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Eliciting stock market expectations: The effects of question wording on survey experience and response validity

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Abstract

Expectations about stock market movements are an important factor in models of investments and savings. To better understand consumers' financial behavior, economic surveys such as the Health and Retirement Study (HRS) ask participants to report expectations about the stock market. However, readability statistics suggest that the HRS' stock market expectations questions use relatively complex wording, which may contribute to their relatively high rates of missing responses. Here, we build on survey design research to improve the readability of these questions. In two experiments using national online panels, we test whether revising stock market expectation questions to reduce their difficulty affects respondents' 1) survey experience, as measured by percent of missing answers and ratings of question clarity and difficulty, and 2) response validity, as assessed by respondents' confidence in their answer and comparisons between expectations and stock market outcomes. In both studies, our revisions improve survey experience. Unfortunately, revisions also decreased the perceived (Study 1) and actual (Study 2) validity of responses. We discuss implications of question revisions for the design of economic surveys.

Keywords: stock market expectations, survey design, HRS, survey experience, response validity

Introduction

Over the past few decades, Americans have taken increased responsibility for personally managing their retirement assets (Poterba et al., 2007). To ensure that they have sufficient retirement wealth, consumers are encouraged to invest in the stock market. Yet, only about 50% of U.S. households have stock market holdings, including stocks that are part of managed retirement accounts (Board of Governors of the Federal Reserve System, 2014). Models of portfolio choice predict that investment decisions depend, among other factors, on estimates of expected investment returns (Markowitz, 1952; Sharpe 1964). Thus, in order to understand consumers' investment decisions, surveys have been designed to elicit consumers' expectations of stock market movements.

Research exploring the validity of consumers' stock market expectations has shown that survey-based reports correlate with investment behaviors in meaningful ways. For instance, consumers who report more optimistic beliefs about stock market returns are more likely to hold stock market assets (Dominitz & Manski, 2007; Hurd, 2009), maintain a higher proportion of their portfolio in stocks (Vissing-Jorgenson, 2003), and acquire stocks in the near future (Hurd, Van Rooij, & Winter, 2011). Consumers' stock market expectations also change in response to market events, such as the financial crisis of 2008 (Hoffmann, Post, & Pennings, 2013; Weber, Weber, & Nosić, 2013), suggesting that investors update expectations as they learn about events that could affect returns.

Although responses to commonly analyzed survey questions about stock market expectations have demonstrated validity in terms of correlations with behavior, there are concerns that their wording may be relatively difficult. The readability of a text excerpt can be assessed using the Flesch-Kincaid statistic, which is calculated on the basis of the number of

words per sentence and the number of syllables per word (Flesch, 1948; Kincaid et al., 1975).[1] It is matched to the American educational system, such that texts with a Flesch-Kincaid statistic of 6 should be understandable to individuals who have completed the 6th grade (Kincaid et al., 1975).[2] Average adult literacy in the U.S. ranges between 7th and 9th grade levels (Neuhauser & Paul, 2011), so readability guidelines recommend that materials disseminated to members of the general public do not exceed that range (e.g., Daraz et al., 2011; Young, Hooker & Freeberg, 1990).

Calculating the Flesch-Kincaid statistic for questions in the nationally representative Health and Retirement Study (HRS) shows that this survey contains a stock market expectations question with a reading level of 13.5. It asks participants: "By next year at this time, what is the percent chance that mutual fund shares invested in blue chip stocks like those in the Dow Jones Industrial Average will be worth more than they are today?" (Table 1). The nationally representative Survey of Economic Expectations (SEE) asks respondents for expectations regarding "the type of mutual fund known as a diversified stock fund," with the full question having a reading level of 8.3.[3]

Questions that are difficult to read may cause problems for survey respondents. For instance, survey research on attitudinal questions shows that respondents are more likely to skip questions that are more difficult to read (Knäuper, Belli, Hill & Herzog, 1997). If the same pattern applies to expectations questions, then stock market expectations questions should yield relatively large non-response rates. Indeed, the 2006 HRS and 2000 SEE questions about stock market expectations had non-response rates of 24% and 27%, respectively (see Hurd, 2009; Dominitz & Manski, 2011). By comparison, a 2006 HRS question with a Flesch-Kincaid reading level of 3.3 that asks about the chances of survival to age 75 had a 4% non-response rate

(Hurd, 2009), suggesting that respondents may have found the stock market question much more difficult.

In addition to having high non-response rates, survey questions that are difficult to read may pose a threat to response validity, as demonstrated by reduced correlations with behaviors. One diagnostic of response validity is respondents' perceived validity, expressed as their confidence in their answers. In Bruine de Bruin and Carman (2012), for instance, respondents were asked to indicate their level of confidence in their reported survival expectations. Those who indicated low confidence by stating that they had "no idea about the chance" or that "no one can know the chance" gave expectations that had lower validity than those who reported having confidence. Specifically, respondents who had low confidence reported survival expectations that had lower correlations with variables relevant to survival such as age, number of visits with medical specialists, and self-reported serious health problems (Bruine de Bruin & Carman, 2012). Participants who have low confidence about their expectations may also be more likely to use "50%" responses as an expression of "don't know" rather than a numerical probability (Bruine de Bruin et al., 2000; Bruine de Bruin & Carman, 2012; Fischhoff & Bruine de Bruin, 1999). While there is no direct evidence on respondents' confidence in their stock market expectations, on the 2006 HRS about 30% of those answering the stock market question gave a 50% response, relative to 23% of those answering a question about survival (Hurd, 2009).

The Effects of Rewording Expectations Questions on Survey Experience and Response Validity

While correlations between readability and non-response suggest that simplifying difficult-to-read questions may be beneficial, a more direct test would involve conducting an experiment in which respondents are randomly assigned to different versions of a question

(Fowler, 2004; Presser et al., 2004). One survey-based experiment has shown that questions that are written in a less complex style cause lower drop-out rates (Ganassali, 2008). Another has shown that avoiding problematic features, such as low-frequency words and ambiguous vocabulary, reduces the use of "don't know" responses (Lenzner, 2012). Hence, stock market expectations may be improved by eliminating unfamiliar terms that are difficult to understand (e.g., "blue chip stocks like those the Dow Jones Industrial Average") in favor of more colloquial terms (e.g., "the stock market") and by using fewer words (e.g., removing "like those in the Dow Jones Industrial Average"). Here, we test this idea by revising questions about stock market expectations. The original and revised questions that we examine, as well as their associated Flesch-Kincaid readability statistics, are shown in Table 1.

We assess the effect of question revisions on two outcomes: respondents' survey experience and response validity. Survey experience includes respondents' ratings of the question's difficulty and their likelihood of answering. Validity consists of perceived validity, which is measured by asking respondents whether they are confident in their answer, as well as actual validity, which can be measured by gauging whether 1) respondents' behaviors are correlated with their stated beliefs (as in Hurd, Van Rooij, & Winter, 2011) or 2) mean reported expectations are in agreement with observed outcomes (as in Bruine de Bruin, Parker, & Fischhoff, 2007). For this paper, we assess validity by examining respondents' confidence in their answers and comparisons between mean expectations and stock market outcomes.

While previous research on survey design suggests that revising question wording may have beneficial effects on survey data quality (Ganassali, 2008; Lenzner, 2012), there is also reason to believe that revised questions could adversely affect survey experience and response validity. When economic surveys posed easy-to-read questions about expectations for "prices in

general," some respondents recognized the intended meaning as "inflation" while others interpreted it as asking about their personal experiences with prices (Bruine de Bruin, van der Klaauw, Downs, Fischhoff, Topa, & Armantier, 2010). Respondents who thought of personal price experiences tended to report larger expectations, because experiences with large price changes were more salient to them (Bruine de Bruin, van der Klaauw & Topa, 2011). Questions that ask about expectations for "inflation" therefore yield less variation in question interpretation, and responses that are less extreme and less dispersed, as compared to questions that ask about expectations for "prices in general" (Bruine de Bruin et al., 2012). It is possible that using more difficult terminology in survey questions about stock market expectations may similarly reduce variability in respondents' interpretations and yield better response validity.

Given that revised survey questions do not necessarily lead to improvements in survey experience and response validity, it is ultimately an empirical question if modifying specific questions would be beneficial for respondents and data quality. We report on two online experiments in which we examined the effect of the revised (vs. original) question wording of stock market expectations questions (Table 1) on 1) survey experience, as measured by ratings of question clarity and question difficulty, and whether participants choose to skip the question, and 2) perceived and actual response validity, as measured by respondents' confidence in their answers and comparisons between expectations and stock market performance.

Study 1

Method

Sample. We surveyed 1,516 members of the 2011 HRS Internet panel who answered an online survey between May and August of that year. Members of this panel indicated that they

had internet access in the 2009 HRS, a nationally representative sample of adults aged 50 or over. Panel members were invited to participate in our survey in exchange for $25. The overall response rate for the 2011 HRS Internet survey was 79.9% (Health and Retirement Study, 2012). In our sample, 58.9% of respondents were women and 38.9% had a college degree.[4] On average, respondents were 65.3 years old (SD = 9.9). Data are publicly available at http://hrsonline.isr.umich.edu/.

Stock market expectations. Participants were asked to report their stock market expectations as part of a larger survey about health and finances. Following standard HRS practice, the section on expectations began with the following introduction, "We would like to ask your opinion about how likely you think various events might be. For each question, please give a number from 0 to 100, where '0' means that you think there is absolutely no chance, and '100' means that you think the event is absolutely sure to happen." This text was followed by an example showing how to use the scale to report the chances of rain tomorrow.

Participants were randomly assigned to answering the original version (n = 733) or the revised version of the stock market expectations question (n = 783). The wording for the original question had a Flesch-Kincaid reading level of 13.5 while the revised version had a reading level of 4.5 (Table 1). All participants were asked to "Please give a number between 0% and 100%."

Measures of survey experience.

Non-response to stock market expectations question. Participants who did not respond to the stock market expectations question were coded as non-respondents.

Question ratings. All respondents were asked to rate the question's clarity and difficulty. To measure clarity, we asked, "Please think about the question you just answered, about the

chance that the stock market will be higher in a year than it is now. How clear was this question?" and presented a visual response scale ranging from 1 = Not clear at all to 7 = Very clear (following Fischhoff & Bruine de Bruin, 1999). In order to measure the perceived difficulty of answering this question, we asked, "How hard was it to come up with an answer to this question?" The accompanying visual response scale ranged from 1 = Not hard at all to 7 = Very hard.

Response validity.

Confidence in response. As an indicator of perceived response validity, we asked respondents to rate their confidence in their answer, if they had provided one (Bruine de Bruin & Carman, 2012). Specifically, respondents saw the expectation they had just reported and were asked, "Which of the options below best represents how you think about that answer?" They could select (a) "I am very sure about the chance," (b) "I am pretty sure about the chance," (c) "I actually have no idea about the chance," or (d) "No one can know the chance." The former two response options are expressions of relatively high confidence and the latter two signal relatively low confidence (Bruine de Bruin & Carman, 2012).

Stock market performance. A year after the survey was fielded, we collected data on the performance of the Dow Jones Industrial Average from the Federal Reserve Bank of St. Louis (https://research.stlouisfed.org/fred2/series/DJIA/). Using this data set, we calculated annual stock market performance over two periods. The first included returns from the fielding period, and therefore reflected the values that respondents were asked to predict in the stock market expectations question ("post-survey returns"). We also calculated returns that preceded the survey fielding period ("pre-survey returns"), reflecting information available to respondents at the time that they answered the survey.

Specifically, we calculated post-survey returns for the survey fielding months (i.e., May through August 2011) and matched these to participants' responses based on the month when they took the survey. Pre-survey returns were calculated for the ten years preceding the fielding period (i.e., May 2001 to April 2011). In all cases, we calculated monthly-level returns because survey responses from the HRS Internet panel were dated at the monthly level. For the month in which the participant completed the survey, we used the first trading date of the month. For example, the yearly return for May 2011 was calculated as (May 1, 2012 closing value – May 2, 2011 closing value) ÷ (May 2, 2011 closing value).

Results

Survey experience.

Non-response to stock market expectations question. We found that 10.5% of respondents did not answer the original version of the stock market question. Only 4.3% skipped the revised version. Thus, the revision caused a decline in missing responses ($\chi 2(1, N = 1516) = 20.29, p < .001$).

Question ratings. Respondents perceived the revised version of the stock market question as clearer (M revised = 6.0, SD = 1.6; M original = 5.8, SD = 1.7; $t(1403) = 2.97, p = .003$) and less difficult to answer (M revised = 2.8, SD = 1.9; M original = 3.0, SD = 1.9; $t(1403) = -2.18, p = .030$) than the original version of the question.

Response validity.

Confidence in response. We calculated the proportion of respondents who indicated confidence in their response by stating "I am very sure about the chance" or "I am pretty sure about the chance." A comparison of respondents' confidence between the original and revised

questions showed that fewer participants had confidence when answering the revised stock market question (40.3%) versus the original question (45.8%; $\chi 2(1, N = 1401) = 4.01$, $p = .045$). Possibly, the simpler wording of the revised question was perceived as more ambiguous (Bruine de Bruin et al., 2012), or encouraged participants who would not have answered to shift to an uncertain response.

As in past research (e.g., Bruine de Bruin & Carman, 2012), participants who had more confidence were also less likely to say "50%" (48.9% vs. 69.2%; $\chi 2(1, N = 1401) = 55.78$, $p < .001$). Additionally, those with confidence in their answer gave higher average expectations ($M = 55.3\%$, $SD = 25.1$) than those with low confidence ($M = 43.0\%$, $SD = 19.9$; $t(1399) = 10.23$, $p < .001$).

Stock market performance. We analyzed participants' expectations and how they aligned with the performance of the Dow Jones Industrial Average. As shown in Figure 1, there was no significant difference between the distributions of the expectations reported in response to the original and the revised questions (Kolmogorov-Smirnov $D = 0.03$, $p = .98$). Both the original and the revised versions yielded similar average expectations ($M_{original} = 48.5\%$, $SD = 23.3$ vs. $M_{revised} = 47.9\%$, $SD = 23.0$; $t(1403) = .53$, $p = .596$). These results indicate that overall responses were not affected by changes to the wording of the question.

An analysis of post-survey stock market returns shows that there were positive nominal returns for three of four survey fielding months (75%), capturing 51.6% of respondents. Thus, respondents' average expectations were slightly pessimistic when compared to actual stock market returns. We also compared reported expectations to pre-survey returns for the ten years preceding the survey. Despite including two economic recessions, this period showed positive

nominal yearly returns in 69.2% of months (83 of 120). As such, respondents were pessimistic when compared to historical outcomes.

Discussion

Our analysis of data collected from the HRS Internet panel suggests that the original HRS stock market question may be difficult for some participants to understand. The revised version of the question, which asks about the "stock market" rather than "mutual fund shares invested in blue chip stocks like those in the Dow Jones Industrial Average," improves respondents' survey experience. Specifically, this question is perceived as clearer and easier to answer, and elicits fewer missing responses than the original question. However, we found that the overall rate of missing responses to this question was 10.5%, which is lower than the rate reported in some previous research (Hurd, 2009).[5] One possible reason for this difference may be the survey administration mode. The HRS is primarily administered over the phone, while the HRS Internet Panel used in Study 1 is only completed online. In previous research, researchers asking questions about inflation expectations have found that administering surveys in-person versus online causes different non-response rates, with lower levels of non-response online (Bruine de Bruin et al., 2016). It is possible that a similar mode effect may have contributed to the lower level of non-response in this study.

While our experiment showed beneficial effects of the revised wording on respondents' survey experience, we found mixed results for response validity. First, the revised version of the question reduced respondents' confidence (i.e., feeling "very sure" or "pretty sure") about their answers, suggesting that they perceived their answers as being less valid (e.g., Bruine de Bruin & Carman, 2012). However, the revision did not affect validity as measured through the

correspondence between mean expectations and stock market movements. Before drawing strong conclusions about these results, we test a similar revision using a different sample and a question asking about a 5% stock market return over the next month.

Study 2 was designed to test the robustness of conclusions from Study 1 using a different sample and time frame. Specifically, participants from the American Life Panel reported their expectations for a 5% stock market increase over the next month. Traditionally, the HRS asks respondents about their expectations of an overall stock market increase and an increase of 20% or more (Hurd, 2009). In past years, the HRS asked questions about different levels of change (ranging from -40% to +40%) in order to examine expectations over a wider range of outcomes. Here, we asked about a smaller change happening over a shorter time period so as to be able to compare reported expectations to stock market performance sooner.

Study 2

Method

Sample. Participants were members of RAND's American Life Panel (ALP), who fill out monthly online surveys about economic topics (https://mmic.rand.org/panel/). For this study, 3,197 ALP members were invited to participate. A total of 2,831 responded, representing an overall response rate of 88.6%. Of those responding, 59.4% were women, and 41.6% had a college degree. Respondents reported a mean age of 50.0 years (SD = 14.9).

Stock market expectations. Participants received the same introduction to the expectations questions as in Study 1. Next, they estimated the probability of a 5% stock market increase over the next month, in response to original (n = 1442) or revised (n = 1389) question wording. The Flesch-Kincaid reading difficulty level was 16.5 for the original wording and 4.8

for the revision (Table 1). As is standard practice in the ALP, participants who skipped the question or gave a non-numeric answer were encouraged to go back and provide a probability response, because "your answers are important to us." Perhaps because such encouragements are commonly used on the ALP, questions tended to elicit few missing responses.

Survey experience.

Non-response to stock market expectations question. Participants who did not answer the expectations question were coded as non-respondents.

Question ratings. All respondents were asked to rate the clarity of the stock market expectations question and how easy it was to answer using the same questions as in Study 1.

Response validity.

Confidence in response. As in Study 1, participants were asked to explain their response, if they had given one, by selecting (a) "I am very sure about the chance," (b) "I am pretty sure about the chance," (c) "I actually have no idea about the chance," or (d) "No one can know the chance" (following Bruine de Bruin & Carman, 2012).

Stock market performance. We collected data on closing prices of the Dow Jones Industrial average in order to calculate the probability of experiencing a month-to-month return of 5% or more. The ALP recorded respondents' survey completion date at the daily level. Therefore, we calculated stock market returns for the 30-day window from those dates. The next available trading date was used for participants who completed the survey during weekends or holidays (e.g., the June 4th monthly return was calculated using the July 5th closing value instead of the July 4th value). We also calculated pre-survey returns for trading days in the year preceding the survey.

Results

Survey experience.

Non-response. We found that 1.2% of respondents did not answer the original version of the stock market question. In contrast, .4% skipped the revised version. Thus, the revision caused a significant decline in missing responses ($\chi 2(1, N = 2831) = 5.18$, $p = .023$).

Question ratings. Respondents perceived the revised version of the stock market question as clearer than the original version ($M_{revised} = 6.7$, $SD = .9$; $M_{original} = 6.5$, $SD = 1.2$; $t(2805) = 6.45$, $p < .001$). There was no significant difference in perceptions of how difficult the question was to answer ($M_{revised} = 3.3$, $SD = 1.8$; $M_{original} = 3.4$, $SD = 1.9$; $t(2802) = -1.46$, $p = .144$).

Response validity.

Confidence in response. There was no difference in the proportion of respondents who expressed confidence by stating "I am very sure about the chance" or "I am pretty sure about the chance" between the original (36.4%) and revised (33.3%) versions of the question ($\chi 2(1, N = 2808) = 2.95$, $p = .086$). A comparison of the expectations given by participants shows that those who were confident in their answer were less likely to have reported an expectation of 50% (15.9% versus 28.3%; $\chi 2(1, N = 2808) = 55.54$, $p < .001$). Additionally, those who were confident had different average expectations. Average expectations were 25.4% ($SD = 24.3$) for those who reported relatively high confidence and 28.0% ($SD = 20.1$) for those with lower levels of confidence ($t(2806) = -3.01$, $p = .003$).

Stock market performance. The distribution of respondents' answers is shown in Figure 2. As shown, there was an upward shift in responses for those receiving the revised stock market expectations question as compared to the original version (Kolmogorov-Smirnov $D = 0.10$, $p <$

.001). As such, the average response to the stock market question was significantly higher with the revised version ($M = 29.1\%$; $SD = 21.9$, $t(2807) = 4.95$, $p < .001$) than with the original version ($M = 25.1\%$; $SD = 21.3$).[6]

These expectations can be interpreted in the context of actual stock market returns. Post-survey monthly gains were 5% or higher for only .2% of respondents in this survey. As such, participants were too optimistic on average about the possibility of a 5% return. As a point of comparison, we also calculated pre-survey monthly gains. This analysis showed that 14.3% of trading days had monthly gains of over 5%; respondents' average expectations were also optimistic when compared to these returns. Thus, the higher expectations reported under the revised version of the stock market question were less valid than those reported under the original wording.

Discussion

Our analysis of data from the ALP shows that, even in this sample of frequent survey respondents, rewording the stock market question can improve survey experience. Specifically, the revised version of the question was rated as clearer by respondents and led to fewer missing responses. However, the results of this study also reveal problems with the validity of responses to the revised question. Specifically, although the revision did not improve the proportion of respondents who were confident about their reported expectation, those responding to the revised question provided less valid answers insofar as they deviated further from both historical stock market returns and actual returns. As such, the results of this study suggest that rewording the question about a 5% monthly stock market increase improved respondents' survey experience while decreasing one of the two assessments of response validity.

General discussion

In order to understand consumers' saving, investment, and retirement behavior, economists have asked respondents in large national surveys to report stock market expectations. Such questions have predictive validity, as shown in correlations with actual stock market holdings and stock acquisition (e.g., Hurd, Van Rooij, & Winter, 2011). Yet, researchers have suggested that survey questions about stock market expectations may be difficult for some respondents to answer (e.g., Hurd, 2009). Following methods from the survey design literature (Presser et al., 2004; Fowler, 2004), we tested the effects of revising a stock market expectations question to ask about "the stock market" instead of "mutual fund shares invested in blue chip stocks." Specifically, we analyzed whether this revision affected 1) respondents' experience with the survey, measured through ratings of question clarity, ratings of question difficulty, and whether respondents provided an answer, and 2) response validity, measured through respondents' confidence in their expectation and a comparison of mean stock market expectations to actual returns.

Both of our studies suggest that participants who receive a less complex version of the stock market question are likely to have a better experience with the survey. Participants perceived the question as clearer and were more likely to respond. In Study 1, they also perceived the revised version as easier to answer. Thus, simplified wording can provide benefits for survey respondents and reduce associated problems of unrepresentative samples stemming from non-response (Hurd, 2009). If implemented, such revisions could also have beneficial effects in panel surveys, as research suggests that improved survey experience increases

willingness to respond in later survey waves (e.g., Kalton et al., 1990; Lepkowski & Couper, 2002; Olsen, 2005).

However, our findings also suggested that simplified questions may introduce concerns about response validity. In Study 1 respondents who received the revised question were less confident in their answers and in Study 2, respondents' mean expectations showed less correspondence with stock market performance. These patterns are similar across the two studies (Table 2), although the effects vary in magnitude.

These results draw attention to a potential tradeoff between survey experience and response validity when writing questions about stock market expectations. Our results are consistent with previous research which shows that replacing expert terminology with simpler wording (e.g., "prices" instead of "inflation") may produce confusion about a question's meaning (Bruine de Bruin et al., 2012). Here, we simplified questions about "blue chip stocks like those in the Dow Jones Industrial Index" by asking about "the stock market." Doing so tended to improve respondents' experience but not improve perceived or actual response validity, perhaps because respondents did not know how to answer. Our questions were simplified below the 7th grade reading level in order to conform to readability guidelines (Young, Hooker & Freeberg, 1990), but it is possible that a less dramatic change could have produced more precise wording and more valid responses.

Comparing results across the two studies highlights areas of divergence. Most notable may be the overall differences between the two studies in terms of non-response rates and confidence; across the two studies, there is a nearly ten-fold difference in missing responses and roughly a ten percentage point difference in the proportion of respondents who say they are confident in their answer. In future research, it would be useful to compare multiple questions

within the same sample in order to better understand whether sample variation or question variation drives these differences.

Like most studies, the current research is not without limitations. First, we present data from two studies that use parallel wording for questions about stock market expectations. It is possible that simplified wording would have different consequences for questions on other topics. Another limitation is our measure of response validity. We compared stock market expectations to returns over the periods in the expectations questions (i.e., one year and one month), but we recognize that actual returns may be affected by unexpected events. As such, responses that appear reasonable at the time of the survey may be inaccurate in retrospect and vice versa. Future research should also assess validity by examining correlations between reported expectations and investment behaviors.

In the meantime, we note that surveys need to be written so that they are targeted at the intended audience (Bruine de Bruin & Bostrom, 2013). Simple questions that improve survey experience may be more important when surveying non-experts, or when running longitudinal studies where attrition is a concern. However, simplifying questions may provide more limited benefits when surveying experts who can process question content with less difficulty. Survey researchers recommend pre-testing surveys using cognitive interviews, in which respondents are asked to think out loud while answering survey questions, in order to diagnose potential problems before they arise (Converse & Presser, 1986; Dillman et al., 2009). Such interviews may provide benefits for future researchers who are interested in eliciting stock market expectations.

Ultimately, researchers interested in understanding consumers' investment behavior must be concerned with both the completeness and the quality of data on stock market expectations.

By better understanding the cognitive mechanisms underlying survey responses, and by testing survey revisions to measure their effects with intended participants, we should be able to develop survey questions that address these needs.

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Table 1. Wording of Stock Market Expectation Questions

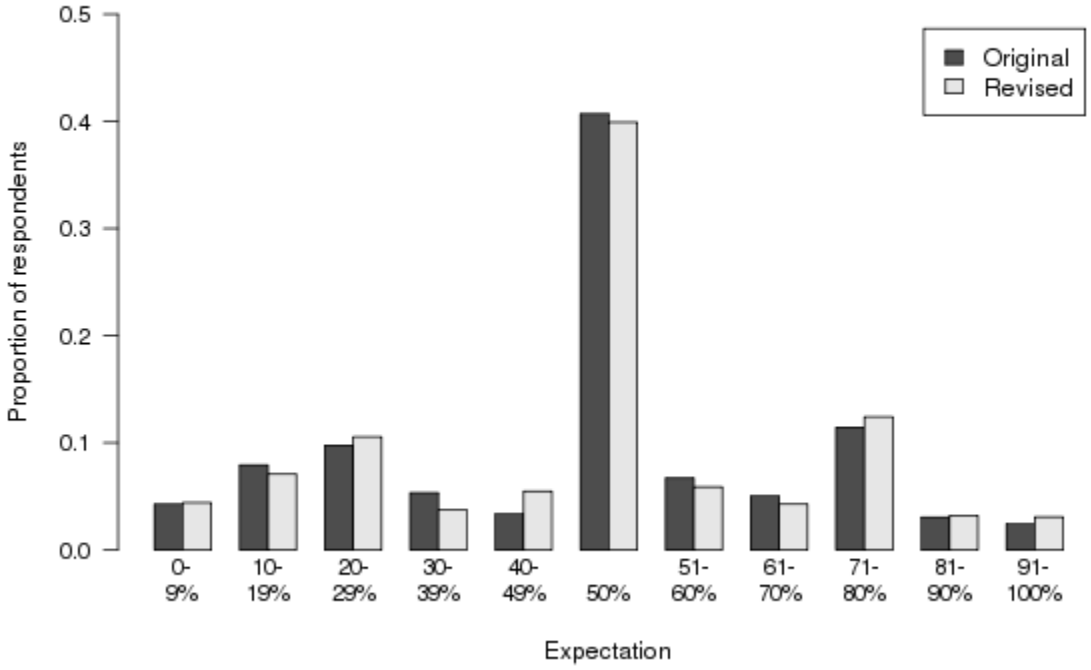
	Wording	Flesch-Kincaid readability statistic
Study 1		
Original HRS question	By next year at this time, what is the percent chance that mutual fund shares invested in blue chip stocks like those in the Dow Jones Industrial Average will be worth more than they are today?	13.5
Revised question	What is the chance that the stock market will be higher in a year than it is now?	4.5
Study 2		
Original question	By next month at this time, what is the percent chance that mutual fund shares invested in blue chip stocks like those in the Dow Jones Industrial Average will have gained in value by more than 5% compared to what they are worth today?	16.5
Revised question	What is the chance that the stock market will be 5% higher in a month than it is now?	4.8

Table 2. Summary of Results

Dependent variable	Question wording	Study 1: HRS Internet Panel	Study 2: ALP
Survey experience measures			
Non-response rates (%)	Original	10.5	1.2
	Revised	4.3***	0.4*
Question clarity (M)	Original	5.8	6.4
	Revised	6.0**	6.7***
Difficulty answering question (M)	Original	3.0	3.4
	Revised	2.8*	3.3
Validity measures			
Confident in response (%)	Original	45.8*	36.4
	Revised	40.3	33.2
Average expectation (%)	Original	48.5	25.1***
	Revised	47.9	29.1

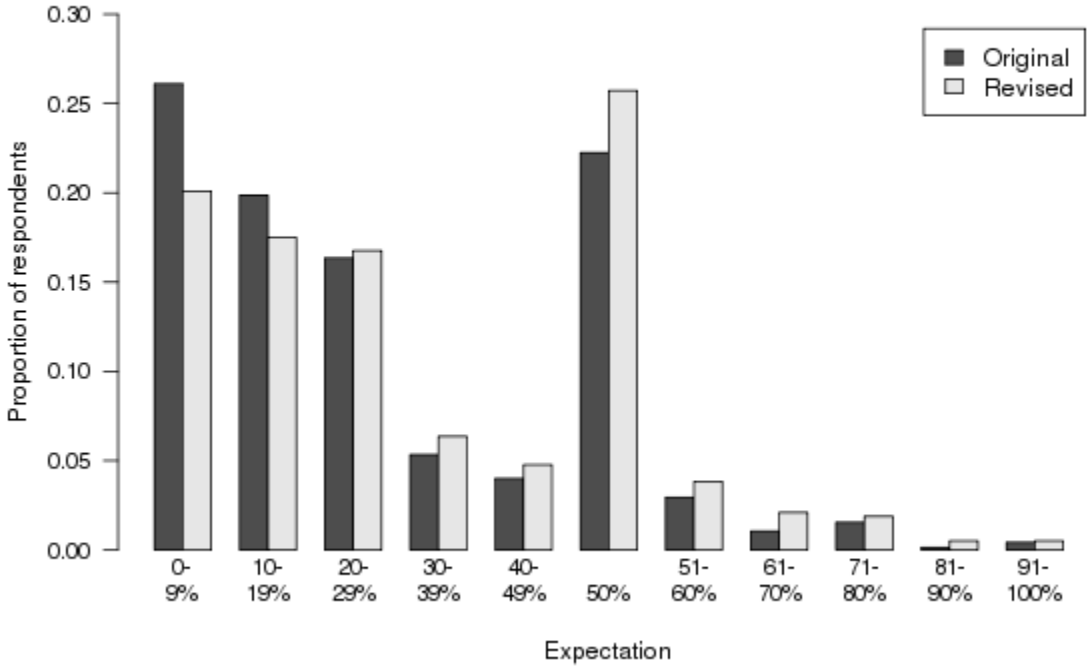
Note. Question clarity was rated from 1 ("Not clear at all") to 7 ("Very clear"). Difficulty answering the question was rated from 1 ("Not hard at all") to 7 ("Very hard"). Confidence in response was measured as the proportion of respondents who stated "I am very sure about the chance" or "I am pretty sure about the chance," versus the proportion who stated "I actually have no idea about the chance" or "No one can know the chance." In the text, average expectations are compared to pre- and post-survey stock market realizations in order to gauge validity. Asterisks indicate that the flagged statistic is significantly improved compared to the alternative condition in the same survey; specific statistical tests are mentioned in the text. ***$p < .001$; **$p < .01$; *$p < .05$

Figure 1. Distribution of Expectations in Study 1



Note. N = 1,405.

Figure 2. Distribution of Expectations in Study 2



Note. N = 2,809.

Endnotes

[1] The Flesch-Kincaid formula is: 0.39 * (total words / total sentences) + 11.8 * (total syllables / total words) – 15.59.

[2] Many other readability statistics require more text than is available in this context. For example, the Fry method requires at least two 100-word samples.

[3] This question reads, "The next question is about investing in the stock market. Please think about the type of mutual fund known as a diversified stock fund. This type of mutual fund holds stock in many different companies engaged in a wide variety of business activities. Suppose that tomorrow someone were to invest one thousand dollars in such a mutual fund. Please think about how much money this investment would be worth one year from now. What do you think is the percent chance that this one thousand dollar investment will increase in value in the year ahead, so that it is worth more than one thousand dollars one year from now?"

[4] Five respondents did not report their educational attainment, and are omitted from this calculation.

[5] We thank an anonymous reviewer for suggesting that we explore the difference in non-response rates between published research on the HRS and our survey.

[6] As shown, average responses reflect a high number of 50% responses. Omitting 50% responses, the average response was 17.9% (SD = 18.8) for the original version and 21.9% (SD = 21.0) for the revised version ($t(2134) = 4.56$, $p < .001$).