

# Financial Inhibition, Financial Activation, and Saving for Retirement

Kirstan A. Neukam, Douglas A. Hershey\*

*Department of Psychology, Oklahoma State University, 201 N. Murray Hall, Stillwater, OK, USA*

Accepted 21 January 2003

---

## Abstract

In this paper, we describe the construction and psychometric evaluation of two personality-based measures of financial savings motives, and examine their relationship to individuals' retirement savings practices. The Financial Inhibition Scale (FIS) was designed to assess fear-based motives we believed would hinder the process of saving for retirement. The Financial Activation Scale (FAS) was designed to assess goal-based motives we thought would facilitate savings practices. Findings from two separate empirical studies provide support for both the reliability and validity of these new theoretically based measures of financial savings motivation. © 2003 Academy of Financial Services. All rights reserved.

*JEL classification:* Major E2, Minor E29

*Keywords:* Financial; Retirement; Savings; Motivation; Personality

---

## 1. Introduction

When thinking about retirement, individuals are likely to envision both positive and negative images of the future, and these images are likely to have a significant impact on one's retirement planning and savings tendencies. Bell and Mau (1971) suggested that images of the future influence current decisions and behaviors by determining the nature of one's goals, and the strategies and procedures one will adopt to achieve them. Consistent with Bell and Mau's theoretical perspective, one of our working assumptions is that in the

---

\* Corresponding author. +1-405-744-6027; fax: +1-405-744-8067.

*E-mail address:* hershey@okstate.edu (D. Hershey).

retirement planning context, positive and negative images of the future will differentially shape individuals' behavioral motives, and thus, their savings practices. The purpose of the present investigation is to develop two theoretically derived measures, one focuses on the strength of individuals' goal-based financial motives, the other focuses on the strength of individuals' fear-based motives. Each scale was designed to assess an independent psychomotivational individual difference dimension, and in so doing, allow for prediction of whether individuals are likely to save for retirement.

For some, the notion of retirement will conjure up negative images of the future (say, financial dependence or ill health) that may be psychologically threatening, and thus, anxiety provoking. We believe that individuals who experience retirement anxiety (cf., Hayslip et al., 1997) would be less likely to plan and save for the future than those who do not, based on a general pattern of avoidance when it comes to thinking about and engaging in long-term savings activities. Others, in contrast, are likely to envision rich and positive images of life after their departure from the workforce. These visions serve to define specific retirement goals (Hershey et al., 2002), and these goals, we argue, should serve to stimulate appropriate financial savings activities, allowing individuals to meet their long-term objectives. This basic distinction between financial fears and financial goals serves as a conceptual backdrop for the present investigation.

In this paper, two different studies are described in which we evaluate the psychometric and conceptual adequacy of a pair of financially oriented psychomotivational measures: the Financial Inhibition Scale (FIS) and the Financial Activation Scale (FAS). The remainder of the paper is organized as follows. In Section 2, a review of the relevant literature is provided. Sections 3 through 6 describe a study designed to assess the psychometric characteristics of the FIS and FAS, which are domain-specific analogues of motivational measures developed by Carver and White (1994). Study 2, described in Sections 7 through 10, was conducted to replicate the factor structure identified in Study 1, and to test the predictive validity of the new measures using a larger, nationally representative sample. Section 11 contains a general discussion designed to conceptually integrate findings across both empirical studies. In general, the results of these two investigations support the psychometric adequacy and validity of the new financial scales. These measures, we believe, will be particularly useful for financial counselors and retirement planning specialists who face the difficult task of identifying why it is that certain individuals fail to save for the future.

## **2. Review of the literature**

A fair amount of work has focused on measuring individual differences in two basic types of behavioral motives: fear-based motives, which are commonly associated with a pattern of behavioral avoidance, and goal-based motives, which are typically associated with achievement-oriented behaviors (Carver and Scheier, 1985; Carver and White, 1994; Gray, 1981, 1987; Higgins et al., 1994; Oyserman and Markus, 1990). Findings from this body of work suggest that individuals who possess an achievement orientation tend to focus on the future by setting goals, whereas those driven by their fears seek to avoid thoughts of the future so as not to envision anticipated negative events.

Gray (1978, 1987, 1990, 1991) proposed one of the more often cited theories of motivation, which highlights separate subsystems that are differentially sensitive to fears and goals. As part of his physiologically grounded model, Gray posits the existence of two general motivational systems that underlie behavior and affect: the behavioral approach system (BAS) and the behavioral inhibition system (BIS). According to Gray, the BAS system regulates appetitive motivation, and it is purported to be particularly sensitive to signals of reward. Behaviorally, the BAS system prompts individuals to initiate and maintain active goal pursuits in order to seek novel or otherwise rewarding experiences. Based on theory, individuals with higher levels of BAS sensitivity will experience positive feelings when exposed to signals of future rewards. The BIS system, in contrast, controls aversive motivation, prompting individuals to avoid actions associated with potentially negative outcomes or events. Gray's model suggests that individuals with higher levels of BIS sensitivity will experience fear, anxiety, and frustration in the presence of situational cues associated with punishment and threat. In short, a strong BAS orientation stimulates movement toward goal achievement, whereas a strong BIS orientation inhibits movement toward goal achievement.

One effort to operationalize and measure the two systems proposed by Gray was carried out by Carver and White (1994). In developing a series of self-report BIS items, Carver and White sought to measure individuals' general concerns over the possibility of negative occurrences (e.g., "I worry about making mistakes") or sensitivity to such events when they transpire (e.g., "Criticism or scolding hurts me quite a bit"). In designing the BAS scale, Carver and White used a more divergent strategy. All items on the BAS are designed to reference potentially rewarding events. However, unlike the BIS, which is structurally unidimensional, the BAS is designed to tap multiple aspects of reward sensitivity (further discussed below).

In developing their scales, Carver and White (1994) conducted a factor analysis of the BIS and BAS items using a sample of 732 university students. They found that the combined set of items they analyzed grouped into four separate scales: one BIS scale and three BAS subscales. The seven items designed to assess day-to-day behavioral anxiety all loaded on the anticipated BIS factor. BAS items, in contrast, grouped into a four-item Drive subscale, associated with the pursuit of desired goals (e.g., "When I want something, I usually go all-out to get it"), a four-item Fun Seeking subscale, reflecting a desire for new rewards and a willingness to spontaneously engage in potentially rewarding events (e.g., "I crave excitement and new sensations"), and a five-item Reward Responsiveness subscale, that focused on the occurrence or anticipation of rewards (e.g., "When I get something I want, I feel excited and energized"). Carver and White found the BAS subscales to be moderately correlated with one another, as one would expect if all three were designed to reflect different aspects of the same affect-laden, personality-based motivational system. The reliability and validity of the BIS and BAS measures were adequately demonstrated in Carver and White's 1994 paper, as well as in other investigations that have subsequently appeared in the literature (Heubeck et al., 1998; Jorm et al., 1999).

### 3. Study 1: objectives

Previous research has failed to address the distinction between fear- and goal-based planning motives in the context of financial preparation for retirement. Therefore, we created two financial measures designed to tap these motives modeled after Carver and White's BIS and BAS scales. Study 1 was conducted to examine the factor structure and psychometric properties of the two new measures. Toward that end, factor analyses were carried out, and we also evaluated the internal consistency of the scales. Next, we assessed the extent to which scores on the FIS and FAS were associated with scores on Carver and White's BIS and BAS measures, as well as with demographic indicators including age, income, and gender. Based on findings from previous financial and economic studies, one would expect to find older individuals, those with higher levels of income, and men to display higher FAS scores and lower FIS scores (Clark et al., 2000; Lusardi, 2000).

### 4. Methods

#### 4.1. Participants

The sample consisted of 150 working adults 25–45 years of age ( $M = 34.3$ ,  $SD = 5.8$ ) living in North Central Oklahoma at the time of testing. Participants were 79 men and 71 women with a median income of \$50K and a median educational level of 16.0 years. The racial composition of the sample was representative of the region: Caucasian 81.3%, African American 6.0%, Native American 4.7%, Hispanic 1.3%, Asian 0.7%, and multi-ethnic 2.7%. Participants were solicited to complete the questionnaire at churches, airports, and other public venues.

#### 4.2. Questionnaire

In addition to the FIS and FAS measures, the questionnaire contained the 7-item BIS scale, and the 13-item BAS scale (Carver and White, 1994), as well as several demographic items. The new FIS and FAS measures each contained nine items, all using a seven-point response scale (1 = "strongly disagree," 7 = "strongly agree"). Like the BIS and BAS they were modeled after, the FIS and FAS included statements designed to tap individuals' behaviors, opinions, or beliefs. The creation of items for the two new scales involved rewording items contained on the BIS and BAS to make them applicable to the area of financial planning for retirement. Consistent with the BIS, FIS items included statements that reflect a concern for negative future occurrences or apprehension associated with the financial planning and savings process (e.g., "I worry about my finances in retirement"). FAS items, in contrast, were developed to identify individuals who were responsive to positive future financial occurrences, or who were motivated to engage in goal-setting activities in the financial planning context (e.g., "I am highly active in my pursuits toward financial planning for retirement"). Unlike the BAS, however, which was designed to be conceptually multi-

dimensional, items on the FAS were designed to tap a single psychomotivational personality disposition.

## 5. Results

Examination of the FIS and FAS began with an exploratory factor analysis (EFA) of the combined set of 18 items in order to determine how many factors if any, existed beyond the two that were hypothesized. A principal components analysis was conducted, followed by varimax rotation, yielding four factors with eigenvalues greater than one, which together accounted for 70% of the variance in the model. Examination of the scree plot also provided evidence for a four-factor solution. Individual items from the FIS and the FAS are shown in Table 1, along with their rotated factor loadings for each of the four factors. (Study 2 loadings, shown in parentheses, can be disregarded until they are discussed below.) The pattern of loadings revealed that each of the two theoretically based constructs contained two subscales. The FIS items appeared to divide into “Financial Worry” and “Planning Worry” subscales, whereas the FAS items appeared to separate into a “Planning Drive” subscale, and a “Financial Freedom” subscale.

Based on the theoretical writings of Gray (1990, 1991), the FIS and FAS should only tap two separate constructs, corresponding to two motivational subsystems driven by fears and goals (see Section 2, above). Therefore, a second factor analysis was conducted that specified two factors be extracted using principle components analysis, with varimax rotation to a final solution. As predicted, the set of nine FIS items grouped together, as did the nine FAS items (see Table 2). (Again, the loadings from Study 2, shown in parentheses, can be disregarded.) Moreover, the rotated factor matrix failed to reveal any substantial cross-loadings. Together, the two factors accounted for 53% of the overall variance in the model. Despite the fact that the four-factor solution explained more variance than the two-factor model, we believe that in some measurement contexts the full-scale FIS, for instance, might be more appropriate as a general indicator of financial motivation than either of the shorter, more specific financial worry or planning worry measures. The same could be said to be true regarding the FAS and its associated subscales. Therefore, for the remainder of the study, we report the psychometric characteristics of the full-scale measures as well as their related subscales.

Next, coefficient alpha values were computed to assess the internal consistency of the scales. Alpha was 0.90 for the full-scale FIS (financial worry = 0.89; planning worry = 0.88) and 0.85 for the full-scale FAS (financial freedom = 0.77; planning drive = 0.89). Moreover, item-to-total correlations were found to exceed 0.40 for all items on both the full-scale FIS and the full-scale FAS, as well as each of the four subscales. Taken together, these findings indicate that the new scales demonstrate a reasonable level of internal consistency, both at the full-scale and subscale levels.

Once the factor structure of the scales had been established, we sought to determine whether the measures were related to the scales from which they were derived. Therefore, we correlated the FIS and its respective subscales with the BIS scale, and the FAS and its respective subscales with the BAS. The BIS was found to be moderately correlated with the FIS ( $r = .34, p < .01$ ), the financial worry scale ( $r = .32, p < .01$ ),

Table 1  
Rotated factor loadings for the FIS and FAS from the exploratory and confirmatory analyses

|  | F1        | F2        | F3        | F4        |
|--|-----------|-----------|-----------|-----------|
| <i>FIS: Financial Worry</i>  |           |           |           |           |
| I worry about my finances in retirement  | .81 (.80) |           |           |           |
| I am concerned about being dependant upon friends or family members for financial support after I retire                     | .70 (.60) |           |           |           |
| I often find myself concerned about not having enough money in retirement  | .85 (.85) |           |           |           |
| I worry about making mistakes in my financial preparations for retirement  | .77 (.81) |           |           |           |
| I am concerned about being financially stable in retirement  | .80 (.74) |           |           |           |
| I often feel that something bad will happen in retirement for which I will not have adequately saved                         | .67 (.82) |           |           |           |
| <i>FIS: Planning Worry</i>   |           |           |           |           |
| Compared to my friends, I have a lot of fears involving financial planning for retirement                                    |           | .85 (.85) |           |           |
| I feel nervous and hesitant when doing financial planning for retirement   | [.48]     | .76 (.87) |           |           |
| I am hesitant about making retirement investment decisions because I am worried about making a mistake                       |           | .82 (.71) |           |           |
| <i>FAS: Planning Drive</i>   |           |           |           |           |
| When it comes to financial planning for retirement, I use a “no holds barred” approach                                       |           |           | .84 (.77) |           |
| When doing financial planning for retirement, I feel excited and energized   |           |           | .83 (.76) |           |
| I go out of my way when it comes to financial planning for retirement  |           |           | .88 (.85) |           |
| I am highly active in my pursuits toward financial planning for retirement   |           |           | .78 (.74) |           |
| When I see the chance to further my retirement investments, I move on it right away  |           |           | .81 (.83) |           |
| <i>FAS: Financial Freedom</i>  |           |           |           |           |
| I desire financial freedom when I retire   |           |           |           | .56 (.61) |
| I have the desire to be able to do what I want financially in retirement   |           |           |           | .77 (.66) |
| When I retire, I want to have enough money to be able to participate in any leisure activities I desire                      |           |           |           | .82 (.85) |
| I want to have enough in retirement to be able to purchase the items I wish without being concerned about financial security |           |           |           | .81 (.74) |

*Note:* Loadings below .40 have been omitted for clarity. Only one cross-loading was found in the exploratory analysis, which is shown in brackets under the planning worry scale.

The loadings not in parentheses are from study 1, and the loadings in parentheses come from study 2.

Table 2  
Rotated factor loadings for the FIS and FAS based on the two-factor forced solution

|  | F1        | F2        |
|--|-----------|-----------|
| <i>Financial Inhibition Scale (FIS)</i>  |           |           |
| I worry about my finances in retirement  | .78 (.77) |           |
| I am concerned about being dependent upon friends or family members for financial support after I retire                     | .60 (.59) |           |
| I often find myself concerned about not having enough money in retirement  | .85 (.82) |           |
| I worry about making mistakes in my financial preparations for retirement  | .81 (.82) |           |
| I am concerned about being financially stable in retirement  | .77 (.70) |           |
| I often feel that something bad will happen in retirement for which I will not have adequately saved                         | .78 (.84) |           |
| Compared to my friends, I have a lot of fears involving financial planning for retirement                                    | .74 (.70) |           |
| I feel nervous and hesitant when doing financial planning for retirement   | .82 (.72) |           |
| I am hesitant about making retirement investment decisions because I am worried about making a mistake                       | .68 (.60) |           |
| <i>Financial Activation Scale (FAS)</i>  |           |           |
| When it comes to financial planning for retirement, I use a “no holds barred” approach                                       |           | .77 (.76) |
| When doing financial planning for retirement, I feel excited and energized   |           | .80 (.75) |
| I go out of my way when it comes to financial planning for retirement  |           | .80 (.85) |
| I am highly active in my pursuits toward financial planning for retirement   |           | .72 (.74) |
| When I see the chance to further my retirement investments, I move on it right away  |           | .83 (.84) |
| I desire financial freedom when I retire   |           | .49 (.10) |
| I have the desire to be able to do what I want financially in retirement   |           | .60 (.36) |
| When I retire, I want to have enough money to be able to participate in any leisure activities I desire                      |           | .46 (.29) |
| I want to have enough in retirement to be able to purchase the items I wish without being concerned about financial security |           | .53 (.26) |

*Note:* For the study 1 data, loadings below .40 have been omitted for clarity. For study 2 data, all loadings are reported corresponding to the basic factor structure identified in study 1.

The loadings not in parentheses are from study 1, and the loadings in parentheses come from study 2.

and the measure of planning worry ( $r = .27, p < .01$ ). Similarly, the BAS was significantly related to the FAS ( $r = .26, p < .01$ ), the planning drive scale ( $r = .16, p < .05$ ), and the measure of financial freedom ( $r = .32, p < .01$ ).

Theory would suggest that the FIS and FAS tap independent constructs, and thus, should not be highly correlated with one another. This was indeed found to be the case—the Pearson correlation between the full-scale FIS and the full-scale FAS was small and not statistically significant ( $r = .05, ns$ ). In contrast, one would expect to find the FIS subscales to be correlated with one another, and the FAS subscales to be positively related as well. This was also found to be the case, with the Pearson correlation between planning worry and financial worry to be .62 ( $p < .01$ ), and the  $r$ -value between planning drive and financial freedom to be .37 ( $p < .01$ ).

Scores on the full-scale FIS and FAS were next examined in relation to a set of four demographic indicators previously shown to be related to financial planning and savings practices. Age was found to be uncorrelated with scores on the FIS ( $r = .10$ , *ns*); however, as expected, it was found to be positively related to scores on the FAS ( $r = .24$ ,  $p < .01$ ). Both scales were associated with level of income, with the FAS ( $r = .43$ ,  $p < .01$ ) more strongly related to this variable than the FIS ( $r = -.16$ ,  $p < .05$ ). Finally, contrary to expectations, gender was shown to be unrelated to scores on both the FIS,  $t(148) = .11$ , *ns*, and the FAS,  $t(148) = .17$ , *ns*.

With respect to the subscales, age was found to be related to planning worry ( $r = .17$ ,  $p < .05$ ) and planning drive ( $r = .27$ ,  $p < .01$ ), and it was unrelated to financial worry and financial fear. Income was significantly negatively correlated with financial worry ( $r = -.17$ ,  $p < .05$ ), and positively correlated with financial freedom ( $r = .24$ ,  $p < .01$ ), and planning drive ( $r = .43$ ,  $p < .01$ ). Income was not, however, correlated with planning worry. Finally,  $t$  tests revealed that gender was unrelated to all four of the subscales (all tests  $p > .05$ ).

## 6. Summary and conclusions

The results of the EFAs in Study 1 provide empirical support for the existence of independent FIS and FAS constructs, which parallel the BIS and BAS constructs that were identified by Gray (1990) and subsequently operationalized by Carver and White (1994). However, contrary to expectations, each of the two financial motivation scales appeared to tap two different dimensions. The FIS was found to be made up of a retirement-oriented worry dimension, and a second worry dimension that focused on general financial issues. Similarly, the FAS was found to consist of a retirement-oriented financial goals dimension, and a second goal dimension that focused on the ability to achieve financial freedom. For the most part, findings regarding the factor structure of the scales were clearly interpretable, with only one unanticipated cross-loading in the four-factor solution. Moreover, coefficient alpha values and item-to-total correlations for the six different scales (FIS, FAS, and related subscales) were shown to be quite reasonable, which speaks to the internal consistency of the measures.

The new financial motivation scales were also shown to be positively correlated with the scales from which they were derived, as one would expect based on standard measurement theory. The bivariate correlations between the BIS and BAS and their respective domain-specific measures were all statistically significant and in the small-to-moderate range. One would hope to find that these correlations would not be too large, which would indicate that the domain-specific and domain-general scales are essentially tapping the same psychological construct. This would also suggest that the financial measures would be unlikely to explain unique variance in savings tendencies beyond that which could be explained by the BIS and BAS. On the other hand, one would hope to find that the correlations were statistically significant, so as to demonstrate theoretically expected relationships between the domain-general fear and goal constructs and their domain-specific instantiations. Thus, the modest correlations between Carver and White's (1994) scales and the new measures of

financial motivation are what one would hope to find when developing derivative scales of this type.

Another interesting set of findings involved the set of demographic variables previously shown to be related to retirement planning and savings practices. Age was positively correlated with FAS scores, but found to be unrelated to FIS. The fact that financial goal-based motives increased over the age range is not particularly surprising, given that studies have shown an increase in savings activity among middle-aged individuals (Glass and Kilpatrick, 1998; Hershey et al., 2001). On the flip side of the coin, given the sizeable percentage of workers who postpone saving until the decade just prior to retirement (Poterba, 1996), it was curious that financial fear did not increase developmentally. Perhaps individuals at or near 45 years of age were young enough not to have experienced the psychological pressure and anxiety that sometimes accompanies preparation for retirement (Hayslip et al., 1997). It could be that FIS would be positively related to age had older workers been included in the sample.

Income was correlated with both FIS and FAS in the predicted directions. Not surprisingly, lower-income individuals were more likely to endorse FIS-based statements involving concerns about late-life financial solvency and hesitancy regarding financial decisions. Conversely, higher-income individuals, who would be expected to have more in the way of discretionary income, were more likely to endorse FAS-based statements that suggested active planning and savings pursuits. High-income individuals not only displayed a superior desire for financial freedom, but they also indicated high levels of planning drive. An aggressive stance toward planning and savings combined with reasonable levels of disposable income should put high-income, high-FAS individuals in good stead when it comes to achieving their long-term financial goals.

It was surprising to find that gender was not associated with fear- or goal-based financial motives, given a small but consistent set of findings which has shown that women as a group save less than men (Richardson, 1993), and tend to be less confident in making financial decisions (Merrill Lynch, 1995). The absence of gender differences may be due in part to the fact that a younger group of workers was studied. Far more women today are engaged in retirement planning activities than two or three decades ago, as a result of their increased participation in the workforce, and the proliferation of defined contribution savings programs which require an active planning role on the part of the worker. As compared to years past, more young and middle-aged women are charting their own financial futures, and the lack of gender differences across the FIS and FAS measures presumably reflects growth toward equality between the sexes. In sum, three of the six correlations involving demographic variables were significant in the expected direction. Furthermore, among the remaining three that were not significant, none were found to run in the opposite direction of our a priori predictions.

Strengths of the present study included the fact that the new financial scales were theoretically derived and the factor structure of the measures were interpretable and in line with a priori expectations. Limitations included the fact that a regional sample was employed, and the predictive validity of the new financial motivation measures has yet to be empirically demonstrated. Specifically, further research is required to show that the scales

make good predictors of retirement savings tendencies, as one would anticipate. Both of these limitations are addressed in Study 2.

## 7. Study 2: objectives

The second study, which was based on data collected from a nationally representative sample of working adults, had two primary objectives. The first was to replicate the factor structure of the scales identified in Study 1, only this time using the more stringent confirmatory factor analysis (CFA) technique cast in a structural equation modeling (SEM) context. The second objective was to determine whether the FIS and FAS measures and their respective subscales are related to individuals' retirement savings practices. Specifically, we posited that FAS scores would be positively related to retirement savings contributions (in that high FAS individuals should be striving to meet their financial goals), and FIS scores should be negatively related to savings allocations (in that high FIS individuals should find the prospect of financial planning aversive). As these financial motivation scales are new, and have yet to be shown to possess predictive validity, we were hesitant to make detailed predictions regarding the nature of possible interactions between these constructs when predicting savings tendencies. In general, however, one should expect individuals high in FAS and low in FIS to have saved the most, and those low in FAS and high in FIS to have saved the least.

If the FIS and FAS constructs are each shown to be made up of two subscales, then a similar analysis to the one described above will be conducted, only the four subscales will be used as predictors of retirement savings. In the same way that FAS scores are expected to be positively related to savings practices, scores on the FAS subscales—planning drive and financial freedom—are also predicted to be positively related to savings contributions. Similarly, the two FIS-related subscales—planning worry and financial worry—are expected to be negatively related to retirement savings practices.

## 8. Method

### 8.1. Participants

A total of 270 working adults (154 men, 116 women) participated in Study 2. The data for this study were obtained from part of a larger national study on the psychological determinants of retirement planning among young and middle-aged working adults. All participants were members of a large household data panel maintained by a major international marketing firm. Sampling of the panel was limited to Americans 25–45 years of age inclusive ( $M = 36.2$ ,  $SD = 6.18$ ), and stratified on the basis of geographical region. Participants' median level of education was 14.0 years, and their median income was \$55K. The racial composition of the sample was roughly comparable to that of the nation: Caucasian 85.6%, African American 4.4%, Hispanic 4.1%, Asian 1.9%, Native American 1.1%, and multi-ethnic 0.4%.

## 8.2. Questionnaire

The elements of the larger retirement planning questionnaire that are relevant to Study 2 include the FIS and FAS measures, and by implication, each of their subscales. Also included in the questionnaire was an extended set of demographic variables, and an item that asked participants to indicate the percentage of personal income they had voluntarily allocated toward retirement savings during the preceding 12 months. This last item, voluntary savings contributions, was measured using an 11-point scale that was graded in 2–3 percentage point increments, in which a value of 1 corresponded to no contributions during the past year, and a value of 11 corresponded to savings contributions greater than 25%.

## 9. Results

### 9.1. Confirmation of factor structure

Confirmatory factor analyses were conducted on the FIS and FAS items using the AMOS v. 3.6 structural equation modeling program (Arbuckle, 1997). First, separate one- and two-factor solutions were computed using items from the FIS scale. The one-factor model (with all nine items loading on a single latent variable) was found to be a poor fit to the data,  $\chi^2(27) = 298.77$ ,  $p < .01$ ,  $CFI = .82$ ,  $AGFI = .63$ ,  $TLI = .76$ ,  $RMSEA = .19$ . In this model, all factor loadings were found to be greater than .59 (see FIS loadings in parentheses, Table 2). Next, a two-factor solution was calculated using the financial worry and planning worry constructs, as defined by the structure identified in Study 1. In this model, the two subscales were allowed to correlate. The observed fit indices for the two-factor FIS solution were stronger than those seen in the one-factor model,  $\chi^2(26) = 150.47$ ,  $p < .01$ ,  $CFI = .92$ ,  $AGFI = .80$ ,  $TLI = .89$ ,  $RMSEA = .13$ . As was the case in the one-factor model, all factor loadings in this second analysis were found to be greater than .59, and the modification indices failed to reveal any appreciable cross-loadings between factors (see FIS loadings in parentheses, Table 1). Furthermore, the planning worry and financial worry constructs were found to be strongly correlated ( $r = .73$ ). Given that the one- and two-factor models are nested within one another, it was possible to use a 1 df  $\chi^2$  test to determine whether one was superior to the other. This test revealed that the two-factor solution provided for a significantly better fit than the one-factor model,  $\chi^2_{diff}(1) = 148.30$ ,  $p < .01$ .

Next, separate one- and two-factor CFAs were calculated using the FAS items. The one-factor FAS model (with all nine items loading on a single latent variable) was found to be a poor fit to the data,  $\chi^2(27) = 387.55$ ,  $p < .01$ ,  $CFI = .69$ ,  $AGFI = .52$ ,  $TLI = .58$ ,  $RMSEA = .22$ . In this model, four of the nine factor loadings were found to be less than .40, which is considered to be unacceptably low (see FAS loadings in parentheses, Table 2). A two-factor solution was then calculated using the financial freedom and planning drive constructs, as defined by the two-factor FAS structure identified in Study 1. Again, in this solution, the subscales were allowed to correlate with one another. The observed fit indices for the two-factor FAS solution were substantially stronger than those seen in the one-factor model,  $\chi^2(26) = 76.49$ ,  $p < .01$ ,  $CFI = .96$ ,  $AGFI = .90$ ,  $TLI = .94$ ,  $RMSEA = .08$ . Unlike

Table 3

Source table from the hierarchical regression analysis using FIS and FAS to predict savings tendencies

| Model  | SS      | df  | MS     | F     | p-level |
|--|---------|-----|--------|-------|---------|
| Level 1                                      |         |     |        |       |         |
| Regression                                   | 1315.28 | 2   | 657.64 | 27.68 | .01     |
| Residual                                     | 6343.44 | 267 | 23.76  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ for level = .172 ( $p < .01$ )         |         |     |        |       |         |
| Level 2                                      |         |     |        |       |         |
| Regression                                   | 1421.28 | 3   | 473.76 | 20.20 | .01     |
| Residual                                     | 6237.43 | 266 | 23.45  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ -change for level = .014 ( $p < .05$ ) |         |     |        |       |         |

the one-factor model, all factor loadings in the two-factor model were found to be greater than .61, and the modification indices failed to reveal any appreciable cross-loadings (see FAS loadings in parentheses, Table 1). Furthermore, the planning drive and financial freedom constructs were found to be modestly correlated ( $r = .30$ ). Again, because the one- and two-factor FAS models were nested within one another, a 1 df  $\chi^2$  test was used to determine whether one was superior to the other. This test revealed that the two-factor solution provided for a significantly better fit than the unitary structure,  $\chi^2_{\text{diff}}(1) = 311.06$ ,  $p < .01$ .

Additional analyses revealed that the internal consistency reliability of the financial scales (i.e., coefficient alpha levels) were comparable to the findings reported in Study 1. Moreover, the patterns of interdependence witnessed across scales (based on Pearson correlations) were also comparable to the patterns seen in the first study.

The CFAs reported above suggest the four subscales that make up the FIS and FAS constructs are viable as stand-alone constructs, with each measuring a specific type of financial planning motive. However, we also recognize the potential value of combining planning worry and financial worry scores to form an overall FIS score, and the financial freedom and planning drive constructs to form an overall FAS score. Such composite scores could be of value in certain applied settings or research contexts. Therefore, for the remainder of the results we report analyses using both the FIS and FAS measures, as well as their respective subscales.

## 9.2. Predictive validity of the scales

Two hierarchical regression analyses were calculated to examine the predictive validity of the financial motivation scales, both of which used as the criterion the percentage of income allocated to retirement savings during the past 12 months. Prior to these analyses, however, all scales were centered and these centered variables were used in the computation of the interaction terms. The first of the two regressions employed the FIS and FAS measures as predictors at the first level in the model, and the FIS by FAS two-way interaction as the sole predictor in the second level. The source table from this analysis is shown in Table 3. The

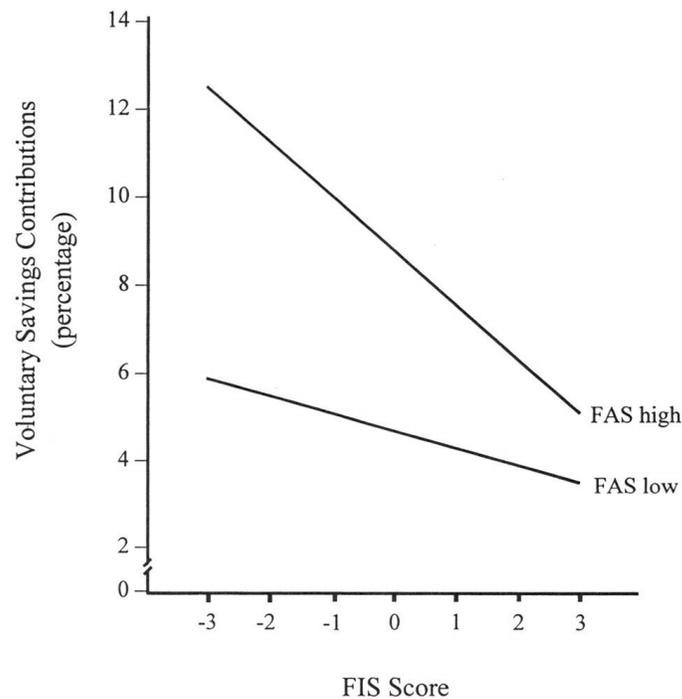


Fig. 1. Simple slopes obtained from the two-way interaction between FIS and FAS. In this analysis, voluntary retirement savings contributions were regressed on FIS scores at both high and low levels of FAS.

first level of the model was found to be significant,  $F(2, 267) = 27.68, p < .01$ . Significant effects were revealed for both FIS ( $\beta = -.23, p < .01$ ) and FAS ( $\beta = .37, p < .01$ ), which together accounted for 17% of the variance in retirement savings contributions. The two-way interaction entered in the second level was also found to obtain ( $\beta = -.12, p < .05$ ), which resulted in a statistically significant  $R^2$ -change of .014.

The above two-way interaction was interpreted following the recommendations of Aiken and West (1991). Specifically, voluntary savings contribution scores were regressed on FIS scores so as to compute simple slopes corresponding to both high and low levels of the FAS variable (i.e., at 1 *SD* above and below the FAS mean; see Cohen and Cohen, 1983). The  $FAS_{high}$  slope ( $\beta = -.30$ ) was found to be statistically significant,  $t = 4.64, p < .01$ ; however, the  $FAS_{low}$  slope was not,  $\beta = -.10, t = 1.14 (ns)$ . These two simple slope functions are shown graphically in Fig. 1, which clearly illustrates a two-way interaction. As the figure reveals, individuals high in FAS decreased their savings contributions as a function of increasing levels of FIS. In contrast, the slope of savings contributions for individuals low in FAS failed to show a significant difference as a function of increasing levels of FIS.

As mentioned above, the second hierarchical regression used the percentage of income allocated to retirement as the criterion; however, this model used the four FIS and FAS subscales as predictors. Again, the subscales were centered prior to their use in the regression model, and prior to calculating interaction terms. Planning worry, financial worry, planning drive, and financial freedom scores were all entered into the model in the first level. At the second level, the six possible two-way interaction terms were entered, and at the third level, the four three-way interactions were entered. The sole predictor entered in the fourth and

Table 4

Source table from the second hierarchical regression analysis using the four subscales to predict savings tendencies.

| Model  | SS      | df  | MS     | F     | p-level |
|--|---------|-----|--------|-------|---------|
| Level 1                                      |         |     |        |       |         |
| Regression                                   | 1509.07 | 4   | 377.27 | 16.26 | .01     |
| Residual                                     | 6149.65 | 265 | 23.21  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ for level = .197 ( $p < .01$ )         |         |     |        |       |         |
| Level 2                                      |         |     |        |       |         |
| Regression                                   | 1831.14 | 10  | 183.11 | 8.14  | .01     |
| Residual                                     | 5827.57 | 259 | 22.50  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ -change for level = .042 ( $p < .05$ ) |         |     |        |       |         |
| Level 3                                      |         |     |        |       |         |
| Regression                                   | 1964.30 | 14  | 140.31 | 6.28  | .01     |
| Residual                                     | 5694.41 | 255 | 22.33  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ -change for level = .017 ( <i>ns</i> ) |         |     |        |       |         |
| Level 4                                      |         |     |        |       |         |
| Regression                                   | 1964.77 | 15  | 130.99 | 5.84  | .01     |
| Residual                                     | 5693.94 | 254 | 22.42  |       |         |
| Total  | 7658.71 | 269 |        |       |         |
| $R^2$ -change for level = .000 ( <i>ns</i> ) |         |     |        |       |         |

final level of the model was the four-way interaction term. The source table from this second hierarchical regression is shown in Table 4. The first level of the model was statistically significant,  $F(4, 265) = 16.26, p < .01$ , with 20% of the variance accounted for using all four predictors. Only one of the FIS subscales and one of the FAS subscales were found to be reliable predictors of savings: planning worry was found to be related to voluntary retirement contributions,  $\beta = -.25, p < .01$ , as was planning drive,  $\beta = .32, p < .01$ . Both financial worry and financial freedom failed to obtain (both  $p > .05$ ). The second level of the model was also found to be statistically significant,  $F(10, 259) = 8.14, p < .01$ ; however, only one of the six two-way interactions was found to obtain: the planning worry by planning drive term,  $\beta = -.23, p = .01$ . The addition of the six interaction terms at this level resulted in an  $R^2$ -change of .042. All higher-order interactions at the third and fourth levels failed to reach the significance threshold.

Again, consistent with the recommendations of Aiken and West (1991), we sought to interpret the nature of the two-way interaction. Toward this end, the voluntary contribution scores were regressed on planning worry scores so as to compute simple slopes corresponding to high and low levels of the planning drive variable (i.e., at 1 *SD* above and below the planning drive mean). The low planning drive slope ( $\beta = -.08$ ) was not found to be statistically significant ( $t = 1.07, ns$ ); however, the high planning drive slope was found to obtain ( $\beta = -.39, t = 5.91, p < .01$ ). As seen in Fig. 2, individuals high in planning drive decreased their savings contributions as a function of increasing levels of planning worry. In contrast, individuals low in planning drive failed to show a change in contributions as a function of increasing levels of planning worry.

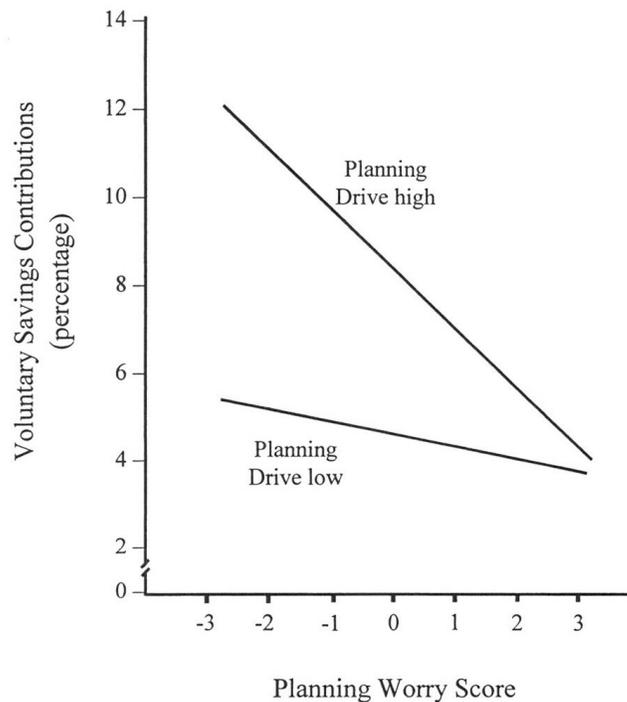


Fig. 2. Simple slopes obtained from the two-way interaction between planning worry and planning drive. In this analysis, voluntary retirement savings contributions were regressed on planning worry scores at both high and low levels of planning drive.

## 10. Summary and conclusions

The findings from Study 2 served to replicate and extend the findings from Study 1. In terms of replication, a two-factor structure for the FIS measure and a two-factor structure for the FAS measure were again found to emerge through the CFAs, and these two-factor models were found to be superior to the single-factor representations against which they were compared. Moreover, as was the case in Study 1, in the second study the FIS and FAS constructs were found to be uncorrelated, yet their respective subscales (planning worry with financial worry, and planning drive with financial freedom) were significantly positively related to one another. Furthermore, the indices of internal consistency reliability were shown to be acceptable for each of the new financial measures.

Despite the fact that FIS and FAS were both found to be comprised of two subscales, we believe that in certain measurement contexts it would be advantageous to work with individuals' scores at the level of the higher-order constructs, as opposed to at the level of the four individual subscales. To help illustrate this point, consider research in the area of intelligence testing. Whereas it is possible to measure a variety of basic intellectual abilities such as inductive reasoning, concept formation, and visual conceptualization (Horn, 1988), it is often desirable to combine scores along these dimensions with other markers of functioning to derive an overall level of fluid intellect (Horn and Cattell, 1967). Turning back to the present findings, if one were to conduct a field study that focused exclusively on retirement savings, then one or both of the two retirement-specific scales—planning drive

and planning worry—would be the instruments of choice. However, in applied financial counseling contexts, where the goal is to broadly assess individuals' motivational predispositions, aggregate FIS and FAS scores might provide a clearer picture of the psychological forces that drive one's financial decisions.

Study 2 also extended the findings from Study 1 by demonstrating that the new financial motivation measures were predictive of individuals' voluntary retirement savings contributions. Interestingly, in the regression model where FIS and FAS were used as predictors of savings, an interaction effect obtained. Although this effect was not originally hypothesized, the analysis of simple slopes shown in Fig. 1 revealed a pattern of results that was clearly interpretable. Specifically, the savings practices of individuals with strong financial goals were contingent upon their level of financial fear. The savings contributions of those with weak financial goals, in contrast, appeared to be unaffected by their level of financial fear.

The regression analysis using the four subscales to predict voluntary savings also revealed an intriguing pattern of results. Not all subscales were found to be equally predictive of savings tendencies when entered together in the first level of the regression model. Main effects for the planning worry and planning drive measures were found to obtain, but the measures of financial worry and financial freedom did not. It makes sense that the planning-specific retirement subscales (planning worry and planning drive) would override the effects of the more general financially oriented retirement subscales, given that the criterion specifically tapped retirement savings practices. That is, planning activities should be better predictors of retirement savings than simply the desire to have financial security after leaving the workforce. More importantly, however, the two-way interaction between planning drive and planning worry was found to obtain, a finding that parallels the FIS by FAS interaction found in the regression reported above.

The planning drive by planning worry interaction revealed that those high in planning drive decreased their level of savings as a function of increasing levels of planning worry. In contrast, those low in planning drive were relatively unaffected by different levels of planning worry. These findings suggest that in general, a moderate to high level of planning drive is a necessary but not sufficient antecedent when it comes to making contributions to a retirement savings plan. High levels of planning drive need to be accompanied by low levels of planning worry so as to avoid the incapacitating effects of the latter variable. One other aspect of the picture is quite clear, however. Across both regression analyses, the individuals who are saving the most are those who have the strongest financial goals and the lowest level of fear. This can be seen at the level of the full-scale FIS and FAS instruments in Fig. 1, as well as at the level of the subscales in Fig. 2.

## 11. General discussion

In this paper, we have described the development and evaluation of a new set of brief self-report measures that assess individual differences in motives associated with saving for retirement. First, sets of items were developed that reflected the kinds of responses that should be theoretically linked to the two motivational systems proposed by Gray, and the factor structure of those items was explored using EFA. Then the resulting scales were

correlated with the measures created by Carver and White, and with a series of demographic variables previously shown to be related to retirement planning and saving. Finally, in a replication study, the factor structure of the scales was examined using CFA, and the scales were subsequently used to successfully predict the percentage of income individuals allocated to retirement savings.

Results of the factor analyses indicated that the new FIS and FAS scales do in fact measure separate constructs as hypothesized, and the two scales were found to be orthogonal to one another. This latter finding was important to demonstrate from a theoretical perspective, based on Carver and White's position that behavioral inhibition and behavioral activation represent two separate, independent constructs. Across both Study 1 and Study 2, the factor analyses revealed that both FIS and FAS each contained two subscales. The FIS was found to be made up of a planning worry subscale and a financial worry subscale, and the FAS contained planning drive and financial freedom subscales. Moreover, the scales were found to possess adequate psychometric properties, both at the level of the full-scale FIS and FAS, as well as at the level of the individual subscales.

The findings from this research suggest profitable applications for the new measures of financial motivation. Specifically, the scales could be used in individual financial counseling contexts, either as a tool for conducting one-time assessments, or if administered repeatedly, to track changes in attitudes and motives over time. Once a client's fear and goal-based dispositions have been evaluated, then steps can be taken to shape the individual's psychomotivational tendencies to increase planning and savings. These data suggest that two groups of clients, in particular, stand to benefit from individual counseling: those who have high-fear motives, and those with low-goal motives. Counselors could potentially help those with high-fear motives by discussing individuals in similar circumstances who were able to successfully plan and save for retirement. Exposure to "role models" could help to alter negative images of the future by increasing the perceived likelihood of retirement income security. Providing basic education about finances and examples of strategies for investing could also serve to reduce retirement anxiety among those with high-fear motives. This is based on the assumption that to some extent, retirement fears stem from a lack of financial knowledge about how long-term economic goals can be achieved.

Those with weak financial goal motives also stand to benefit from individual counseling efforts. Specifically, getting the client to establish specific goals for retirement (e.g., travel, financial independence) could serve to not only define goal content, but also to increase goal clarity. Increasing goal clarity could be accomplished in part by encouraging individuals to discuss future plans with a spouse, family members, or other retirees. Written goal-setting exercises or visualization tasks could also serve to establish and define retirement goals. We view goal enhancement activities as an important initial objective of counseling, which should precede serious discussion of the tactics that would allow one to achieve retirement income security. Unfortunately, those in the greatest need of counseling (i.e., those with high-fear motives and low-goal motives) are perhaps the least likely to seek financial counseling. This underscores the critical need for outreach programs and public education campaigns designed to target individuals who are not saving appropriately.

There are other potentially useful applications for the new financial measures described in this paper. In group-based retirement intervention contexts, the planning drive and planning

worry scales could be used as prescreening devices, to sort attendees into different types of sessions where materials and exercises are tailored to meet their unique motivational needs. Alternatively, the instruments could be used by individuals as self-assessment devices, or as a stimulus for dialogue between co-financial planners in a household. From a marketing perspective, the findings from this investigation could be used to develop communications that target consumers with particular motivational profiles (e.g., the high-goal, low-fear individual who is an active planner, or the low-goal, high-fear individual who has yet to begin planning).

The general limitations associated with survey research techniques apply to the findings of the present investigation. In particular, individuals' subjective ratings of their financial motives and savings practices may not be representative of their actual feelings, thoughts, and behaviors. Additionally, the fact that participants in the two studies were self-selected may have contributed to some unknown response bias: those who chose to complete the survey may have differed in some important respects from nonrespondents. A third limitation is that both samples were limited to young working adults. It would be informative in future investigations to examine developmental differences in fear- and goal-based planning motives.

In this paper we have argued that two fundamental personality-linked motivational systems—the BAS and the BIS—predispose individuals to develop differential levels of fear- and goal-based financial motives. We also believe that these motives are shaped by the environment, and sculpted according to each person's unique life experiences. Certainly, we recognize that the mechanisms that underlie these motivational and behavioral processes are complex, dynamic, to some extent idiosyncratic, and therefore, inherently difficult to study. The challenging nature of the scientific issues, however, should not dissuade us from an in-depth exploration of the factors that lead to individual differences in retirement savings practices.

## Acknowledgments

This work was supported in part by a grant to the second author from the National Institute on Aging (#1-R03-AG-19849-01). The authors are indebted to Joy Jacobs–Lawson for valuable discussions throughout the development of the paper, and to Sherry Horning for assistance with the data collection. Portions of this research were presented at the 14th Annual Meeting of the American Psychological Society in New Orleans, June, 2002.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: testing and interpreting interactions*. Newbury Park, CA: Sage.
- Arbuckle, J. L. (1997). *AMOS users' guide version 3.6*. Chicago: Smallwaters.
- Bell, W., & Mau, J. A. (1971). Images of the future: theory and research strategies. In W. Bell, J. Mau (Eds.), *The sociology of the future: theory, cases, an annotated bibliography* (pp. 6–44). New York: Sage.

- Carver, C. S., & Scheier, M. F. (1985). A control-systems approach to the self-regulation of action. In J. Kuhl, J. Beckman (Eds.), *Action control: from cognition to behavior* (pp. 237–265). Berlin: Springer-Verlag.
- Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: the BIS/BAS scales. *Journal of Personality and Social Psychology*, *67*, 319–333.
- Clark, R. L., Goodfellow, G. P., Schieber, S. J., & Warwick, D. (2000). Making the most of 401(k) plans: who's choosing what and why? In O. S. Mitchell, P. B. Hammond, A. M. Rappaport (Eds.), *Forecasting retirement needs and retirement wealth* (pp. 95–138). Philadelphia: University of Pennsylvania Press.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Earlbaum.
- Glass, Jr., J. C., & Kilpatrick, B. B. (1998). Gender comparisons of baby boomers and financial preparation for retirement. *Educational Gerontology*, *24*, 719–745.
- Gray, J. A. (1978). The 1977 Meyers lecture: the neuropsychology of anxiety. *British Journal of Psychology*, *69*, 417–434.
- Gray, J. A. (1981). A critique of Eysenck's theory of personality. In H. Eysenck (Ed.), *A model for personality* (pp. 246–276). Berlin: Springer-Verlag.
- Gray, J. A. (1987). *The psychology of fear and stress*. Cambridge, England: Cambridge University Press.
- Gray, J. A. (1990). Brain systems that mediate both emotions and cognition. *Cognition and Emotions*, *4*, 269–288.
- Gray, J. A. (1991). The neuropsychology of temperament. In J. Strelau, A. Angleitner (Eds.), *Explorations in temperament: international perspectives on theory and measurement* (pp. 105–128). New York: Plenum.
- Hayslip, B., Bezerlein, M., & Nichols, S. (1997). Assessing anxiety about retirement: the case of academicians. *International Journal of Aging and Human Development*, *44*, 15–36.
- Hershey, D. A., Brown, C. E., Jacobs–Lawson, J. M., & Jackson, J. (2001). Retirees' perceptions of important retirement planning decisions. *Southwest Journal on Aging*, *16*, 91–100.
- Hershey, D. A., Jacobs–Lawson, J. M., & Neukam, K. A. (2002). Influences of age and gender on workers' goals for retirement. *International Journal of Aging and Human Development*, *55*, 163–179.
- Heubeck, B. G., Wilkinson, R. B., & Cologon, J. (1998). A second look at Carver and White's (1994) BIS/BAS scales. *Personality and Individual Differences*, *25*, 785–800.
- Higgins, E. T., Roney, C. J. R., Crowe, E., & Hymes, C. (1994). Ideal versus ought predilections for approach and avoidance: distinct self-regulatory systems. *Journal of Personality and Social Psychology*, *66*, 276–286.
- Horn, J. L. (1988). Thinking about human abilities. In J. Nesselroade, R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology*, 2<sup>nd</sup> Ed. (pp. 645–685). New York: Plenum.
- Horn, J. L., & Cattell, R. B. (1967). Age differences in fluid and crystallized intelligence. *Acta Psychologica*, *26*, 107–129.
- Jorm, A. F., Christensen, H., Henderson, A. S., et al. (1999). Using the BIS/BAS scales to measure behavioral inhibition and behavioral activation: factor structure, validity and norms in a large community sample. *Personality and Individual Differences*, *26*, 49–58.
- Lusardi, A. (2000). Saving for retirement: the importance of planning. *TIAA-CREF Research Dialogue*, *66*, 1–11.
- Merrill Lynch (1995). *Confronting the savings crisis: perceptions and attitudes about retirement and financial planning [Brochure]*. Princeton: Author.
- Oysterman, D., & Markus, H. R. (1990). Possible selves and delinquency. *Journal of Personality and Social Psychology*, *59*, 112–125.
- Poterba, J. A. (1996). Personal saving behavior and retirement income modeling: a research assessment. In E. A. Hanushek, N. L. Maritato (Eds.), *Assessing knowledge of retirement behavior* (pp. 123–148). Washington, DC: National Academy Press.
- Richardson, V. E. (1993). *Retirement counseling: a handbook for gerontology practitioners*. New York: Springer.
- Scott, L. J. (1983). *Confirmatory factor analysis: a preface to LISREL*. Beverly Hills: Sage.