Assessing The Concurrent Validity Of The SCF Risk Tolerance Question

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The Survey of Consumer Finances (SCF) offers researchers one of the most popular sources of data for the study of financial risk tolerance. This paper reports findings from two studies that were designed to test the concurrent validity of the SCF financial risk tolerance assessment question. Comparisons between the commonly used one-item SCF assessment measure and a 13-item risk-tolerance assessment index were undertaken. Results of the concurrent validity analyses suggest that the SCF question does not represent the full spectrum of financial risk tolerance, but might reflect investment choice attitudes or experience.

Key words: *Survey of Consumer Finances, Risk tolerance, Validity*

Individual risk tolerance is assumed to be a primary determinant of asset allocation choices, security choices, and goal planning strategies. Many investment product promotional materials include an explanation of risk tolerance. Risk-tolerance assessments may be found in these materials or on Internet sites that discuss planning for future goals.

However, no single assessment measure is currently used by both practitioners and academics. A lack of a standardized measure has prompted financial professionals to use a variety of self-developed or in-house assessment methods ranging from client questionnaires to simple conversations with clients about levels of comfort with different financial scenarios. The lack of a widely used standardized measure has also affected financial counseling and planning research. Due to the complexities and potential problems associated with creating a risk assessment measure, many researchers have turned to the Survey of Consumer Finances (SCF) as a data source for studying financial risk tolerance.

Recent versions of the SCF have been conducted every three years by the National Opinion Research Center at the University of Chicago under the sponsorship of the Federal Reserve Board and other federal agencies (Kennickell & Starr-McCluer, 1994). The SCF is used to gather data on assets, liabilities, financial attitudes, and financial behaviors of individuals and families. While some questions within the SCF change over time, many questions remain the same. This similarity from one survey to another facilitates comparisons of findings from one period to another.

One question found in the versions of the SCF since 1983 deals with financial risk tolerance. When completing the survey, respondents are asked to respond to the following question:

> Which of the following statements on this page comes closest to the amount of financial risk that you are willing to take when you save or make investments?
> 1. Take substantial financial risk expecting to earn substantial returns
> 2. Take above average financial risks expecting to earn above average returns
> 3. Take average financial risks expecting to earn average returns
> 4. Not willing to take any financial risks

This is the only measure of subjective financial risk tolerance used in the SCF. It is important to note that the response patterns to the question over different time periods have remained relatively stable (Table 1), suggesting that the item is somewhat reliable (i.e., it measures a construct consistently). Of more importance, however, for researchers and practitioners, is the issue of validity, or how well the SCF question measures financial risk tolerance. Most researchers have not questioned the validity of the item; however, Chen and

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Finke (1996) commented that the item might not be a "good proxy for people's true risk aversion" (p. 94). Chen and Finke (1996) suggested that the SCF question might, in fact, be measuring a person's financial situation rather than financial risk tolerance. Hanna and Chen (1997), when examining the empirical patterns of risk tolerance, concluded that the item "does not necessarily reveal pure preferences, as an answer may depend upon the respondent's situation" (p. 19). They went on to conclude that the validity of the item might be impaired because the concept of volatility may confuse individuals when they think about risk tolerance. This questioning of the validity of the SCF question has important implications for researchers and practitioners who have relied on the SCF question, either as a predictor (independent) factor or as a predicted (dependent) factor.

Table 1.
Distribution of Answers to the SCF Risk Tolerance Question, 1983, 1992 and 1998.

	1983†	1992‡	1998*
Substantial risk	6%	3%	5%
Above average risk	11%	11%	18%
Average risk	38%	36%	38%
No risk	43%	50%	39%

†Avery & Ellihausen (1986).
‡Huston, Chang & Metzen (1997).
*Rha, Montalto & Hanna (2001).

The purpose of this paper is to report research findings that consider the concurrent validity of the SCF risk-tolerance assessment item. This study analyzes two data sets that included the SCF question and a multiple-item index for measuring financial risk tolerance. Comparing the relationship between the SCF question and a larger multidimensional assessment instrument offers some insight into the assertion that the SCF question may not be measuring the multidimensional nature of personal financial risk tolerance. Findings reported here, coupled with other empirical tests of the validity of the SCF question, will help verify if Chen and Finke (1996) were correct in suggesting that the SCF financial risk-tolerance item is measuring something other than risk tolerance, or whether the item is measuring, in one way or another, a dimension of financial risk tolerance.

Examples Of The SCF question In Research
The use and acceptance of the SCF financial risk-tolerance assessment item has grown over the past 10 years for the following reasons. First, researchers, due to time and monetary constraints, needed extant data that included a reliable method of assessment. Second, it has been assumed that since the item has a long history of inclusion within the SCF it "must be valid," and third, no other single measure or combination of measures has been offered as a reliable and valid alternative to the SCF question. In other words, the SCF question offered researchers a well-accepted and consistent measure of financial risk tolerance.

The assumption that the SCF question is a valid measure of financial risk tolerance has contributed to its continued use among financial counseling and planning researchers. Table 2 provides a brief list of studies that have used the item, either as a dependent or independent factor, within the domain of personal finance. As the summary of findings in Table 2 suggests, results using the SCF question have been relatively consistent over time. Researchers have generally concluded, using the item as a predicted (dependent) factor, that (a) some demographic and economic variables can be used to predict an individual's risk tolerance, (b) households generally exhibit decreasing relative risk aversion, and (c) investment in risky assets is significantly related to attitudes toward risk taking.

Generally researchers who have used the SCF question as an explanatory (independent) factor, combined with other factors, have concluded that (a) households with a high level of risk tolerance save more than others; (b) households that are willing to take at least average risks, as measured by the risk assessment item, are more likely to own most types of investment assets; and (c) individuals with higher levels of risk tolerance are more likely to contribute to a retirement savings plan.

While the studies presented in this review represent a small portion of the published literature that has used the SCF question, these studies are typical of how the item has been and continues to be utilized. Given the large and growing number of studies that rely on the SCF question either as a dependent factor or an independent factor, any suggestion that sheds doubt on the validity of the item is cause for concern. A validity discussion among researchers who use the item is warranted.

Table 2.

Examples of Studies That Have Used the SCF Risk Tolerance Item

Author	Use as Dependent Factor	Use as Independent Factor	Finding
Hawley & Fujii (1993-1994)	X		Demographics can be used to predict risk tolerance.
Haliassos & Bertaut (1995)	X		Households exhibit decreasing relative risk aversion.
Schooley & Worden (1996)	X		Investment in risky assets is related to risk tolerance.
Sung & Hanna (1996)	X		Gender, marital status, ethnicity, and education can be used to predict risk tolerance.
Grable & Lytton (1998)	X		Education and gender can be used to predict risk tolerance.
Xiao, Alhabeeb, Hong & Haynes (2001)	X		Family business owners are more willing to take financial risks.
Chang (1994)		X	Highly risk tolerant individuals save more.
Chen & Finke (1996)		X	High-risk tolerance is associated with high savings.
Xiao (1996)		X	Average or higher risk takers more likely to own investment assets.
Yuh & DeVaney (1996)		X	Risk tolerance is directly related to defined contribution pension participation.
Yuh & Olson (1997)		X	Accumulated retirement savings is related to risk tolerance.
Huston & Chang (1997)		X	At least one-half of households are willing to take some financial risk.
Huston, Chang & Metzen (1997)		X	Single parent and single-person-not-working households are less risk tolerant.
Kennickell, Starr-McCluer & Sunden (1997)		X	Wealthy households are more risk tolerant.
Sung & Hanna (1998)		X	Those who are willing to take above-average or substantial risks are more likely to invest in stocks within a retirement plan.
Yuh, Montalto & Hanna (1998)		X	In a bivariate test, adequate retirement wealth is associated with the willingness to take high financial risk.
Ding & DeVaney (2000)		X	Households with relatively low risk levels were less likely to have an adequate emergency fund.

Psychometric Attitude Assessment: A Review

Roszkowski (1998) noted that assessing someone's level of risk tolerance is a difficult process because risk tolerance is an elusive, ambiguous concept. The use of a single item when assessing a complex attitude such as financial risk tolerance is generally not recommended because single items tend to subject respondents to "subtle influences of the decision analyst during the assessment process" (MacCrimmon & Wehrung, 1986, p. 65). Multiple items, in the form of an index or scale, have been recommended because indices tend to allow for the full measurement of financial risk tolerance by assessing choices and attitudes regarding lotteries, stocks, bonds, mutual funds, real estate, options, commodities, other types of investments, and gambles (Roszkowski, Snelbecker & Leimberg, 1993; Roszkowski, 1998). It has been argued that the best way to concisely and accurately identify a person's financial risk tolerance is to use an assessment instrument designed specifically to measure risk tolerance using multidimensional financial/investment situations (MacCrimmon & Wehrung, 1986).

Reliability and Validity of the SCF question

Regardless of which method of measurement and assessment is used, an item or index must show consistently high levels of reliability and validity. In terms of reliability, the assessment method must produce consistent results from one period to another. A test/retest method of assessing reliability is generally considered to be the best way to measure a construct's reliability (Litwin, 1995). This method of testing requires that an item or index be given to the same person over a period of time. In the case of the SCF question, it is impossible to accurately assess reliability using this method because the survey is given to different people in succeeding years rather than to the same group of individuals over time. In terms of pure consistency of

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results produced from one survey to the next, the reliability of the item has not been adequately addressed.

In addition to reliability issues an assessment item or index must also pass four tests (at a minimum) of validity. The following discussion reviews validity issues as they relate to the SCF question.

Face validity Face validity is a measure of accuracy as measured informally by nonexperts (Litwin, 1995). Although no formal polling was taken as part of this research, it is plausible that financial planning researchers and practitioners would generally agree that the SCF question is valid for use in measuring subjective risk tolerance. In other words, on its face, the item appears to pass this test of validity.

Content validity Content validity is a more rigorous measure of validity. Content validity is determined by a "formal review by individuals who are experts" (Litwin, 1995, p. 82). The content validity of the item appears weaker than its face validity. Research indicates that people consider four distinct elements when making risky choices: (a) the probability of gains, (b) the probability of loss, (c) the dollar amount of potential gains, and (d) the potential dollar loss (MacCrimmon & Wehrung, 1986). The SCF question does not appear to measure all four elements concurrently.

Two additional content validity issues are of concern. First, the separation between the four response choices is not conceptually similar. (See Pedhazur & Schmelkin [1991] and Litwin [1995] for a discussion of the desired psychometric properties of multiple choice attitudinal assessment items.) For example, the psychometric difference between the categories of "take average financial risks expecting to earn average returns" and "not willing to take any financial risks" is significantly dissimilar compared to the psychometric difference between the other two choices of "take above average financial risks expecting to earn above average returns" and "take substantial financial risk expecting to earn substantial returns." Second, it may be unreasonable to assume that nearly 40% of the 1992 SCF respondents who were employed actually were "not willing to take any financial risks" (Sung & Hanna, 1996). It is more likely that the inclusion of a non-response option (i.e., "not willing to take any financial risks") skewed results toward that option. According to findings presented by Kahneman and Tversky (1979), many individuals will indicate agreement with a non-response option regardless of their true risk preference. These issues suggest that

re-examination of the content validity of the SCF question is warranted.

Construct validity Construct validity is a measure of how meaningful an item or index is in multiple situations. Research results using the SCF question have been fairly consistent over time, indicating an adequate level of construct validity. However, researchers and others who use the SCF question should keep in mind that the item has never undergone a longitudinal test/retest reliability assessment. Furthermore, simply because a measure appears to be meaningful, does not necessarily make it valid. Ultimately, researchers and practitioners need assurance that an item or measure can be used to predict a phenomenon in a valid manner. This is the reason criterion validity is so important.

Criterion validity Criterion validity is a measure of "accuracy that involves comparing it (authors' note: in reference to the SCF question, a scale, or a measure) to other tests" (Litwin, 1995, p. 82). Concurrent validity, a form of criterion validity, tests a measure, such as the SCF question, against another measure that has proven psychometric properties. If the item has a high correlation with the larger multidimensional measure, the criterion validity of the item can be established. Currently, no published evidence exists to support the criterion (i.e., concurrent) validity of the SCF question.

Summary The SCF financial risk-tolerance item passes two of the four tests of validity. The face validity of the item is well founded, while the consistency of results associated with the use of the item tends to support its construct validity. However, based on general recommendations concerning scale and index development (Litwin, 1995), as well as recommendations unique to the measurement of financial risk tolerance (MacCrimmon & Wehrung, 1986), one can argue that a re-evaluation of the content validity of the SCF question is warranted. Finally, the criterion related validity (i.e., concurrent validity specifically) has yet to be confirmed in the literature. This suggests that more research related to this specific topic is warranted.

Analysis and Results
A concurrent validity test was undertaken in order to examine the assertion that the item may not be measuring the full spectrum of personal financial risk tolerance. According to Litwin (1995), the concurrent validity statistic is "calculated as a correlation coefficient" (p. 37) between the test item and a measurement criterion. Requisite to the research was the choice of a

multidimensional financial risk-tolerance assessment for use as a criterion-related comparison for the SCF question. A 13-item financial risk-tolerance assessment instrument, as developed by Grable and Lytton (1999b), was chosen as the measurement criterion (Appendix).

According to Grable and Lytton (1999b), the 13 items used in the instrument showed a strong relationship with final composite risk assessment scores in their testing and development of the instrument. External validation was measured by comparing individual assessment item scores to other item scores and the total index score. This test was conducted to confirm that respondents who scored low (or high) on one item generally scored similarly on other items. In general, it was determined that persons who were categorized as having low risk tolerances tended to be less confident in their investment behaviors, less aggressive in their investing behaviors, and more likely to avoid risky financial situations than those who were categorized into higher risk-tolerance categories. The reliability estimate for the 13-item instrument was .75, indicating an acceptable level of consistency for an attitudinal measure (Pedhazur & Schmelkin, 1991).

Using results from a factor analysis, Grable and Lytton (1999b) found that the 13 items measured financial risk tolerance on three constructs: (a) investment risk (questions 4, 5, 8, 11, & 12); (b) financial risk and hypothetical projections (questions 1, 3, 6, 7, & 13); and (c) speculative risk (questions 2, 9, & 10). It was concluded that the 13-item measure had a strong degree of multidimensionality.

In addition, the instrument met four primary criteria requirements for a risk tolerance measurement (MacCrimmon & Wehrung, 1986): (a) the items offered a high degree of face and content validity; (b) the items, when combined into an index, allowed for the derivation of a risk measure; (c) the items offered relevance to potential respondents; and (d) the items, and the related index, offered ease of administration. Additionally, the items covered a variety of risky financial and investment situations in a multidimensional manner, and each question required a relatively short response time. The presence of risk-free alternatives (i.e., a no choice option) was minimized in order to conform to research findings that suggest validity problems when such answers are present (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981).

Litwin (1995) and others (e.g., Silva, 1993) have

suggested that a high correlation coefficient between a test item (i.e., SCF question) and a measurement criterion (i.e., 13-item instrument) indicates good concurrent validity. Obviously the measurement criterion must have solid psychometric properties. It was assumed, based on the extensive development of the 13-item risk tolerance assessment instrument, that this measure offered necessary psychometric properties. It should be noted, however, that no results have been reported on the predictive validity of the instrument, which is another measure of concurrent validity.

Regardless of this shortcoming, the degree of reliability, the repeated steps taken to assure the validity of the instrument, the variety of items asked, and the potential ease of administration made this a viable tool to use as the measurement criterion. Nevertheless, the developmental nature of the criterion index and the lack of use of the index with diverse audiences are acknowledged limitations of this research. To compensate for this limitation, data from two surveys were used to test the concurrent validity of the SCF question. Two surveys, with data collected at different dates from different respondents, were used in this research to determine if similar results would be obtained under different conditions. This dual survey method was also used to reduce the possibility of suggesting a low level of validity in the SCF question when, in fact, this assertion may be incorrect.

Survey One Data
The first survey was administered to a random sample of faculty and staff at Virginia Tech in Autumn, 1997 (N = 1,075). The usable response rate to this convenience sample equaled 54%. The survey contained the 13-item instrument, the SCF question, and demographic assessment items. More than 50% of respondents were women (55%), and the majority were married (72%). The average age of respondents was 43 years, with incomes ranging from a low of $20,000 to over $90,000. Due to the nature of the sample, the majority (63%) indicated having earned at least a four-year college diploma. Over 90% of the survey respondents were White/Caucasian.

Responses to the 13 risk questions were combined into an index of risk tolerances with answers weighted according to the riskiness of the response. Higher weightings indicated a riskier choice, while lower weightings indicated a less risky choice. The index was constructed by summing the weights corresponding to each response. The average risk score was 25.43, with a

standard deviation of 5.31, and a range of 13 to 44. This distribution of scores was consistent with reported distributions of risk-tolerance attitudes found in the literature (MacCrimmon & Wehrung, 1985), indicating that the validity of the items, when combined into an assessment instrument, could be used with some degree of confidence as an initial criterion measure of financial risk tolerance.

Response frequencies for the university faculty and staff to the SCF question were:
a. 18% "not willing to take any financial risks."
b. 56% "take average financial risks expecting to earn average returns."
c. 22% "take above average financial risks expecting to earn above average returns."
d. 4% "take substantial financial risk expecting to earn substantial returns."

The most comparable result from the SCF is that reported by Sung and Hanna (1996) from the 1992 SCF, since they limited their analysis to households with an employed head, whereas the results shown in Table 1 are for all households. The comparison is shown in Table 3.

Table 3.
Distribution of Answers to the SCF Risk Tolerance Question, Virginia Tech, Professional Associations, and National Survey.

	Virginia Tech*	Professional associations†	1992‡
Substantial risk	4%	5%	4%
Above average risk	22%	37%	15%
Average risk	56%	51%	42%
No risk	18%	5%	40%

* Survey given in Autumn, 1997
† AFCPE and ASID survey, 2000.
‡ Sung & Hanna (1996) analysis of households with employed householder, 1992 SCF.

The concurrent validity correlation coefficient was calculated to be .5383 between responses to the SCF question and the 13-item index. "Levels of 0.70 or more are generally accepted as representing good validity" (Litwin, 1995, p. 45). Results from the correlation analysis indicated that the concurrent validity of the SCF

question was modest.

Because responses to the substantial risk-tolerance category on the SCF question have been consistently low, researchers often collapse the categories into a new bivariate item (Xiao et al., 2001). Typically, this new variable is coded as either 1 = some risk tolerance (i.e., combining average, above average, and substantial categories) and 0 = no risk tolerance. A correlation analysis was conducted on this "new" SCF question to determine if the correlation between the 13-item index and the item could be improved. In fact, the correlation was reduced to .4498 (Table 4), suggesting an even weaker level of concurrent validity.

A correlation analysis was then run between the SCF question (i.e., using all four response categories) and the individual 13 items in the criterion measure. Correlation coefficients were consistently low and not meaningful. A final correlation analysis was conducted using the SCF question and factor index scores representing the three factors that made up the 13-item measure (i.e., investment, financial, and speculative risk). The factor index scores were calculated by summing respondent scores for each item in the factor. Correlation coefficients of .5654, .3359, and .2767 were observed between the item and the factors titled "investment risk," "financial risk and hypothetical projections," and "speculative risk," respectively (Table 4). The modest correlation between the SCF and the investment risk factor suggests that conceptually these items might be similar. Although similar, the correlation coefficient was below the minimum cutoff (i.e., .70) needed for a high level of concurrent validity.

Table 4.
Correlation Coefficients for Survey One*

13 Item measure & SCF question	0.5383
13 Item measure & bivariate SCF question	0.4498
Factor One & SCF question	0.5654
Factor Two & SCF question	0.3359
Factor Three & SCF question	0.2767

*Survey at Virginia Tech

Survey Two Data

A second survey was distributed to a convenience sample of the membership of two professional organizations. The professions represented were interior design, the American Society of Interior Designers (ASID) and financial counseling, the Association for Financial Counseling and Planning Education (AFCPE.) Five hundred individuals received the survey; 212 useable surveys were returned (i.e., a response rate of 42%). The majority of respondents were women (79%). The average age of respondents was 31.49 years. Participants were equally split between being married (including widowed status) and being single. Slightly more than 16% of respondents indicated being self-employed. Household income, on average, was $57,900. As expected with this type of sample, almost all participants indicated having at least a bachelors degree or higher level of education (90%). Finally, over 90% of respondents indicated being White/Caucasian, with the remainder reporting African-American, American Indian, or Asian background.

As was the case with the first survey, responses to the 13 risk questions were combined into an index of risk tolerances. The average risk score was 27.90, with a standard deviation of 4.28, and a range of 18 to 40. Mean scores for this sample were slightly higher than scores on the first survey, and the range of scores was narrower for this group.

Response frequencies to the SCF question for this group were (a) 5% "not willing to take any financial risks," (b) 51% "take average financial risks expecting to earn average returns," (c) 37% "take above average financial risks expecting to earn above average returns," and (d) 5% "take substantial financial risk expecting to earn substantial returns." Score distributions for each of the categories, except the "not willing" category, were similar to those in the first survey and previous administrations of the SCF (Table 3). Those who were not willing to take any financial risks were significantly lower in this survey.

The concurrent validity correlation coefficient was calculated to be .4415 between responses to the SCF question and the 13-item criterion measure. As was the case in the first survey, this level was below the recommended target of 0.70 (Litwin, 1995). This was interpreted to mean that the concurrent validity of the SCF question was, at best, modest.

Responses to the SCF question were collapsed and

recoded as either 1 = some risk tolerance (i.e., combining average, above average, and substantial categories) or 0 = no risk tolerance. The correlation between the 13-item instrument and this recoded SCF was reduced to .2624, which indicates less concurrent validity. This result was similar to findings from the first survey.

Finally, a correlation analysis was run between the SCF question and the factor index scores of the 13-item measure. Correlation coefficients of .5125, .2062, and .1720 were observed between the item and the factors (i.e., investment risk, financial risk and hypothetical projections, and speculative risk, respectively). The results of these validity tests are shown in Table 5. The modest correlation between the SCF and the investment risk factor was consistent with the results from the first survey data. This suggests some similarity between the concepts; however, results were still below the recommended minimum coefficient (i.e. .70) to support a finding of a high level of concurrent validity.

Table 5.
Correlation Coefficients for Survey Two*

13 Item measure & SCF question	0.4415
13 Item measure & bivariate SCF question	0.2624
Factor One & SCF question	0.5125
Factor Two & SCF question	0.2062
Factor Three & SCF question	0.1720

*Survey of two professional associations, ASID and AFCPE.

Conclusions

On its face, the SCF question appears to be a useful measure of financial risk tolerance. However, a formal review of the content validity of the item suggests several weaknesses. First, the separation between the response choices was found to be conceptually dissimilar. This means that the difference between "not willing to take any financial risk," and the alternatives of "average," "above average," and "substantial" financial risk may be too dissimilar. (Users of the item outside the realm of the SCF may wish to substitute "below average" for the "not willing" category.)

Second, the high percentage of respondents who indicated a no risk tolerance choice in previous versions

of the SCF, and in the first survey in this study, was found to be consistent with the literature that suggests that the inclusion of a non-response option (i.e., answer four – not willing) will tend to skew results toward the non-response option. According to findings presented by Kahneman and Tversky (1979), the high number of non-risk tolerant respondents is most likely a result of the question response choice, not necessarily a result of real risk tolerances among respondents. The significantly lower number of "no risk" respondents in the second survey administration may be explained by sample bias. Because of their investment knowledge, the respondents from the financial counseling professional organization may have interpreted and responded to this question differently than the typical SCF respondent. In other words, they may have recognized the need for prudently assumed financial risk.

It was also determined, based on a series of correlation analyses, that the concurrent validity of the SCF question was low to moderate when compared to a 13-item financial risk-tolerance assessment instrument that was thought to offer appropriate psychometric properties. Findings from this study do not suggest, however, that the SCF financial risk assessment item is totally invalid or not useful. In fact, the findings suggest that the SCF may be measuring investment risk tolerance instead of a more globally defined type of financial risk tolerance. While the concurrent validity of the SCF was determined to be moderately weak when compared to the 13-item measure, it is important to note that more empirical research is needed to fully explore issues related to the validity of the SCF question.

Implications

Results from this study offer the first empirical analysis of the SCF risk-tolerance item. Other researchers have raised conceptual questions about the measurement (Hanna, Gutter & Fan, 1998, 2001; Xiao, et al., 2001). Results from this study lend some support to the suggestion originally made by Chen and Finke (1996) that the SCF question may not be "a good proxy for people's true risk aversion, i.e., it is more a measure of people's financial situation" (p. 94). Similarly, Hanna and Chen (1997) observed that the item does not "necessarily reveal pure preferences" (p. 19) as the individual assessment may be situational. Hanna and Chen also expressed concern that individuals, in responding, may confuse investment volatility with longer-term losses. Findings from the empirical analyses reported here suggest that the SCF question may, in fact, be a better measure of investment risk tolerance than

financial risk tolerance.

The tests for validity indicate that the item may not be as useful of a measure of financial risk tolerance as previously assumed. It appears that the item is measuring a single dimension within the larger context of financial risk tolerance. Recall that financial risk tolerance is a difficult attitude to measure, and that risk tolerance includes multiple dimensions. Any single item is likely to be less valid than a larger measure that incorporates many factors, such as risk taking within the domains of pure loss and gain situations, lotteries, investment choices, and allocation decisions. Further, a multidimensional measure that does not allow respondents a "no option" choice, such as the one used as the criterion measure in this research, tends to be more valid than a measure or item that allows non-response. As such, the SCF question probably should not be used as a proxy for a person's overall financial risk tolerance.

Instead, the SCF question may be a better measure for either investment risk tolerance or as a measure of financial experience. Based on the correlation analyses between the SCF question and the three factors derived from the 13-item criterion measure, the SCF question had the highest correlation with the measure of investment risk attitudes. These attitudes, as previously suggested by Chen and Finke (1996), may represent the financial situation, or experience, reflected in the SCF question. Items that comprised the investment risk factor in the Grable and Lytton (1999b) instrument (see also Appendix of this article) address investment choices, often citing specific products (i.e., items 4, 5, 8, 11, and 12). In contrast, items loading on the other two factors related to a broader range of financial risk issues. Although the correlation was moderate at best, use of the item as a proxy for investment risk tolerance has stronger support than as a proxy for a conceptually broader measure of financial risk tolerance.

From a qualitative perspective, the item may be a more appropriate measure of a person's financial experience. For example, counter to consensus belief, research using the SCF question suggests that age and risk tolerance are not inversely related (Grable & Lytton, 1998), and that in fact, older respondents typically appear more aggressive in responding to the item (Cutler, 1995). This suggests that because older respondents may be more knowledgeable about investments compared to younger investors, the item may be measuring this experience rather than actual risk-taking propensity. Hanna et al.

(1998) summarized their view of the SCF question as follows: The item "may reflect a combination of the investor's current situation, the investor's limited information, and perhaps the investor's lack of rationality" (p. 4).

The item does appear to offer researchers a reasonable measure of reliability. Response patterns from one use of the item to another are consistent, suggesting that results based on the use of the SCF question are reproducible and most likely generalizable. It is just not clear what is being measured consistently.

Obviously more research is needed to confirm the results presented here. Researchers are encouraged to replicate this study using the 13-item measure and the SCF question. The SCF question should also be included in studies that use other measures of risk-tolerance measurement to further confirm the concurrent validity. The SCF question has become an integral part of financial counseling and planning research. Results presented in this paper suggest that researchers and practitioners should cautiously interpret the results when using the item either as a dependent factor or as an independent factor. At the very least, it should be acknowledged that the item does not represent adequately the full spectrum of financial risk tolerance.

Appendix
Financial Risk Tolerance Assessment Instrument

Source: Grable, J. E., & Lytton, R. H. (1999b).

1. In general, how would your best friend describe you as a risk taker?
a. A real gambler
b. Willing to take risks after completing adequate research
c. Cautious
d. A real risk avoider

2. You are on a TV game show and can choose one of the following. Which would you take?
a. $1,000 in cash
b. A 50% chance at winning $5,000
c. A 25% chance at winning $10,000
d. A 5% chance at winning $100,000

3. You have just finished saving for a "once-in-a-lifetime" vacation. Three weeks before you plan to leave, you lose your job. You would:
a. Cancel the vacation
b. Take a much more modest vacation
c. Go as scheduled, reasoning that you need the time to prepare for a job search
d. Extend your vacation, because this might be your last chance to go first-class

4. If you unexpectedly received $20,000 to invest, what would you do?
a. Deposit it in a bank account, money market account, or an insured CD
b. Invest it in safe high quality bonds or bond mutual funds
c. Invest it in stocks or stock mutual funds

5. In terms of experience, how comfortable are you investing in stocks or stock mutual funds?
a. Not at all comfortable
b. Somewhat comfortable
c. Very comfortable

6. When you think of the word "risk" which of the following words comes to mind first?
a. Loss
b. Uncertainty
c. Opportunity
d. Thrill

7. Some experts are predicting prices of assets such as gold, jewels, collectibles, and real estate (hard assets) to increase in value; bond prices may fall, however, experts tend to agree that government bonds are relatively safe. Most of your investment assets are now in high interest government bonds. What would you do?
a. Hold the bonds
b. Sell the bonds, put half the proceeds into money market accounts, and the other half into hard assets
c. Sell the bonds and put the total proceeds into hard assets
d. Sell the bonds, put all the money into hard assets, and borrow additional money to buy more

8. Given the best and worst case returns of the four investment choices below, which would you prefer?
a. $200 gain best case; $0 gain/loss worst case
b. $800 gain best case; $200 loss worst case
c. $2,600 gain best case; $800 loss worst case
d. $4,800 gain best case; $2,400 loss worst case

9. In addition to whatever you own, you have been given $1,000. You are now asked to choose between:
a. A sure gain of $500
b. A 50% chance to gain $1,000 and a 50% chance to gain nothing

10. In addition to whatever you own, you have been given $2,000. You are now asked to choose between:
a. A sure loss of $500
b. A 50% chance to lose $1,000 and a 50% chance to lose nothing

11. Suppose a relative left you an inheritance of $100,000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?
a. A savings account or money market mutual fund
b. A mutual fund that owns stocks and bonds
c. A portfolio of 15 common stocks
d. Commodities like gold, silver, and oil

12. If you had to invest $20,000, which of the following investment choices would you find most appealing?
a. 60% in low-risk investments 30% in medium-risk investments 10% in high-risk investments
b. 30% in low-risk investments 40% in medium-risk investments 30% in high-risk investments
c. 10% in low-risk investments 40% in medium-risk investments 50% in high-risk investments

13. Your trusted friend and neighbor, an experienced geologist, is putting together a group of investors to fund an exploratory gold mining venture. The venture could pay back 50 to 100 times the investment if successful. If the mine is a bust, the entire investment is worthless. Your friend estimates the chance of success is only 20%. If you had the money, how much would you invest?
a. Nothing
b. One month's salary
c. Three month's salary
d. Six month's salary

Scoring
1. a=4; b=3; c=2; d=1
2. a=1; b=2; c=3; d=4
3. a=1; b=2; c=3; d=4
4. a=1; b=2; c=3
5. a=1; b=2; c=3
6. a=1; b=2; c=3; d=4
7. a=1; b=2; c=3; d=4
8. a=1; b=2; c=3; d=4
9. a=1; b=3
10. a=1; b=3
11. a=1; b=2; c=3; d=4
12. a=1; b=2; c=3
13. a=1; b=2; c=3; d=4

References

Avery, R. B. & Elliehausen, G. E. (1986, March). Financial characteristics of high-income families. *Federal Reserve Bulletin*, 163-177.

Chang, Y. R. (1994). Saving behavior of U.S. households in the 1980s: Results from the 1983 and 1986 Survey of Consumer Finance. *Financial Counseling and Planning*, 5, 45-64.

Chen, P. & Finke, M. S. (1996). Negative net worth and the life cycle hypothesis. *Financial Counseling and Planning*, 7, 87-96.

Cutler, N. E. (1995, January). Three myths of risk tolerance: What clients are not telling you. *Journal of the American Society of CLU & ChFC*, *49*, 33-37.

Ding, J. & DeVaney, S. A. (2000). Predictors of emergency funds adequacy. *Proceedings of Association for Financial Counseling and Planning Education*, 56-65.

Grable, J. E. & Lytton, R. H. (1998). Investor risk tolerance: Testing the efficacy of demographics as differentiating and classifying factors. *Financial Counseling and Planning*, *9* (1), 61-74.

Grable, J. E. & Lytton, R. H. (1999a). Financial risk tolerance: Results of a concurrent validity analysis. *Proceedings of the Association for Financial Counseling and Planning Education*, 65-75.

Grable, J. E. & Lytton, R. H. (1999b). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 8, 163-181.

Haliassos, M. & Bertaut, C. C. (1995). Why do so few hold stocks? *The Economic Journal*, *105*, 1110-1129.

Hanna, S. & Chen, P. (1997). Subjective and objective risk tolerance: Implications for optimal portfolios. *Financial Counseling and Planning*, *8* (2), 17-26.

Hanna, S. D., Gutter, M. & Fan, J. (2001). A measure of risk tolerance based on economic theory. *Financial Counseling and Planning*, *12*(2), 53-60.

Hanna, S., Gutter, M. & Fan, J. (1998). A theory based measure of risk tolerance (Working Paper). Columbus, OH: The Ohio State University, Department of Consumer and Textile Sciences.

Hawley, C. B. & Fujii, E. T. (1993-1994). An empirical analysis of preferences for financial risk: Further evidence on the Friedman-Savage model. *Journal of Post Keynesian Economics*, *16*, 197-204.

Huston, S. J. & Chang, Y. R. (1997). Adequate emergency fund holdings and household type. *Financial Counseling and Planning*, *8* (1), 37-46.

Huston, S. J., Chang, Y. R. & Metzen, E. J. (1997). Economic, demographic and attitudinal characteristics of American households by household type. *Family Economics and Resource Management Biennial*, *2*, 9-18

Kahneman, D. & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*, 263-291.

Kennickell, A. & Starr-McCluer, M. (1994). Changes in family finances from 1989 to 1992: Evidence from the Survey of Consumer Finances. *Federal Reserve Bulletin*, *80*, 861-882.

Kennickell, A. B., Starr-McCluer, M. & Sundén, A. E. (1997). Saving and financial planning: Some findings from a focus group. *Financial Counseling and Planning*, *8* (1), 1-8.

Litwin, M. S. (1995). *How to measure survey reliability and validity*. Thousand Oaks, CA: Sage.

MacCrimmon, K. R. & Wehrung, D. A. (1985). A portfolio of risk measures. *Theory and Decision*, *19*, 1-29.

MacCrimmon, K. R. & Wehrung, D. A. (1986). *Risk management*. New York: The Free Press.

Pedhazur, E. J. & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Lawrence Erlbaum Associates Inc., Publishers.

Rha, J-Y., Montalto, C. P. & Hanna, S. D. (2001). The effect of saving goals and expectations on household saving behavior. Paper presented at the Academy of Financial Services.

Roszkowski, M. J. (1998). Risk tolerance in financial decisions. In D. M. Cordell (ed.), *Readings in Financial Planning* (pp. 281-328). Bryn Mawr, PA: The American College.

Roszkowski, M. J., Snelbecker, G. E. & Leimberg, S. R. (1993). Risk tolerance and risk aversion. In S. R. Leimberg, M. J. Satinsky, R. T. LeClair & R. J. Doyle, Jr. (eds.), *The tools and techniques of financial planning* (4th ed., pp. 213-226). Cincinnati, OH: National Underwriter.

Schooley, D. K. & Worden, D. D. (1996). Risk aversion measures: Comparing attitudes and asset allocation. *Financial Services Review*, *5*, 87-99.

Silva, F. (1993). *Psychometric foundations and behavioral assessment*. Thousand Oaks, CA: Sage.

Sung, J. & Hanna, S. (1996). Factors related to risk tolerance. *Financial Counseling and Planning*, *7*, 11-20.

Sung, J. & Hanna, S. (1998). The spouse effect on participation and investment decisions for retirement funds. *Financial Counseling and Planning*, *9* (2), 47-58.

Tversky, A. & Kahneman, D. (1981). The framing of decisions

and the psychology of choice. *Science*, *211*, 453-458.

Wang, H. & Hanna, S. (1997). Does risk tolerance decrease with age? *Financial Counseling and Planning*, *8* (2), 27-31.

Xiao, J. J. (1996). Effects of family income and life cycle stages on financial asset ownership. *Financial Counseling and Planning*, *7*, 21-30.

Xiao, J. J., Alhabeeb, M. J., Hong, G. & Haynes, G. W. (2001). Attitude toward risk and risk-taking behavior of business-owning families. *The Journal of Consumer Affairs*, *35*, 307-325.

Yuh, Y. & DeVaney, S. A. (1996). Determinants of couples' defined contribution retirement funds. *Financial Counseling and Planning*, *7*, 31-38.

Yuh. Y. & Olson, P. (1997). Factors affecting the retirement fund levels of self-employed households and wage and salary households. *Family Economics and Resource Management Biennial*, *2*, 25-31.

Yuh, Y., Montalto, C. P. & Hanna, S. (1998). Are Americans prepared for retirement? *Financial Counseling and Planning*, *9* (1), 1-12.