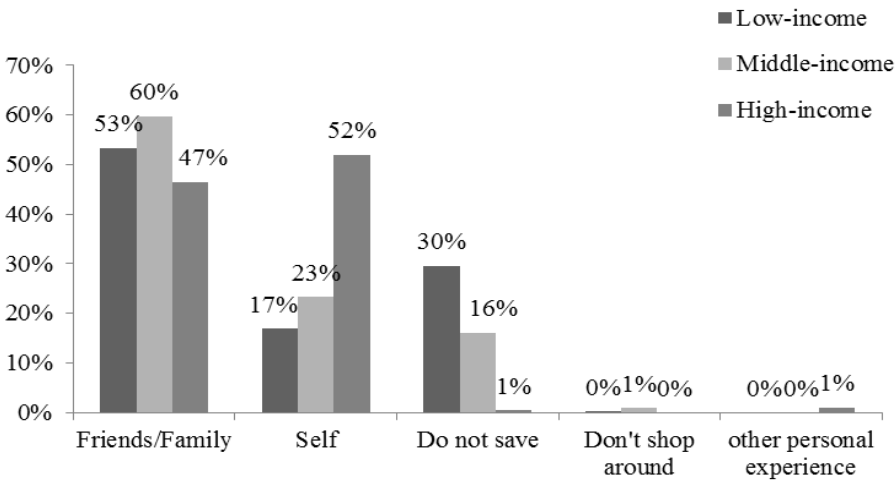


Figure 5. Detailed Information Sources within the Informal Advisor Category (% of total informal sources)

Financial Behavior Results

Savings Behaviors

The first research question in this study asked whether the financial behaviors of low-income employees were different from those of employees in other income segments of the workforce. The financial behaviors examined in this section are savings behaviors. Thus, this study sought to determine if the percentage of acceptable savings behaviors reported by low-income employees was significantly different from and less acceptable than those of middle-income and high-income employees. Results from the financial behaviors frequency analysis, and t-test, indicated that the savings behaviors of low-income employees were significantly

different from and less acceptable than the savings behaviors of middle-income and high-income employees (Table 8). These results confirmed the savings behaviors proportion of the first hypothesis (H1)

Low-income employees' individual acceptable savings behaviors were all lower than those of middle-income and high-income employees', while the acceptable percentages of middle-income and high-income employees were closer or there was a smaller gap between these two percentages. As reported in Table 8, low-income employees' percentage of acceptable savings behaviors was 34%, which was significantly different from and less acceptable than middle-income employees' percentage of acceptable savings behaviors which was 51% ($t(1,840) = 16.46, p < .0001$). Additionally, low-income employees' percentage of acceptable savings behaviors of 35% was significantly different from and less acceptable than high-income employees' percentage of acceptable savings behaviors which was 64% ($t(2,007) = 30.49, p < .0001$). For this study 1,006 low-income 847 middle-income and 1,016 high-income employees were used in this analysis, data were weighed and the RII technique was used in this analysis (Table 8).

There was a 30% gap between low-income employees' percentage of acceptable savings behaviors and that of high-income employees. This large disparity was primarily due to three of the five individual savings behavior questions that asked employees: (1) Do you have an IRA? (2) Do you have a tax deferred account or retirement account through your employer? and (3) Do you save on a monthly basis? Only 20% of all low-income employees reported having an IRA, compared to 67% of high-income employees who reported having an IRA ($t(2,007) = 24.12, p < .0001$). Moreover, only 30% of all low-income employees reported that they had a tax deferred account or retirement account through their employer, compared to 69% of all high-

income employees ($t(2,007) = 18.98, p < .0001$). Lastly, only 70% of low-income employees reported that they saved on a monthly basis, compared to 97% of high-income employees ($t(2,007) = 17.34, p < .0001$). These savings behaviors as well as all other saving behaviors are reported in Table 8, and the % of total column represents the percentage of acceptable or unacceptable behaviors for each financial behavior and total behaviors.

Table 8

Savings and Cash-Flow Management Behaviors Analysis

Behaviors	Low-		Middle-		High-	
	Income Employees (n= 1,006)	% of Total(a)	Income Employees (n= 847)	% of Total(a)	Income Employees (n= 1,016)	% of Total(a)
Savings Behaviors:						
Save on a monthly basis						
Yes	705	70%	729	86%	986	97%
No	301	30	118	14	30	3
Have a savings account						
Yes	433	43	525	62	661	65
No	573	57	322	38	355	35
Have a CD						
Yes	71	7	111	13	204	20
No	935	93	736	87	812	80
Have a retirement account						
Yes	302	30	475	56	700	69
No	704	70	372	44	316	31
Have an IRA						

Behaviors	Low-		Middle-		High-	
	Income Employees (n= 1,006)	% of Total(a)	Income Employees (n= 847)	% of Total(a)	Income Employees (n= 1,016)	% of Total(a)
Yes	201	20	338	40	681	67
No	805	80	509	60	335	33
Total Acceptable Behaviors	1,712	34	2,178	51	3,232	64
Total Unacceptable Behaviors	3,318	66	2,057	49	1,848	36
Cash-Flow Management Behaviors:						
Pay loans on time						
Yes	533	53%	627	74%	813	80%
No	472	47	220	26	203	20
Spending= or < income						
Yes	774	77	704	83	945	93
No	232	23	143	17	71	7
Automatically deposited						
Yes	554	55	653	77	874	86
No	452	45	194	25	142	14
Checking account						
Yes	824	82	822	99	1005	99
No	182	18	25	1	11	1
Total Acceptable Behaviors	2,685	67	2,806	83	3,637	89
Total Unacceptable Behaviors	1,338	33	582	17	427	11

Note: a.) % of total column= percentage of acceptable and unacceptable behaviors

Cash-Flow Management Behaviors

Again, the first research question asked whether the financial behaviors of low-income employees were different from those of employees in other income segments of the workforce. The financial behaviors examined in this section are the cash-flow management behaviors. Thus, this study sought to determine if the percentage of acceptable cash-flow management behaviors reported by low-income employees was significantly different from and less acceptable than those of middle-income and high-income employees. Results from the financial behaviors frequency analysis, and t-test, indicated that the percentage of cash-flow management behaviors of low-income employees were significantly different from and less acceptable than the comparable percentages for middle-income and high-income employees. These results confirmed the cash-flow management behaviors proportion of first hypothesis (H_1)

Low-income employees' individual acceptable cash-flow management behaviors were all much lower than those of middle-income and high-income employees', while the acceptable percentages of middle-income and high-income employees were relatively close. As reported in Table 8, low-income employees' percentage of acceptable cash-flow management behaviors was 67%, which was significantly different from and less acceptable than middle-income employees' percentage of acceptable cash-flow management behaviors, which was 83% ($t(1,840) = 14.42$, $p < .0001$). Additionally, low-income employees' percentage of acceptable cash-flow management percentage of 67% was significantly different from and less acceptable than high-income employees' percentage of acceptable cash-flow management behaviors, which was 89% ($t(2,007) = 24.34$, $p < .0001$).

The disparity in the percentage of acceptable cash-flow management behaviors was smaller between the income subsamples than the disparity between the percentages of acceptable

saving behaviors (22% vs. 30%). The cash-flow management behaviors disparity was primarily influenced by two of the four cash-flow management behavior questions that asked employees: (1) Do you have money automatically deposited into an account? and (2) Do you pay your loans ahead of schedule or on schedule? Only 55% of all low-income employees reported having money automatically deposited into an account, compared to 86% of all high-income employees ($t(2,007) = 16.56, p < .0001$). Furthermore, only 53% of all low-income employees reported that they either paid their loans ahead of schedule or on schedule, compared to 80% of all high-income employees ($t(2,007) = 13.88, p < .0001$). These behaviors as well as all cash-flow management behaviors are reported in Table 8.

Ordered Logistic Regression Results

The second research question asked whether financial information from a formal advisor would have a positive effect on the financial behaviors (savings and cash-flow management behaviors) of low-income employees. In essence, is there a significant and positive relationship between the use of financial information from a formal advisor and low-income employees' adoption of acceptable savings and acceptable cash-flow management behaviors? This section presents the results of two ordered logistic regressions used to address this research question. The results from the first regression are presented in Table 9. This analysis assessed whether there was a significant and positive relationship between the use of financial information from a formal advisor and low-income employees' acceptable cash-flow management behaviors. Additionally, insights were gained by comparing these results to those from two additional regression analyses which examined the same relationship for middle-income and high-income employees, respectively (Table 9). The results from an ordered logistic regression analysis of

savings behaviors are presented in Table 10. These regressions assessed whether there was a significant and positive relationship between the use of financial information from a formal advisor and low-income employees' acceptable savings behaviors. Insights were gained by comparing these results to those from two regressions which examined the same relationship for middle-income and high-income employees, respectively (Table 10). For all ordered logistic models, 1,006 low-income, 847 middle-income and 1,016 high-income employees, and the RII technique was used.

Ordered Logistic Regression Results on Cash-flow Management Behaviors

The second research question asked whether information from a formal advisor would have a positive effect on financial behaviors: (1) the cash-flow management behaviors and (2) the savings behaviors of low-income employees. This section focuses on the first part of that research question, cash-flow management behaviors. Thus, this researcher sought to determine if there was a significant and positive relationship between the use of information from a formal advisor and the proportion of acceptable cash-flow management behaviors reported by low-income employees. Results from the first ordered logistic regression analysis indicated a significant and positive relationship between the use of financial information from a formal advisor and the proportion of acceptable cash-flow management behaviors reported by low-income employees. These results confirmed the cash-flow management behaviors proportion of the second hypothesis (H_2) and are reported in Table 9. This ordered logistic regression model also gave the log odds or the likelihood that the cash-flow management behaviors of employees in each income subsample would be ranked as high or medium rather than low, or ranked as low rather than high or medium.

The statistics from this ordered logistic regression model indicated that the model convergence criterion was satisfied, which concludes that the maximum likelihood algorithm converged for this model. Hence, coefficients generated from the ordered logistic regression model for each independent variable can be estimated by maximum likelihood. Likewise, the model was determined to be a good fit for this study, based on the Akaike Information Criterion (AIC), the Schwarz Criterion (SC), and the -2 Log L test. The Score Test for Proportional Odds assumption concluded that the ordered logistic coefficients may not be equal across the three possible outcomes of the dependent variable (low, medium and high) or in other words the model failed this test. However, this result could be due to small sample sizes within one of the three possible outcomes and therefore is not a true failure that could impact the findings of this model (SAS Knowledge Base, 2012). Separate binary models, or models that used binary dependent variables, comparing low-income to middle-income as well as low-income to high-income employees were run to determine whether the results of the ordered logistic model appeared to be biased. The findings from the binary models were consistent with the findings of the ordered logistic models, and therefore the findings from the ordered logistic model were interpreted and used. The results of the model comparison are reported in Appendix B. Additionally, there were two intercepts in this regression model because there are three categories in the dependent variable.

As previously stated, the results of the first ordered logistic regression model indicated a significant and positive relationship between the use of information from a formal advisor and the proportion of acceptable cash-flow management behaviors reported by low-income employees (partially confirming H2). The cash-flow management behaviors of low-income employees who used financial information from formal advisors were 1.61 times more likely to

be ranked high or medium rather than low, than the behaviors of low-income employees who used financial information from informal advisors or public sources. This relationship was not significant for middle-income or high-income employees (Table 9).

Table 9

Likelihood of High or Medium Cash-Flow Management Behaviors

Variables	Low-Income Employees (n=1,006) b, c		Middle-Income Employees (n=847) b, d		High-Income Employees (n=1,016) b, d	
	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio
Formal advisor	0.478*** (0.163)	1.61	0.313 (0.218)	1.37	0.212 (0.306)	1.24
SE						
Planning	0.572*** (0.136)	1.78	0.472* (0.214)	1.60	0.938** (0.350)	2.70
SE						
Minority	-0.596*** (0.140)	0.55	-0.753* (0.221)	0.47	-0.738 (0.424)	0.49
SE						
Self-Employed	0.168 (0.215)	1.18	0.026 (0.296)	1.03	-0.604* (0.318)	0.53
SE						
Education	0.181*** (0.025)	1.10	0.201*** (0.042)	1.22	0.113 (0.077)	1.12
SE						
Male	-0.395*** (0.145)	0.77	-0.363 (0.251)	0.70	-0.556 (0.593)	0.59
SE						
Age	0.058*** (0.006)	1.03	0.019 (0.009)	1.02	-0.041 (0.011)	0.96
SE						
Intercept	-2.751		-1.790		3.443	

	Low-Income Employees (n=1,006) b, c		Middle-Income Employees (n=847) b, d		High-Income Employees (n=1,016) b, d	
	Coefficients		Coefficients		Coefficients	
Variables	(SE)	Odds ratio	(SE)	Odds ratio	(SE)	Odds ratio
SE	(0.438)		(0.737)		(1.520)	
Intercept	-1.355		-0.210		6.194	
SE	(0.430)		(0.749)		(1.604)	

Notes: a.) ***p< .001, **p< .01, * p< .05

b.) Likelihood Ratio Test, $p < .0001$, Score Test, $p < .0001$, Wald Test, $p < .0001$

c.) Score Test for Proportional Odds assumption, $p < .05$

d.) Score Test for Proportional Odds assumption, $p > .05$

Ordered Logistic Regression Results on Other Variables

As discussed in the methodology section, other variables, specifically planning, gender, race, education, age and self-employed, were controlled for and included as independent variables in the ordered logistic regressions. The results on these variables are reported in Table 9 as secondary findings. There was a significant and positive relationship between planning and the proportion of acceptable cash-flow management behaviors reported by low-income, middle-income and high-income employees. Thus, the cash-flow management behaviors of low-income employees, who were planners, were 1.78 times more likely than those of non-planners to be ranked high or medium rather than low. Additionally, the cash-flow management behaviors of middle-income and high-income employees who were planners were 1.60 and 2.70 times more likely than the behaviors of non-planners to be ranked high or medium rather than low (Table 9).

In contrast, results indicated a significant and negative relationship between race and the proportion of acceptable cash-flow management behaviors reported by low-income employees, as well as a significant and negative relationship between gender and the proportion of

acceptable cash-flow management behaviors of low-income employees. In the model, race and gender were represented by binary variables MINORITY and MALE. Thus, the cash-flow management behaviors of low-income minority employees were more likely, relative to those of Caucasians, to be ranked low rather than high or medium. This relationship also was significant and negative for middle-income minority employees, but not for high-income minority employees. Additionally, the cash-flow management behaviors of low-income employees who were male were more likely than the behaviors of females to be ranked low rather than high or medium (Table 9). This relationship was not significant for middle-income and high-income male employees.

Furthermore, results indicated a significant and positive relationship between education and the proportion of acceptable cash-flow management behaviors reported by low-income and middle-income employees. Specifically, for each additional year of education, the odds of the cash-flow management behaviors of low-income employees and middle-income employees being ranked as high or medium, rather than low, increased by a multiple of 1.10 and 1.22, respectively. This relationship was not significant for high-income employees (Table 9).

Finally, a significant and positive relationship between age and the proportion of acceptable cash-flow management behaviors was found for low-income employees but not for middle-income and high-income employees. Thus, for each additional year of age, the odds of low-income employees' cash-flow management behaviors being ranked high or medium rather than low increased by a multiple of 1.03 (Table 9). The relationship between self-employed and acceptable cash-flow management behaviors was not significant for low-income or middle-income employees, but was significant and negative for high-income employees.

Ordered Logistic Regression Results on Savings Behaviors

This section focused on the savings behaviors of the second research question. Thus, this researcher sought to determine if there was a significant and positive relationship between the use of information from a formal advisor and the proportion of acceptable savings behaviors reported by low-income employees. Thus, this researcher sought to determine if there was a significant and positive relationship between the use of information from a formal advisor and the proportion of acceptable savings behaviors reported by low-income employees. Results of the second ordered logistic regression, which are reported in Table 10, indicated that there was a significant and positive relationship between the use of financial information from a formal advisor and the proportion of acceptable savings behaviors reported by low-income employees. This result confirms the savings behavior proportion of the second hypothesis (H₂).

The statistics from this ordered logistic regression model indicated that the model's convergence criterion was satisfied which concludes that the maximum likelihood algorithm converged for this model. Hence, coefficients generated from the ordered logistic regression model for each independent variable can be estimated by maximum likelihood. Likewise, the model was determined to be a good fit for this study, based on the Akaike Information Criterion (AIC), the Schwarz Criterion (SC), and the -2 Log L test. Additionally, the Score Test for Proportional Odds assumption concluded that the ordered logistic coefficients were equal across the three possible outcomes of the dependent variable.

The results of the second ordered logistic regression analysis are reported in Table 10. As previously stated the results indicated a significant and positive relationship between the use of financial information from a formal advisor and the proportion of acceptable savings behaviors reported by low-income employees (partially confirming H₂). The savings behaviors of low-

income employees were 1.40 times more likely to be ranked as high or medium rather than low for employees who used financial information from formal advisors than the behaviors of low-income employees who used financial information from informal advisors or public sources. Likewise, the savings behaviors of middle-income employees were 1.41 times more likely to be ranked as high or medium rather than for middle-income employees who used financial information from formal advisors compared to those of middle-income employees who used information from informal advisors or public sources. This relationship was not significant for high-income employees.

Table 10

Likelihood of High or Medium Savings Behaviors

	Low-Income Employees (n=1,006) b, c		Middle-Income Employees (n=847) b, c		High-Income Employees (n=1,016) b, c	
Variables	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio
Formal advisor	0.337** (0.152)	1.40	0.377* (0.150)	1.41	0.003 (0.130)	1.00
SE						
Planning	0.916*** (0.140)	2.50	0.251 (0.169)	1.32	0.879*** (0.201)	2.40
SE						
Minority	-0.461*** (0.144)	0.63	-0.478** (0.186)	0.60	-0.589 (0.221)	0.55
SE						
Self-employed	0.009 (0.192)	1.01	-0.026 (0.190)	0.91	-0.316 (0.141)	0.73
SE						
Education	0.211*** (0.029)	1.23	0.162*** (0.032)	1.18	0.158*** (0.040)	1.17
SE						

Variables	Low-Income Employees (n=1,006) b, c		Middle-Income Employees (n=847) b, c		High-Income Employees (n=1,016) b, c	
	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio	Coefficients (SE)	Odds ratio
Male	-0.297** (0.149)	0.74	.022 (0.192)	1.02	-0.601* (0.301)	.54
Age	0.025*** (0.005)	1.03	.021*** (0.006)	1.02	-0.004 (0.006)	0.99
Intercept	-6.940 (0.518)		-4.950 (0.592)		-2.923 (0.761)	
Intercept	-3.665 (0.462)		-1.858 (0.563)		0.797 (0.755)	

Notes: a.) ***p< .001, **p< .01, * p< .05

b.) Likelihood Ratio Test, p < .0001, Score Test, p < .0001, Wald Test, p < .0001

c.) Score test for Proportional Odds assumption, p > .05

Ordered Logistic Regression Results on Other Variables

Again, other variables were controlled for and included as independent variables in this ordered logistic regression model. As in the previous analysis variables such as planning, gender, race, education, age and self-employed were included. The results for these variables are likewise reported in Table 10. This researcher found a significant and positive relationship between planning and the proportion of acceptable savings behaviors of low-income and high-income employees. Results indicated that the savings behaviors of low-income employees who were planners were 2.50 times more likely than those of non-planners to be ranked as high or medium rather than low. Likewise, the savings behavior of high-income employees who were

planners was 2.40 times more likely than those of non-planners to be ranked as high or medium rather than low (Table 10).

In contrast, the results indicated a significant and negative relationship between race and the proportion of acceptable savings behaviors reported by low-income employees; as well as a significant and negative relationship between gender and the proportion of acceptable savings behaviors reported by low-income employees. In this model race and gender were represented by binary variables MINORITY and MALE. Thus, the savings behaviors of low-income minority employees were more likely relative to those of Caucasians to be ranked as low rather than high or medium. This relationship was also significant and negative for middle-income minority employees, but not significant for high-income minority employees. Additionally, the savings behaviors of low-income employees who were males were more likely than the behaviors of females to be ranked as low, rather than high or medium. This relationship also was found to be significant and negative for high-income male employees but not significant for middle-income male employees (Table 10).

Furthermore, there was a significant and positive relationship between education and the proportion of acceptable savings behaviors reported by all three income subsamples. Specifically, for each additional year of education, the odds of the savings behaviors of low-income employees being ranked as high or medium rather than low increased by a multiple of 1.23. Likewise, for each additional year of education, the odds of the savings behaviors of middle-income and high-income employees being ranked as high or medium rather than low increased by a multiple of 1.18 and 1.17, respectively (Table 10).

Lastly, a significant and positive relationship was found between age and the proportion of acceptable savings behaviors reported by low-income and middle-income employees. Thus,

for each additional year of age, the odds of the savings behaviors of low-income employees being ranked as high or medium, rather than low, increased by a multiple of 1.03. Likewise, for each additional year of age, the odds of the savings behaviors of middle-income employees being ranked as high or medium rather than low increased by a multiple of 1.02 (Table 10). This relationship was not significant for high-income employees. The relationship between self-employed and acceptable savings behaviors was not significant for any income subsample.

CHAPTER 5

SUMMARY AND DISCUSSION

This chapter provides a summary of the findings and a discussion of results within the context of existing research. This chapter also places these findings in the context of the workplace, specifically as it relates to employees. The chapter additionally presents the study's limitations and implications as well as future research that could logically follow this study.

Summary of Findings

The overall purpose of this study was to investigate and understand the financial behaviors of low-income employees, as well as investigate and understand whether their source of financial information could impact their financial behaviors. Thus, this study addressed the following research questions: (1) Are the financial behaviors of low-income employees significantly different from those of employees in other income segments of the workforce? (2) Does information from a formal advisor positively affect the financial behaviors of low-income employees?

Data for this study came from the 2007 Survey of Consumer Finance (SCF). Based on these data, three income subsamples were created: (1) low-income employees, (2) middle-income employees, and (3) high-income employees. Based on these data, three measures were created, one to reflect an employee's self-assessed source of financial information, and two others to measure employees' savings and cash-flow management behaviors. Additionally,

ordered logistic regression models and financial behaviors frequency analyses were used to analyze data and test the hypotheses.

This researcher found that the savings and cash-flow management behaviors reported by low-income employees were significantly different from and less acceptable than the savings and cash-flow management behaviors of middle-income and high-income employees (confirming H₁). In addition, this study found that there was a significant and positive relationship between the use of information from a formal advisor and the acceptable savings behaviors reported by low-income employees, as well as a significant and positive relationship between the use of information from a formal advisor and the acceptable cash-flow management behaviors of low-income employees (confirming H₂). Thus, the savings and cash-flow management behaviors of low-income employees were more likely to be ranked as high or medium rather than low for low-income employees who used information from formal advisors compared to low-income employees who used information from informal advisors or public sources.

The secondary findings of this study were related to other variables that were controlled for in the ordered logistic regression models. A significant and positive relationship was found between planning, education and age and the acceptable savings and acceptable cash-flow management behaviors reported by low-income employees. In contrast, a significant and negative relationship was found between race and gender and the acceptable savings and acceptable cash-flow management behaviors reported by low-income employees.

Discussion

Impact of Financial Information on Low-Income Employees' Financial Behaviors

The primary purpose of this study was to examine the relationship between the use of information from a formal advisor and the financial behaviors of low-income employees. In doing so, this study adds to the body of knowledge related to the financial behaviors of low-income employees. Consequently, this study found that there was a significant and positive relationship between the use of information from a formal advisor and the proportion of acceptable financial behaviors reported by low-income employees. This finding, while only correlational, suggests that financial information from a formal advisor could positively affect the financial behaviors of low-income employees. Moreover, these findings were consistent with results from previous studies where low-income employees were the focal group, as well as those previous studies that focused on all employees in the workplace. As mentioned in the literature review, the vast majority of these studies involve financial information provided by employers or information provided by formal advisors through the employer (Clark et al., 2003).

In a previous study, Rand (2004) found that a financial information program known as “Your Money and Your Life” improved the financial knowledge, as well as the savings behavior, of low-income workers. Rand also evaluated the financial knowledge and savings behavior of 822 low-income workers after they participated in a series of financial information seminars. Findings from the current study were consistent with those from Rand’s study, although the current study used a more robust classification, which defined low-income employees by household income as well as household size. Furthermore, Rand conducted a field experiment with actual savings behaviors, while the current study examined correlations to financial

behaviors. In addition, the current study used an expanded definition of financial behavior that included multiple savings and cash-flow management behaviors.

Another previous study that involved low-income employees focused on self-directed learning and used financial planning material as well as employer-based financial planning material was conducted by Hira and Loibl (2005). Hira and Loibl found a significant and positive relationship between financial planning information provided through self-directed learning and the financial behaviors of low-level insurance workers. The results of the current study were consistent with those from Hira and Loibl's study in that both found a significant relationship between information from a formal advisor and the financial behaviors of low-income employees. These results were consistent despite the fact that Hira and Loibl's primary independent variable was self-directed learning, while the current study's primary independent variable was the information source of low-income employees. Moreover, a more detailed classification was used to define low-income employees in the current study, which included household income and household size, while Hira and Loibl used low-level insurance workers, whom were the lowest-paid employees in the company.

Finally, some previous workplace financial information studies focused on all employees in the workforce, not just low-income employees. These studies found that information from a formal advisor had a positive effect on the financial behaviors of employees (Bayer et al., 1996; Bernheim & Garrett, 2003; Clark et al., 2006; Garman, 1999). Therefore, these findings were consistent with the findings of the current study, even though their methodologies differed. In two particular studies by Bayer et al. and Bernheim and Garrett, the focus of these studies was the "availability" of financial information from an employer as opposed to the use of financial information from formal advisors. Additionally, the focal group of the current study was low-

income employees, while these two previous studies did not focus on any particular segment within the workplace. Additionally, the current study used an expanded definition of financial behavior to assess low-income employees' financial behaviors, which included multiple savings and cash-flow management behaviors.

The Financial Behaviors of Low-Income Employees – Compare and Contrast Findings

A second but equally important purpose of this study was to determine if the financial behaviors of low-income employees were significantly different from and less acceptable than those of middle-income and high-income employees. The researcher found that the savings and cash-flow management behaviors of low-income employees were significantly different from and less acceptable than those of middle-income and high-income employees. This result suggests that low-income employees' financial behaviors were worse than those of middle-income and high-income employees. Previous studies also have demonstrated that those with low income also have poor financial behaviors or low financial knowledge. Again, the current study's focus is financial behaviors, not financial knowledge. However, financial behavior is an application of financial knowledge (Huston, 2010; Remund, 2010) so it was imperative to review and discuss these findings.

Oftentimes, previous researchers examined financial literacy through an individual's savings behavior. Moreover, some of these previous studies have found a significant and positive relationship between earning a lower income and poor savings behaviors (Kim et al., 2005; Munnell et al., 2007). Unlike the methodologies of these previous studies, the current study used an expanded definition of financial behavior, which included not only savings behaviors but also cash-flow management behaviors to find a correlation between those with low-income and poor financial behaviors. Furthermore, the current study used a more detailed classification to define

low-income employees and then compared them to other income subsamples that were defined with the same classification.

Financial literacy also has also been routinely evaluated through an individual's financial knowledge. Those previous studies that have examined a change in an individual's financial knowledge usually established an initial financial knowledge baseline. In these previous studies, one common finding was that low-income individuals displayed low financial literacy, which was assessed through their initial financial knowledge baseline (Lusardi & Mitchell, 2007; Rand, 2004; Zhan et al., 2006). The findings of these previous studies were consistent with those of the current study in that the previous studies found a significant correlation between low income and financial knowledge while the current study found a significant correlation between low income and poor financial behaviors, which are an application of financial knowledge (Huston, 2010; Remund, 2010)

The differences in methodologies included the current study's focus on financial behaviors which was appropriate based on the findings or several researchers (Lyons, Palmer, Jayaratne & Scherpf, 2006) Furthermore, the current study used an expanded definition of financial behavior, which included savings and cash-flow management behaviors. Finally, the current study used a more specific classification to define low-income employees, which included household income and household size and then compared them to other income subsamples that were defined through the same classification.

Information Sources used by Low-Income Individuals – Compare and Contrast Findings

A question that was answered by the current study and by previous studies is as follows: Where do low-income individuals or low-income employees obtain their information when making financial decisions about savings and investing? This researcher found that the largest

percentage of low-income employees used financial information from informal advisors, while the second largest percentage used information from public sources. Smaller proportions of low-income employees relied on information from formal advisors. Although this was not the purpose of the current study, finding this information was relevant to understanding the financial behaviors of low-income employees. Within the informal advisor category, low-income employees primarily relied on friends and family, closely followed by their reliance on public sources in which they primarily called around for their information. These findings were consistent with previous studies that found that low-income individuals were more likely to rely on informal sources for their financial information, and specifically relied on friends and family for their source of information (Chang, 2005; Hogarth et al., 2003; Olsen & Whitman, 2007).

In particular, the findings of the current study were consistent with Olsen and Whitman's (2007) study. Olsen and Whitman found that individuals making less than \$20,000 primarily used informal sources for their financial information. However, the current study found that almost as many low-income employees relied on public sources as those low-income employees who relied on informal sources, while Olsen and Whitman made no such finding. The difference in the findings could be that the survey used in the current study was a later version of SCF than what was used by Olsen and Whitman, combined with the increased popularity and accessibility of the internet. It could also be that low-income employees, as opposed to the broader low-income population, have greater access to public sources of information and therefore utilize them more than the broader low-income population. Although it is not readily apparent, the difference in the findings was probably due to the different methodologies used to define low-income employees. It is difficult to determine the exact difference due to the lack of detail between individual information sources provided in Olsen and Whitman's study.

In other previous studies in which researchers also used SCF, friends and family were the primary information source of low-income individuals (Chang, 2005; Hogarth et al., 2003). Similar to the current study these previous studies examined the use of information from friends and family directly or indirectly through an individual's social network (Chang, 2005; Hogarth et al., 2003). However, the current study used a different classification to define low-income employees, which included household income and household size.

A finding of the current study that was inconsistent with previous studies was that low-income employees relied on formal advisors to some extent. Within the formal advisor category, half of all low-income employees used bankers for their financial information. This may be due to their increased access to bankers relative to other formal advisors or that bankers typically give information for free. This inconsistency between the current study and Chang's (2005) study, in particular, could be due to the fact that bankers were included in the formal advisor category for the current study, while bankers were not included in the paid advisor category in Chang's study.

Among the formal advisors, the second highest percentage of low-income employees relied on financial planners for their financial information. Very few studies that found that low-income employees or low-income individuals used financial planners for financial information (Chang, 2005; Olsen & Whitman, 2007). Thus, due to the lack of detail provided in SCF, it should not be assumed that the term financial planner is defined as a Certified Financial Planners. Consequently, due to this lack of detail, it is hard to determine the professional credentials or qualifications of these financial planners. Additionally, it is difficult to interpret how respondents viewed this option.

Other Variables – Compare and Contrast Findings

The primary independent variable in the ordered logistic regression model was information from a formal advisor. However, it was necessary to control for other variables because researchers have found a correlation between these variables and financial behaviors. Such variables were planning, education, age, self-employed, gender, and race. The ordered logistic regressions results indicated a significant and positive relationship between several of these variables and the proportion of acceptable savings and acceptable cash-flow management behaviors reported by low-income employees. Planning, in particular, was the variable which showed the strongest correlation to proportions of acceptable financial behaviors reported by low-income employees. Unlike any other variable, planning likewise showed the strongest correlation to the proportions of acceptable financial behaviors for almost every income subsample. These findings were consistent with previous studies which found evidence that good financial behaviors were significantly and positively correlated with planning (Lusardi & Mitchell, 2005). This consistency exists despite differences in the definitions of the planning variables across studies. Lusardi and Mitchell measured planning using three questions to identify individuals as planners, as individuals who developed a plan and as individuals who stuck to a plan. In the current study, planners were employees who either reported planning for at least the next few years or longer.

Moreover, the ordered logistic regressions found a significant and negative relationship between race and gender and proportion of acceptable savings and cash-flow management behaviors reported by low-income employees. The results related to race were consistent with previous studies which found that individuals with poor financial behaviors tended to be minority as well as low earners, single, less educated, and either younger or older than the

overall population (Burhouse et al., 2004; Lusardi, 2008). One difference is that these previous study controlled for marital status while the current study did not.

Most previous financial studies related to gender focused on the risk tolerance between men and women (Grable, 2000; Yao & Hanna, 2005). Their focus was not to necessarily evaluate the financial behaviors of men and women. However, a few previous studies' findings related to gender were inconsistent with those of the current study. For example, a previous study found that women were less likely to save as compared to men, in the short term, if their health was poor (Fisher, 2010). Perhaps the inconsistency was due to the fact that Fisher (2010) additionally controlled for health while the current study did not. The inconsistency could be due to the fact that Fisher's study was not focused on low-income males while the current study's focus was low-income males. Another previous study related to financial knowledge found that women scored lower on a financial knowledge test versus males, and therefore women were less financially knowledgeable than men (Lusardi & Mitchell, 2006). This previous study, however, was not related to low-income males, and their focus was financial knowledge not financial behavior.

Limitations of the Current Study

This study examined the relationship between use of financial information from a formal advisor and the financial behaviors reported by low-income employees. Examining such relationships posed many challenges, which introduced limitations for this study. Low-income employees were the focal group of the study and even fewer previous studies related to the impact of the use of financial information from formal advisors on the financial behaviors of

low-income employees. This was not surprising since only 1% to 2% of the financial planning industry comes from low-income and minority populations (Walters, 2007).

Several other limitations of this study were data related limitations. The 2007 SCF is a cross-sectional survey and thus only associations or correlations can be determined between variables; causal relationships cannot be determined in this type of data. Moreover, with cross-sectional data, it is not possible to show an actual change in financial behaviors due to the use of information from a formal advisor. Likewise, with cross-sectional data researchers cannot show changes in financial behaviors over time. The ideal research design for the current study would be a classical research design where information from formal advisors was the independent variable and actual financial behaviors, sustained over time, was the dependent variable. Additionally, the 2007 SCF is a complex sample design and errors within the standard errors calculations could occur. However, it was difficult to control for this complexity through the SAS statistical package 9.2.

Moreover, within the 2007 SCF, employees were asked to self-report whether they performed certain financial behaviors. Any self-reported data are subjective and based on the respondent's opinion. Hence, an ideal situation would be to collect actual observational data of employees performing particular financial behaviors. Likewise, there were a limited number of financial behavior questions within the 2007 SCF. Therefore, questions that asked if participants simply had a savings account, checking account or retirement account were used as substitutes for actual financial behavior questions. Additionally, in the SCF question which asked about the information sources of an employee two of the option were "do not shop around" and "do not save or invest". These options are confusing and it was difficult to interpret the intent of the options. Therefore, these options posed a limitation for the researcher. The question as to

whether employees saved and invested should have been asked in a separate question prior to the information source question. The researcher was left to interpret these two options and decided that the “do not shop around” response was coded as an informal advisor since the individual is only relying on themselves, which was also coded as an informal adviser. Individuals that indicated they “do not save or invest” were also grouped in with the informal advisor category because they did not indicate any information source used and implicitly do not seek out information regarding saving or investing; thus, they rely largely on themselves, which is grouped with informal advisors.

Finally, there were a limited number of large, public, randomly selected surveys containing actual financial behavior data. In Hogarth et al.’s (2003) study, researchers asked the Federal Reserve to add financial knowledge and financial behavior questions to the Monthly Survey of Consumers administered by the University of Michigan in November and December of 2001 for their study. Specific financial behavior questions that would have been ideal for this current study included questions that asked participants if they used a budget to manage their money or if they paid their bills on time, ahead of time or late. Additionally, questions related the type of budget respondents used would have been ideal; for instance if they used a written budget or mental budget. Information related an individual’s check balancing behaviors such as if they use their check book to balance their account, use some online tool, or mentally balance their check book would be ideal. These money management financial behavior questions would have been important in evaluating financial behaviors, in particular, for low-income employees.

Implications of the Current Study

There are many implications that could result from the current study; however three distinct implications are evident. First, more research related to low-income employees or related to specific segments of the workforce might be a result of this study. Second, employers should be encouraged to provide workplace financial information seminars to their employees, perhaps through third party formal advisors such as financial planners or brokers, based on the findings from the current study. While this study merely showed a correlation between financial information from a formal advisor and the financial behaviors reported by low-income employees, other researchers have demonstrated the financial benefit of an employer investing in these types of workplace financial seminars. Third, again based on findings from this study, employers should not only consider providing these seminars, but should also tailor these seminars toward low-income employees.

During the literature review of this study the researcher found that there were very few studies related to the financial behaviors of low-income employees or related to the financial behaviors of any specific segment of the workforce. In the current study the researcher found that there were significant differences in the financial behaviors of low-income employees versus other income segments of the workforce therefore other researchers may find that there are other differences in other segments of the workforce. It may be important to understand these differences when designing and implementing workplace information seminars or other employee related financial materials.

Findings from the current study not only suggest that low-income employees' financial behaviors are worse than those of middle-income and high-income employees, but findings also suggest that financial information provided through a formal advisor would positively affect low-

income employees' financial behaviors. Therefore, employers should be encouraged to provide workplace financial information seminars, perhaps by utilizing third party formal advisors. Thus, any workplace financial information seminar has the potential to impact financial behaviors, including but not limited to retirement planning, of low-income employees, and findings from previous studies agree that financial information from a formal advisor has the potential to improve the financial behaviors of low-income employees (Gonyea, 2007; Loibl & Hira, 2005; Rand 2004). Again, while the current study has taken the first step to establish a significant relationship between financial information from a formal advisor and the acceptable financial behaviors reported by low-income employees, other researchers have demonstrated the financial benefit of an employer's investment in workplace financial information seminars (Garman 1999; Garman & Kim, 2003). Researchers have found that employees who are financially secure, or who are less financially stressed, are more productive, absent less, and more beneficial to their employers (Garman 1999; Garman & Kim, 2003).

Given that low-income employees' financial behaviors are worse than employees in other income segments of the workforce, employers should not only provide workplace financial information seminars but should consider tailoring these financial seminars toward low-income employees. Based on the findings of this study, if employers tailored workplace financial seminars towards low-income employees these employers could achieve a more substantial impact on the financial behaviors of low-income employees. Specifically, the ordered logistic regression results of this study found that information from a formal advisor had a stronger correlation or more of an impact on low-income employees' financial behaviors as opposed to those of middle -income or high-income employees. Therefore, by tailoring workplace financial information seminars toward low-income employees, there would be a higher probability of

improving their financial behaviors and maybe their financial status, and a less financially stressed, more productive employee would be beneficial to employers. Previous studies have also suggested that lower-income employees or employees at the bottom of the income distribution would benefit the most from workplace financial seminars (Bayer et al., 1996; Loibl & Hira, 2005; Rand, 2004).

Future Research

Future areas of research that would logically follow this study would include the following three areas: 1) Research that further understanding about the financial behaviors of low-income employees: 2) Research that identifies barriers to the access of financial professionals for low-income employees and that investigates alternative access channels: and 3) Research that demonstrates the financial benefit of providing workplace financial information seminars and that establishes a more objective link between an employer's investment and its financial benefit.

First, additional research is needed to further understanding related to the financial behaviors of low-income employees. As previously stated, the current study simply has found a correlation between the use of information from a formal advisor and the proportion of acceptable financial behaviors reported by low-income employees. Future research could include a longitudinal study that involves low-income employees using financial information from a formal advisor and a pre-post survey that has the ability to show a change in financial behaviors over time, perhaps over a year. This type of research is needed to more conclusively show that information from a formal advisor has the ability to impact the financial behaviors of low-income employees. In reviewing literature for the current study, the researcher found very few

studies that concentrated on the effects of information from a financial professional on the financial behaviors of low-income employees, regardless of whether that financial professional was a financial planner, banker, or broker.

Second, future research that concentrates on low-income employees' or low-income individuals' access to financial information from financial professionals is needed. There are many studies about the unbanked population, which are individuals outside the banking system or outside the system of financial professionals. However, future research that examines and investigates barriers to this access is needed. One previous study concluded that income was a barrier to access (Olsen & Whitman, 2007); while another study concluded that the current financial system does not meet the needs of the low-income population (Seidman & Tescher, 2004). Nevertheless, future research that more conclusively identifies barriers to access and also examines options for low-income employees to gain access is needed.

Third, future research that demonstrates the financial benefit of providing workplace financial information seminars to employees would be ideal. Some researchers have specialized in the financial status of employees; however, more research by more researchers is needed in this area to convince employers to offer these seminars. American businesses are in business to make a profit. Therefore, any employee benefit, such as financial information seminars, has to demonstrate the financial benefit, for the employer, of making such an investment. Thus, more research in this area may indicate that these financial information seminars can improve the profitability or improve the bottom line of the company and research has to be able to clearly quantify that benefit.

Additionally, future research that establishes a more objective link between an employer's investment and the financial benefit or return of that investment would be ideal.

Researchers have made a connection between the impacts of financial stress on an employer's profitability through excessive absenteeism or through stress related medical expenses (Garman 1999; Garman & Kim, 2003; Kim & Garman 2003). However, employers may view this connection as less than direct or too subjective to be convinced that there is a financial benefit. Therefore, future research that demonstrates the positive impact of financial information from a financial professional on an employee's productivity might be a more direct way to show this benefit.

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APPENDIX A

Proposal Item Resolution

1. An ordered logistic or ordered logit regression model was used to test the relationship between the use of information sources and financial behaviors indices. The ordered logistic regression model is an appropriate statistical analysis since the dependent variables or financial behavior indices are ordered dependent variables with more than two distinct response categories. These categories have a meaningful sequential order where a value is indeed higher than the previous one such as low medium and high, and the relationship is non-linear (Stock & Watson, 2007). The ordered logistic regression model uses the probability odds model to determine the probability that the dependent variable (Y) will fall into one category rather than another, given the independent variables. The ordered logit regression model utilizes the chi-square test to determine if an independent variable is a significant factor on the dependent variable. The coefficients generated from the ordered logit regression model for each independent variable can be estimated by maximum likelihood and also an odds ratio estimate is generated for each independent variable.
2. Low-income employees were defined as employees with a household income equal to or less than 200% of the 2007 US poverty level. The US poverty level is based on household size, therefore these income subsamples are also based on household size. Middle-income employees were defined as employees with household incomes greater

than 200% of the 2007 US poverty level as well as employees with household incomes less than 494% of the 2007 US poverty level (Giminez, Glover, & Rios-Rull, 2011). Finally, high-income employees were defined as employees with household income equal to or greater than 494% of the 2007 US poverty level. This 494% income level that separates the middle-income employee and high-income employee subsamples was based on an income quantile created by Giminez et al. (2011) within the 2007 SCF, and this income level was adjusted for a household of four. In Giminez's et al. (2011) income quantile, 80% of all households fall below this income level; households below this income level were in the middle and bottom tail of the distribution. Therefore, for this study, these households below this 80% income level represent the middle-income and low-income employee subsamples. In Giminez's et al., (2011) income quantile, the remaining 20% of households above this income level were in the top of the distribution (Giminez et al., 2011). Hence, for this study, this remaining 20% represents the high-income employee subsample. The employee subsamples' income levels by household sizes are listed in Table 1 (U.S. Department of Health and Human Services, 2007).

3. Respondents could have indicated more than one response to this question and these responses could fall within multiple categories (i.e. formal advisor, informal advisor, public source). If this occurred, there would be an overlap problem in the data. A household had the option of selecting up to 10 responses indicating their information sources, and their initial response was recorded first in SCF. Chang (2005) utilized the same SCF question within the 1998 Survey of Consumer Finances, and faced the same potential overlap problem.

To resolve this potential overlap problem Chang (2005) compared the household's initial response category to the category of the majority of responses from a household. Chang (2005) found that on average a household selected 1.83 responses, out of 10, and there was little to no difference between a household's initial response and the category of the majority of responses from a household. Therefore, Chang (2005) used a household's initial response to categorize a household.

This study used the same approach as Chang (2005). This researcher analyzed all of an employee's responses to determine the category of the majority of the responses from an employee, and then compared this category to that of an employee's initial response. In doing this the researcher determined there was not a difference between the initial response and the majority response. Therefore, this study used the initial response. An initial analysis indicated that employees selected on average 2.2 responses to this question, out of 10 potential responses.

4. Low-income employees' formal advisor information source selection was evaluated to determine if investment clubs and investment seminars could be excluded from the formal advisor category. If the number of low-income employees that selected investment clubs or investment seminars was small, these selections can be eliminated from the formal advisor category. No low-income employees selected investment clubs or investment seminars as their information source. Also for the middle-income and high-income employee group a small insignificant number of employees choose investment clubs or investment seminars as their information source. Therefore, these groups were eliminated from the formal advisor category. Based on the literature review,

it is not surprising that low-income employees primarily rely on public sources and informal sources for their information sources.

5. I added more information around data, sample size, methodology, key variables, overall findings and detail findings on previous studies in the literature review. One section of the literature review, “Information source used by low-income employees” is synthesized very well and no specific study was mentioned, so it wasn’t appropriate to add detail to this section.

6. Financial behavior indices were created to rank an employee’s savings and cash-flow management behavior as either “Low”, “Medium” or “High”. A “High” index represents an employee’s response of “1” to greater than 70% of financial behavior variables in a particular category. As previously stated, according to Hogarth’s et al., (2003) study a “1” response represents an acceptable financial behavior. A “Medium” index represents an employee’s response of “1” to greater than 25% and less than 70% of financial behavior variables in a particular category. And a “Low” index represents an employee’s response of “1” to less than or equal to 25% of financial behavior variables in a particular category. There are two financial behavior indices, one representing the “savings” category (SAVINGS INDEX), and one representing the “cash-flow management” category (CASH-FLOW INDEX).

APPENDIX B

Model Comparison

Table 11

Comparison of Ordered Logistic Regression and Binary Regression

Cash-Flow Management	Low-Income Employees		Low-Income Employees	
	OLR (n=1,006)		Binary (n=1,006)	
	Coefficients		Coefficients	
Variables	(SE)	Odds ratio	(SE)	Odds ratio
Formal advisor	0.478***	1.61	0.197***	1.22
SE	(0.163)		(0.088)	
Planning	0.572***	1.78	0.515***	1.67
SE	(0.136)		(0.145)	
Minority	-0.596***	0.55	-0.662**	0.52
SE	(0.140)		(0.145)	
Self-employed	0.168	1.18	0.128	1.14
SE	(0.215)		(0.224)	
Education	0.181***	1.10	0.168***	1.18
SE	(0.025)		(0.029)	
Male	-0.395**	0.77	-0.565	0.57
SE	(0.145)		(0.156)	
Age	0.058***	1.03	.029***	1.03
SE	(0.006)		(0.006)	
Intercept	-2.751		-2.483	
SE	(0.438)		(0.493)	

Cash-Flow Management	Low-Income Employees		Low-Income Employees	
	OLR (n=1,006)		Binary (n=1,006)	
Variables	Coefficients		Coefficients	
	(SE)	Odds ratio	(SE)	Odds ratio
Intercept	-1.355			
SE	(0.430)			