

Factors Associated With the Ownership of Individual Retirement Accounts (IRAs): Applying the Theory of Planned Behavior

Frank M. Magwegwe^a  and HanNa Lim^b 

Despite the importance of retirement savings, many individuals retire with lack of adequate retirement savings. While calculating retirement savings needs was found to enhance retirement savings, little is known about what underlies this enhancement. Applying the theory of planned behavior (TPB), we developed a model in which psychological factors influence the calculation of retirement savings needs, which in turn influences the ownership of individual retirement accounts. Path analysis was used to test our model with data from the 2015 National Financial Capability Study. The results showed that favorable attitudes, strong social norms, and perceived behavioral control are associated with calculating retirement savings needs. Also, calculating retirement savings needs as well as perceived behavioral control and having an employer-based retirement plan, in turn, contributed to the prediction of individual retirement account ownership. Our results suggest it is important to understand the psychological factors behind calculating retirement savings needs and to make it easy for individuals to calculate those needs.

Keywords: financial education, financial knowledge, individual retirement account, Keogh, retirement planning, retirement savings needs calculation

Roughly 43.3 million individuals in the United States work for employers that do not offer retirement plans (Rhee & Boivie, 2015). Those who do not have employer-provided retirement plans available are reliant on saving for retirement through individual retirement accounts (IRAs) or Keogh accounts. Introduced in 1974 to provide workers without employer-sponsored retirement plans a tax-advantaged way to save for retirement, IRAs have become an essential program for the accumulation of retirement savings. Similarly, Keogh accounts allow self-employed individuals to save for retirement on a tax-advantaged basis. Because researchers and policymakers report that Americans' retirement savings are inadequate to maintain living standards during retirement (Federal Reserve Bank, 2019; Jeszeck et al., 2015; Lusardi & Mitchell, 2011; Munnell et al., 2017), retirement planning through ownership of an IRA/Keogh is an important topic for study.

Retirement planning behaviors contribute to greater financial security and well-being in retirement (Elder & Rudolph, 1999; Fletcher & Hansson, 1991; Hershey et al., 2013; Moen, 1996; Noone et al., 2009), and low levels of preretirement anxiety (Hershey & Mowen, 2000; Taylor-Carter et al., 1997). Retirement planning benefits accrue not only for individuals but also for families and society. Individuals who plan are more likely to have higher levels of wealth at retirement (Ameriks et al., 2003; Lusardi & Mitchell, 2007) and are less likely to rely on family members or government programs that provide for older adults in need (Cole, 2017). However, retirement planning is inadequate, with 39.6 million (45%) working-age households failing to own any retirement account assets. Moreover, the median retirement account balance for all working-age households in 2013 was \$2,500 (Rhee & Boivie, 2015). When workers responded about how confident they were that their retirement income would enable them to live comfortably

^aPrincipal Scientist, Thrive Financial Wellness, 40 Desborough Avenue, Winston Ridge, South Africa, 2196. E-mail: frank@thrivefinwell.com

^bAssistant Professor, School of Family Studies and Human Services, College of Health and Human Sciences, Kansas State University, 343P Justin Hall, 1324 Lovers Lane, Manhattan, KS 66506. E-mail: hlim@ksu.edu

throughout their retirement years, only 18% reported feeling very confident (Greenwald et al., 2017).

Changing individuals' retirement planning behaviors requires an understanding of their perceptions and attitudes toward retirement planning. However, knowledge about the psychological factors that underlie planning for retirement remains limited (Hershey et al., 2007). Understanding these factors is important because, while researchers have promoted the need for individuals to plan for retirement and noted the associated benefits, individuals seem to lack motivation (Ekerdt et al., 2001) and an understanding of this lack of motivation remains thin (Griffin et al., 2012).

In the present study, we focus on the role of psychological factors (attitudes, subjective norms, perceived behavioral control, and behavioral intention) in retirement planning, especially related to IRA/Keogh ownership. Specifically, guided by the theory of planned behavior (TPB) (Ajzen, 1991), the purpose of this study is to investigate the psychological determinants of IRA/Keogh ownership and the psychological processes through which they affect IRA/Keogh ownership among nonretired adults. Studies on IRA/Keogh ownership focus primarily on sociodemographic variables with only a few studies investigating the psychological factors that explain IRA/Keogh ownership (Hira et al., 2009). Even fewer studies employ a theoretical framework or use a national dataset. This article fills the noted gap in the literature by examining the relationships among psychological factors guided by the TPB as the theoretical framework, utilizing a national dataset to conduct a path analysis.

Review of the Literature and Hypotheses

Theoretical Framework

The theoretical framework used in this study was the TPB, which has been widely used to model the determinants of human social behavior (Armitage & Conner, 2001). The TPB has been applied to consumer behavior such as completing debt management plans (Xiao & Wu, 2008), use of credit cards (Rutherford & DeVaney, 2009; Xiao et al., 2011), and retirement planning (Kimiyağahlam et al., 2019).

The TPB posits that attitudes, subjective norms, and perceptions of control determine an individual's intention to perform a given behavior. Additionally, the intention to perform the behavior ultimately determines the actual

behavior. Thus, the theory posits that, while attitudes and subjective norms have indirect effects on actual behavior through behavioral intention, perceived behavioral control has both direct and indirect effects on the actual behavior (Ajzen, 1991). Attitudes toward a behavior are an individual's positive or negative evaluation of the particular behavior based on his or her beliefs. Subjective norms refer to a person's perception of whether significant others, such as spouse, friends, or colleagues, would approve or disapprove of the behavior (Ajzen, 1991). Perceived behavioral control assesses the extent to which an individual has control about performing the behavior (Ajzen, 1991). Behavior under consideration must be voluntary; for example, an individual initiates the retirement planning behavior to own an IRA/Keogh and, therefore, creates a voluntary action that one can measure through the TPB lens.

Determinants of IRA/Keogh Ownership

The determinants of IRA/Keogh ownership fall within one of the following two categories: sociodemographic factors or psychological factors. A thorough review of the literature showed that sociodemographic factors have received considerable attention from researchers, though they have paid little attention to psychological factors. Researchers have shown that being old, White, married, highly educated, and earning a higher income associated positively with IRA/Keogh ownership (Bernstein, 2004; Chatterjee, 2010; DeVaney & Zhang, 2001; Hira et al., 2009; Knoll et al., 2012; Xiao, 1996). DeVaney and Zhang (2001) also found that homeownership, household size, and self-employment associated positively with IRA/Keogh ownership. Conversely, other researchers have shown that the number of children one has associates negatively with IRA/Keogh ownership (Chatterjee, 2010; Xiao, 1996), as do consumer debt levels (Bernstein, 2004).

Xiao (1996) and Hira et al. (2009) investigated psychological factors as they relate to IRA/Keogh ownership. Xiao (1996) found that risk tolerance associates positively with IRA/Keogh ownership. Hira et al. (2009) found, however, that while perceived control was not statistically significant, an individual's savings activity (e.g., frequency of saving), sources of financial information (i.e., financial advisor, the Internet, the workplace, or print media), active involvement in investing (e.g., increasing the amount invested, consulting with a financial advisor), and investing early in life associate positively with IRA/Keogh ownership.

While previous research shows that sociodemographic variables are important determinants of IRA/Keogh ownership, the TPB posits that these variables only affect one's behavioral intention, and affects one's actual behavior indirectly through attitudes, subjective norms, and perceived behavioral control. Therefore, using TPB as a guiding framework for the present study, we classify determinants of IRA/Keogh ownership into the following four TPB constructs: attitudes, subjective norms, perceived behavioral control, and behavioral intention.

Attitudes Toward IRA/Keogh Ownership. Some researchers have suggested that certain attitudinal factors, such as planning horizon, goal setting, and risk tolerance, might influence IRA/Keogh ownership (DeVaney et al., 2007; Xiao, 1996). We consider these attitudinal factors to be proxies for attitudes toward IRA/Keogh ownership, since an individual who chooses to own an IRA/Keogh is taking action that involves positive or negative dispositions toward long-term planning, goal setting, and engaging in risk to achieve one's future goals. DeVaney et al. (2007) reported that individuals with long planning horizons are more likely to have retirement accounts like IRAs or 401(k) plans; other researchers have found that individuals with long planning horizons are also more likely to save (Fisher & Montalto, 2010; Lusardi, 1999; Rabinovich & Webley, 2007). In a variety of life domains, setting goals influences people to engage in deliberate planning to achieve those goals (Locke et al., 1997; Smith et al., 1990). Several studies found that goals influenced retirement planning behaviors such as retirement savings calculations and retirement plan contributions (Hershey et al., 2003; Petkoska & Earl, 2009). Lastly, some research shows that risk tolerance influences ownership of financial assets (Coleman, 2003; DeVaney et al., 2007; Xiao, 1996). Based on these findings, we hypothesize that planning horizon, setting goals, and risk tolerance relate positively to intent to own an IRA/Keogh (H1a, H1b, and H1c).

Subjective Norms. Duflo and Saez (2003) examined the role of peer effects in employees' decisions to enroll in a savings plan, and found that peer effects might influence decisions to take retirement planning actions. Other studies report that social norms influence an individual's decision about how much to contribute to a retirement

plan (Bailey et al., 2004; Beshears et al., 2015). Bernheim and Garrett (2003) found that financial education workshops create social learning opportunities in retirement planning through discussions among coworkers about retirement planning. Such discussions can exert social pressure on individuals (Duflo & Saez, 2002), and influence individuals' participation in and contribution to retirement plans (Bernheim & Garrett, 2003).

Financial socialization can also influence individuals' retirement planning behaviors. Danes (1994) defined financial socialization as "the process of acquiring and developing values, attitudes, standards, norms, knowledge, and behaviors that contribute to the financial viability and well-being of the individual" (p. 128). In one study, Jorgensen and Savla (2010) examined whether young adults perceived their parents as influences on financial socialization, and found that the participants believed their parents had a significant influence on financial attitudes and behaviors. In another study, LeBaron et al. (2020) found that financial education from parents during childhood positively influenced positive financial behaviors in young adults. Financial education from parents or guardians, in addition to participating in financial education during high school, college, or at work, helps capture the concept of subjective norms on the importance of retirement savings. Based on the previous research, we hypothesize that financial education received at home, school, and work is related positively to intent to own IRA/Keogh (H2a, H2b, and H2c).

Perceived Behavioral Control. In the present study, we assessed perceived behavioral control by an individual's subjective financial knowledge and subjective financial management ability. Subjective financial knowledge associates positively with calculating retirement savings needs (Hershey et al., 2007, 2010; Hershey & Mowen, 2000; Mayer et al., 2011). Other studies have shown that subjective financial management ability associates positively with participation in retirement plans and calculating required retirement savings needs (Henager & Cude, 2016; Robb & Woodyard, 2011). Thus, we hypothesize that subjective financial knowledge and subjective financial management ability are related positively to intent to own an IRA/Keogh (H3a and H3b) and to the actual behavior of owning an IRA/Keogh (H4a and H4b).

Behavioral Intention. In the present study, we measure one's intention to own an IRA/Keogh by his or her decision to calculate retirement savings needs. According to Mayer et al. (2011), "Calculating retirement savings needs is a foundational action in the retirement planning process," which also increases retirement savings (p. 198). Zhu and Chou (2018) and Bi et al. (2017) found a positive association between calculating retirement savings needs and one's actual retirement savings. Based on the results of these studies, we hypothesize that calculating retirement savings needs relates positively to actual IRA/Keogh ownership (H5).

Employer-Based Retirement Plans. In addition to attitudes, subjective norms, and perceived behavioral control, other conceptually independent predictors can be added to the TPB (Ajzen, 2011; Ajzen & Fishbein, 2005). This study extended the original TPB by adding ownership of employer retirement plans as an additional predictor. Past studies have been inconclusive on whether employer-based retirement plans and IRAs are substitutes or complements (e.g., Bernheim, 2002; Gale et al., 2017; Gelber, 2011). If they were complements, it meant that participation in an employer-based plan was likely to increase individuals' awareness of the need to save for retirement; individuals subsequently respond by saving more through IRAs. Conversely, if they were substitutes, retirement saving through an employer plan would result in no additional retirement savings through IRAs or even lower IRA ownership and contribution. Griffin et al. (2012) reported a significant negative relationship between having a defined benefit plan and an index of retirement planning behaviors (e.g., topping savings for retirement). However, Bernstein (2004) found that individuals who own IRAs are more likely to have employer-based retirement plans such as 401(k) and defined benefits plans. In the present study, we hypothesize that having employer-based retirement plans would relate positively to both the intention to own an IRA/Keogh (H6) and to the actual behavior of owning an IRA/Keogh (H7).

Based on our theoretical framework and previous research, we developed seven hypotheses, which appear in Figure 1.

Method

Data

Data for this study came from the 2015 National Financial Capability Study (NFCS) commissioned by the FINRA Investor Education Foundation. The NFCS has surveyed

Americans' financial knowledge, attitudes, and behaviors every 3 years since 2009. The 2015 survey includes roughly 500 respondents from each state, with oversamples from four large states. The original sample of the 2015 survey comprises 27,564 respondents, aged 18 years or older. Since we are interested in retirement savings, we restricted the sample to nonretired households, which reduces the sample size to 21,769. After deleting those with missing values in the key variables, the analytic sample size of this study was 16,406. Table 1 presents the demographic characteristics of the original sample of nonretired households and our analytic sample. The two samples showed similar patterns in each demographic factor. In the descriptive analysis, we weighted the data to be nationally representative.

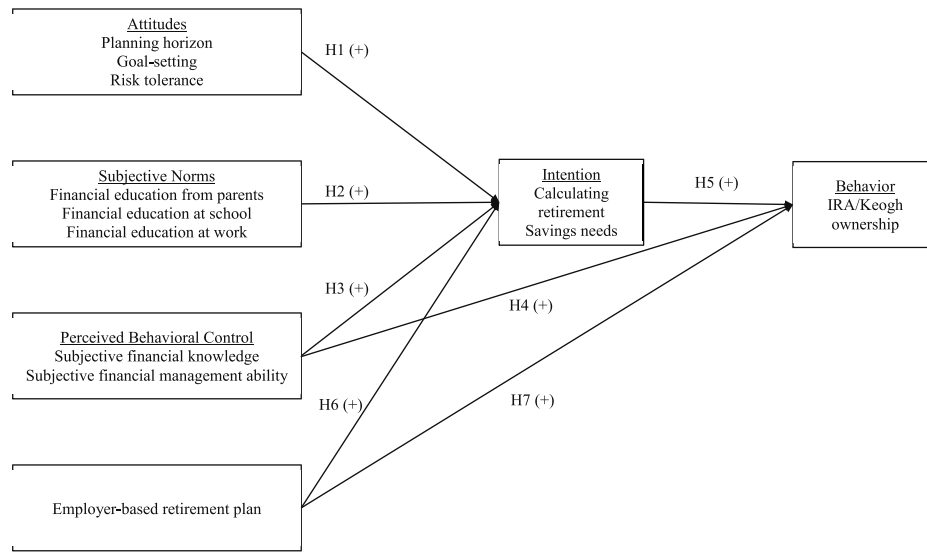
Dependent Variable

The dependent variable in this study is a binary indicator on the ownership of an independent retirement account. Respondents answered the question, "Do you or your spouse have any other retirement accounts not through a current employer, like an IRA, Keogh, SEP, myRA, or any other type of retirement account that you have set up yourself?" For simplicity, we refer to these types of retirement accounts collectively as IRAs.

Independent Variables

The independent variables represented the four TPB constructs: attitudes, subjective norms, perceived behavioral control, and behavioral intention. Based on the literature review on retirement planning, attitudes toward IRA/Keogh ownership include planning horizon, goal setting, and risk tolerance. We measured the planning horizon from the question, "In planning or budgeting your household's saving and spending, which of the following time periods is most important to you?" The available responses were as follows: "the next few months," "the next year," "the next few years," "the next five to ten years," and "longer than ten years." We coded those who reported "longer than ten years" as one and all others as zero for having long planning horizon indicator. Goal setting was measured using a seven-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*) in response to the statement "I set long term financial goals and strive to achieve them." Risk tolerance was measured using a 10-point Likert scale (from 1 = *not at all willing* to 10 = *very willing*) in response to the question "When thinking of your financial investments, how willing are you to take risks?"

Figure 1. Path analysis model on IRA/Keogh ownership.



We measured subjective norms toward IRA/Keogh ownership by whether respondents learned how to manage finances from their parents or guardians, and whether they received financial education in high school, college, or at the workplace. The respondents answered the question, “Did your parents or guardians teach you how to manage your finances?” Respondents also indicated whether financial education was available to them. If the response was positive, the follow-up question asked about the source of their financial education (high school, college, employer, and military). In the present study, we combined financial education from high school and college into “from school,” and we combined sources of financial education from the employer and the military into “from the employer.”

We measured perceived behavioral control through subjective financial knowledge and subjective financial-management ability. Since the theory posits *perceived* behavioral control, this study used respondents’ subjective or self-assessed financial knowledge instead of an objective financial knowledge measure based on financial literacy questions. To measure subjective financial knowledge, the participants responded on a seven-item Likert-type scale (from 1 = *very low* to 7 = *very high*) to the question, “How would you assess your overall financial knowledge?” To measure subjective financial management ability, the respondents were asked to respond on a seven-item Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*)

to the statement “I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses.”

We measured the behavioral intention to own an independent retirement account according to whether the respondent had tried to calculate required retirement savings. Respondents answered the question, “Have you ever tried to figure out how much you need to save for retirement?” As an external control variable, we added having employer-provided retirement plans to the model. Respondents answered the question, “Do you or your spouse have any retirement plans through a current or previous employer, like a pension plan or a 401(k)?” We coded the responses one for yes and zero otherwise.

Data Analyses

In the TPB, the independent variables related directly and indirectly to the dependent variable. Given this strong theoretical framework, path analysis was suitable for this study to capture these simultaneous relationships. Path analysis, a special case of structural equation modeling (MacCallum & Austin, 2000), is a powerful method for examining complex models in which one variable influences another variable that affects another variable (Streiner, 2005). Path analysis is appropriate when there are limited multiple indicators of latent variables or when measured variables are the primary interest (MacCallum & Austin, 2000). In this study, the criteria was met, hence path analysis was used. According to

Streiner (2005), path analysis cannot establish causality but can estimate the direct, indirect, and total effects of the variables under consideration on the dependent variable, which is IRA/Keogh ownership in this study.

Results

Descriptive Statistics

The analytic sample consisted of 16,406 nonretired respondents aged 18 years or older. Nearly four-fifths (79.5%) of the sample were under 55; just over half (50.7%) were male; the majority (62.9%) was White, and 56.5% reported having no college degree. Only an eighth (12.2%) of the sample were self-employed; more than half (53.4%) reported incomes above \$50,000; nearly six-tenths (59.1%) were homeowners, and over half (51.8%) were married. Detailed information appears in Table 1.

Table 2 summarizes the descriptive statistics on the independent variables of interest by the ownership of IRAs. For example, 11% of the total sample reported that they have longer than 10 years of planning horizon, but it varies depending on whether the respondents have IRAs or not. While 17% of those with IRAs reported they have longer planning horizon, only 8% of those without IRAs/Keoghs reported they do.

Multivariate Analysis

We conducted multivariate analysis using path analysis to determine the effects among the different variables based upon the path diagram shown in Figure 1. Path analysis was the appropriate multivariate analysis regression method because it is ideal for estimating the magnitude of linkages between theoretically connected measured variables and testing the overall fit of the model to the data. We then estimated the direct and indirect effects and tested the overall fit of the model. The model provides a close fit to the data ($\chi^2(6, N = 16,406) = 605.99; p < .0001$; Root Mean Square Error of Approximation (RMSEA) = .078; Standardized Root Mean Square Residual (SRMR) = .021; Comparative Fit Index (CFI) = .977). Other indices also indicate that the model fit is acceptable. Table 3 shows the path coefficients that indicate the relationships between the model constructs. All predicted paths in the TPB model are significant except the path between financial education at school and retirement savings needs calculation ($p = .872$). That is,

financial education one receives at school does not predict retirement savings needs calculation.

Results from the path analysis in Table 3 reveal that all attitudinal variables for Hypothesis 1 are related positively to retirement savings needs calculation (supporting Hypothesis 1). Except for financial education at school in Hypothesis 2, all variables are related positively and significantly to retirement savings needs calculation (partially supporting Hypothesis 2). Both subjective financial knowledge and subjective financial management ability positively are related to retirement savings needs calculation (supporting Hypothesis 3) and to the actual behavior of having IRAs (supporting Hypothesis 4). Calculating retirement savings needs positively is associated with the actual behavior of having an independent retirement account (supporting Hypothesis 5). Having an employer-based retirement plan is related positively to retirement savings needs calculation (supporting Hypothesis 6) and to the actual behavior of having an independent retirement account (supporting Hypothesis 7). Standardized path coefficients for direct and indirect effects appear in Figure 2.

Robustness Checks

We performed separate analyses for subgroups by demographic variables (e.g., age, gender, and income); the models showed consistent outcomes across different demographic subgroups. Additionally, to capture the “subjective norms” differently, we ran the same model with the variable on whether the respondents were offered financial education at school or workplace, regardless of whether they received the education. The results show that even having access to an environment that offered financial education relates positively with retirement savings calculation, which supports Hypothesis 2.

Discussion

Previous studies on IRA ownership have failed to consider the influence of psychological factors (i.e., attitudes, subjective norms, behavioral intention, and perceptions of behavioral control), and have focused mostly on the influence of sociodemographic factors. We sought to fill this gap in the literature by using the TPB to identify the determinants of IRA ownership and the psychological processes through which these determinants are related to IRA ownership. The

TABLE 1. Analytic Sample Compared to Original Survey Sample

| | Original Sample: Nonretired Households (N = 21,769) | Analytic Sample: Nonretired Households Without Missing Values (N = 16,406) |
|-------------------------|--|---|
| Age | | |
| 18–24 | 15.8% | 14.1% |
| 25–34 | 22.7% | 23.0% |
| 35–44 | 20.4% | 20.7% |
| 45–54 | 21.3% | 21.7% |
| 55–64 | 15.1% | 15.8% |
| 65 or above | 4.7% | 4.7% |
| Gender | | |
| Male | 49.1% | 50.7% |
| Female | 50.9% | 49.3% |
| Race | | |
| White | 61.6% | 62.9% |
| Non-White | 38.4% | 37.1% |
| Education | | |
| Less than high school | 2.7% | 2.0% |
| High school | 26.0% | 23.3% |
| Some college | 31.1% | 31.3% |
| College degree | 29.9% | 31.6% |
| Postgraduate degree | 10.3% | 11.9% |
| Self-employed | | |
| Yes | 11.7% | 12.2% |
| No | 88.3% | 87.8% |
| Household income | | |
| Less than \$34,999 | 36.0% | 31.9% |
| \$35,000–\$49,999 | 14.7% | 14.7% |
| \$50,000–\$74,999 | 19.4% | 20.2% |
| \$75,000–\$99,999 | 12.6% | 13.5% |
| Above \$100,000 | 17.3% | 19.7% |
| Homeownership | | |
| Yes | 56.1% | 59.1% |
| No | 43.9% | 40.9% |
| Marital status | | |
| Married | 49.7% | 51.8% |
| Cohabiting | 7.9% | 7.7% |
| Single | 42.4% | 40.5% |

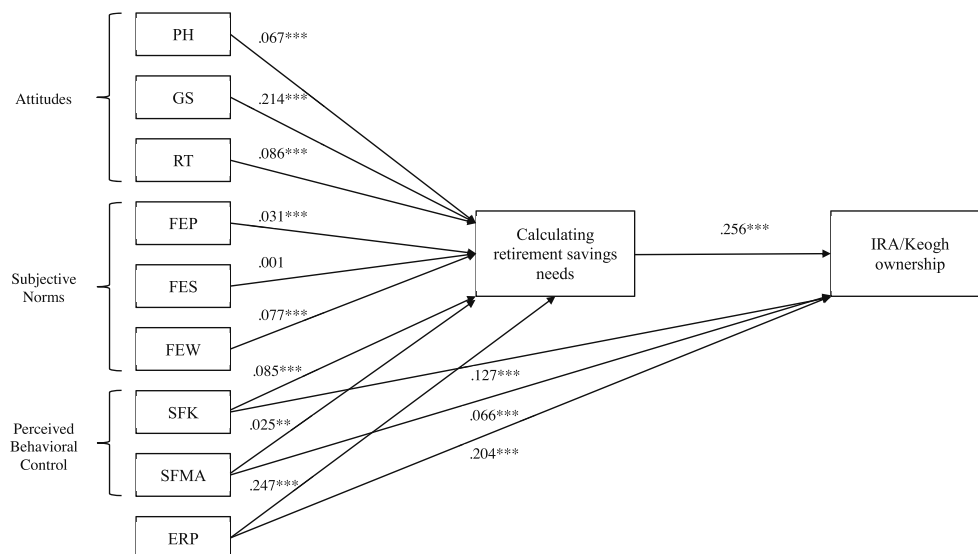
results show our extended TPB framework to be a powerful model for explaining the process through which working adults own IRAs/Keoghs. Following the theory, attitudes toward IRA/Keogh ownership, subjective norms, and perceptions of behavioral control are significant predictors of behavioral intention (i.e., calculating retirement savings needs) and behavioral intention strongly predicted the actual

behavior (i.e., IRA ownership). The successful application of the TPB to IRA ownership is consistent with other studies in which the theory effectively predicted a variety of retirement planning behaviors such as contributing extra to compulsory retirement savings and changing compulsory retirement savings investment strategy (Croy et al., 2012; Griffin et al., 2012).

TABLE 2. Descriptive Statistics by IRA/Keogh Ownership

| Constructs | Independent Variables | Mean (SD) | | |
|------------------------------|---|---------------------|--------------------------------|-------------------------------------|
| | | Total N = 16,406 | Have IRA/Keogh N = 5,755 | Not Have IRA/Keogh N = 10,651 |
| Attitudes | Longer planning horizon (0, 1) | 0.11 (0.31) | 0.17 (0.35) | 0.08 (0.27) |
| | Goal setting (1–7) | 4.99 (1.75) | 5.74 (1.36) | 4.62 (1.82) |
| | Risk tolerance (1–10) | 5.53 (2.60) | 6.56 (2.26) | 5.11 (2.64) |
| Subjective norms | Financial education from parents (0, 1) | 0.49 (0.48) | 0.56 (0.48) | 0.44 (0.50) |
| | Financial education at school (0, 1) | 0.20 (0.39) | 0.25 (0.41) | 0.17 (0.38) |
| | Financial education at work (0, 1) | 0.09 (0.29) | 0.16 (0.35) | 0.06 (0.24) |
| Perceived behavioral control | Subjective financial knowledge (1–7) | 5.26 (1.16) | 5.71 (0.94) | 5.04 (1.21) |
| | Subjective financial management ability (1–7) | 5.82 (1.37) | 6.23 (1.08) | 5.62 (1.46) |
| Intention | Retirement savings needs calculation (0, 1) | 0.46 (0.49) | 0.74 (0.42) | 0.33 (0.47) |
| External variable | Employer-based retirement plan (0, 1) | 0.59 (0.49) | 0.83 (0.36) | 0.48 (0.50) |

Figure 2. Standardized path coefficients for the prediction of IRA/Keogh ownership.



Note. Model fit statistics: $\chi^2 (6, N = 16,406) = 605.99; p < .0001$; RMSEA = .078; SRMR = .021; CFI = .977 PH = planning horizon, GS = goal-setting, RT = risk tolerance, FEP = financial education from parents, FES = financial education at school, FEW = financial education at work, SFK = subjective financial knowledge, SFMA = subjective financial management ability, ERP = employer-based retirement plan.

As hypothesized, attitudinal variables such as long planning horizon, goal setting, and risk tolerance positively influence behavioral intention. These findings are consistent with previous research that has found that a long planning horizon

(Hershey & Mowen, 2000; Mayer et al., 2011), goal setting (Hershey et al., 2007, 2010), and risk tolerance (Mayer et al., 2011) influences the calculation of retirement savings needs.

TABLE 3. Path Analysis Results for the Effects of Independent Variables on IRA/Keogh Ownership

| Path | Standardized Results | | | |
|--|----------------------|------|--------|-------|
| | Estimate | SE | t | p |
| Attitudes → intention | | | | |
| Long planning horizon → retirement savings needs calculation (H1a) | .067 | .007 | 9.768 | <.001 |
| Goal setting → retirement savings needs calculation (H1b) | .214 | .008 | 27.369 | <.001 |
| Risk tolerance → retirement savings needs calculation (H1c) | .086 | .008 | 11.201 | <.001 |
| Subjective norms → intention | | | | |
| Financial education from parents → retirement savings calculation (H2a) | .031 | .007 | 4.386 | <.001 |
| Financial education at school → retirement savings needs calculation (H2b) | .001 | .008 | 0.161 | .872 |
| Financial education at work → retirement savings needs calculation (H2c) | .077 | .008 | 10.072 | <.001 |
| Perceived behavioral control → intention | | | | |
| Subjective financial knowledge → retirement savings needs calculation (H3a) | .085 | .008 | 10.250 | <.001 |
| Subjective financial management ability → retirement savings needs calculation (H3b) | .025 | .007 | 3.223 | .001 |
| Perceived behavioral control → behavior | | | | |
| Subjective financial knowledge → having an IRA/Keogh (H4a) | .127 | .008 | 16.205 | <.001 |
| Subjective financial management ability → having an IRA/Keogh (H4b) | .066 | .008 | 8.603 | <.001 |
| Intention → behavior | | | | |
| Retirement savings needs calculation → having an IRA/Keogh (H5) | .256 | .007 | 35.085 | <.001 |
| External variable → intention | | | | |
| Employer-based retirement plan → retirement savings needs calculation (H6) | .247 | .007 | 35.32 | <.001 |
| External variable → behavior | | | | |
| Employer-based retirement plan → having an IRA/Keogh (H7) | .204 | .007 | 27.839 | <.001 |

In this study, we captured subjective norms with financial education by financial socialization agents (i.e., parents, high school or college, and workplace). While financial education from one’s parents and in the workplace shows significant positive effects on the calculation of retirement savings needs, financial education from high school or college fails to show a significant effect. Our results are only partially consistent with previous studies (e.g., Xiao & O’Neill, 2016; Xiao & Porto, 2017) which found a positive association between financial education from any source (i.e., high school, college, work) and positive financial behaviors.

Although no previous study has specifically investigated the influence of parental financial education and workplace financial education on calculating retirement savings needs, our results are consistent with findings from past studies on other financial behaviors. For example, learning about finances from parents is associated with better financial

behaviors (Deenanath et al., 2019; Jorgensen & Savla, 2010; LeBaron et al., 2020; Shim et al., 2010; Xiao et al., 2011) and workplace financial education programs influence retirement planning behaviors (Bernheim & Garrett, 2003). Our findings on the influence of financial education from parents on financial behavior (i.e., calculating retirement savings needs) provide evidence of the supporting role of parents as the primary source of financial socialization (Danes, 1994) and the long-term benefits of early financial socialization (e.g., Kim & Chatterjee, 2013).

The insignificance of financial education at high school or college is the only finding contradictory to our hypotheses. There is a vast body of literature on the influence of high school and college financial education on financial behavior, but the findings are not conclusive. For example, while Danes et al. (1999) found a significant positive association between high school financial education and positive financial behaviors, Mandell and Klein (2009) found no

significant impact of high school financial education on various positive financial behaviors. Mandel and Klein (2009) attributed the ineffectiveness of high school financial education to ineffective teaching, low student motivation, and irrelevant contents with financial responsibilities.

Our finding that workplace financial education has a significantly positive association with calculating retirement savings needs, while school financial education does not, can be attributed to three important factors. First, there is likely more focus on retirement planning through workplace financial education than there is during high school or college. Second, compared to high school or college students, working individuals have more financial responsibilities, including saving toward retirement and thus have a heightened interest in financial education and financial behaviors. Third, when compared to high school or college students, working individuals benefit from lower decay effects of financial education. Some researchers have discussed significant delays between class attendance and knowledge application later in life as the reason for the decay effects of financial education over time (Fernandes et al., 2014).

As predicted, perceptions of behavioral control (i.e., subjective financial knowledge and subjective financial management ability) are related positively to the calculation of retirement savings needs. These findings are consistent with previous studies. For example, subjective financial knowledge relates to various financial behaviors, including calculating retirement savings needs (Hershey et al., 2007, 2010; Hershey & Mowen, 2000; Mayer et al., 2011). Additionally, subjective financial management ability relates to the calculation of retirement savings needs and IRA/Keogh ownership (Henager & Cude, 2016; Robb & Woodyard, 2011).

Our finding that subjective financial knowledge and subjective financial management ability significantly predict behavioral intention (i.e., calculating retirement savings needs) is important for two reasons. First, researchers (e.g., Fernandes et al., 2014) have called for more focus on financial education that improves perceptions of financial knowledge and confidence because the effect of objective financial knowledge on behavior greatly reduces after controlling for the much stronger effect of financial confidence (Fernandes et al., 2014). Second, attempts to improve objective financial knowledge must guard against diminishing the

perceptions of financial knowledge and financial management ability (Hadar et al., 2013).

Based on the literature review, we included an additional predictor, having an employer-based retirement plan, to the TPB's constructs in our conceptual model. Our findings provide strong support for including this predictor. Previous studies have reported mixed results on the association between employer-based retirement plans ownership/contribution and IRA ownership/contribution. For example, while Bernstein (2004) and Gale et al. (2017) found no significant relationship between them, Gelber (2011) found that 401(k) eligibility increases IRA balances (that are conditional on IRA ownership). Chen and Munnell (2017) mentioned that the assets in IRA are mostly rollovers from employer-based retirement plans, and this could be one of possible explanations on the positive association between employer-based retirement plans and IRA. Our finding that there is a significant positive association between having employer-based retirement plans and IRA ownership raises concerns about the retirement preparation of self-employed individuals and individuals working in small firms who often do not have access to employer retirement plans (Rhee & Boivie, 2015). Our results show that these individuals are less likely to have independent retirement accounts as well.

We identified the possible psychological mechanisms for IRA ownership through the influence of attitudes, subjective norms, and perceptions of behavioral control on calculating retirement savings needs that influence IRA ownership. An explanation for this finding is that calculating retirement savings needs may act as a vivid intervention defined by Hershfield et al. (2018), serving as an intervention that helps people in visualizing or imagining themselves. According to Hershfield et al. (2018), the future self can become more imaginatively vivid through written and verbal exercises. Calculating retirement savings needs may increase the vividness of the imagined future self who lacks adequate retirement savings during retirement, which in turn leads to IRA ownership.

No previous research has investigated the influence of calculating retirement savings needs on IRA ownership. However, some research has found a significant positive association between calculating retirement savings needs and perceived retirement savings adequacy (Hershey et al., 2007, 2010) and increased retirement savings measured

as a sum of savings in both employer and nonemployer-sponsored retirement plans (Bi et al., 2017; Mayer et al., 2011; Zhu & Chou, 2018). Our finding is a very important contribution to the literature because few previous studies have linked specific retirement planning behaviors (e.g., calculating retirement savings needs) with retirement outcomes such as retirement savings accumulation and retirement account ownership (Mayer et al., 2011).

Although this study contributes to the literature in various ways, we acknowledge several limitations. First, given the cross-sectional design of the dataset, this study only makes correlational and not causal claims. Second, since the dataset does not provide account balances, it was not possible to identify IRA accounts with zero balances for our dependent variable. Third, the dataset does not provide information on whether IRA ownership is a result of 401(k) rollovers or from use of IRAs as additional vehicles to save for retirement. Finally, the use of a secondary dataset makes it difficult to ensure appropriate measurement of the respondent's attitudes, subjective norms, perceived behavioral control, and behavioral intention. It is, therefore, difficult to ensure that these measures relate directly to the target behavior and know the time order between the predictors and target behavior. Future research can address this limitation by constructing a questionnaire to measure the TPB's constructs for the target behavior of IRA ownership based on the guidelines provided by Conner and Sparks (1995). Despite these limitations, this study contributes to retirement planning literature and provides important avenues for future research on the psychological determinants of IRA ownership and the processes through which these determinants affect IRA ownership.

Implications for Practitioners

This study identifies factors that measure attitudes, subjective norms, and perceived behavioral control, all of which are predictors of the behavioral intention to calculate required retirement savings needs. The findings from this study can assist personal finance educators and financial advisors in understanding the psychological determinants of behavioral intention to calculate required retirement savings; they can use this knowledge to encourage individuals to prepare for retirement. For example, since workplace financial education is a significant predictor of calculating retirement savings needs, financial educators can focus their initiatives on offering workplace financial

education and help employers to provide financial education as an employee benefit. Financial educators can also provide information about how to access retirement savings calculators immediately after financial education workshops, which can help reduce an individual's effort to search the relevant information elsewhere and overcome procrastination.

The present study establishes that calculating retirement savings needs and having an employer-based retirement plan significantly and positively predict IRA/Keogh ownership. According to Rhee and Boivie (2015), 43.3 million individuals in the United States work for employers that do not offer retirement plans, with two-thirds of these individuals working in small firms. Further, according to the International Foundation of Employee Benefit Plans (IFEFP)'s 2018 report, 63% of North American employers offer their employees financial education, with larger firms being more likely to offer workplace financial education than small firms are.

Our findings have implications for retirement preparation, particularly with respect to individuals working in small firms. First, there is need for policy that makes it easy for small firms to offer retirement plans to their employees. For example, a policy on multiple employer retirement plans would allow small firms to share plan administration costs and fiduciary responsibilities, which are some of the reasons why small firms do not offer retirement plans (Munnell et al., 2016). Second, owners of small firms who cite cost as a reason not to offer financial education to their employees (IFEFP, 2018) could collaborate with civic organizations or nonprofit providers to deliver workplace financial education. An example of such a partnership exists between the Kansas City Federal Reserve, United Way of the Midlands, and numerous small firms in Nebraska, who delivered a financial education program to employees at the small firms (Edmiston et al., 2009).

Finally, this study highlights the important relationship between financial education from one's parents and retirement planning behaviors (i.e., calculating retirement savings needs). Based on this important finding, future research should explore how parents can most effectively teach financial concepts to their children as a complement to formal financial education programs offered in schools and colleges. Financial educators and policymakers could also

encourage parents to provide financial education to their children in two ways, so that this parental behavior can become a societal norm. First, they could encourage the development of youth financial education programs that include parental involvement. For example, such programs would include take-home exercises that children and their parents can participate in together. Further, such education programs would include workshops for parents to help them understand their role in the financial socialization of their children. Second, policymakers can develop frameworks and effective strategies for parents to teach financial education to their children at different development stages and provide them to community organizations and other educators to use in workshops with parents. Examples of similar policymaker efforts are the tools and resources for K-12 financial education that are provided in various formats by the Consumer Financial Protection Bureau (CFPB) to K-12 financial educators.

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