The Disappointment Dilemma: The Role of Expectation Proclivity and Disappointment Aversion in Describing Financial Risk Aversion and Investing Risk-Taking Behavior

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This article adds to the existing literature on financial risk aversion and risk taking by testing the possibility that a person's degree of disappointment aversion, as an anticipatory emotion, may be an antecedent of risk-taking behavior. In this regard, the purpose of this article is to introduce two interrelated measures—the expectation-proclivity scale and the disappointment-aversion scale—and to establish the empirical association between expectation-proclivity and disappointment-aversion scale scores and financial risk aversion and financial risk taking. Results from this study show that disappointment aversion is positively associated with financial risk aversion, whereas establishing high outcome expectations is negatively related with financial risk aversion. Additionally, findings show that disappointment aversion and expectation proclivity are inversely related. Findings from this study provide support for what is termed in this article the disappointment dilemma hypothesis. Specifically, financial decision-makers who are averse to disappointment may be prone to allocating assets and investment dollars in ways that minimize or avoid disappointment in the short-run, but by doing so, may regret risk-avoiding behavior in the future.

Keywords: disappointment aversion, expectations, risk aversion, risk taking

Anticipatory emotions play an important role in describing and shaping decisions. An anticipatory emotion is a feeling someone has when the person thinks about what could happen after a decision has been made (MacLeod, 2017). Regret and disappointment fall into the domain of anticipatory emotions (as do hope and fear). *Regret* refers to a negative emotion associated with the feeling that one's situation could or would have been better had a different choice been made (Bell, 1982). Often feelings of regret are based on a dichotomous assessment based on whether, looking back, a certain course of action should have been taken. Those who feel regret often exhibit counterfactual thinking by asking a question like "what would have happened had I not made that decision" (Bailey & Kinerson, 2005)? Although closely related to regret, disappointment is a different emotion. *Disappointment* refers to an "outcome that does not match up to expectations" (Bell, 1985, p. 1). Disappointment can be thought of this way: It is the mismatch between one's expectations and actual outcomes. Rather than being a dichotomous state, disappointment is often measured as degrees of dissatisfaction. When viewed this way, the extent of disappointment someone experiences related to a decision outcome is associated with the person's internal reference point, which is typically the outcome expectation that is established prior to a behavior or decision. In the context of decision-making, this reference point is thought to be equal in importance to the magnitude of the outcome (Tzieropoulos et al., 2011).

Fear of disappointment, as an anticipatory emotion, is generally assumed to be an antecedent of behavior. That is, decision-makers are thought to consider the amount of disappointment they are willing to endure before making a decision. It is important to note, however, that this perspective is

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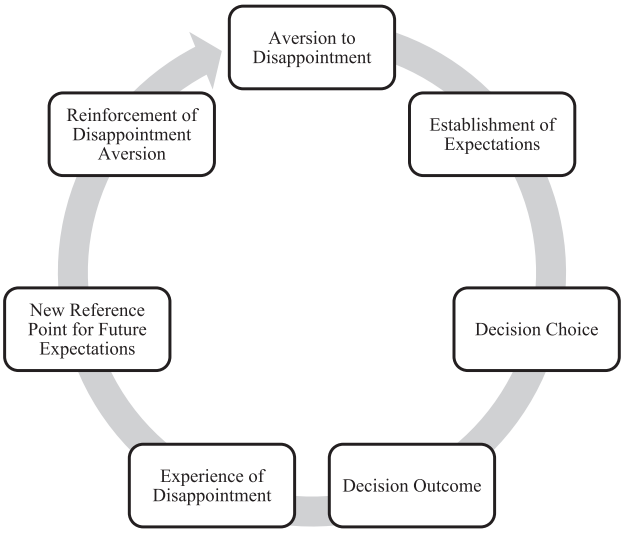
not held by all researchers. Rather than being an antecedent of behavior, Davis et al. (2009) argued that some emotions can be viewed as an outcome of the decision-making process. While it is true that as a decision input, the anticipation of disappointment may alter the type of decision made, sometimes in a positive way but often in a negative manner, it is also true that experiencing disappointment can dampen the desire to engage in activities of a similar nature in the future. At a minimum, disappointment can have a negative impact on satisfaction and utility (Inman et al., 1997).

There is a consensus in the literature that avoiding disappointment often results in the establishment of low expectations related to a decision choice (Cho & Cho, 2018). Disappointment is closely aligned to the expectations of a decision-maker (Cho & Cho, 2018). This explains the often used adage that decision-makers should spend time managing (i.e., lowering) expectations in anticipation of reducing future disappointment. In cases where anticipated disappointment is too high—a calculation based on a decision-maker's internal reference point—the decision-maker will generally avoid or alter the behavior or decision.

According to Bell (1985), feelings of disappointment are generally ignored in traditional models of economic analysis, even though it is known that perceptions of differences between outcomes and expectations play an important role in describing the way decisions are made. There is some evidence, however, that as an anticipatory emotion, disappointment does arise when decision-makers frame decision choices. The role of disappointment as an emotional element associated with decision making is known as *disappointment aversion* or the inclination of decision-makers to avoid, to some extent or another, future disappointment (Loomes & Sugden, 1986). Gul (1991) argued that disappointment aversion is evidenced by decision-makers' attempts to avoid situations where decision outcomes may be worse than prior situational expectations. This contrasts with the concept of regret aversion, which is the notion that investors will avoid risky decisions as a mechanism to avoid being wrong. As noted above, the extant literature is relatively clear in concluding that disappointment aversion acts as an input into the decision-making process. Although not commonly discussed in the literature, it is possible that disappointment aversion also serves as a feedback input into the estimation of future decision outcomes. This possible circular feedback system is shown in Figure 1.

Figure 1. The circular nature of disappointment aversion.



The purpose of this article is two-fold. The first purpose is to introduce two interrelated measures: The expectation-proclivity scale and the disappointment-aversion scale. The second purpose is to estimate the association between expectation-proclivity and disappointment-aversion scale scores and financial risk aversion. Related to this second purpose, this article also describes the relationship between financial risk aversion and investing behavior, as indicated by equity ownership at the household level. The remainder of this article is focused on the presentation of a conceptual framework that shows how expectation proclivity and disappointment aversion are thought to be associated with financial risk aversion. This is followed by the presentation of the two scales and a discussion of the methods used to test the framework. The article concludes with a presentation of the results and a summary of the key findings.

Background, Hypotheses, and Framework

A core proposition embedded in the model of disappointment aversion (see Bell, 1985), which is referred to in this article as the disappointment dilemma hypothesis, is that investors may be prone to allocating assets and investment dollars in ways that minimize or avoid disappointment. This should be evidenced through increased risk aversion. That is, investors who are disappointment averse may act in ways that remove elements of potential distress by taking less risk (Yechiam & Hochman, 2013). Thus lies the dilemma. By minimizing or avoiding disappointment, an investor may increase the likelihood of feeling regret in the future. Regret

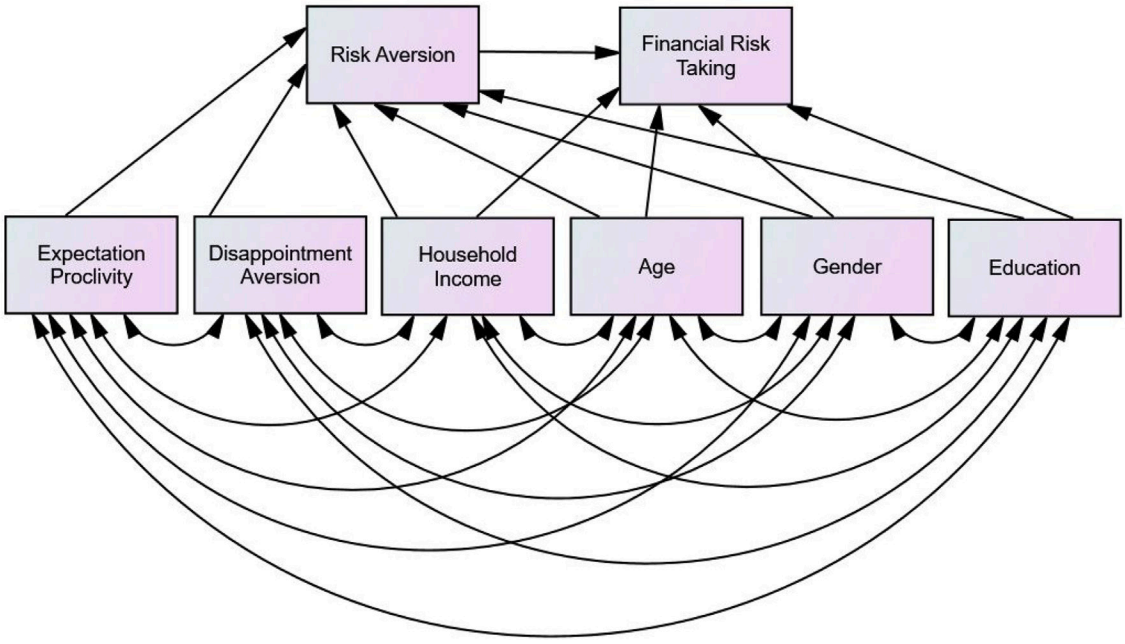
can arise because actions taken to reduce disappointment generally involve making decisions that reduce or eliminate risk. Given that risk and return are positively correlated over long periods of time, a financial decision-maker may find that making one or a series of disappointment avoiding decisions will result in investment outcomes that fall short of expectations, which can result in a feeling of wishing to undo earlier decisions that were overly risk averse (Huang & Zeelenberg, 2012; Zeelenberg et al., 2000).

The degree of disappointment aversion experienced and exhibited by individuals differs across decision-makers. Unlike risk aversion, few measures of disappointment aversion exist, which makes it difficult to precisely measure the effects of disappointment aversion. Additionally, no standards of practice around the assessment of disappointment aversion, particularly in relation to financial and investment decision-making, exist. Similarly, few measures or scales indicating the degree to which a decision-maker establishes expectations across choice scenarios exist. Without such a scale it is difficult to know if decision-makers typically establish expectations in a similar manner across scenarios or if the establishment of expectations varies based on particular choice scenarios. Additionally, without robust measures of disappointment aversion and expectations, it becomes difficult to estimate the association between these two constructs.

Theoretically, one should expect someone who exhibits high disappointment aversion to act differently compared to someone who exhibits low disappointment aversion. Specifically, those with high disappointment aversion should exhibit signs of high-risk aversion, preferring investment and choice outcomes that offer less return variability. Those with high disappointment aversion should also display a tendency to shy away from making decisions where choice outcomes fall outside the decision-maker's control (Marcatto & Ferrante, 2008). It is possible the magnitude of potential losses, as an input when establishing an internal reference point in which to gauge outcomes, may also be associated with disappointment aversion. In particular, those with a high disappointment aversion may retreat from investments that require a large initial or ongoing investment. In a similar vein, those who have a proclivity to establish low expectations should behave differently in the context of financial risk taking compared to decision-makers who have a proclivity to establish high outcome expectations. Specifically, those who establish low expectations in relation to a choice scenario should be less risk averse.

Based on these theoretical relationships, a conceptual framework (Figure 2) and associated hypotheses were developed to better understand the linkages between and among expectation proclivity, disappointment aversion,

Figure 2. Conceptual framework.



financial risk aversion, and financial risk-taking behavior. The framework includes two endogenous variables: Risk aversion—the tendency of decision-makers to prefer investments with a certain gain versus investments with less certain, and potentially negative, outcomes—and financial risk taking. The variance in these variables was hypothesized to be dependent on the other variables in the model. Decision-maker expectation proclivity and disappointment aversion are the two key exogenous variables in the framework. As conceptualized, risk aversion is shown as a determinant of financial risk-taking behavior (i.e., the single-headed arrow runs from risk aversion to financial risk taking). Given this relationship, the following hypothesis was tested:

> **H1:** Financial risk aversion is negatively associated with equity ownership.

The single-headed arrows from expectation proclivity to risk aversion and disappointment aversion to risk aversion describe the hypothesized relationships between these constructs. The dual-headed arrow linking expectation proclivity and disappointment aversion indicates a hypothesized correlation between these two variables. The following hypotheses were tested in relation to these associations:

> **H2:** Disappointment aversion is positively associated with financial risk aversion.

> **H3:** A tendency to establish high expectations is negatively associated with financial risk aversion.

> **H4:** Disappointment aversion is negatively associated with a tendency to establish high expectations.

The framework includes four other exogenous variables: Household income, age, gender, and education. The decision to include these variables in the model was based on the risk-aversion and risk-taking literature that suggests these decision-maker characteristics are most often associated with the degree to which someone is willing to engage in a behavior in which the potential outcome is both unknown and potentially negative. Specifically, in this study, it was expected that household income and education—as variables representing financial capacity—would be negatively associated with risk aversion (Fang et al., 2021; Grable, 2000; Grable & Joo, 2004; Hallahan et al., 2004; Larkin et al., 2013; Pinjisakikool, 2017; Rabbani et al., 2021b; Wong, 2011), whereas age and gender would be positively related to risk aversion (Anbar & Eker, 2010; Chavali & Mohanraj, 2016; Dickason & Ferreira, 2018; Fisher & Yao, 2017; Grable, 2000; Hallahan et al., 2004; Hartnett et al., 2019; Koekemoer, 2018; Larkin et al., 2013; Rabbani et al., 2021a; Wang & Hanna, 1998). Similar relationships were anticipated with actual risk-taking behavior. These associations are indicated in the framework by the single-headed arrows from these exogenous variables to the two endogenous variables. Correlations among all the exogenous variables were assumed, although directional relationships were not hypothesized.

Methods

Sample

Data for this study were gathered during spring 2020 from a survey distributed to an online sample of 525 individuals who were 18 years of age or older at the time of the survey. The sample was specifically designed to include individuals who indicated making investment decisions in the past and a likelihood of making an investment decision in the future. The survey was developed using Qualtrics and distributed by Dynata. Respondents who completed the survey, which took approximately 15 minutes to complete, were paid a modest incentive. Prior to survey distribution, the research project was approved by the research team's university institutional review board.

Measures

Financial risk aversion was assessed using the following item, which was adapted from Grable et al. (2022):

> *Suppose you are considering making an investment. You have a chance to make an investment that will return either $50,000 or $100,000. Your financial advisor estimates that the probability of receiving $50,000 is 50% and the probability of receiving $100,000 is also 50%. You also learn from your financial advisor that shares in this investment are limited and difficult to obtain. Therefore, the less you are willing to invest, the lower the chance that you will be able to participate in the investment. Based on this information, what is the largest amount of money you would be willing to pay to participate in this investment, assuming you had the money?*

After reading the item, study participants were then asked to select a dollar amount from the choices shown in Table 1.

TABLE 1. Question Response Options

Choice	Amount willing to invest	Risk premium
1	$70,711	$4,289
2	$66,667	$8,333
3	$63,246	$11,754
4	$60,571	$14,429
5	$58,566	$16,434
6	$57,083	$17,917
7	$55,978	$19,022
8	$55,143	$19,857
9	$54,499	$20,501
10	$53,991	$21,009

Note. Readers who are interested in the mathematical derivation of the "willingness to invest" amounts shown in Table 1 will find a complete description in Grable et al. (2022). The values in column two of Table 1 represent certainty equivalent amounts that relate directly to estimates of constant relative risk aversion (γ). As γ increases, a financial decision-maker becomes more risk averse, increasing the risk premium and lowering the certainty equivalent amount they are willing to accept for not engaging in the choice scenario. For example, a financial decision-maker with a $\gamma = 1$ will value the risky outcome of $75,000 (i.e., the expected value of the investment) as equivalent to $70,711 with certainty and therefore be willing to pay a risk premium of $4,289.

The dollar amounts shown in the table relate directly to the certainty equivalent amounts from the question scenario. Table 1 also shows the corresponding risk premium associated with each dollar amount. For interpretation purposes, the amount selected for investment is negatively associated with the risk premium. As the risk premium increases, risk aversion (γ) also increases. A survey participant with a γ score of 1 would be considered a risk taker (i.e., not risk averse). A participant in this scenario would be willing to potentially lose more than $20,000 if the investment returned only $50,000 in pursuit of gaining only $30,000. As such, this participant's risk premium would be deemed to be very low. On the other end of the scale, a survey participant with a γ score of 10 would only be willing to lose about $4,000 in pursuit of gaining over $46,000. This participant's risk premium would be classified as very high, suggesting high-risk aversion.

Financial risk taking was measured by asking survey participants to respond to the following question: "Suppose that you were to take a snap-shot of your current financial position. Approximately what percent of your total savings and investments are invested in equities (e.g., stock mutual funds, stocks)?" Responses ranged from zero to 100%. A participant's degree of risk-aversion was hypothesized to be negatively associated with holding more equities in one's portfolio.

Household income was assessed using an 11 category ordinal scale ranging from 1 = none to 11 = above $100,000. Participant age was measured in years. Gender was coded 1 = male and 2 = female. Formal attained education was measured using the following six categories: (a) Some high school or less, (b) high school graduate, (c) some college/trade/vocational training, (d) Associate's degree, (e) Bachelor's degree, and (f) graduate or professional degree. The income and education variables were considered to be ordinal constructs in the analyses.

Given the dearth of available expectation-proclivity and disappointment-aversion scales and related measures, two such scales were developed for use in this study. As noted by Cho and Cho (2018), it was anticipated that expectations and disappointment aversion would be interrelated. Based on this assumption, 10 scenarios were created to assess a participant's expectation related to choice situations in which an uncertain outcome was presented. Each expectation measure was thought to be representative of a participant's reference point concerning the potential decision outcome. Expectations were measured using a scale ranging from 0 (no expectation of success) to 100 (very high expectation of success). Each scenario was followed by the scenario outcome. Participants were then asked to indicate their feeling after learning the outcome. Feelings of disappointment were gauged using a four-point multiple-choice answer, ranging from "I am not disappointed …" (scored as 1 across scenarios) to "I am very disappointed" (scored 4 across scenarios).

Expectation-proclivity and disappointment-aversion scale scores were developed by summing responses across the 10 case scenarios. As such, scores on the expectation-proclivity scale could theoretically range from 0 to 1,000, whereas scores on the disappointment-aversion scale could range from 10 to 40. Higher scores indicated a tendency to establish elevated expectations and to exhibit more disappointment aversion, respectively. The 10 scenarios are shown in the Appendix.

Data Analyses

Descriptive statistics were used to depict the characteristics of the sample. This was followed by an evaluation of the construct validity and reliability of the expectation-proclivity and disappointment-aversion scales. This evaluation was undertaken using classical test theory techniques. First, correlations among the 10 items comprising each scale were estimated. It was expected that scores from each item would be positively correlated. Second, the unidimensionality of each scale was assessed using a confirmatory factor analysis concurrently with a Promax factor rotation. It was anticipated that the 10 items included in each scale would correspond to one underlying construct. Third, the association between the two scales was evaluated with an anticipation that scales scores would be negatively correlated. Finally, the reliability of each scale was estimated using Cronbach's alpha. A Cronbach's alpha score of .70 or higher was used as a benchmark for acceptable reliability (see Nunnally, 1978).

The conceptual framework illustrated in Figure 2 was tested using path analysis with AMOS 26.0. Path analysis is a technique used to assess the effects of variables on specified outcomes by way of multiple recursive pathways (Population Health Methods, 2020, p. 1). The model was designed to assess associations rather than to document causality. An advantage associated with path analysis, compared to traditional regression techniques, is that a path model estimates the relationship between variables via path coefficients. This is accomplished by estimating several regressions simultaneously. This allows for the total variance in the model to be decomposed as indirect, direct, and total effects. For example, in the conceptual framework, expectation proclivity and disappointment aversion are hypothesized to be directly associated with risk aversion but indirectly related to financial risk taking. Results from the path analysis allow for the entire model, as well as individual variables in the model, to be evaluated. In this study, one absolute and two incremental fit indexes were used to evaluate the model fit. Specifically, the root mean square error of approximation (RMSEA) was used as the absolute fit criterion, whereas the normed fit index (NFI) and the comparative fit index (CFI) were used as the incremental fit criteria. Acceptability of the model was based on an RMSEA score of .06 or less and NFI and CFI scores of .90 or greater (Hu & Bentler, 1999). Based on the initial path model test, a specification search was conducted to identify the best fit model.

Results

Table 2 provides a descriptive overview of the sample. When viewed holistically, the sample was characteristic of relatively well-educated, high-income U.S. households. Those in the sample were middle-aged with relatively modest holdings in equities. The sample was also somewhat risk averse. Those in the sample scored above-average in terms of establishing expectations regarding future outcomes and near the average in respect to disappointment aversion.

Scale Validation

Several tests were conducted to determine the construct validity and reliability of the proposed expectation-proclivity and disappointment-aversion scales. Table 3 shows the correlation coefficients among the items comprising the expectation-proclivity scale. The items were positively and statistically significantly associated. These coefficients suggest that participants were relatively consistent when establishing expectations across scenarios, which is a sign of scale validity.

Table 4 shows the mean and standard deviation data for each item in the expectation-proclivity scale. In general, participants established above-average expectations about the possible uncertain outcomes associated with the 10 scenarios. Table 4 also shows the factor loadings for the scale items. The fourth column of the table shows the findings from the confirmatory factor analysis. The results, based on a principal components analysis, indicate a high degree of unidimensionality in the scale. Additionally, the last row of Table 4 shows the estimated reliability of the scale. The scale was found to be highly reliable (Cronbach's alpha = .912).

A similar set of analyses were conducted for the proposed disappointment-aversion scale. Table 5 shows the correlations among the items comprising the scale. The relationships among the variables were positive and statistically significant, which suggests that while there may have been some variability in the degree of disappointment felt by participants upon learning the outcome from a case scenario, in general, participants were relatively consistent in their feelings of disappointment.

Table 6 shows the descriptive statistics for the 10 items that comprise the disappointment-aversion scale. With a few exceptions, participants tended to exhibit above-average

TABLE 2. Sample Attitudinal and Demographic Characteristics

Variable	Percentage	*M* *(SD)*
Financial risk taking (equities ownership)		19.65 (27.77)
Financial risk aversion		6.37 (3.55)
Expectation-proclivity scale		615.43 (189.83)
Disappointment-aversion scale		26.27 (6.73)
Gender	50.8%	
Male (coded 1)	49.2%	
Female (coded 2)		
Age (years)		46.87 (17.24)
Household income	3.6%	
$0	15.9%	
Less than $20,001	10.2%	
$20,001–$30,000	5.4%	
$30,001–$40,000	5.6%	
$40,001-$50,000	7.9%	
$50,001-$60,000	6.7%	
$60,001-$70,000	6.5%	
$70,001–$80,000	5.6%	
$80,001–$90,000	5.4%	
$90,001–$100,000	27.2%	
Above $100,000		
Education	3.1%	
Some high school or less	20.1%	
High school graduate	22.2%	
Some college/trade/vocation training	9.2%	
Associate's degree	25.5%	
Bachelor's degree	19.9%	
Graduate or professional degree		

TABLE 3. Correlation Coefficients Across Items Comprising the Expectation-Proclivity Scale

	Exp1	Exp2	Exp3	Exp4	Exp5	Exp6	Exp7	Exp8	Exp9	Exp10
Exp1	1									
Exp2	.512**	1								
Exp3	.521**	.538**	1							
Exp4	.470**	.350**	.331**	1						
Exp5	.533**	.470**	.689**	.428**	1					
Exp6	.471**	.461**	.611**	.411**	.653**	1				
Exp7	.445**	.377**	.281**	.617**	.410**	.428**	1			
Exp8	.505**	.439**	.442**	.587**	.535**	.571**	.725**	1		
Exp9	.462**	.478**	.499**	.448**	.523**	.522**	.570**	.673**	1	
Exp10	.545**	.466**	.584**	.509**	.622**	.669**	.508**	.661**	.669**	1

**$p < .001$.

TABLE 4. Expectation-Proclivity Scale Descriptive Statistics and Components Matrix

Item	Mean	Std. deviation	Component
Exp1	62.98	24.69	.72
Exp2	63.49	27.31	.67
Exp3	72.53	23.56	.73
Exp4	51.62	27.72	.68
Exp5	68.35	21.53	.78
Exp6	66.31	24.13	.78
Exp7	48.75	27.97	.71
Exp8	56.85	25.78	.82
Exp9	61.18	26.78	.78
Exp10	63.38	23.82	.84
Cronbach's Alpha	.912		

TABLE 5. Correlation Coefficients Across Items Comprising the Disappointment-Aversion Scale

	Dis1	Dis2	Dis3	Dis4	Dis5	Dis6	Dis7	Dis8	Dis9	Dis10
Dis1	1									
Dis2	.446**	1								
Dis3	.401**	.587**	1							
Dis4	.326**	.416**	.443**	1						
Dis5	.258**	.286**	.262**	.189**	1					
Dis6	.331**	.484**	.511**	.390**	.297**	1				
Dis7	.361**	.424**	.433**	.388**	.335**	.420**	1			
Dis8	.372**	.435**	.405**	.407**	.322**	.439**	.493**	1		
Dis9	.320**	.486**	.487**	.398**	.301**	.519**	.461**	.477**	1	
Dis10	.337**	.336**	.242**	.361**	.337**	.350**	.365**	.429**	.356**	1

**$p < .001$.

TABLE 6. Disappointment-Aversion Scale Descriptive Statistics and Components Matrix

Item	Mean	Std. Deviation	Component
Dis1	2.39	.99	.61
Dis2	2.90	1.02	.74
Dis3	2.91	1.05	.73
Dis4	2.72	1.05	.65
Dis5	2.29	.80	.50
Dis6	2.76	.95	.72
Dis7	2.69	1.07	.70
Dis8	2.51	.98	.72
Dis9	2.86	1.09	.73
Dis10	2.25	.97	.60
Cronbach's Alpha	.865		

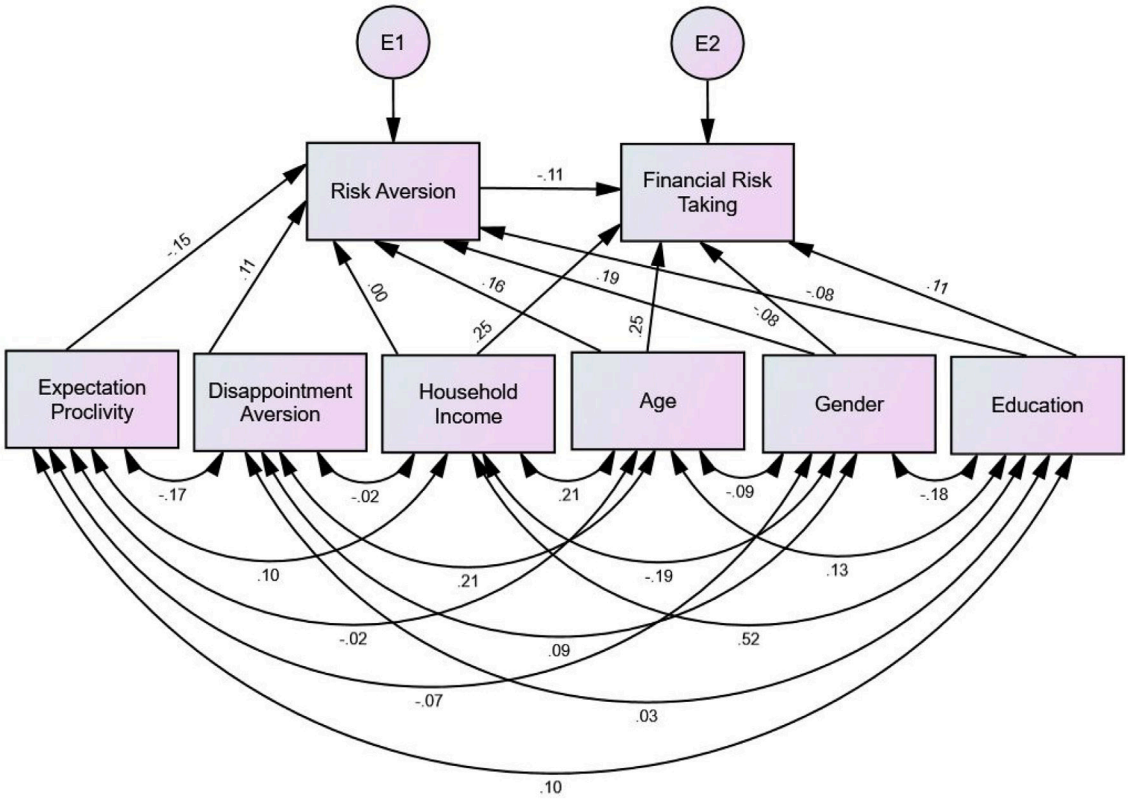
disappointment aversion across the 10 case scenarios. This level of consistency was highlighted in the confirmatory factor analysis. The factor analysis results, which were based on a principal components analysis, confirmed that the scale had a high degree of unidimensionality. The last row of Table 6 shows the Cronbach's alpha for the scale. The alpha score (.865) was indicative of a highly reliable scale.

When the correlational, factor analytic, and reliability estimate data are viewed together, the data suggest that both scales appear to offer unique insights when describing a decision-maker's expectation proclivity and aversion to disappointment. In confirmation with the discussion related to the conceptual framework, scores from the two scales were found to be associated ($r = -.174$, $p < .001$), with expectation proclivity setting an internal reference point from which scenario outcomes can be evaluated.

Test of the Conceptual Framework

Figure 3 shows the results from the path analysis test of the conceptual framework. The coefficients associated with each path in the model represent standardized regression coefficients. The circles with a single-head arrow represent error terms related to the endogenous variables. Each of the path coefficients was statistically significant at the $p < .05$ level, with two exceptions; namely, the path from household income to risk aversion was not significant. Similarly, the path from education to risk aversion was not statistically significant. The following four correlation associations also were not significant: Household income and disappointment aversion, education and disappointment aversion, gender and expectation proclivity, and age and expectation proclivity. This implies that scores on the expectation and disappointment-aversion scales were inconsistently associated with decision-maker characteristics. The overall fit of the model was assessed with NFI, CFI, and RMSEA. The

Figure 3. Test results associated with the conceptual framework using a path analysis.



Note. All relationships were statistically significant at the $p < .05$ level except for the associations between household income and risk aversion, education and risk aversion, household income and disappointment aversion, age and disappointment aversion, gender and expectation proclivity, and education and expectation proclivity.

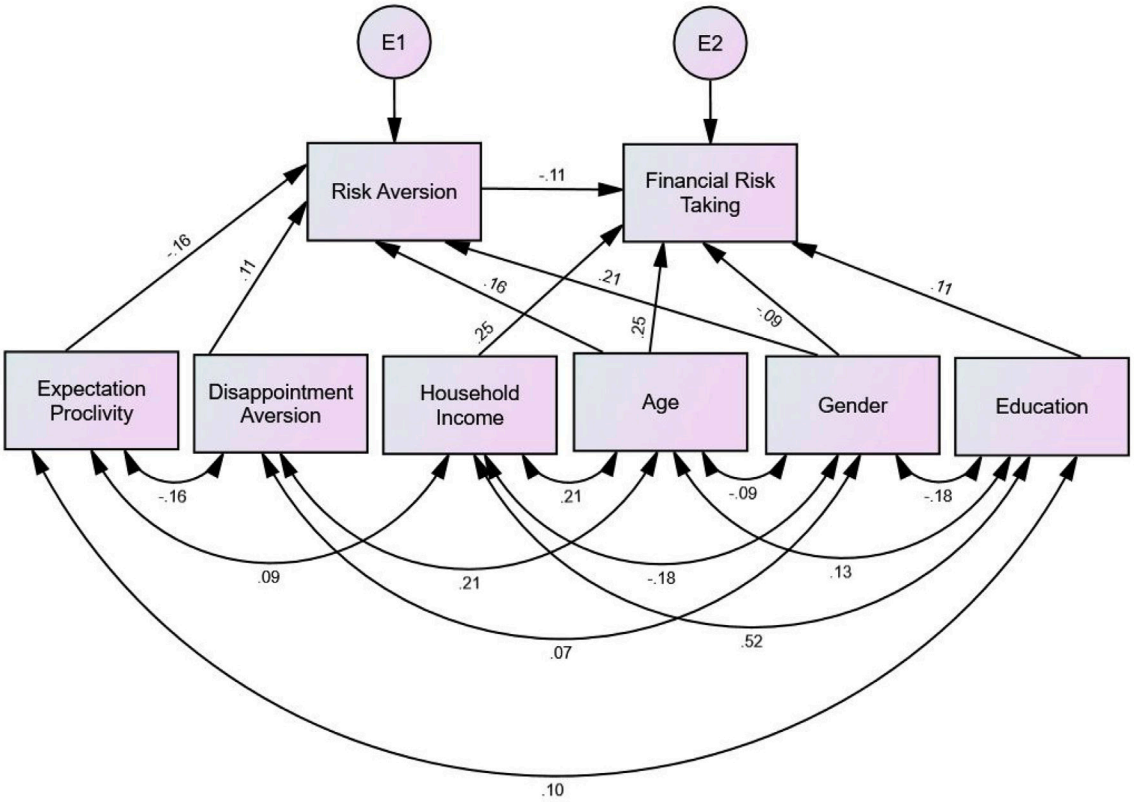
model was found to be relatively robust with NFI and CFI scores of .981 and .984, respectively. RMSEA was estimated to be .083.

Although the data were shown to fit the conceptual framework, a specification search was used to refine the framework in order to obtain the best fit model. The results from the specification search are shown in Figure 4. All of the path coefficients, and the correlation associations, were statistically significant in the specified model. While the NFI and CFI fell slightly to .966 and .981, respectively, the RMSEA was significantly improved, reducing from .083 to .045.

Another outcome associated with the use of path analysis is the identification of indirect, direct, and total effects across the variables in a model. Table 7 shows the effects of the exogenous variables on the two endogenous variables.

The total effect of expectation proclivity and disappointment aversion on financial risk taking (i.e., ownership of equities) was through an indirect path through financial risk aversion. Those who established high expectations were more likely to invest a greater percentage of their portfolio in equities. However, those who exhibited high disappointment aversion were less likely to take financial risks.

Figure 4. Specified framework.



Note. All relationships were statistically significant at the $p < .05$ level. The specified model illustrates how financial risk aversion was related to financial risk taking and how expectation proclivity and disappointment aversion were associated with financial risk aversion. Support was found for the first research hypothesis, which stated that financial risk aversion is negatively associated with equity ownership. Support was also found for the other research hypotheses. In alignment with the second hypothesis, those who presented higher levels of disappointment aversion were found to be more risk averse. Those who established higher expectations across the scenarios were found to be less risk averse, which aligned with the third hypothesis. Finally, the association between expectation-proclivity and disappointment-aversion scale scores was found to be negative. This result provided support for the fourth research hypothesis.

TABLE 7. Indirect, Direct, and Total Variable Effects

Endogenous variables	Disappointment aversion	Expectation proclivity	Age	Gender (1 = male; 2 = female)	Household income	Education	Financial risk aversion
Indirect effects							
Financial risk aversion	.000	.000	.000	.000	.000	.000	.000
Financial risk taking	−.012	.018	−.018	−.023	.000	.000	.000
Direct effects							
Financial risk aversion	.107	−.161	.155	.206	.000	.000	.000
Financial risk taking	.000	.000	.249	−.086	.250	.111	−.111
Total effects							
Financial risk aversion	.107	−.161	.155	.206	.000	.000	.000
Financial risk taking	−.012	.018	.231	−.109	.250	.111	−.111

Age was found to be positively associated with risk aversion and risk taking. Income and education were not directly associated with risk aversion but were positively related with financial risk taking (i.e., ownership of equities). Female participants were significantly more likely to exhibit greater risk aversion and report lower equity holdings. Finally, as noted previously, the association between financial risk aversion and financial risk taking was negative.

Discussion, Limitations, and Implications

Discussion

The purpose of this study was multifaceted. One purpose was to introduce two interrelated measures: The expectation-proclivity scale and the disappointment-aversion scale. Another purpose was to establish the empirical association between expectation-proclivity and disappointment-aversion scale scores and financial risk aversion. This study also was designed to describe the relationship between financial risk aversion and investing behavior, controlling for four decision-maker characteristics.

Support for the conceptual framework was obtained from a series of path analysis tests. It was determined that financial risk aversion was, among participants in this study, negatively associated with equity ownership. This finding was not unexpected, as this is the relationship that is most commonly reported in the literature. It was also noted that disappointment aversion was positively associated with financial risk aversion, whereas establishing high expectations was negatively related with financial risk aversion. Disappointment aversion and expectation proclivity were found to be inversely related. In alignment with Lurtz et al. (2021), findings from the present study suggest that financial decision-makers establish expectations and their acceptable level of disappointment, in the context of risk taking, using a broader perspective than stated probabilities.

The final specified framework shown in Figure 4 provides support for the notion that the degree to which a decision-maker exhibits financial risk aversion is associated with the decision-maker's expectations regarding outcomes of a decision—potentially a subjective reference point—as well as the decision-maker's aversion to disappointment. As conceptualized, these two constructs act indirectly through risk aversion in describing risk-taking behavior. Other variables of importance in the final specified model included age, gender, household income, and education. Age and being female were found to be positively associated with financial risk aversion. This pattern of association reflects what has been reported in the previous literature. Neither household

income nor education had a direct association with financial risk aversion, although these two variables were found to be associated with financial risk-taking behavior. In the case of education, those with a higher level of education reported holding more equities in their portfolios. Household income was found to be positively related with financial risk taking, with higher-income households holding a greater percentage of equities in their portfolios.

The findings from this study are noteworthy in two respects. The first is that it appears expectation proclivity and disappointment aversion can be assessed using scaling techniques. The two interrelated scales that were developed for this study showed strong validity and reliability. Both were also found to be related to the construct of financial risk aversion. Future research should consider the inclusion of these or similar assessment items when the goal of a study is to determine the degree to which a decision-maker is risk averse. The second noteworthy outcome is that expectation proclivity and disappointment aversion do appear to be related to the concept of risk aversion. Disappointment is rarely considered in studies that examine financial risk taking. Results from this study suggest that this may be an oversight that is reducing the amount of explained variance in some tests.

As noted in this study, disappointment, as an anticipatory emotion, appears to be an antecedent of behavior. In alignment with the literature that shows that financial decision-makers perceive risk through diverse lenses (Lurtz et al., 2021), it does look as if decision-makers consider how much disappointment they are willing to endure before making a decision. A key element associated with this calculus is the establishment of expectations related to the decision scenario. Disappointment and expectations are not interchangeable but these two constructs do appear to be estimated concurrently. While common wisdom says that a decision-maker should dampen expectations, this advice tells only half of the story. The degree of disappointment aversion exhibited by a decision-maker appears to be an important input when establishing expectations.

This leads back to the disappointment dilemma hypothesis. It does appear that investors who are averse to disappointment are less willing to take financial risks. This higher degree of risk aversion was shown in this study to be negatively associated with equity ownership. While this type of behavior likely removes elements of distress for a risk-averse investor in the short run, especially during periods of high equity price variation or losses, it also makes it more likely that the investor may feel regret in the future. This feeling of regret could stem from several sources. One source of regret could arise when a disappointment-averse investor achieves returns that fall below previously established expectations. Regret could also emerge when market returns exceed expectations, as well as the investor's portfolio, with less variability. This later form of regret should be anticipated, given that price variability tends to fall over time. Another source of regret is that sometime in the future, the investor may look back and wish that they had taken more portfolio risk.

Limitations

As with all exploratory studies, the research presented here was conducted with limitations. For example, the sample, while representative of those who are likely to make an investment decision, is not generalizable to the U.S. population. The sample tended to be older, better educated, with more financial resources compared to the average U.S. citizen. Another limitation is that some variables known to be associated with financial risk aversion and financial risk-taking were omitted from the path analysis. While it is possible to create very large path models, the choice to limit the use of control variables was based on the research purpose and inherent limitations associated with sample size. Rather than being a study focused on identifying the determinants of risk aversion and risk taking, this research was directed at estimating the effects of expectation proclivity and disappointment aversion. Nonetheless, future studies should expand the number and variety of control variables used when attempting to explain financial risk-taking behavior.

Implications

Even in the context of these limitations, findings from this study have research and practice implications for those interested in financial counseling and planning topics. When working with clients, for example, a financial counselor should be certain to acknowledge the possible roles that expectation proclivity and disappointment aversion can play in shaping the types of decisions made by clients. Clients who consistently establish high outcome expectations should be expected to exhibit a greater willingness to take financial risk, and in practice, take more risk. On the other hand, clients who exhibit greater disappointment

aversion should be expected to exhibit greater risk aversion, and when asked to take financial risk, shy away from implementing decisions where high decision-outcome variance may occur. The net effect is that financial counselors and financial planners should anticipate that clients who establish low outcome expectations will be more likely to exhibit disappointment and risk aversion. This insight can be used to frame recommendations made to clients. It is possible, when appropriate, to help risk-averse clients reframe expectations in a way that induces a greater willingness to take a risk. It may also be possible, over time, to help certain clients better understand how anticipatory emotions influence decision making, and that in some situations, anticipatory feelings of disappointment and regret may lead to a future dilemma. With this in mind, a financial counselor or financial planner may find it useful to engage risk-averse clients in discussions about the long-term possibility of generating feelings of regret resulting from establishing expectations that are too low in the present. While this approach may help a disappointment-averse client feel better in the short run, it is possible that this client may feel worse in the future when they evaluate the true outcomes associated with decisions that are unduly influenced by shorter-term anticipatory feelings of disappointment.

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Appendix.
Disappointment Aversion and Expectation Proclivity Scales

Each of the following case scenarios has two elements. The first element is a brief narrative. Survey participants are asked to indicate their level of expectation associated with each situation. This is followed by the case scenario outcome. This second element asks a survey participant to choose a statement that best matches their feeling based on the new information. Scores across each element are summed to create the disappointment-aversion and expectation-proclivity scale.

Case Scenario	Score
(1) Expectation. Recently, you learned from your financial advisor that the stock market has historically returned 9.50% on an annualized basis. After reviewing your portfolio (which is a sizable portion of your net worth), your advisor indicated that you should be earning the same return. Based on this information, what is your expectation about earning 9.50%?	0 (no expectation) to 100 (very high expectation)
(1) Disappointment. Unfortunately, your portfolio has actually returned about 2.00%, which is close to what you could have earned in a bank account. Which of the following statements best describes your feeling after learning that you have been underperforming the market?	
a. I am not disappointed because things could have been worse.	1
b. I am somewhat disappointed, but I will continue to invest in the stock market.	2
c. I am disappointed and will move money from stocks to less risky investments.	3
d. I am very disappointed and will likely avoid making similar investments in the future.	4
(2) Expectation. Imagine that your good friend asks to borrow a significant amount of money from you. What is your expectation about getting repaid if you decide to lend the money?	0 (no expectation) to 100 (very high expectation)
(2) Disappointment. It turns out that you did lend your friend the money. Over the next year, your friend made promises that the loan would be repaid soon. Finally, yesterday your friend told you that there was no way the loan can be repaid. How do you feel?	
a. I am not disappointed because these things happen.	1
b. I am somewhat disappointed but if my friend asked me, I would loan the money again.	2
c. I am disappointed, and will be more careful about whom I loan money to.	3
d. I am very disappointed and will probably never loan money to a friend again.	4

(*Continued*)

Case Scenario	Score
(3) Expectation. Last week a new restaurant opened in your hometown. Your friends are excited to try the food because the chef has an excellent reputation. After several weeks of trying, you are able to get a reservation. You notice that the menu items are very expensive. What is your expectation regarding the quality of the food and service?	0 (no expectation) to 100 (very high expectation)
(3) Disappointment. After finishing your meal, which did in fact cost a considerable amount of money, you conclude that the service and quality of food was really poor. Based on your experience, how do you feel?	
a. Although I am somewhat disappointed, I am looking forward to going back to try other menu items.	1
b. Even though I am disappointed, I may go back in the future once the restaurant gets issues related to service and food fixed.	2
c. Given my level of disappointment, big changes would need to happen before I go back.	3
d. Given my high level of disappointment, it is unlikely I will ever return to the restaurant.	4
(4) Expectation. Whenever you visit a casino you budget $500 to play roulette. Although you know it is possible to lose 100% of your gambling budget, you typically leave the casino with an amount equal to or more than your budget. Assume you visit a casino today. What is your expectation about leaving the casino with $500 or more?	0 (no expectation) to 100 (very high expectation)
(4) Disappointment. Unfortunately, this trip to the casino turned out badly. You ended up losing not only the $500 but an additional $1,000 that you withdrew from an ATM. Which of the following statements best describes your feeling?	
a. I am not disappointed; after all, sometimes you win and sometimes you lose.	1
b. I am somewhat disappointed; I will return soon to win the money back.	2
c. I am disappointed; it is going to be quite a while before I return to the casino.	3
d. I am very disappointed; it is very unlikely that I will go gambling again.	4
(5) Expectation. Imagine a new movie is released featuring your favorite actor. You want to be among the first to see the movie, so you plan a night out that includes dinner and the movie. What is your expectation regarding the movie?	0 (no expectation) to 100 (very high expectation)
(5) Disappointment. The movie turns out to be terrible. The acting is bad and your favorite actor's performance falls far below what you had hoped for. How do you feel?	
a. I am a bit disappointed; even so, I can't wait for the next movie starring my favorite actor.	1
b. I am somewhat disappointed; I will wait to read reviews before choosing my next movie with this actor.	2
c. I am disappointed; I will not go out of my way in the future to watch movies that feature this actor.	3
d. I am very disappointed; I will avoid other movies with this actor.	4

Case Scenario	Score
(6) Expectation. You are considering purchasing an electric vehicle. You have never owned an all-electric car or truck, but from what you have heard, all-electric vehicles tend to be safe, inexpensive to operate, and fun to drive. Based on the recommendation of a family member, you decide to purchase an all-electric car. What is your expectation regarding the car's quality?	0 (no expectation) to 100 (very high expectation)
(6) Disappointment. Sadly, it turns out that there were significant problems with the battery, which made it impossible to drive long distances at a high speed. After several unsuccessful attempts to fix the problem, you ended up selling the vehicle for a loss. Which of the following statements best represents your feeling?	
a. I am not disappointed, after all, this is a new technology and there are sure to be problems.	1
b. I am somewhat disappointed but I will shop for another all-electric vehicle.	2
c. I am disappointed and until the technology gets better, I will avoid all-electric vehicles.	3
d. I am very disappointed and will probably never buy another all-electric car.	4
(7) Expectation. Your trusted neighbor and friend has been telling you about how much money he is making investing in crypto-currencies. You are not very familiar with these investments, but the way your neighbor talks about his profits has prompted you to thinking about also making an investment in crypto-currencies. What is your expectation about making money with this investment?	0 (no expectation) to 100 (very high expectation)
(7) Disappointment. It has been nearly a year since you made your initial investment. Unfortunately, during that time, the value of crypto-currencies has fallen by 50%. Which of the following statements describes how you feel?	
a. I am not disappointed because, after all, all investments go up and down in value.	1
b. I am a bit disappointed but I see this as an opportunity to invest in more crypto-currencies.	2
c. I am disappointed and will just cut my losses and sell the investment.	3
d. I am very disappointed and will never invest in crypto-currencies.	4
(8) Expectation. You were recently given an opportunity to purchase shares in an initial public offering. The buzz surrounding the company has been very positive. You don't have the full amount needed to make the investment, but you know that you can borrow money from a relative to fund the purchase. What is your expectation about making with this investment?	0 (no expectation) to 100 (very high expectation)
(8) Disappointment. Based on your analysis, you went ahead with the purchase. Shortly after making the investment, the share price jumped by 25%, but by the end of the year, the stock's price, based on bad sales news, was down 60%. How did this make you feel?	
a. I am not disappointed because making an investment like this entails risk.	1
b. I am somewhat disappointed but that will not stop me from investing in another initial public offering.	2
c. I am disappointed and I will need to really be convinced on an initial public offering's chance of success before making a similar investment.	3
d. I am very disappointed and will avoid making investments in initial public offerings in the future.	4

(*Continued*)

Case Scenario	Score
(9) Expectation. You just learned that your favorite band is going to play a one-time show one week from today. Unfortunately, you also learned that the show is sold out. You really want to go, so on the day of the show you purchase a ticket from someone selling tickets on the street. The person who sold you the ticket said that you would be on the floor and close to the stage. What is your expectation about having an enjoyable experience at the concert?	0 (no expectation) to 100 (very high expectation)
(9) Disappointment. It turns out that you did purchase the ticket. You paid several hundred dollars in cash to the seller. Once you got into the venue, however, you found out that your seat was in the last row of the top balcony. You could barely see the band. Even worse, being up so high distorted the band's sound. How did you feel after the show?	
a. I was not disappointed because I got to see my favorite band.	1
b. I was somewhat disappointed, but I would still buy tickets on the street to see this band again.	2
c. I was disappointed and will be really careful before buying tickets from someone on the street.	3
d. I was very disappointed and will never buy tickets from someone on the street.	4
(10) Expectation. Based on the advice of your financial advisor, you purchased 1,000 shares in a high quality dividend-paying stock. Your financial advisor indicated that in addition to receiving dividends on a regular basis, the stock price should increase over time. What is your expectation about making money with this investment?	0 (no expectation) to 100 (very high expectation)
(10) Disappointment. You have now held the stock for five years. During that time, you did receive dividends but the price of the stock is almost exactly the same as when you made your initial purchase. Based on your experience, how do you feel?	
a. I am not disappointed because at least I received dividends.	1
b. I am somewhat disappointed, but I will continue to hold the stock.	2
c. I am disappointed and will sell the stock and buy stock in another high-quality stock.	3
d. I am very disappointed and will avoid similar stocks recommended by the financial advisor in the future.	4