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THE EFFECTS OF EMOTIONS ON RISK AVERSION BEHAVIOR

Selim AREN * & A. Berrak KÖTEN **

** Prof. Dr. Yildiz Technical University, Faculty of Economic and Administrative Science Business Administration, TURKEY, e-mail: saren@yildiz.edu.tr*
ORCID ID: https://orcid.org/0000-0003-1841-0270

*** Istanbul Kultur University Vocational School*
Public Relations and Publicity Programme, TURKEY, e-mail: a.koten@iku.edu.tr
ORCID ID: https://orcid.org/0000-0002-5680-9920

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ABSTRACT

This study investigates the effects of basic emotions like fear, sadness, anger, and hope on risk aversion and the intent to make a risky investment. The data used in the study in 2017 were obtained through convenience sampling. A relationship was found between fear and risk aversion and between risk aversion and the intent to make a risky investment. Both objective and subjective financial literacy affect the relationship between fear and risk aversion, while the latter significantly affects sadness. The study makes an important contribution to the literature on the effects of basic emotions on risky investment intent.

Keywords: *Risk aversion, risky investment intention, fear, hope, sadness, anger*

Jel Kodes: *D14, M21*

1. INTRODUCTION

As the studies on behavioral finance increased, and as they were published frequently in respected journals, the fact that investors did not make decisions only by rational principles was accepted. Another important contribution of behavioral finance studies was that they revealed the effect of emotions on financial decisions. In our present time, emotions are not considered as variables disrupting financial decisions, and therefore should be excluded in the decision-making process. Emotions that are properly managed may help to make better decisions; however, false emotional awareness and dealing with them in an unsuitable manner in decision-making process may have negative outcomes.

Affect, which refers to emotional experience, includes feelings, moods and attitudes. Strong affective heuristics may change the decision as well as the evaluation process. For this reason, not only the feelings, but also the mood, personality traits, attitudes and emotional experiences of the decision-maker are important on the decision.

Affective heuristics are useful and functional especially in complex situations. The individual produces several labels (i.e. tags) with the affective heuristics s/he has. These tags generate shortcuts about the decision variable. For instance, the tags like "*The X firm is modern, innovative, promising and exciting*", or "*The Y firm is traditional, conservative, antiquated and boring*" are the determinants for the decision. The tags are valuable for decision-maker since they simplify and accelerate the decision process, and eliminate the uncertainty and the stress that is related to it. However, for the purpose of making an accurate decision, the intuition (which is used as knowledge) must be merged with the mind in an accurate way. When this agreement is ensured, the decision-maker will have an effective evaluation and judgment process. In this respect, the ideal financial psychology is ensured by the individual's knowing himself/herself and by controlling his/her emotional motives.

A person's feelings that stem from his/her mood or living conditions or from other persons or nearby objects are called "emotions." Psychology-based studies and behavioral finance literature classify emotions into two groups: *positive* and *negative emotions*. However, different cultures may vary in the perceptions of some emotions (such as anger) as positive or negative. In general, while Western culture regards anger as *an emotion related to obstacles hindering the realization of a goal*, which is a positive interpretation; Eastern culture regards it as a *loss of control*, which is a negative interpretation.

Although there are such differences, emotions are considered to have positive or negative effects on financial decisions. This aspect has been investigated in recent years. The effect of emotions on financial decisions is generally considered to have two dimensions. The first dimension stems from the individual's mental state and/or conditions at the moment a decision is made; the second represents the feelings about, past memories of, and experiences with financial assets or financial decision-making problems.

Investigations have revealed that people's financial risk perceptions and financial decisions differ depending on whether the events immediately prior to making a financial decision make them feel happy (e.g., news of the birth of a child or grandchild), or make them feel unhappy (e.g., news about the death of a relative). Similarly, it has been observed that individuals who made a profitable investment in a certain financial instrument and thus were able to obtain a desired possession like a home or a car may evaluate that instrument as good in the future. However, those who have lost money from their investments and therefore suffered a loss, such as having to cancel a planned vacation, may evaluate that investment instrument as bad in the future. Financial instruments that have enabled the fulfillment of other needs in the past and thus evoked positive feelings are considered to be worth investing in again, even if they have high risk and low return. On the other hand, if current *very good investment*

instruments -which deliver good returns- caused a financial loss to an investor in the past, the investor is likely to evaluate them negatively. The ability of people's emotions to influence their investment decisions has attracted the interest of researchers in the field of behavioral finance in recent years, which has led to multi-dimensional evaluations.

The relationship between risk aversion and the intent to make a risky investment is another aspect that is as prominent as that of emotions. While at first glance these two variables are considered to be highly related, they do not always have common characteristics. Individuals' risk perception is not independent of time, mood, or the subject matter to be decided. The differentiation of time and mood was emphasized in the previous section. The item that is the focus of the decision creates at least as much difference as the other two risk assessments. The risks that a person takes when participating in an extreme high-adrenaline sport, agreeing to undergo a life-threatening surgery, being aware of the possibility of death in service to one's country, and investing in a high-risk financial asset cannot all be evaluated with the same risk paradigm. Each individual may have various assumptions regarding these risks. A person who is not concerned about engaging in dangerous sports may not tolerate the loss of money, and may not consider investing in almost risk-free financial assets. On the other hand, people who make risky investment decisions may not entertain any health-related risks. For this reason, the risk aversion behaviors of individuals and their intent to make risky investments are not necessarily negatively related. Therefore, this research studies this relationship after investigating the emotional aspects. The investigation of this relationship and the examination of the effects of emotions on both these variables will contribute valuable findings to the literature.

Finally, another important variable to consider is an individual's objective and subjective financial literacy level. Studies on financial literacy have rapidly grown over the last twenty years, with many examples in Turkish literature. However, almost all of these studies measured objective financial literacy. This variable, which is defined by other variables, refers to the level of financial information possessed by an individual. However, in recent years, the subjective financial literacy criterion has attracted the attention of behavioral finance researchers -that is, how an individual self-assesses his/her knowledge level. An important contribution of our study to the literature is that it investigates the relationship between these two financial literacy criteria, as well as their effect on the relationship between emotions, risk aversion behaviors, and risky investment intentions.

With all these considerations, this study provides important and pioneering findings. The remainder of this document is structured as follows: Section 2 outlines the conceptual framework and theory development of the study, and Section 3 describes the research method. Section 4 contains the results and discussion, and Section 5 concludes.

2. CONCEPTUAL FRAMEWORK AND THEORY DEVELOPMENT

2.1. Emotions and decision-making

Cognition is an individual's conscious mental activity, which is activated by paying attention to an event or phenomenon. The information about such an event is evaluated alongside past information and experiences, and a cause-effect relationship is established. Emotions are the experiences that are produced through activation of the mind, considered to be conscious, and give feelings of satisfaction or dissatisfaction. For emotion to emerge, the sensory organs must first sense a physical stimulation. Emotion is shaped by past experiences, which become meaningful and are observed as behavior. Kahneman and Tversky (1979) documented the effects of emotions on financial decision-making. Behavioral finance presents cognition and emotion as two influencing variables in the decision-making process. However, as Herbert (2018) claimed, the difference between these two is not as clear as it may be implied

by their definitions, and their effects are not limited to risky financial decision-making. Instead, they also influence personality and mood, which collectively have an impact on financial decision-making (e.g. Aren and Aydemir, 2014; Kalabalık and Aren, 2018; Meşe and Aren, 2018).

2.2.Risk

Risk is the possibility of different future outcomes, stemming from an expected situation. When individuals make decisions under risk, they refer to their past knowledge of the event, their ability to evaluate this information, and their past experiences. Although information is considered an *objective reality*, this is not completely true. The issue of which pieces of information -which may or may not affect the outcome of the event- will be taken into account and how these are weighed are determined by perceptions (note that a person has the ability to evaluate only eight pieces of information at the same time). Similarly, evaluating the experiences and abilities of an individual is an entirely subjective process. For this reason, the risk analysis and risk perceptions of an individual are not objective. In other words, personality traits differ from situation to situation and from time to time.

From a financial viewpoint, a risk is the deviation from what is expected. The Neoclassical Approach to finance foresees that individuals have a consistent approach for risk and return, and will prefer the highest return at the acceptable risk level, or the lowest risk at an acceptable return level.

However, in real life, as Nicholson et al. (2005) and Chu et al. (2017) stated, the same people may take bigger risks in some cases, and in some cases, they would not even want lower risks. There are several reasons to this: As Aren and Zengin (2016) stated, their information on investment might affect their risk preferences, or evaluating the success chance of the investment in a different way (Schoemaker, 1993), or their past risk-taking behaviors (Nicholson et al. 2005) might affect their preferences.

For this reason, it is not accurate to explain the decision about risks only with return. Perceptions have more importance in terms of directing towards risky behavior or not (Hoffmann et al. 2015); and as the perception increases, the probability of risky behavior decreases (Machin and Sankey, 2008). Similarly, as the feeling of optimism dominates, the desire for risk increases (Sjöberg and Engelerg, 2009).

In addition, as Aren and Zengin (2016) stated, demographic characteristics and personality traits are also important in risk perception, and therefore, in risky behavior. In this respect, Aren and Zengin (2016) reported that age and gender affect the risky investment preference. Young people and men desire more risks. Grable (2000) emphasizes that the risk desire increases as the income and education levels increase. Similarly, Akhtar et al. (2011) detected a relation between education and risky investment. Bannier and Neubert (2016) explained the differentiation in risky investment according to gender with low data.

Aren and Zengin (2016) emphasized the demographic characteristics in the risky investment preference. Studies dealing with this aspect are relatively few in number. In this respect, Carducci and Wong (1998), Soane and Chmiel (2005), Dohmen et al. (2011), Durand et al. (2013) Tauni et al. (2017) also stated that personality traits affected risk desire. As a result, financial risk is different from the general risk concept, in which losses of security, nutrition, status, and similar factors are more important than a monetary loss (Herbert, 2018). For this reason, the concepts of risk taking and risky financial investment decisions are two variables that must be evaluated separately (Aydemir and Aren, 2017).

2.3.Anger and fear

Anger is the reaction of an individual to a perceived danger to his/her environment, or to him/her. Threat perception may be real or may exist only in the mind of the individual. However, regardless of whether it is real or imaginary, the individual experiences physical and psychological reactions to these threats. Carrión (2012) claimed that Clausen, who considered this topic, distinguished between active and passive anger-based reactions. The active response is verbal or physical, while the passive response is emotional. The emotional response is mostly related to interpreting and evaluating events. Based on this, Carrión (2012) emphasized that anger may be related to one single event, or to an interpretation of the world in general, and that these two should be considered differently.

DeSteno et al. (2000) reported that negative feelings such as anger could cause risky behaviors and have destructive consequences, compared to positive feelings. By referring to a study conducted by Baumeister et al., Park and Lee (2011) explained that individuals have a habit of changing a negative situation (i.e., a threat) by losing control and moving to risky behaviors without considering the risk/return relationship. In this respect, Lerner and Keltner (2001) stated that anger is the cause of a loss of control. A number of findings show that anger increases risk appetite (e.g., Lerner et al., 2015; Habib and Cassotti, 2015; Ferrer et al., 2016). Ferrer *et al*. (2016) approached anger from a gender-based perspective, and found that anger resulted in different risk appetites for men and women. In their experimental study, they showed that men had the tendency to move toward risky behaviors when they were angry, whereas women were less inclined to take risky actions because they were able to control their anger. On the other hand, Eagly and Wood (1999) stated that the anger–risk relationship cannot be gender-biased, but that it might be related to cultural norms, and thus claimed that differences may be seen among societies. In this respect, while Eid and Diener (2001) stated that anger was a useful and positive feeling when expressed in an accurate manner, Li (2011) stated that anger was accepted as a negative feeling in the Chinese culture.

Indeed, fear and anger are very close to each other. Fear, like anger, is the psychological and physiological response when an individual perceives some kind of danger. However, the physiological reactions of an individual when s/he is afraid and when s/he is angry (body temperature, heart rate, etc.) are different. Another equally important difference is that the threat must be realized for anger to manifest. Fear appears when there is a possibility that the danger might appear in the future. For this reason, unrealized threats cause fear, while realized threats cause anger.

In general, it is accepted that fear affects judgment and reasoning, and causes short-term thoughts. The people who are afraid cannot assess the situation they are in and their own status with an objective viewpoint. However, it is seen that they are unbiased and objective when they assess the fears of others. For this reason, it is seen that investors, who do not feel fear in a medium in which fear is dominant, make more robust decisions, and make use of investment opportunities. It is interesting that fear is associated with genetics and experience. For this reason, the thing here is the fact that investors are conditioned against fear. This situation requires psychological treatment; and in case it is not treated, it may have long-term outcomes on the investor's decisions. The fear sense is related closely to the project in bias that is mentioned in behavioral finance. According to this bias, investors reflect their current feelings to future; and for this reason, and an investor who is captured by this "*flood of feeling*" fears and does not have the courage and ability to make use of the decreasing prices in the market.

Although the effect of fear on risk-taking behavior is generally accepted, no absolute consensus on its direction has been reached. Based on the mood maintenance hypothesis, Conte et al. (2018) suggested that sad, angry, and scared individuals were more likely to take risks

than those who were in a neutral state. According to the relevant hypotheses, emotions include the desire to maintain positive situations, and the desire to mitigate the effects of negative events. Based on this, they assert that people who experience negative feelings such as fear will prefer risks. However, many other researchers—for example, Lerner and Keltner (2001), Crisan et al. (2009), Nguyen and Noussair (2014), and Stone et al. (2017)—found a negative relationship between fear and risk aversion. Although Campos-Vazquez *et al.* (2014), on the other hand, accepted the *reverse relationship*, they could not obtain any findings in their study. Approaching the topic in the context of insurance, Camerer (2013) emphasized that people who were afraid were insured, paying a price to avoid risks.

Kugler et al. (2012) made an important contribution by indicating that the effect of emotions on risk-taking or risk-averse behavior depended on the level and degree of uncertainty of the decision makers. For this reason, these relational findings of differing directions may be due to the source and severity of the uncertainty experienced. In this respect, Lee and Andrade (2015) tested the effect of fear on risk-appetite behavior in two differently designed experiments. In gambling, where excitement is in the foreground, fearful individuals wanted to take risks, while in a situation such as investing in the stock market, fear caused risk aversion.

2.4. Sadness, depression, and hope

Sadness is the feeling experienced by an individual because of suffering or loss. It is relatively short, healthy, and is experienced consciously. Another state of emotion that is often confused with sadness is depression, which is unconscious, long-term, and unhealthy. Sadness is a feeling that exists in the normal course of life. Just like fear and anger, sadness is a subject that is frequently investigated for its effects on risk-taking behavior.

Leith and Baumeister (1996) described sadness as a negative mood, and claimed that it reduced risk appetite. However, they also emphasized that a risky investment alone could not affect the intent to invest. However, Li (2011) conducted a study on Chinese entrepreneurs and found that sadness reduced the chances of starting a new venture. Similarly, Murgea (2016) emphasized that sadness induced individuals to act in a cautious manner. Similar to Leith and Baumeister (1996), Scheibehennea and Von Helversen (2015) described sadness as a negative feeling. However, they also differentiated it from anger. Compared to anger, sadness causes weaker stimulation and a stronger desire to control. Szasz et al. (2016) evaluated sadness and anger simultaneously; however, they indicated that the sadness–risk relationship was weaker than the anger–risk relationship. Rajagopal and Pham (1999) approached sadness from a different angle, and stipulated that sadness is caused by the loss or destruction of something worthy; because of this, the person who wants to compensate for a loss would be susceptible to the need for a reward, and would take more risks.

Hope is having a desire for the realization of an expected future goal. In this respect, hope is a concept that is different from mood. Because mood is related with the "present time"; however, hope is directed to the future. Snyder et al. (1991) claimed that hope has two components: the mental capacity to find various ways to achieve a desired outcome, and the motivating factors associated with achieving targets (Edwards et al., 2007). Reimann et al. (2014) emphasized that hope is not *optimism*, and that despair is not *pessimism*.

Another feeling that is related to hope is fear. Sometimes it is believed that if there is hope, there will be no fear or hopelessness. This is not true. Fear and hope are feelings that are inversely related with one another; however, they can also exist simultaneously. An investor who has a hope that company shares he invested in will have high returns in the future might also feel fear due to the fluctuations in the market and the unpredictable behaviors of other investors. With this mood, the same investor may have both fear and hope simultaneously.

Foo (2011) reported that hope raised risk perception. Hayenhjelm (2006) associated this with a current situation, and stated that if a current situation were negative, and if the desired outcome was unlikely to be obtained, the individual would take the risk with hope. In contrast, Reimann *et al.* (2014) associated enhanced risk perception with the future. If there is a threat to the desired future situation, the risk might be taken, but if there are no threats, the risk would be avoided.

2.5.Financial Literacy

Financial markets have become accessible for individual investors in the whole world (Lusardi and Mitchell, 2014). However, this situation has also given them the responsibility for understanding and assessing the complex financial instruments (Rooij et al. 2011; Lusardi and Mitchell, 2014). Especially the recent financial crisis has indicated the importance of this skills of understanding and evaluation for individuals (Aren and Aydemir, 2014). For this, education is a beneficial tool (Letkiewicz and Fox, 2014). However, the general education level is not always an influential factor (Aren and Zengin, 2016). The thing that is actually needed is financial literacy (Chu et al., 2017).

Financial literacy means having the information on understanding financial assets, and risk and its return assessments (Singh and Sharma, 2016). Financial information, on the other hand, is the knowledge that is learnt and organized on market and products (Wang, 2009). However, this information is separated into two groups as objective and subjective ones. While objective information is the one whose accuracy is certain, the subjective one is the one that is believed to be true and to be owned. These two pieces of information might affect behaviors in different ways (Wang, 2009). For this reason, the increase in information does not guarantee better decisions. Psychological factors are included in this respect (Robb, Woodyard, 2011).

For this reason, the thing that is important is the ability to use the information, in other words, financial literacy rather than the information. While in wrong financial decisions, the effect of low financial literacy is seen (Brounen et al., 2016), as the level of financial literacy increases, the quality of decisions also increases (Wang 2009; Bhushan and Medury, 2013). Meanwhile, financial literacy increases participation in markets (Rooij et al., **201**; Chu et al., 2017), the investment preference and risk perception (Aren and Zengin, 2016); which in return, increases the return expectation and the possibility to succeed in it (Clark et al., 2015; Chu et al., 2017).

3. RESEARCH METHOD

3.1.Aim, sample, and variables

The aim of this study is to determine the effects of different emotions on risk aversion behavior and on the intent to make a risky investment. The influence of feelings on risk avoidance behavior has been investigated in recent years. In this context, four essential feelings -fear, sadness, anger, and happiness- have been dealt with in the research. In addition, the effects of subjective and objective financial literacy on the relationship between emotion and risk aversion were also examined. Previous studies documented that financial literacy affects risk averse behavior. However, almost all of these studies included objective financial literacy in their models. In our study, subjective financial literacy, which is considered to have a larger effect on emotions, is also included in the model, together with objective financial literacy. This conceptualization renders the findings of the study unique.

The data used in the study were obtained by having participants fill out online questionnaires in a voluntary manner, using the convenience sampling method. Nearly half of the participants were male (54%), and half were female (46%). Marital status was also split approximately equally (with 54% married participants). A total of 76% of the participants were

young (40 years and under), and 80% were highly educated (undergraduate, post-graduate, or doctorate degree). The study variables, question numbers, and scales are presented in Table 1.

3.2. Analysis

The variables used in the study (excluding the objective and subjective financial literacy variables) were subjected to factor analysis, and then to the Cronbach's Alpha reliability analysis. The study variables are presented in Table 2.

The suitability and adequacy of the sample for factor analysis were assessed by the Bartlett and KMO Tests. The sample was determined to be suitable for factor analysis (0.000) and adequacy (0.779 >0.700). Following this assessment, the reliability analyses were conducted for each factor; Cronbach's Alpha values were found to be over the maximum level at 0.700.

Based on the results obtained from the factor and reliability analyses, the theoretically stipulated factors were formed, and the effects of emotions on risk aversion and the intent to make a risky investment were investigated. Firstly, a correlation analysis was conducted. The results indicated that there was a positive relationship between fear and risk aversion (r=0.221) at an error rate of 0.01; and a negative relationship existed between risk aversion and the intent to make a risky investment, at an error rate of 0.000 (r=– 0.417). However, no relationships were found between other emotions. As may be seen in the correlation analysis, the risk aversion behaviors of individuals with high fear levels were considerable and statistically significant when compared to those with low fear levels.

A positive relationship was identified between objective and subjective financial literacy levels, at an error rate of 0.000 (r=0.700). However, no statistically significant relationships were determined between either financial literacy risk aversion or the intent to make a risky investment. Detailed analyses were done in cases where the expected relationships were not found.

A total of 66 independent t-tests were conducted to determine whether emotional levels caused differences in risk aversion for all the demographic characteristics in the study, and for subjective and objective financial literacy levels. A significant difference, with an error rate of up to 0.10, was reported for 12 variables; these are given in Table 3.

Investigation of gender-based differences indicated that angry male individuals sought greater risks, which reminds us of the old saying: *When anger comes, temper is lost. When anger goes, face is lost*. In the case of females, it was observed that individuals with high fear levels and low hope levels were more likely to avoid risk.

The risk aversion desire increased as the fear level increased in single individuals compared to married people. Similarly, fear levels increased risk aversion behaviors in young individuals between the ages of 20 and 30 years. While participants with low levels of education (primary/secondary school graduates) took more risks when they felt angry, university graduates avoided risks as their fear levels increased.

Risk levels increased when fear levels decreased in subjects with low subjective (based on the individual's financial knowledge) and objective (measured financial information levels) financial literacy levels. When subjective financial literacy levels were low, risk aversion increased as hope decreased. In individuals with low objective financial literacy levels, as the sadness levels increased, the risk aversion desire increased.

The present study also investigated whether risk aversion, the intent to make a risky investment, and subjective and objective financial literacy levels differed according to demographic variables. For this purpose, independent sample *t*-tests were conducted to

determine whether the four characteristics listed above differed according to gender and marital status variables. There were no significant differences in risk aversion, the intent to make a risky investment, or objective and subjective financial literacy levels according to the gender variable in the eight independent sample *t*-tests.

On the other hand, the objective financial literacy levels of married people were higher at a statistically significant level compared with single individuals, with an error rate of 0.002. However, interestingly, subjective financial literacy did not create a significant difference at an error level of 0.10. In other words, although married individuals had higher financial literacy levels than single people, these levels were not significantly different from those of single individuals. In addition, despite the high objective financial literacy levels, the level of risk aversion was higher for married individuals than for single individuals.

Since the demographic characteristics of age and educational level consist of more than two categories, ANOVA and Duncan tests were conducted to determine the differences between them.

Table 4 shows that study participants' ages were classified into four sub-categories, namely, 20–30, 31–40, 41–50, and 51+. Among these age groups, the 51+ group was the most risk-averse—which was an expected outcome. Parallel to this, while the oldest individuals were the least willing to make a risky investment, the 31–40 age group had the highest intent to make a risky investment. However, a noteworthy observation is that these two groups had the same objective and subjective financial literacy levels. Further, while the youngest group had the lowest financial literacy, the 41–50 age group had the highest financial literacy level.

Educational level was evaluated using four sub-categories: primary/secondary school, high school, university, and post-graduate/PhD level. However, when risk aversion was excluded, educational levels did not differ (high school graduates were those who had the highest risk appetite, and primary/secondary school graduates were the ones who most avoided risks). For this reason, these results are not reported in this study.

3.3.Results and discussion

Emotion is a phenomenon felt by individuals who are affected by their conditions or by the people around them. When emotions become permanent, they are referred to as moods. Regardless of whether the mood or emotional state is considered, they have strong physical and psychological effects on the individual.

Since standard emotions that influence financial behavior are considered elements that move decisions away from rationality, they are also considered elements that need to be destroyed. However, behavioral finance, which is descriptive rather than rule-making, is often regarded as interpreting people as "*humans*," rather than as "*defects*" that must be destroyed.

This study adopted a behavioral finance perspective to examine the effects of emotions on risk aversion and the intent to make a risky investment. Although other studies have investigated their effects on risk aversion, the literature on intent to make a risky investment is limited. Four basic emotions—fear, anger, sadness, and hope—were discussed in the present study. The first tests showed that, among these four emotions, only fear increased risk aversion. However, when further detailed analyses were conducted based on demographic characteristics, some noticeable relationships were revealed. It was determined that anger has different effects on aversion in women than in men. While anger has no effects on risk aversion behavior in women, it increases the risk appetites in men. Men anger more quickly than women, leading to loss of control, and as a result, more risk taking.

An interesting finding is related to marital status. Regardless of the feeling of fear, married individuals are more likely to avoid risks than single people; this is an understandable finding when the social and economic conditions of married couples are considered. However, single individuals' risk appetites are affected by fear—single individuals who are fearful are more likely to take risks than single individuals without fear.

The results indicate that individuals with low education levels (primary/secondary school graduates) took more risks when they become angry, while those with higher education levels (university graduates) avoided risks when their fear increased. While the low levels of education deprived individuals of the ability to assess the results of their behaviors, the lack of something to lose fueled their risk appetite. In contrast, highly educated individuals may more realistically assess the results of the risks that they take, and may tend to avoid risks when they are afraid. This finding is further supported by the entrepreneurial literature. As the level of education rises, potential losses increase, which causes fear and hinders entrepreneurship (risk taking).

The study considered the important aspect of financial literacy. Objective financial literacy, which is mainly examined by the existing literature, is based on measurements. This is also a necessary approach to realistically determine the financial literacy levels that an individual possesses. However, as in our study, subjective financial literacy is also very important when emotions are considered, because the individual evaluates himself/herself. It has been found that there is a noteworthy and statistically significant relationship between these two financial literacy levels. However, there are also findings indicating that these variables differ. When you consider the topic in terms of fear, both objective and subjective financial literacy can cause risk aversion. However, in a less clear sentiment—that is, hope—subjective financial literacy is activated, causing risk aversion. Objective financial literacy has an effect on sadness, and individuals with low objective financial literacy levels avoid risks more as they become unhappier.

Another obvious difference between subjective and objective financial literacy is observed in marital status. Although married individuals had higher objective financial literacy than single individuals, no differences were found in the subjective financial literacy levels of married and single individuals. As stated above, while the responsibilities and age of married individuals made them more cautious, single people showed bravery and had more aggressive characteristics, which prevented a realistic appraisal of their financial literacy levels. While married people evaluate lower for their subjective financial literacy, single people evaluate higher and create an environment that is not different from subjective financial literacy, according to the marital status variable.

4. CONCLUSION

This study presents unique and important contributions to the literature by analyzing the effects of emotions on risk aversion, and by considering objective and subjective financial literacy in explaining the relationships. Because it is a pioneering study, its aim was to discover general relationships. However, the study can be repeated in the future using panel data, and by generating different emotions at different times and with the same subjects; this approach will be very useful in obtaining comparative data.

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Tables

Table 1: Variables

Variable	Item	Scale
Risk Aversion	7	Donthu and Gilliland (1996)/Burton *et al.* (1998) (Modified: Aydemir and Aren, 2017)
Intent to Make a Risky Intention	4	Putrevu *et al.* (1994)/Dodds *et al.* (1991) (Modified: Aydemir and Aren, 2017)
Fear	5	Leary (1983)
Anger	5	Gambetti and Giusberti (2012)
Hope	4	Smyder *et al.* (1991)
Sadness	3	Doherty (1997)
Subjective Financial Literacy	1	Aren and Canikli (2018)
Objective Financial Literacy	11	Van Rooij, Lusardi and Alessie (2001)

Table 2: Varimax factor analysis and reliability analyses results

Anger	Fear	Risk Aversion	Risky Investment Intention	Hope	Sadness
A1	F1	R1	N1	H1	S1
A2	F2	R2	N2	H3	S2
A3	F3	R3	N3	H4	S3
A4	F4	R4	N4		
A5	F5	R5			
		R7			
KMO		0,779			
Bartlett's Test of Sphericity		$2321{,}927^{0{,}000}$			
% of Var.	14,242	13,223	13,067	11,314	7,917	7,829
Reliability	0,920	0,883	0,842	0,891	0,736	0,761

Table 3: The results of independent sample **t**-tests and risk aversion differentiation according to emotion level

Demographical Variables	Emotion	Level	Average	Significance
All Data	Fear	Low High	3,20 3,52	0,034
Male	Anger	Low High	3,39 2,94	0,032
Female	Fear	Low High	3,16 3,83	0,001
Female	Hope	Low High	4,06 3,74	0,016
Single	Fear	Low High	2,95 3,49	0,013
20–30	Fear	Low High	2,99 3,71	0,001
Primary/Secondary School	Anger	Low High	4,08 2,79	0,005
University	Fear	Low High	3,12 3,46	0,087
Subjective Financial Literacy Low	Fear	Low High	3,11 3,55	0,043
Subjective Financial Literacy Low	Hope	Low High	3,90 3,20	0,059
Objective Financial Literacy Low	Fear	Low High	3,07 3,54	0,039
Objective Financial Literacy Low	Sadness	Low High	2,74 3,31	0,080

Table 4: Duncan analysis risk aversion results per age group, intent to make a risky investment, objective financial literacy, and subjective financial literacy differentiation

Age Group	1		2	
31–40	3,1583			
20–30	3,2587		3,2587	
41–50	3,4917		3,4917	
+51			3,7436	
Significance	0,204		0,063	
Intent to Make a Risky Investment				
Age Groups	1		2	
+51	1,8654			
41–50	2,2750		2,2750	
20–30	2,3619		2,3619	
31–40			2,6188	
Significance	0,056		0,187	
Objective Financial Literacy				
Age Group	1	2		3
20–30	4,01			
51+	5,92	5,92		
31–40		6,48		6,48
41–50				8,35
Significance	0,055	0,577		0,059
Subjective Financial Literacy				
Age Groups	1		2	
20–30	2,40			
31– 40	2,80		2,80	
51+	3,15		3,15	
41–50			3,35	
Significance	0,058		0,167	