Health Information Search and Retirement Planning

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Prior research has found a relationship between the health habits of individuals and their financial well-being. Little research has been conducted, however, to explore the nature of the health-wealth connection. The purpose of this study was to explore and test the association of physical health behaviors, namely exercise and diet, and health information search behaviors, and financial wellness. Using data from the 2008 wave of National Longitudinal Survey of Youth (NLSY79), retirement planning activities were used as a proxy for financial wellness, and self-determination theory as a framework for the analysis, this study found that individuals who engage in health information search behaviors, such as reading the contents and nutrition details of food labels, are more likely to engage in financial planning activities.

Keywords: exercise, diet, financial planning, financial wellness, health information search behavior

Introduction

Since the latter part of the 20th Century, the Centers for Disease Control and Prevention and the American College of Sports Medicine have advocated and extolled the benefits of daily, moderate-intensity physical activity lasting 30 minutes or more (Haskell, Montoye, & Orenstein, 1985; Haskell et al., 2007). The President's Council on Physical Fitness and Sports, having embraced the recommendations of and cited results from, studies of five U.S. government agencies, noted that moderate daily physical activity can substantially reduce the risk of developing or dying from certain cancers, cardiovascular disease, and Type 2 diabetes (U.S. Department of Health and Human Services, 2010). Warburton, Nicol, and Bredin (2006) found a linear relationship between physical activity and health status, suggesting that increases in physical activity correspond with enhanced health. It is almost undisputed that physical fitness and regular physical activity are positively correlated with physical and emotional well-being (Taylor, Sallis, & Needle, 1985; Warburton et al., 2006).

Shorrocks (1975) was among the first researchers to note a strong association between health and wealth at the household level. He found that wealthier individuals had lower mortality rates and consequently constituted increasingly larger portions of surviving cohorts. The increasing wealth level of older cohorts runs contrary to the inverted-U pattern as predicted in the traditional life-cycle hypothesis (Modigliani, 1986). An integral life cycle hypothesis prediction is that savings decline in an individual's later years. Kim and Lyons (2008) found that unexpected events such as health problems accelerated savings depletion resulting in considerable financial strain. Financial strain can then exacerbate health problems. On the other hand, Adams, Hurd, McFadden, Merrill, and Ribeiro (2002) studied elderly Americans, as represented in the Asset and Health Dynamics of the Oldest Old (AHEAD) panel, and found no causal link between wealth and most health conditions. Meer, Miller, and Rosen (2003) reached conclusions between these two views. They found wealth wields a statistically significant and positive effect on health, but the strength of the association was very weak. Interestingly, studies of lottery winners by Lindahl (2005) and Apouey and Clark (2010) found sudden increases in wealth had positive effects on mental health but no significant impact on general health.

O'Neill (2007, 2009a) showed how a person's lifestyle choices impact the financial stability of the family unit. For example, someone who smokes cigarettes may be required, later in life, to deplete retirement assets to fund health care costs associated with smoking-related diseases. She also noted that individuals tend to be happier and more economically secure when they are healthy. This may stem from opportunity costs associated with unhealthy behavior. O'Neill (2009a) noted that smokers spend at least $2,500 annually to support their habit, which is money that could be used for financial goal achievement. The link between health and wealth tends to assume that diet and exercise are the key elements leading to improved financial well-being, which Zimmerman (1995) defined as a state of being healthy, happy, and free from financial

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worry (see also Joo & Grable, 2004). This assumption is supported by evidence showing people who fail to eat well and exercise regularly incur higher health care costs (Leslie & Makela, 2008) and reduced lifetime savings. Evidence of this sort, however, may be misleading and not fully supported by nationally representative data. Currently, it is presumed that those individuals who regularly exercise and those who practice healthy eating behavior should also be more likely to exhibit financial planning. That is, the motivation to exercise and eat well is assumed to be associated with the motivational predisposition to act similarly in the domain of personal and household finance matters. This may not be the case. While it is true eating well and exercising reduces health-related expenses, this is not necessarily the same as stating those who watch their diet and exercise exhibit better financial behavior.

This paper extends the literature in a unique way. Rather than assume the physical acts of eating well and exercising regularly are associated with better financial behavior, this research posits the possibility that the health-wealth connection may actually be explained by health information search behavior. Specifically, this paper proposes that the health-wealth connection does exist, but it is not physical activity (or the lack thereof) that is associated with financial behavior and wellness, but rather the cognitive processes associated with a healthy lifestyle. Therefore, the purpose of this research can be summarized as a test of the association between a set of health behaviors such as physical fitness, healthy eating, and health information search behavior and retirement planning.

Literature Review

The Health-Wealth Connection

There is a dearth of literature exploring the direct relationship between physical fitness (i.e., health) and financial fitness (i.e., wealth). Prior research has also been very limited in scope. However, some modest positive associations between individuals' physical health and family wealth have been noted. Pollack et al. (2007) reviewed 29 studies published between 1990 and 2006 that used health and at least one other socioeconomic status independent variable and a health related dependent variable. Their analysis found wealth to be significantly associated with health and that not considering wealth might lead to the under assessment of the influence of socioeconomic status on health.

Deaton (2002) argued that health and wealth are not merely correlated but directly affect one another. That is, heath affects wealth and wealth affects health. Health-related behaviors, such as alcohol or tobacco use, are important factors in influencing wealth accumulation. Wealth provides better access to medical care, sanitation, housing, nutrition, and education. It is these very factors that affect health.

Smith (1999), on the other hand, expressed skepticism that economic status might influence health outcomes by providing differential access to health care. Instead, Smith advocated an economic model of health with a health production function in which health is the result of an array of factors including behaviors such exercise. An essential element associated with this approach is to consider "health" to be a stock in which chosen behaviors are investments resulting in changes to that stock. Variations in the stock of health affect future earnings and consumption such as medical expenses. In the economic model, health affects wealth since the marginal utility of consumption could be affected by health.

Debt can be considered a counter measure of wealth. Young adults may consider taking on debt for education or a home, for example, as means to advance their social status. Debt, therefore, may be positively associated with self-esteem (Dwyer, McCloud, & Hodson, 2011). Drentea and Reynolds (2012) argued, however, that debt status is a critical factor of socioeconomic status and that being in debt can be a powerful potential stressor negatively effecting physical health.

Retirement Planning

Retirement planning, as a major component of lifetime wealth and asset accumulation, has been a topic of much interest to, and study by, academic researchers and practitioners alike. For example, Li, Montalto, and Geistfeld (1996) observed factors such as planning horizon and ownership of assets are positively associated with the accumulation of financial resources sufficient to meet pre-retirement income levels during the period of retirement. Yao, Hanna, and Montalto (2003) extended research conducted by DeVaney (1995) pertaining to the reliability and use of the capital accumulation ratio (CAR) as a measure of retirement adequacy. They found that the 25% CAR threshold is not as accurate a measurement as initially thought. Using the life-cycle hypothesis of saving (Ando & Modigliani, 1963) as a theoretical framework for his research, Hatcher (1998) noted that individuals use a blend of concepts, including per period wealth, as a barometer of whether or not to retire.

One of the more challenging elements of retirement planning is ascertaining the percent of current income necessary to fund post-retirement lifestyles. Williams and Zhou (1997)

conducted a three-prong review consisting of a content analysis of financial planning literature employed in the education of financial planners, a telephone survey of financial planners, and an analysis of empirical data contained in the 1991 Consumer Expenditure Survey. They found that expenditures in retirement tended to cluster and differ around two retirement periods consisting of one period of individuals aged 55 to 64 in which expenditures were 71% of pre-retirement expenditures, and a second period consisting of individuals aged 65 to 74 in which expenditures were 50% of the pre-retirement level. These, and other studies, suggest that retirement planning behavior is associated with cognitive processes, including the estimation and anticipation of current and future consequences. When viewed this way, the relationship between financial planning and health activities becomes apparent.

Self-Esteem Issues

Butterfield, Lehnhard, Lehnhard, and Parker (1995) found that youths from low-income families had lower physical fitness levels than youths from high net worth families. Results from the Butterfield et al. study were significant because, although narrow in scope, the study illustrates a positive relationship between a person's health status and wealth. While there is a paucity of research available that examines the connection between physical fitness and financial planning behaviors, there have been numerous studies that have linked a person's physical fitness to self-esteem or mental well-being. This is an important connection because self-esteem is known to be associated with factors of wealth accumulation, such as financial risk tolerance (Grable & Joo, 2004; Neymotin, 2010). The literature does indicate a positive relationship exists between self-esteem and financial fitness. Individuals who have higher levels of self-esteem have been found to be more likely to engage in financial planning activities (Neymotin, 2010). Although the purpose of this study was to test the direct relationship between individuals' physical and health information search behavior and their financial planning, recognizing the positive association between self-esteem and financial fitness is significant, as well as relative to this research. Specifically, and as noted throughout the literature, it is important to account for psychosocial factors as control variables when attempting to examine the health-wealth connection.

Higher levels of physical activity, as well as the increase in a person's physical condition, have been shown to improve an individual's overall self-esteem (Bane, McAuley, & Mihalko, 1997). Further, the majority of the studies involving physical fitness and self-esteem report a positive association between increased physical activity and higher levels of self-esteem. This has led to arguments suggesting a clear and positive relationship between increased physical fitness and mental health.

Physical Activity and Other Factors

It is generally accepted as true that increases in physical activity can lead to improvements in other areas of one's life (O'Neill, 2009a). Stathi, Fox, and McKenna (2002) found increased levels of physical activity improved a person's mood and life satisfaction, as well as decreasing depressive symptoms and feelings of loneliness. This suggests the effects of increased levels of physical fitness are far-reaching. That is, physical activity not only enhances a person's physical conditioning and self-esteem, but also improves other aspects of a person's life (e.g., mood, life satisfaction, and work performance). Fox and Thogersen-Ntouman (2005) noted that increased physical fitness improves an individual's work performance. In their study, physical fitness not only increased the cost-effectiveness of the employee-employer relationship, but increased exercise also improved workers' attitudes and feelings towards their job.

Theoretical Framework

As suggested above, the examination of the health-wealth connection is a relatively new area of research. While there is empirical evidence linking the two constructs, explanations as to why a connection exists are far from complete. Furthermore, negligible work has been conducted to explain the relationship between health and wealth theoretically. This study helps fill this gap by applying self-determination theory (SDT) as a way to frame the research. Deci and Ryan (2002) defined SDT in terms of the types of motivation (as opposed to the quantification of motivation), using autonomous motivation, controlled motivation, and amotivation as predictors of performance and well-being. SDT has been studied and applied extensively to the understanding of motivational processes across many life domains, including "parenting, education, work, relationships, physical activity, health, environmental issues, and psychotherapy" (Vallerand, Pelletier, & Koestner, 2008, p. 257). Wilson, Mack, and Grattan (2008) employed a SDT theoretical framework, for example, to better understand personal motivations for exercise.

Whereas nearly all theories of motivation have assumed the construct to be unitary (i.e., varying in amount), SDT is premised on the notion that motivation is bimodal, consisting

of autonomous and controlled motivational aspects (Deci & Ryan, 2008a). Autonomous motivation, within the context of SDT, is defined as impulse based on the internal dynamics of choice and volition. Controlled motivation is akin to acting as a result of pressure or demands tied to specific outcomes external to the self. Rather than being unitary, human outcomes are shaped by the type of, not simply the amount of, motivation.

Key assumptions within SDT include the following: (a) people are self-motivated, interested, and eager to succeed because success is satisfying and rewarding; (b) people need to feel autonomous, competent, and related to other people; and (c) people can be alienated by their environment in a way that makes them passive and disaffected. The interaction between a person's core desire to succeed and restrictions applied by their social environment either enhance or suppress the person's motivation. According to the theory, those who feel autonomous, competent, and related to others tend to be the most motivated to succeed (Deci & Ryan, 2000). Further, when all three aspects are present, a person's psychological, developmental, and behavioral outcomes are maximized (Ryan & Deci, 2000).

The concepts of autonomous and controlled motivation have most often been operationalized as intrinsic and extrinsic motivation, respectively. When people are intrinsically motivated, they engage in behavior because they find the activity interesting and satisfying. That is, they like to do it and they obtain subjective feelings of well-being associated with the action. Extrinsic motivation entails engaging in a behavior because there is either a tangible reward or punishment tied to the activity. SDT argues that these two types of motivation are not additive. This means that rather than assuming a combination of internal and external motivation can increase a person's likelihood of beginning and maintaining a behavior, SDT argues that these two types of motivation are independent. Extrinsic rewards are predicted to decrease intrinsic motivation (Deci & Ryan, 2008a). Deci and Ryan summarized the relationship this way: "when people are intrinsically motivated, they feel a sense of autonomy as their basic need for autonomy is satisfied. Then, when people are rewarded, threatened, surveilled [sic], or evaluated, they tend to feel pressured and controlled" (p. 15). Controlled motivation leads to the undermining of intrinsic motivation.

As conceptualized in SDT, someone who is intrinsically motivated acts based on the behavior itself. These individuals tend to accept the importance of their own behavior and internalize actions, and are known as autonomous. Individuals who are extrinsically motivated tend not to internalize behavior. They often feel controlled by others or by outside circumstances. Rarely do those with extrinsic motivation take "ownership" of their actions (Deci & Ryan, 2008b). Within SDT, those fitting this profile are known as controlled.

This discussion, and the application of SDT, would be a moot point if the type of motivation did not matter in determining behavioral outcomes. However, this is not the case. The literature overwhelmingly points to autonomous regulation (i.e., intrinsic motivation) as being associated with positive performance and well-being (Miquelon & Vallerand, 2008). Researchers have noted a causal link between autonomous motivation and increased conceptual understanding (Grolnick & Ryan, 1987), creativity (Koestner, Ryan, Bernieri, & Holt, 1984), persistence (Pelletier, Fortier, Vallerand, & Briere, 2001), and increased productivity (Fernet, Guay, & Senecal, 2004). Autonomous motivation has also been linked with healthier lifestyles (Pelletier, Dion, Slovenic-D'Angelo, & Reid, 2004) and exercise (Wilson, Mack, & Grattan, 2008). In short, individuals who hold an intrinsic/autonomous motivational perspective, in relation to a particular activity, tend to exhibit better behavioral outcomes. They also have a propensity to persist in the behavior.

The positive association between holding an autonomous motivational perspective and engaging in a beneficial behavior was noted by Wilson et al. (2008). They documented a positive relationship between goal achievement and intrinsic motivation. As suggested above, goals, like motivation, can either be intrinsic or extrinsic. An intrinsic goal is one related to the satisfaction of a basic psychological need for autonomy, competence, and relatedness (Deci & Ryan, 2008b). Someone, for instance, who begins and maintains a systematic exercise regime (i.e., "a leisure-time behavior involving repeated bodily movements in planned and structured physical activities designed to maintain or improve physical fitness" (Wilson et al., 2008, p. 251)) is likely doing so as a form of personal growth and goal achievement. While the person may also be focused temporarily on maintaining an attractive image (i.e., externally motivated goal), the pursuit of personal health (i.e., intrinsically motivated goal) is one that will prolong the exercise activity (Vansteenkiste, Simons, Soenens, & Lens, 2004). Wilson et al. went on to show that not only is exercise related to goal motivation, but also the outcomes associated with exercise work to improve a person's overall well-being. Specifically, they documented that exercise results in multiple health benefits, including reduced risk of coronary

heart disease, reduced likelihood of diabetes and obesity, and increased life expectancy. Structured exercise has also been associated with improved cognitive functioning, higher self-esteem, lower anxiety, and decreased stress (Acevedo & Ekkekakis, 2006). It can be argued, as assumed in this paper, that those who engage in ongoing, active exercise, as compared to participating occasionally in physical activity, do so as a form of intrinsic goal fulfillment. This was the core finding as reported by Wilson et al. That is, they noted that individuals who exercised on a regular basis tended to hold an autonomous motivational perspective. In addition, the achievement of intrinsic goals (e.g., improved physical health) led to improvements in other life domains.

The existing literature suggests that exercise and diet are more aligned with intrinsic motives than extrinsic motivation. Based on SDT and the work of O'Neill (2009a), the link between healthy physical behavior (e.g., exercising and eating well) and financial planning ought to be positive because financial planning is, by definition, an activity based on motivational processes; however, as discussed earlier, there is a lack of empirical evidence to document this hypothesized positive relationship. One outcome associated with this research is to determine if intrinsically motivated individuals are both physically and fiscally fit. As such, the following hypotheses were tested:

H1: Those who engage in systematic exercise (physical fitness) will be more likely to exhibit financial planning behavior.

H2: Those who engage in a healthy diet program will be more likely to exhibit financial planning behavior.

The association between health information search behavior and financial planning was also tested in this study. This is a new line of inquiry, with few studies addressing the relationship. As conceptualized, health information search behavior is similar to consumer information search activity, with an emphasis on obtaining nutrient data. This is a cognitive activity rather than a physical behavior (e.g., exercising, avoiding sugar and snacks, eating less fast food, etc.). Within the context of self-determination theory (SDT), health information search behavior is considered to be directed by intrinsic motivation. Consumers who are primarily driven by an autonomous desire to improve their health and well-being are assumed to voluntarily read nutrition labels and evaluate food ingredients prior to food purchase on an ongoing basis.

Nutrition labeling was strengthened in 1990 with the passage of the Nutrition Labeling and Education Act. The Act was introduced as a way to counter-balance advertising claims made by food manufacturers and distributors (Cook, Burton, & Howlett, 2011) by providing a mechanism for consumers to make more informed food choices. Cook and her associates noted that a person's motivation directs the use of nutrition labels. In general, only those persons who have a health motivation tend to read nutrition labels or evaluate food ingredients. That is, there appears to be an intrinsic motivation that is primarily cognitive "reading and evaluating" related to this type of health behavior. Given the framework of SDT and the conclusion that certain individuals are predisposed to information search activities that lead to increased knowledge, the following hypothesis was tested in this study:

H3: Those who engage in health information search behavior will be more likely to exhibit financial planning behavior.

Another key aspect of this study involved the measurement of known covariates impacting both motivation and goal formation and achievement. Psychosocial factors, such as mastery, locus of control, and self-esteem are known to be associated with self-regulatory actions (Pham, Taylor, & Seeman, 2001; Windsor & Anstey, 2010). A study by Noone, Stephens, and Alpass (2010) illustrates the typical relationship. They noted that individuals who undertake goal formation and planning actions tend to feel more in control of their lives. Noone et al. specifically found a positive relationship between an internal locus of control perspective and retirement planning behavior. Although not specifically addressed in their study, and as discussed earlier in the paper, high self-esteem, as well as mastery "the perception of being in control of one's life" should also be positively associated with goal formation and achievement.

In addition, the following demographic and socioeconomic factors "all of which are recognized motivational and goal formation covariates" were measured in this study (see Wilson et al., 2008): (a) age, (b) sex, (c) education, (d) income, (e) home location, (f) marital status, and (g) family size. Dieting was also controlled in this study. SDT posits that it is important to account for a person's motivational drive leading to exercise and eating choices. It was thought that individuals who were actively attempting to lose weight might be extrinsically motivated to exercise, eat healthier, and cognitively evaluate food choices. Although no specific hypothesis was tested in relation to this variable, the act of being on a weight-loss diet was controlled in this study as a way to account for extrinsic health motivation.

Figure 1. Self-Determination Model of Financial Behavior

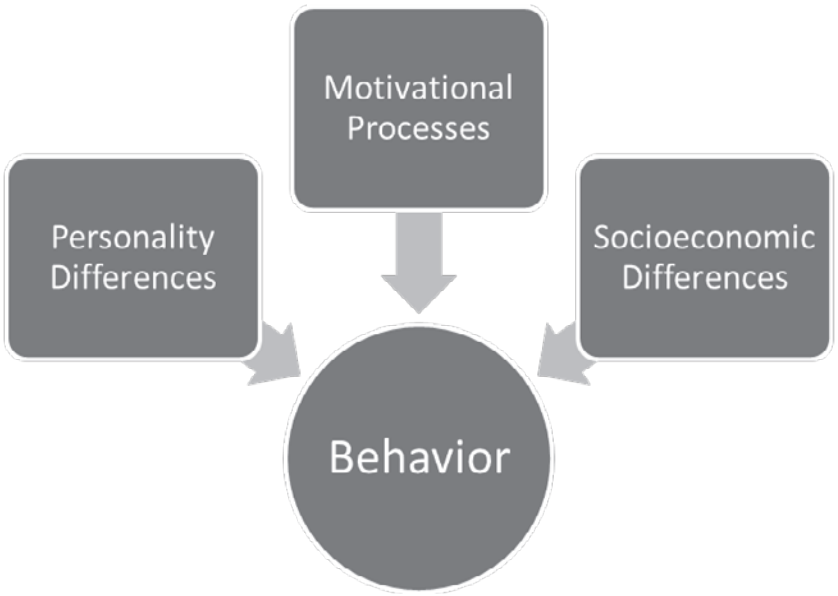

Figure 1 illustrates how the variables of interest, within SDT, were hypothesized to be conceptually related to planning behavior. The conceptual framework is based on a model presented by Ryan, Patrick, Deci, and Williams (2008). As shown, motivational processes, personality differences, and socioeconomic differences are associated with behavioral outcomes. In this study, the tested hypotheses fall under the domain of motivational processes, as do diet and healthy eating factors. Personality differences are represented by self-esteem, mastery, and locus of control. Sex, age, education, household income, urban versus rural living status, marital status, and family size represent socioeconomic differences.

Methodology

Data

Data for this study were obtained from the National Longitudinal Survey of Youth (NLSY), 1979 cohort, consisting of young men and women (n = 12,686) who were born between January 1, 1957 and December 31, 1964 (between ages of fourteen and twenty two years of age at the time). The sample was interviewed annually from inception through 1994 and biennially thereafter. The initial survey sample consisted of three subsets representing: (a) a cross-section sample designed to represent noninstitutionalized, civilian population of youths living in the United States (n = 6,111); (b) a supplemental oversample of minority youths and economically disadvantaged non-minority youths residing in the United States (n = 5,295); and (c) a military sample of enlistees in the Army, Air Force, Navy or Marine Corps as of September 30, 1978 (n = 1,280).

Beginning in 1985, to reduce sampling costs, all but 201 randomly selected respondents in the military subsample were dropped from the survey, and the economically disadvantaged non-minority subsample was discontinued in its entirety in 1991. The first subset, the supplemental oversample of minority youths in the survey, and 201 randomly selected military participants remained at the time of this study (n = 9,964). During the latest survey, 7,654 individuals responded, representing a 77% retention rate. For the purpose of this study, the NLSY survey conducted in 2008 was retained with 4,825 cases included in the analyses.

Outcome Variable

Financial planning was proxied through retirement readiness. This concept was measured using a summated variable consisting of questions related to a respondent's retirement planning as of 2008. Respondents were asked if they had: (a) calculated their retirement income need, (b) consulted a financial planner, (c) read magazines about retirement, (d) used a computer to help plan for retirement, or (e) attended meetings on retirement planning. Answers were coded yes (1) or no (0). Scores were summed, with higher scores representing a greater level of financial planning. The mean score on the measure was 1.02 (SD = 1.37). Data were heavily skewed towards those who had conducted no retirement planning. As such, data were recoded so 1 was representative of engaging in at least the mean number of behaviors, otherwise 0.

Independent Variables

Exercise. Exercise was measured on the basis of frequency of exercise lasting at least 10 minutes and causing heavy sweating or large increases in breathing or heart rate. Respondents indicated their frequency as being: (a) 1 for daily (b) 2 for weekly, (c) 3 for monthly, (d) 4 for yearly, and (e) 5 for never. The mean and median score was 1.96 and 2.00, respectively (*SD* = .88). The way in which the data were coded meant that low scores on the item represent a greater frequency of exercise.

Healthy Eating. Unhealthy eating was measured on a summated basis by aggregating answers to questions asking: (a) How many times have you eaten fast food in the past 7 days?; (b) How many times have you eaten a snack between meals in the past 7 days?; (c) How many times have you skipped a meal in the past 7 days?; and (d) How many times have you had a sugar drink in the past 7 days? Summed scores ranged from 0 to 126 times (*M* = 10.5; *SD* = 7.85). Higher scores were indicative of an unhealthy diet.

Health Information Search Behavior. The independent variable termed health information search behavior was measured through the summation of two questions which asked about the frequency of whether or not respondents read nutritional information while shopping and whether or not respondents read ingredients when shopping. Answers ranged from 1 representing "always," 2 signifying "often," 3 indicating "sometimes," 4 representing "rarely," and 5 signifying "never." Respondents who failed to answer either of the questions or who did not buy food were excluded from the analysis. Responses ranged from 2 to 10 (*M* = 5.62; *SD* = 2.80). Lower scores on the variable were representative of better health information search behavior.

Psychosocial Control Variables. Three psychosocial control variables were included in the study. Pearlin's Mastery Scale (Pearlin, Lieberman, Menaghan, & Mullan, 1981) was used to assess the degree to which respondents perceived themselves to be in control of forces that impact their lives. The scale consists of the following 7-items: (a) There is no way I can solve the problems I have*, (b) I sometimes feel I am being pushed around*, (c) I have little control over what happens to me*, (d) I can do just about anything I really set my mind to, (e) I often feel helpless in dealing with problems in my life*, (f) What happens to me in the future mostly depends on me, and (g) There is little I can do to change important things in my life* (* indicates reverse coding). A four-point Likert-type scale was used, with 1 = strongly disagree and 4 = strongly agree. High scores represented a feeling of mastery. The mean and standard deviation of the scale was 22.14 and 3.22, respectively.

The 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure self-esteem. Scale scores were used to assess each respondent's feeling of personal approval or disapproval. The following response categories were used: (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree, with high summated scores suggesting a state of approval. The ten items were as follows: (a) I am a person of

Table 1. Descriptive Statistics for Independent Variables (N = 4,825)

Variable	Mean	SD	Range
Retirement Planning	n.a.	n.a.	0 – 1
Female	0.52	0.50	0 – 1
Age	46.57	2.23	43 – 52
Education	13.50	2.44	0 – 20
Household Income	$76,508	$75,979	$0 – $454,737
Urban	0.77	0.42	0 – 1
Married	0.56	0.50	0 – 1
Family Size	2.86	1.50	1 – 12
On a Diet	0.48	0.50	0 – 1
Self-Esteem	23.54	4.38	5 – 30
Mastery	22.18	3.22	7 – 28
Locus of Control	8.72	2.40	4 – 16
Exercise	1.79	0.70	0 – 4
Health Eating	10.53	7.52	0 – 126
Health Information Search	5.55	2.77	2 – 10

worth, (b) I have a number of good qualities, (c) I am inclined to feel that I am a failure*, (d) I am as capable as others, (e) I feel I do not have much to be proud of*, (f) I have a positive attitude, (g) I am satisfied with myself, (h) I wish I had more self-respect*, (i) I feel useless at times*, and (j) I sometimes think I am "no good" at all* (* indicates reverse coding). The mean scale score was 23.53 (*SD* = 4.38).

Rotter's Internal-External (I-E) Locus of Control Scale (Rotter, 1966) was incorporated to assess each respondent's belief in the amount of control they have in directing their life through self-motivation and self-determination (i.e., internal control), compared to the extent that the external environment controls their life outcomes (i.e., external control). The following four-point Likert-type scale was used: (1) much closer (internal), (2) slightly closer (internal), (3) slightly closer (external), and (4) much closer (external). Scores ranged from 4 to 16, with high scores suggesting an external locus of control perspective. The mean and standard deviation scores were 8.76 and 2.39, respectively.

Other Covariate Factors. As previously noted, this research controlled for factors that have been previously known to affect goal formation and achievement. Specifically, the following factors were incorporated as covariates in the regression analysis: (a) age, (b) sex, (c) level of education, (d) income, (e) home location (urban = 1, rural = 0), (f) marital status, and (g) family size. Sex and marital status were coded dichotomously. Men were coded 0 and women 1, while those who were married were coded 1, otherwise 0. Additionally, whether or not a respondent was presently on a weight reduction diet was controlled in the analysis (on diet = 1, not on diet = 0). Table 1 reports the descriptive statistics of the variables incorporated in this study.

Data Analysis Method

Given the dichotomous nature of the outcome variable, a hierarchical binary logistic regression procedure was used to test the research hypotheses. Data were entered in five steps: (a) demographic and socioeconomic control variables, (b) psychosocial control variables, (c) exercise, (d) healthy eating, and (e) health information search behavior. Multicollinearity among the independent variables was evaluated using a combination of correlation estimates (Table 2) and collinearity functions within the statistical program (SPSS). In general, the correlation estimates were low, representing small to medium effect sizes. No significant multicollinearity issues were present in the data.

Results

Table 2 shows the correlation coefficient estimates among the continuous variables of interest in this study and retirement planning. Of particular interest are the low correlations among exercise, healthy eating, and health information search behavior. Although each of these behaviors was considered to be a form of intrinsically motivated performance, the relationship among these variables was not as strong as one might assume. In general, the other associations exhibited small to medium effect sizes, with the relationships between education and income (r = .44) and self-esteem and mastery (r = .34) being among the highest.

Table 2. Correlations Among Continuously Measured Variables and Retirement Planning (N = 4,825)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Rent Planning	1										
2. Age	0.03	1									
3. Education	.30**	-0.01	1								
4. Household Income	.32**	0.02	.39**	1							
5. Family Size	.09**	-.07**	.11**	.26**	1						
6. Self-Esteem	.17**	-0.01	.21**	.19**	.06**	1					
7. Mastery	.15**	-.06**	.24**	.19**	.05*	.34**	1				
8. Locus of Control	-.12**	-.15**	-.19**	-.16**	-0.02	-.13**	-.181**	1			
9. Exercise	.07**	-0.02	.11**	.10**	0.02	.08**	.070**	-.04*	1		
10. Healthy Eating	-.04*	-.03*	-.03*	-.04*	0.01	-0.02	-0.005	-0.01	0.02	1	
11.Health Information Search	-.17**	-.05**	-.22**	-.10**	-0.03	-.12**	-.080**	.08**	-.04**	.17**	1

Notes: *p < .05. **p < .01.

Table 3. Summary of Hierarchical Logistic Regression Analysis for Variables Associated with Retirement Planning (N = 4,825)

	Step 1			Step 2			Step 3			Step 4			Step 5		
Variable	*β*	*SE β*	*eB*	*β*	*SE β*	*eB*	*β*	*SE β*	*eB*	*β*	*SE β*	*eB*	*β*	*SE β*	*eB*
Female	-0.15	0.07	.86*	-0.13	0.07	0.88	-0.13	0.07	0.88	-0.14	0.07	0.87	-0.24	0.07	.79**
Age	0.03	0.02	1.03	0.03	0.02	1.03	0.03	0.02	1.03	0.02	0.02	1.03	0.02	0.02	1.02
Education	0.2	0.02	1.22**	0.18	0.02	1.19**	0.18	0.02	1.19**	0.18	0.02	1.19**	0.16	0.02	1.17**
Household Income	0	0	1.00**	0	0	1.00**	0	0	1.00**	0	0	1.00**	0	0	1.00**
Urban	-0.02	0.08	0.98	-0.03	0.08	0.98	-0.02	0.08	0.98	-0.02	0.08	0.98	-0.04	0.08	0.96
Married	0.25	0.09	1.28**	0.23	0.09	1.25*	0.22	0.09	1.25*	0.22	0.09	1.25*	0.22	0.09	1.24*
Family Size	-0.01	0.03	0.99	-0.01	0.03	0.99	-0.01	0.03	0.99	-0.01	0.03	0.99	-0.01	0.03	0.99
On a Diet	0.21	0.07	1.23**	0.22	0.07	1.24**	0.22	0.07	1.24**	0.21	0.07	1.24**	0.15	0.07	1.16*
Self-Esteem				0.05	0.01	1.05**	0.05	0.01	1.05**	0.05	0.01	1.05**	0.04	0.01	1.04**
Mastery				0.03	0.01	1.03**	0.03	0.01	1.03**	0.03	0.01	1.03**	0.03	0.01	1.03**
Locus of Control				-0.03	0.02	.97*	-0.03	0.02	.97*	-0.03	0.02	.97*	-0.03	0.02	.97*
Exercise							0.08	0.05	1.08	0.08	0.05	1.08	0.08	0.05	1.08
Healthy Eating										-0.01	0.01	0.99	0	0.01	1
Health Information Search													-0.11	0.01	.90**
Nagelkerke R2	0.19			0.21			0.21			0.21			0.22		

Notes: Reference categories are male, rural, not married, and not on a diet; *$p < .05$. **$p < .01$.

The three research hypotheses were evaluated with data from the hierarchical logistical regression model (Table 3). The final model was statistically significant ($\chi^2(14) = 811.12$, $p < .001$), with approximately 22% of variance explained by the model (Nagelkerke R^2). The following discussion presents the results of the tests based on each step.

Step 1 included the demographic and socioeconomic control variables. Sex, education, income, and marital status, as described by Wilson et al. (2008), were important socioeconomic factors associated with financial planning. Men, those with more education and income, and those who were married were more likely to have engaged in retirement planning behavior. Being on a diet was also important, with those dieting also reporting planning behavior. Although the absolute values of the coefficients changed throughout the hierarchical process, the direction of the associations remained constant.

Step 2 was used to enter the psychosocial control variables of self-esteem, mastery, and locus of control. These three factors were found to be associated with financial planning behavior. Exhibiting higher levels of self-esteem and mastery, and presenting an internal locus of control, were positively related to financial planning behavior. These findings were consistent with the literature and the core assumptions within SDT. The inclusion of the psychosocial variables within the model increased the level of explained variance in the model by approximately 2%.

Step 3 was used to account for a respondent's level of exercise. As shown in Table 3, there was no association between exercise and financial planning. The overall effect size of the coefficient was very low. Given the sample size used in this study, this level of non-association is noteworthy. As such, the first hypothesis which stated, "Those who engage in systematic exercise (physical fitness) will be more likely to exhibit financial planning" was rejected.

Healthy eating was entered as Step 4 in the model. Initially, the relationship between healthy eating (i.e., eating fast food, snacking, skipping meals, and drinking sugar drinks) and financial planning was negative, although the association was not significant. The relationship changed direction when health information search behavior was added to the model (i.e., Step 5); however, the relationship was never statistically significant, and in terms of explaining model variance, healthy eating was the least important factor associated with retirement planning behavior. Given the results of the test, the second hypothesis, which stated, "Those who engage in a healthy diet program will be more likely to exhibit financial planning" was rejected.

Finally, health information search behavior was added to the model as Step 5. A statistically significant negative association between cognitive evaluation and financial planning was noted. In this case, it is important to take note of the way the variable was coded. Someone who rarely reads a nutrition label or rarely accounts for the ingredients of food when shopping received a score of 8, whereas someone who always does these things received a score of 2. Given this coding, respondents who exhibited health information search behavior were found to also have engaged in more financial planning behaviors. For example, a one-unit increase in health information search behavior was predicted to improve financial planning by 10%. In this case, the third hypothesis, which stated, "Those who engage in health information search behavior will be more likely to exhibit financial planning" was accepted.

Steps were also taken to test for interactions between physical activity and health information search behaviors by calculating a centered interaction term. It is plausible to consider that individuals who regularly engage in physical activity as part of a healthy lifestyle are more likely to pay close attention to product labeling of goods, specifically nutritional information and product contents. Centering was employed to improve the interpretability of interactions and avoid potential problems of multicollinearity of the independent variables (Aiken & West, 1991). The regressions were re-run with the interaction term included; however, the coefficient results were not significant.

Discussion

At the outset of this paper, it was proposed that the physical acts of exercising and eating well, while important aspects associated with well-being, may not be as importantly associated with financial behavior as commonly assumed. Rather, it was hypothesized that the health-wealth connection may actually be explained by health information search behavior. Results from this study provide support for this notion. Specifically, a health-wealth connection was identified. However, direct physical activities (e.g., exercise and eating well) were not found to be associated with financial planning. Cognitive processes, on the other hand, were statistically significantly associated with planning for retirement.

These findings do not directly contradict the work of other researchers; rather, findings add to the existing literature in several ways. For instance, Kim and Lyons (2008) and O'Neill

(2007, 2009a) noted that people who are healthy also tend to be more secure financially. Findings from this study add to this insight by suggesting that the health-wealth connection may be more cognitive than physical. Individuals who are intrinsically motivated to maintain or improve their health through reading and evaluating food labels and ingredient facts appear to share an information search profile with those who are more prepared financially. This finding matches the theoretical framework used in this study. Within SDT, individuals who are intrinsically motivated internalize actions and outcomes. This research adds to the SDT literature (e.g., Pelletier et al., 2004) by showing an association between autonomous motivation and improved well-being.

What is important to bear in mind is that, as suggested by SDT and the existing literature, a health-wealth connection does appear to exist, with the relationship being stronger in terms of cognitive health behavior. Further, as noted by O'Neill (2009a) and bolstered by SDT, a "carrot" rather than a "stick" approach facilitates intrinsic motivation, thereby leading to prolonged, desirable behaviors for health, and ultimately, for wealth. This unique insight into the health-wealth connection is worthy of additional study. For example, future studies should explore the relationship between health behavior and objective financial indicators of wellness, including evaluating cash flow, asset and liability, and savings measures. Additionally, future research should be designed to evaluate more precisely the motivational intention of individuals who exercise and eat healthily. Future research studies may also wish to focus on possible differences and similarities between men and women in terms of cognitive health behaviors.

Limitations

One limitation associated with this study, in the context of SDT, is that respondents were not asked specifically why they were exercising or dieting. It would be helpful to have a direct measure of motivational intention in future studies. Further, the dataset employed in this research involved a study of individuals who constituted the baby boomer generation. It is conceivable that this cohort may have been influenced by economic and political events at the time of their entry into adulthood, thereby affecting their approaches to retirement planning, the dependent variable employed in this study. During the early adulthood years of the baby boomer generation, corporate America was beginning a process of transitioning from defined benefit retirement plans to defined contribution arrangements, which shifted the onus for retirement planning from employer to employee. Baby boomers are arguably the first generation of Americans to contend with this tectonic shift, and it is possible their retirement practices were based upon their parents' generation. This situation may have accounted for the large number of respondents who had engaged in no retirement planning activities as measured by the dataset. The results of the study are therefore limited in this respect, as the outcome may vary based upon a study of other cohorts that have been exposed to a differing set of economic, political, and educational events.

Conclusion

The purpose of this research study was exploratory in nature and designed to extend the literature associated with the health-wealth connection. Specifically, associations among physical fitness, healthy eating, and health information search behaviors were tested in this research. Employing a sample from the 2008 wave of the NLSY-79 dataset, this study provides evidence of a clear positive association between health information search behaviors and individuals who are more likely to engage in one or more retirement planning behaviors. Though regular physical activity and healthy eating were not found to be associated with retirement planning, individuals who were on a weight loss program, and individuals who routinely engage in cognitive-directed behaviors, were identified as being more likely to employ a similar approach during life to buttress financial well-being in retirement.

Implications

This study found that individuals who engage in health information search behaviors, such as reading product labels and product contents, are more likely to engage in one or more of the following retirement planning behaviors: attending seminars, reading books and magazines on retirement planning, consulting a financial planner, using a personal computer to plan for retirement, and calculating retirement income needs. As hypothesized within SDT, individual behavior is thought to be influenced by external and internal motivation, with internal motivation serving as the strongest predictor of both current and future behaviors. This study explored both physical and cognitive health activities as being aligned with internal or intrinsic motivation. Results suggest that intrinsically motivated individuals are more likely to take steps to be prepared financially.

The results from this study further intimate that a way to improve not only the health status of consumers, but also their financial health, is to encourage what Cook et al. (2011) called promotional efforts to increase attention to food and ingredient labels. This is principally what O'Neill (2009b) proposed.

She called for greater cognitive interventions over physical intermediation. Examples of ways to increase both health and financial literacy, as recommended by O'Neill include: (a) personalizing education content that promotes more information search behavior, (b) avoiding technical jargon to help explain technical health and wealth issues, (c) providing realistic action steps, and (d) providing a mechanism to share success stories, including the use of social networks. Whether or not these suggestions are adopted at the federal level (something akin to the Nutritional Labeling and Education Act) or by health and financial professionals is a topic for further study and discussion. Nonetheless, adherence to the behaviors above may not only improve individuals' physical health, but also their financial fitness. Policymakers and/or firms operating in the marketplace could use this rationale in designing programs that make and/or promote a health-wealth connection.

Financial planning strategies that appeal to cognitive processes are supported by the health-wealth connection. Potential exists in transferring strategies that have already been proven to be effective in health planning to wealth planning. For example, in the area of health, nutrition labeling supports cognitive strategies used by some consumers to evaluate the costs and benefits of particular food products, alongside with recommended daily intake guidelines. Research has shown that simply moving nutrition labeling from the back of a product to the front allows individuals to make quicker informed decisions in their shopping (Feunekes, Gortemaker, Willems, Lion, & Kommer, 2008). A similar strategy has potential for application in helping consumers in the domain of financial planning and retirement planning. For example, financial strategies that communicate recommendations in a brief and simple manner up front may be more effective in appealing to an individual's cognitive processes. Furthermore, similar to health and nutrition labeling, the design of recommended standardized financial guidelines may prove helpful in assisting people make proper financial decisions to incorporate within their own plan.

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