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Low-income employees: the relationship between information from formal advisors and financial behaviors

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Abstract

This study investigates the financial literacy of low-income employees, by examining their financial behaviors. Thus, researchers examine the effect that information from formal advisors has on the financial behaviors of low-income employees. In this study, formal advisors include financial planners, bankers, brokers, employers, accountants, insurance agents, and lawyers. Using data from the 2010 Survey of Consumer Finances, researchers find a significant and positive relationship between the use of information from formal advisors and low-income employees' positive financial behaviors. In other words, low-income employees who use information from formal advisors exhibit better financial behaviors than those who do not.

Jel classification: D14

Keywords: Financial behaviors; Low-income employees; Financial information

1. Introduction

Over the last few decades, American corporations have transitioned from a defined benefit environment to a defined contribution environment, making employees largely responsible for their own financial affairs (Garman and Kim, 2003; Gonyea, 2007; Krajnak, Burns, and Natchek, 2008). In a defined benefit pension plan, employers are responsible for providing retirement income for the employee and, therefore, employers bear the investment risk

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associated with their retirement portfolio (Olsen and VanDerhei, 1997). Conversely, a defined contribution plan shifts the majority of this responsibility and risk associated with retirement savings from the employer to the employee (Garman and Kim, 2003; Gonyea, 2007; Olsen and VanDerhei, 1997). Subsequently, employees are now responsible for their retirement planning and have to decide how much to save, when to save, and how to invest their funds (Gonyea, 2007). However, many employees are not prepared for this responsibility, and employers have provided little education to assist employees (Garman and Kim, 2003).

Specifically, low-income employees have been the most adversely affected by this transition and face the greatest risk of being unprepared for retirement (Kijakazi, 2003; Munnell, Golub-Sass, Perun, and Webb, 2007). As a result, low-income employees may enter retirement with little or no savings because they typically have difficulties saving for retirement (Gonyea, 2007; Kijakazi, 2003). Further, research finds that only 23% of households in the bottom third of the income distribution participate in employer retirement plans, compared to 66% of households in the top third (Munnell et al., 2007). While low-income employees may receive a larger proportionate Social Security benefit based on their Average Indexed Monthly Earnings, still the absence of liquid savings in retirement presents challenges (Gonyea, 2007).

Compounding this dire situation, low-income employees also lack the financial knowledge and skills needed to make sound financial decisions to achieve their financial goals (Rand, 2004). For this reason, low-income employees often live from paycheck to paycheck, carry high-cost debt, and are unaware of consumer rights and services that could improve their financial circumstances (Rand, 2004). Oftentimes, these individuals fall prey to financial scams and predatory lenders partly because they lack the financial savvy to protect themselves (Lyons and Scherpf, 2004). Thus, the combined challenge of low incomes and poor financial behaviors warrants a focus on low-income employees and prompts the following research question: Could information from formal advisors positively affect the financial behaviors of low-income employees?

The purpose of this study is to examine the relationship between low-income employees' use of information from formal advisors and their financial behaviors. Formal advisors include financial planners, bankers, brokers, accountants, insurance agents, lawyers, and employers. Researchers assume that financial information from any one of these formal advisors, specific to a client's needs, could have a positive impact on financial decisions and on the financial behaviors of low-income employees. The study's research hypothesis is as follows:

$H1_1$: A significant and positive relationship exists between the use of financial information from formal advisors and the acceptable savings and acceptable cash-flow management behaviors of low-income employees.

$H1_0$: A significant and positive relationship does not exist between the use of financial information from formal advisors and the acceptable savings and acceptable cash-flow management behaviors of low-income employees.

This study is important because it adds to the body of research relating to the financial behaviors of low-income employees as well as the body of research relating to the effectiveness of financial advice or financial information provided by formal advisors. Low-income employees have not participated in the stock market in a significant way, but given improved financial behaviors and skills this segment has the potential to become active, influential investors (Roojl, Lusardi, and Alessie, 2011). This study is also important because researchers take a slightly different approach by defining employees' income not only by household income but also by household size. This approach should provide a better analysis of an employee's true financial circumstances and budget constraints. Moreover, this study utilizes multiple behavioral indicators to assess an employee's savings and cash-flow management behaviors.

2. The workplace as an information source

The workplace has proven to be an effective source of financial information for all employees (Kranjak et al., 2008). After all, individuals spend a large portion of their time at work (Csikszentmihalyi and LeFevre, 1989) and employers and their financial representatives often connect with employees by offering financial education seminars and retirement planning programs through the workplace (Servon and Kaestner, 2008). These financial representatives are third party providers typically hired by the employer to provide workplace financial education seminars (Clark, D'Ambrosio, McDermed, and Sawant, 2003).

Another reason the workplace serves as an effective source of financial education is because employees often view their employers as authorities or experts, particularly on matters relating to their benefits (Jenkins, 2005; Krajnak et al., 2008). Thus, many employees respect and value the workplace as a source of information (Krajnak et al., 2008). Moreover, when financial education is provided as an employee benefit, it is free of charge and therefore more accessible to those with lower incomes (Edmiston and Gillett-Fisher, 2006).

3. Literature review

An individual's financial behaviors provide insight into their financial literacy (Huston, 2010; Remund, 2010). 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. For this reason, researchers of this study choose to examine the financial literacy of low-income employees through their financial behaviors. Furthermore, the researchers of this study review previous studies that examine the effect of financial information or financial education from formal advisors on financial behaviors of low-income employees (Loibl and Hira, 2005; Rand, 2004) and on the financial behaviors of all employees (Bayer, Bernheim, and Scholtz, 1996; Bernheim and Garrett, 2003; Byrne, 2007; Clark, D'Ambrosio, McDermed, and Sawant, 2006; Dolvin and Templeton, 2006).

The theoretical model that guides the analysis and hypothesis of this study is the "Behavioral Model of Financial Services Use" (Kunovskaya, 2010) an adaptation of the "Behavioral Model of Health Services Use" (Andersen, 1995). This model suggests that after an individual makes the decision to use the services of financial professionals their financial status and/or financial behaviors will be positively affected (Kunovskaya, 2010). Likewise, this study suggests that financial information from formal advisors can positively affect the financial behaviors of low-income employees.

3.1. Impact of financial advisors on low-income employees' financial behaviors

Although the primary focus of most workplace financial education studies has been all employees within the workforce, a few studies specifically target low-income employees. These studies provide evidence of a positive and significant relationship between the use of information from formal advisors and acceptable financial behaviors among low-income employees (Loibl and Hira, 2005; Rand, 2004). These previous studies examine the relationship between financial information that has been provided through self-directed learning (Loibl and Hira, 2005) and the financial behaviors of low-income employees as well as financial information provided through seminars (Rand, 2004) and the financial behaviors of low-income employees.

Loibl and Hira (2005) consider the effect of self-directed learning on financial management practices (i.e., financial behaviors), the effect of financial management practices on financial satisfaction, and the effect of financial satisfaction on career satisfaction. Loibl and Hira (2005) measure self-directed learning by examining the employee's use of four different sources of financial planning information provided in the workplace. Furthermore, researchers measure financial management practices or financial behaviors through surveys that ask whether participants save for goals, evaluate their spending, and make plans about how to use their money (Loibl and Hira, 2005). Subsequently, researchers find that financial planning material that has been provided through self-directed learning has a significant and positive effect on low-income employees' financial behaviors, which in turn has a significant and positive effect on financial satisfaction, which ultimately has a significant and positive effect on career satisfaction (Loibl and Hira, 2005).

Next, Rand (2004) examines (1) the relationship between financial information seminars and the financial knowledge of low-income workers and (2) the relationship between financial information seminars and low-income workers' savings behaviors. In Rand's (2004) study, low-income workers are defined as employees with household income less than 200% of the U.S. poverty level. Rand (2004) invites 822 low-income workers to participate in a financial information seminar, as well as complete a pre-post financial knowledge exam. Additionally, this study asks participants to save a percentage of their earned income toward a specific goal and agrees to match each $1 participants save with $2. Rand (2004) finds that financial information seminars improve low-income workers' financial knowledge as well as improve their savings behavior.

3.2. Impact of financial information on all employees' financial behaviors

Bayer et al. (1996) conduct one of the early workplace financial education studies that examine the effects of financial education on the financial behaviors of all employees within the workplace. Researchers use a KPMG Peat Marwick Retirement Benefit Survey and focus on the employer's perspective by surveying employers about their company's retirement plans and whether they provide workplace financial education sessions or financial information (Bayer et al., 1996). In a similar study, Bernheim and Garrett (2003) likewise use data from the KPMG Survey but take a different approach by focusing on the employees' perspective. Bernheim and Garrett (2003) survey employees about their exposure to workplace financial seminars and financial information and about their retirement and personal savings.

Both studies find evidence that workplace financial education have a positive effect on the financial behaviors of all employees. Bayer et al. (1996) find that employers who offer some form of financial education or information have higher retirement plan participation and contribution rates than those employers who do not. Similarly, Bernheim and Garrett (2003) find that employees that have been exposed to financial education seminars or financial information in the workplace have higher savings accumulation in their retirement plans and higher savings overall.

In another previous study whose focus is all employees, Clark et al. (2006) conduct an experiment using university employees to examine changes in retirement goals and savings behaviors. These university employees participate in a one-hour seminar on retirement planning and goal setting and afterwards researchers collect data before the seminar, after the seminar, and several months following the seminar (Clark et al., 2006). Similarly, Dolvin and Templeton (2006) conduct a clinical study, within a law firm, with the purpose of examining the relationship between participation in retirement planning seminars and employees' asset allocation decisions. In this study, the law firm offers a 90-minute financial education seminar to its employees and these employees are surveyed about their participation in the seminar and about information related to their portfolios (Dolvin and Templeton 2006). Both studies find evidence that financial information from formal advisors has a positive effect on the employee's financial behaviors. Clark et al. (2006) find that financial information prompts a significant number of participants to change their retirement goals, modify their savings contributions, and reallocate their investment funds. While, Dolvin and Templeton (2006) find that those who participate in financial education seminars possess more efficient portfolios in their retirement funds than those who do not.

4. Methodology

4.1. Data and sample

This study uses data from the 2010 Survey of Consumer Finances (SCF). The SCF provides information about U.S. household finances and contains detailed information from household balance sheets and income statements (Kennickell, 2007). Moreover, the SCF

Table 1 Income segmentation of the three income subsamples

Household size	2010 U.S. poverty level[a]	Low-income	Medium-income		High-income
		< or equal to	Greater than	< or equal to	Greater than
1	$10,800	$21,660	$21,660	$ 53,500	$ 53,500
2	14,570	29,140	29,140	71,976	71,976
3	18,310	36,620	36,620	90,451	90,451
4	22,050	44,100	44,100	108,927	108,927
5	25,790	51,580	51,580	127,403	127,403
6	29,530	57,060	57,060	145,878	145,878
7	33,270	66,540	66,540	164,353	164,353
8	37,010	74,020	74,020	182,829	182,829

Note. [a]U.S. 2010 poverty level. Adapted from "The 2010 Human Health Services Poverty Guidelines" by the U.S. Department of Health and Human Services (2010) (available at http://aspe.hhs.gov/poverty/10poverty.shtml).

includes demographic and socioeconomic information as well as information relating to financial behaviors and financial attitudes (Kennickell, 2007).

The employee subsample within this study is created by segmenting data within the 2010 SCF by employment status. Among the 6,482 households, 4,280 or 66% are employees. This employee sample includes individuals who reports working at the time of the survey, including those who are working temporarily or seasonally and those who are self-employed. This larger employee sample is further segmented to create three subsamples based on income and household size. Low-income employees are defined as employees with household incomes less than or equal to 200% of the 2010 U.S. poverty level. Middle-income employees are defined as employees with household incomes greater than 200% and less than and equal to 494% of the 2010 U.S. poverty level. Finally, high-income employees are defined as employees with household incomes greater than 494% of the 2010 U.S. poverty level (U.S. Department of Health and Human Services, 2010). The employee subsamples' income levels by household sizes are listed in Table 1.

4.2. Financial behaviors

Researchers find that financial information increases financial knowledge, which in turn improves financial behaviors (Hogarth, Beverly, and Hilgert, 2003). For this reason, researchers of this study choose to examine the relationship between the use of financial information from formal advisors and the financial behaviors of low-income employees. Thus, the key variables for this study are specific financial behaviors which are operationalized and measured using data from select financial behavior questions within the 2010 SCF. Researchers assume that any one of these 10 financial behaviors is equally likely to occur and that income does not preclude the practice of any of these behaviors. All variables are binary and all "yes" responses are considered *good* or *acceptable* financial behaviors (coded as 1) and all no responses are considered *bad* or *unacceptable* financial behaviors (coded as 0).

The 10 financial behavior questions are grouped into measures of cash-flow management

and measures of savings. In the cash-flow management category, five financial behavior variables represent employee's cash-flow management behaviors. Examples of these variables include, having a checking account (CHECKING), and whether loans are paid on schedule or ahead of schedule (LOANS ON TIME). Conversely, in the savings category, five financial behavior variables represent employees' savings behaviors. Two of these savings variables are, whether employees have a savings account (SAVINGS) and whether employees save on a monthly basis (SAVE).

Next, financial behavior indices are created to rank an employee's savings behaviors (SAVINGS INDEX) and cash-flow management behaviors (CASH-FLOW INDEX) as low, medium, or high. A *high* ranking represents a response of "1" to 70% or more of the financial behavior variables. A *medium* ranking represents a response of "1" to more than 25% but less than 70% of the financial behavior variables. A *low* ranking represents a response of "1" to 25% or less of the financial behavior variables. All financial behavior variables and indexes are listed in Table 2.

4.3. Information source variables

Literature suggests that low-income employees obtain their financial information from informal advisors or informal sources that can include family, friends, spouses, or themselves (Olsen and Whitman, 2007). However, low-income employees have expressed a desire to receive information from formal advisors as long as that information is affordable (Garman and Kim, 2003). An information source variable is used in this study to assess employees' source of financial information based on their responses to the following questions: "What sources of information do you use to make decisions about savings and investments?"

The formal advisor category consists of responses that include information from a financial planner, a broker, a banker, an accountant, an insurance agent, a lawyer, or material from work or business contact. The informal advisor category consists of responses that include information from friends and family, self, personal experience, other personal research, as well as "do not shop around," and "do not save or invest." The 2010 SCF question includes two information source options which are difficult to interpret. The "do not shop around" response is coded as an informal advisor because individuals are relying solely on "themselves," which is also coded as an informal advisor. Individuals who indicated they "do not save or invest" are also grouped with the informal advisor category because they did not indicate any information source and implicitly do not seek out information regarding saving or investing, but again rely on "themselves." The public source category consists of responses that include calling around, magazines/newspapers, material in the mail, online/Internet, advertising and TV (Olsen and Whitman, 2007). Table 2 contains the information source variable and their measurements.

4.4. Other variables

Researchers find evidence of a significant relationship between other variables and *good*, or *acceptable*, financial behaviors. Therefore, these variables are identified and controlled for in an attempt to examine the relationship between the use of financial information from

Table 2 List of variables

	Measurements
Cash-flow management behaviors	
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
SOFTWARE	= 1 if reported using software to manage their money; 0 otherwise
CASH-FLOW INDEX	= % of acceptable cash-flow management behaviors
Savings behaviors	
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 certificates of deposit; 0 otherwise
RETIRE PLAN	= 1 if reported participation in any pension, retirement, or tax-deferred savings plan connected with job; 0 otherwise
IRA	= 1 if reported having money in IRA or Keogh; 0 otherwise
SAVINGS INDEX	= % of acceptable savings behaviors
Information source variables	
FORMAL ADVISOR	= 1 if information sources were a financial planner, banker, broker, accountant, insurance agent, lawyer, or material from work/business contact; 0 otherwise
INFORMAL ADVISOR	= 1 if information sources were friends and family, self, personal experience, other personal research, don't shop around, or do not save or invest; 0 otherwise
PUBLIC SOURCE	= 1 if information sources were calling around, magazine/newspaper, material in the mail, online/internet, advertising, or TV; 0 otherwise
Other variables	
PLANNING	= 1 if plan for next few years, next 5–10 years, or more than 10 years; 0 if plan for next year or next few months
AGE	= Chronological age of respondent
MALE	= 1 if respondent is male; 0 if female
EDUCATION	= years of education completed
MINORITY	= 1 if race is Black, Hispanic, or other minorities; 0 if race is White
SELF-EMPLOYED	= 1 if self-employed; 0 otherwise
Financial behavior indices ranking	
LOW	= Response of 1 to 25% or less acceptable behaviors
MEDIUM	= Response of 1 between 25% to 70% acceptable behaviors
HIGH	= Response of 1 to 70% or more acceptable behaviors

formal advisors and the financial behaviors of low-income employees. One relevant variable for this study is a planning variable (PLANNING). Research shows that planners are more financially well off than non-planners (Lusardi and Mitchell, 2005). Furthermore, those who have the propensity to plan tend to display positive financial behaviors (Deaves, Veit,

Bhandari, and Cheney, 2007). In this study, the planning variable (PLANNING) indicates to what extent individuals plan for their futures, with longer term planners being coded as "1" and those who plan for a year or less being coded as "0." This study also includes demographic variables such as age, gender, education, and race because of their correlation with financial behaviors. Table 2 lists all of the other variables and their measurements.

4.5. Statistical analysis

In this study, data from the 2010 SCF are analyzed with the SAS statistical package (version 9.3). The data are used to investigate the hypothesis (H_1) that examines the relationship between the use of financial information from formal advisors and low-income employees' percentage of acceptable savings behaviors and acceptable cash-flow management behaviors. These percentages rank as *low*, *medium*, or *high*. The first data analysis step generates descriptive statistics to describe the demographic and socioeconomic characteristics of the low-income, middle-income, and high-income employee subsamples. Descriptive statistics are weighted to accurately reflect the representation of smaller groups in the population.

The next data analysis step consists of ordered logistic regression analyses, which is used to test the significance of the relationships between the independent variables and the dependent variable. Two ordered logistic regression models are used to test the relationships between information from formal advisors and the dependent variables (SAVINGS INDEX and CASH-FLOW INDEX), while controlling for other variables. The ordered logistic regression model uses the probability odds models to determine the probability that the dependent variable (Y) will fall into one category versus another, in particular the higher categories, given the independent variables (Snedker, Glynn, and Wang, 2002).

The probability odds models are as follows:

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

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

$$\text{logit}(P1 + P2 + \cdots Pk) = log\ \frac{P1 + P2 + \cdots Pk}{1 - P1 - P2 - \cdots Pk} = \propto 1 + B'x1 \tag{3}$$

The ordered logistic regression model utilizes the χ^2 test to determine if an independent variable has a significant correlation with the dependent variable. Coefficients which are generated from the ordered logistic regression model for each independent variable can be estimated by maximum likelihood. Additionally, an odds ratio estimate is generated for each independent variable (Snedker et al., 2002). The 2010 SCF contains five implicates, or five duplicate sets of data that uses various methods to account for missing data. To avoid analysis errors related to these five implicates, researchers use the RII technique in this study.

Two ordered logistic regression models are estimated using the low-income employee sub-sample to determine significant factors affecting the savings behavior and cash-flow

management behaviors of low-income employees. These two ordered logistic regression models are as follows:

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

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

For comparison purposes, two ordered logistic regression models also are estimated using data for the middle-income and high-income employee subsamples to assess the relationship between their dependent and independent variables.

5. Results

5.1. Socioeconomic characteristics of the three income subsamples

This section presents socioeconomic characteristics and descriptive results for the three employee income subsamples: (1) low-income employees, (2) middle-income employees, and (3) high-income employees. The demographic and socioeconomic characteristics and descriptive results are reported in Tables 3 and 4. The employee sample for this current study is created by segmenting data within the 2010 SCF by employment status. This larger employee sample is further segmented to create three income subsamples: (1) the focal group, low-income employees, (2) middle-income employees, and (3) high-income employees, which is based on household income and household size. The focal group contains 1,060 low-income employees and the sample contains 1,432 middle-income employees and 1,787 high-income employees.

The majority of respondents who are low-income employees live in households with one to three people (59%), including themselves, whereas the smallest percentage of low-income employees (3%) lives in households with seven to ten people (Table 3). The mean household size of low-income employees is 3.2 people, which is significantly larger than the mean household size of middle-income employees that is 2.8 (t (2,492) = 6.12, $p < 0.0001$) and even larger than the mean household size of high-income employees that is 2.7(t (2,847) = 9.41, $p < 0.0001$) (Table 4). However, like low-income employees, the majority of middle-income employees (67%) and high-income employees (76%) live in households with one to three people, including themselves (Table 3).

As for race, the majority of low-income employees are White (54%). However, minorities are predominant among low-income employees (46%) in comparison to the percentage of middle-income minority employees (30%) and high-income minority employees (18%).

Table 3 Socioeconomic characteristics (percentage of total)

Characteristics	Percentage of low-income employees (n = 1,060)	Percentage of middle-income employees (n = 1,432)	Percentage of high-income employees (n = 1,787)
Household size			
1–3	59%	67%	76%
4–6	38	32	24
7–10	3	1	0
Gender			
Male	65	80	89
Female	35	20	11
Race			
White	54	70	82
Black	18	13	6
Hispanic	24	12	5
Other	4	5	7
Marital status			
Married	45	58	77
Single	55	42	23
Education			
Less than high school	21	7	2
Graduated high school	39	31	15
Some college	24	29	19
College education	11	22	33
Graduate degree	5	11	31
Age			
18–30	24	15	9
31–50	49	54	49
51+	27	31	42

Hispanics (24%) represent the largest percentage of minorities in the low-income employee subsample. Blacks represent the largest percentage of minorities in the middle-income subsample (13%). Moreover, the largest percentage of minorities in the high-income subsample is other minorities (7%) (Table 3). At the time of the survey, the mean age of low-income employees is 42. This is significantly younger than the mean age of middle-income employees that is 44 (t (2,492) = −3.36, $p < 0.0008$) and even younger than the mean age of high-income employees, which is 51 (t (2,847) = −17.51, $p < 0.0001$). The mean household income of low-income employees is $23,078, whereas the mean household

Table 4 Socioeconomic characteristics (mean and *SD*)

Characteristics	Low-income employees		Middle-income employees		High-income employees	
	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)
Household size	3.2	1.6	2.8	1.5	2.7	1.3
Income	23,078	11,673	58,754	23,205	184,764	13,282
Age	42	14	44	11.7	51	11.8
Education (years completed)	12.3	2.9	13.7	2.3	15.5	1.9

income of middle-income employees is $58,754. Finally, the mean household income of high-income employees is $184,764 (Table 4).

On average, low-income employees complete 12.3 years of education (Table 4), with the largest percentage of low-income employees (39%) graduating from high school and the next largest percentage (24%) graduating from high school and completing some college. The largest percentage of middle-income employees likewise graduates from high school (31%), followed by the next largest percentage of middle-income employees who not only graduate from high school but also completes some years of college (29%). Finally, the largest percentage of high-income employees obtains a bachelor's degree (33%), closely followed by those who obtain a graduate degree (31%) (Table 3).

5.2. Ordered logistic regression results on cash-flow management behaviors

The research question asks whether information from formal advisors could have a positive effect on financial behaviors: (1) the cash-flow management behaviors and (2) the savings behaviors of low-income employees. Results from the first ordered logistic regression analysis indicate a significant and positive relationship between the use of financial information from formal advisors and the proportion of acceptable cash-flow management behaviors of low-income employees. Thus, the cash-flow management behaviors of low-income employees who use financial information from formal advisors are 1.51 times more likely to rank high or medium, rather than low, than the behaviors of low-income employees who use financial information from informal advisors or public sources. This relationship is not significant for middle-income or high-income employees (Table 5). These results confirm the cash-flow management behaviors proportion of the hypothesis (H_1) and are reported in Table 5. The statistics from this ordered logistic regression model indicate that the model convergence criterion is satisfied and the model is determined to be a good fit for this study, according to the Akaike Information Criterion (AIC), the Schwarz Criterion (SC), and the −2 Log L test. Additionally, the Score Test for Proportional Odds assumption concludes that the ordered logistic coefficients are equal across the three possible outcomes of the dependent variable.

5.3. Ordered logistic regression results on other variables (cash-flow management behaviors)

As discussed in the methodology section, other variables, specifically planning, gender, race, education, age, and employment status are controlled for and included as independent variables in the ordered logistic regression models. A significant and positive relationship exists between planning and the proportion of acceptable cash-flow management behaviors of low-income, middle-income, and high-income employees. Thus, the cash-flow management behaviors of low-income employees who are planners are 1.40 times more likely than those of non-planners to rank high or medium, rather than low. Furthermore, the cash-flow management behaviors of middle-income and high-income employees who are planners are 1.29 and 1.75 times more likely than the behaviors of non-planners to rank high or medium, rather than low (Table 5).

Table 5 Likelihood of high or medium cash-flow management behaviors

Variables	Low-income employees (n = 1,060)		Middle-income employees (n = 1,432)		High-income employees (n = 1,787)	
	Coefficients	Odds ratio	Coefficients	Odds ratio	Coefficients	Odds ratio
Formal advisor	0.415*	1.51	0.138	1.15	0.018	1.02
SE	(0.135)		(0.114)		(0.111)	
Planning	0.337*	1.40	0.251*	1.29	0.559***	1.75
SE	(0.124)		(0.110)		(0.138)	
Minority	−0.738***	0.48	−0.343*	0.71	−0.456*	0.63
SE	(0.136)		(0.118)		(0.160)	
Self-employed	0.019	1.02	−0.214	0.81	−0.515***	0.60
SE	(0.162)		(0.158)		(0.118)	
Education	0.165***	1.18	0.205***	1.23	0.147***	1.16
SE	(0.023)		(0.025)		(0.028)	
Male	0.204	1.23	−0.303*	0.74	−0.409*	0.66
SE	(0.131)		(0.136)		(0.200)	
Age	0.013*	1.01	0.002	1.00	−0.018***	0.982
SE	(0.005)		(0.005)		(0.005)	
Intercept	−4.012		−2.51		−0.136	
SE	(0.415)		(0.422)		(0.520)	
Intercept	−1.083		0.76		5.425	
SE	(0.402)		(0.426)		(0.780)	

Note. Likelihood Ratio Test, $p < .0001$; Score Test, $p < .0001$; Wald Test, $p < .0001$; Score Test for Proportional Odds assumption, $p > .05$.

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

On the other hand, results indicate a significant and negative relationship between race and the proportion of acceptable cash-flow management behaviors of low-income employees. In the model, race is represented by a binary variable, MINORITY. Thus, the cash-flow management behaviors of low-income minority employees are more likely than those of low-income White employees to rank low, rather than high or medium. This relationship also is significant and negative for middle-income minority employees and high-income minority employees. The relationship between gender, which is represented by a binary variable, MALE, and the proportion of acceptable cash-flow management behaviors is not significant for low-income employees but is negative and significant for middle-income and high-income employees (Table 5).

Furthermore, results indicate a significant and positive relationship between education and the proportion of acceptable cash-flow management behaviors of low-income, middle-income, and high-income employees. Specifically, for each additional year of education, the odds of the cash-flow management behaviors of low-income, middle-income, and high-income employees being ranked as high or medium, rather than low, increases by multiples of 1.18, 1.23, and 1.16, respectively (Table 5). Moreover, a significant and positive relationship between age and the proportion of acceptable cash-flow management behaviors is found for low-income employees but not for middle-income employees. Thus, for each additional year of age, the odds of low-income employees' cash-flow management behaviors

Table 6 Likelihood of high or medium savings behaviors

	Low-income employees (n = 1,060)		Middle-income employees (n = 1,432)		High-income employees (n = 1,787)	
Variables	Coefficients	Odds ratio	Coefficients	Odds ratio	Coefficients	Odds ratio
Formal advisor	0.499***	1.65	0.319*	1.38	−0.025	0.98
SE	(0.139)		(0.116)		(0.100)	
Planning	0.169	1.18	0.504***	1.66	0.721***	2.06
SE	(0.129)		(0.112)		(0.135)	
Minority	−0.483***	0.62	−0.439***	0.64	−0.664***	0.51
SE	(0.137)		(0.119)		(0.153)	
Self-employed	−0.171	0.84	−0.789***	0.45	−0.484***	0.62
SE	(0.177)		(0.160)		(0.107)	
Education	0.161***	1.17	0.218***	1.24	0.175***	1.19
SE	(0.026)		(0.025)		(0.027)	
Male	−0.007	0.99	−0.065	0.94	0.322	1.38
SE	(0.137)		(0.138)		(0.186)	
Age	0.021***	1.02	0.016*	1.02	0.008	1.01
SE	(0.005)		(0.005)		(0.004)	
Intercept	−6.56		−5.792		−4.545	
SE	(0.489)		(0.455)		(0.511)	
Intercept	−3.02		−2.559		1.028	
SE	(0.438)		(0.428)		(0.496)	

Note. Likelihood Ratio Test, $p < .0001$; Score Test, $p < .0001$; Wald Test, $p < .0001$; Score test for Proportional Odds assumption, $p < .05$.

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

being ranked high or medium, rather than low, increases by a multiple of 1.01. The relationship is significant and negative for high-income employees (Table 5). Finally, the relationship between self-employed and the proportion of acceptable cash-flow management behaviors is not significant for low-income or middle-income employees but is significant and negative for high-income employees (Table 5).

5.4. Ordered logistic regression results on savings behaviors

Results of the second ordered logistic regression model, which are reported in Table 6, indicates a significant and positive relationship between the use of financial information from formal advisors and the proportion of acceptable savings behaviors of low-income employees. This result confirms the savings behavior proportion of the hypothesis (H_1). Thus, the savings behaviors of low-income employees who use financial information from formal advisors are 1.65 times more likely to rank as high or medium, rather than low, than the savings behaviors of low-income employees who use financial information from informal advisors or public sources (Table 6). Likewise, the savings behaviors of middle-income employees who use financial information from formal advisors are 1.38 times more likely to rank as high or medium, rather than low, than the savings behaviors of middle-income

employees who use financial information from informal advisors and public sources. This relationship is not significant for high-income employees (Table 6).

The statistics from this ordered logistic regression model indicates that the model's convergence criterion is satisfied and the model is determined to be a good fit for this study, according to the AIC, the SC, and the −2 Log L test. The Score Test for Proportional Odds assumption concludes that the ordered logistic coefficients may not be equal across the three possible outcomes of the dependent variable (low, medium, and high). This Score Test result could be because of small sample sizes within one of the three possible outcomes, which can cause the model to fail this test (SAS Knowledge Base, 2012). Separate binary models, or models that uses binary dependent variables, are ran to determine whether the results of the ordered logistic model appeared to be biased. The findings from the binary models are consistent with the findings of the ordered logistic models; therefore, the findings from the ordered logistic model are interpreted and used in this study.

5.5. Ordered logistic regression results on other variables (savings behaviors)

A significant and positive relationship exists between planning and the proportion of acceptable savings behavior of middle-income and high-income employees, but not for the savings behaviors of low-income employees. Thus, results indicate that the savings behaviors of middle-income and high-income employees who are planners is 1.66 and 2.06 times more likely than those of non-planners to rank as high or medium rather than low, respectively (Table 6). On the contrary, the results indicate a significant and negative relationship between race and the proportion of acceptable savings behaviors of low-income employees. Thus, the savings behaviors of low-income minority employees are more likely to rank as low, rather than high or medium, relative to those of low-income White employees (Table 6). This relationship is also significant and negative for middle-income and high-income minority employees. The relationship between gender and acceptable savings behavior is not significant for any income subsample (Table 6).

Furthermore, a significant and positive relationship exists between education and the proportion of acceptable savings behaviors of 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, increases by a multiple of 1.17. 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, increases by a multiple of 1.24 and 1.19, respectively (Table 6). Finally, a significant and positive relationship exists between age and the proportion of acceptable savings behaviors of low-income and middle-income employees. Thus, for each additional year of age, the odds of the savings behaviors of low-income and middle-income employees being ranked as high or medium, rather than low, increases by a multiple of 1.02, for both groups. This relationship is not significant for high-income employees. The relationship between self-employed and acceptable savings behaviors is not significant for low-income employees but is negative and significant for middle-income and high-income employees (Table 6).

6. Discussion

6.1. Impact of financial information on low-income employees' financial behaviors

This study finds a significant and positive relationship between the use of information from formal advisors and the proportion of acceptable financial behaviors of low-income employees. Although only correlational, this finding suggests that financial information from formal advisors would positively affect the financial behaviors of low-income employees. This is consistent with results from previous studies in which low-income employees are the focal group (Rand, 2004; Loibl and Hira, 2005). Loibl and Hira (2005) find that financial planning information provided through self-directed learning have a significant effect on low-income employees' financial behaviors. Likewise, Rand (2004) finds that financial information seminars improve a low-income worker's financial knowledge as well as their savings behaviors.

Although the primary focus of this current study is low-income employees, there are specific findings that relates to middle-income and high-income employees that are worth noting. This study finds that financial information from formal advisors does not have a significant effect on the positive cash-flow management behaviors of middle-income and high-income employees. It is not to say that middle-income and high-income employees do not use information from formal advisors, it is just that information from formal advisors has no significant effect on their positive financial behaviors. In fact, research has shown that high-income employees, in particular, use information from formal advisors more so than informal advisors (Olsen and Whitman, 2007). Additionally, this study finds that the savings behaviors of high-income employees who use information from formal advisors are more likely to be ranked low as opposed to medium or high. However, this finding is not significant and is on the borderline of the low and medium ranking.

Results from this study are also consistent with previous workplace financial education and financial information studies that focus on all employees in the workforce and not just low-income employees. These previous studies find that information from formal advisors have a positive effect on the financial behaviors of all employees (Bayer et al., 1996; Bernheim and Garrett, 2003; Byrne, 2007; Clark et al., 2006; Dolvin and Templeton, 2006). One difference between this study and previous studies by Bayer et al. (1996) as well as Bernheim and Garrett (2003) is that these previous studies focus on the access of financial information rather than the use of financial information from formal advisors. Additionally, the focal group of this study is low-income employees whereas these previous studies did not focus on any particular segment within the workplace. Nevertheless, the findings of this current study are still consistent with the finding of these previous studies.

6.2. Implications of the current study

Three distinct implications are evident because of this study: (1) formal advisors such as financial planners, employers, brokers, and bankers should target their financial advice and financial education seminars towards low-income employees; (2) employers should make formal advisors available to their employees for financial consultations; and (3) more

research that focuses on low-income employees or specific segments of the workforce is warranted.

Based on the findings of this study, it is obvious that the financial advice or financial information that formal advisors provide has a positive impact on the financial behaviors of low-income employees. In fact, based on these findings, that effect would be greater for low-income employees as oppose to middle-income and high-income employees. Therefore, if formal advisors target financial information or advice towards low-income employees, there would be a greater probability of improving low-income employees' financial behaviors and long-term financial status. Ultimately, employees would make better financial decisions and experience less financial stress (Garman, 1999). As a result, employers would foster less financially stressed, more productive employees (Garman, 1999). In addition to tailoring financial information towards low-income employees, employers should use third party financial professionals to administer this financial education or financial information. A likely choice would be the financial professionals who administer the company's retirement plans. The findings of this study suggest that if third party financial professionals are used, this would be beneficial for low-income employees and employers. In fact, employers would receive a return on this investment in their employees by having more attentive, more productive employees (Garman, 1999).

Finally, low-income employees could become more active investors in the stock market, through their easily accessible retirement plans, thus presenting a major opportunity for the financial planning industry. As previously mentioned, low-income employees do not significantly participate in the stock market (Rooij et al., 2011). However, this trend could change for this segment of the population, and more research is needed to understand this segment. Specially, research that explores the financial characteristics, financial behaviors and financial decision-making of low-income employees is necessary to design financial advice, education, and financial information that is effective.

7. Conclusions

These researchers find (1) a significant and positive relationship between the use of information from formal advisors and the acceptable savings behaviors of low-income employees and (2) a significant and positive relationship between the use of information from formal advisors and the cash-flow management behaviors of low-income employees. Thus, these findings suggest that low-income employees who use information from formal advisors have better savings behaviors and better cash-flow management behaviors than those who do not. Moreover, these improved financial behaviors could result in better financial decisions for low-income. As a result, low-income employees could become more financially literate and more active participants in the stock market.

The secondary findings of this study are a significant and positive relationship between those low-income employees who are planners, have more education, and are older and their acceptable cash-flow management behaviors. Furthermore, a significant and positive relationship is found between education and age and the acceptable savings behaviors of low-income employees. Thus, the financial behaviors of low-income employees who are

planners, more educated and older are better than the financial behaviors of non-planners, less educated and younger low-income employees. In contrast, a significant and negative relationship is found between race and the acceptable savings and acceptable cash-flow management behaviors of low-income employees. Thus, these low-income employees who are minorities have less positive or poorer savings and poorer cash-flow management behaviors than their comparable low-income White counterparts.

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