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What Is the Role of FoMO in Individual Investment Behavior? The Relationship among FoMO, Involvement, Engagement, and Satisfaction

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ABSTRACT

Little research has investigated the relationship between FoMO (fear of missing out) and financial behavior and underlying this association remains largely unknown. The aim of this paper is to investigate the relationship between envy and FoMO, investment involvement, investment engagement, and satisfaction. Proposed conceptual model was tested using structural equation modeling (SEM) among 1,741 individual investors. Research data were collected by convenience sampling method from individuals who are over 18 years of age and reported financial saving or individual investment. The inclusion criteria for participation included individuals over 18 years of age who reported financial saving or individual investment. Participants completed an online survey containing measurements regarding envy, FoMO, investment involvement, investment engagement, and satisfaction. The results indicated that there are significant and positive relationship between all of the constructs. This study highlights the underlying mechanism between FoMO and individual investment behavior, which has important theoretical and practical implications for understanding decision-making and behavior in the financial area.

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KEYWORDS
Behavioral finance; FoMO; investment; involvement; satisfaction

Introduction

Recently, a large amount of research in psychology, marketing and education has been devoted to the assessment of individuals' FoMO levels, by means of self-reported answers to scale statements. In this study we add to the knowledge about FoMO concept which plays a key role in behavioral finance literature by investigating relationships among relating variables, such as envy, involvement and engagement. Our study aims to contribute to the literature in two ways. First, this study extends the knowledge regarding FoMO' role

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on financial behavior. Second, the paper adds to the understanding of the relationships between envy, FoMO, involvement, engagement and satisfaction in terms of individual investment in behavioral finance.

Behavioral finance, as the "emotional" feelings experienced by investors when investing, refers to the notion that individuals do not always act rationally in investment decisions, and may be influenced by irrational factors with the potential to lead to emotional (irrational) investment preferences (Dickason, Ferreira, and Nel 2017). Similar to behavioral finance, emotional finance, fed by psychoanalytic processes of the human mind, refers to the effect of a person's unconscious emotions, desires and needs on their investment decisions, and, more generally, how they impact the markets (Taffler 2018). Behavioral and emotional finance studies of this issue in general indicate that the investment decisions of individuals are steered by their socio-psychological and demographic characteristics, and should be investigated accordingly (Statman 2014).

In recent years, research on the relationship between FoMO and financial behavior has received researchers and practitioners' attention. A limited number of studies have focused on the effect of FoMO on bandwagon behavior (Ionescu, and Rădulescu 2019), financial decision-making (Hershfield 2020), investment decision (Shiva, Narula, and Shahi 2020), stakeholder enrollment (Young and Cowden 2020), and flee (Lamprecht 2017). There are limited number of studies in the literature investigating the relationship between financial issues and FoMO. However, there remains a dearth of literature on the relationship among FoMO, involvement and engagement for individuals' investment and satisfaction. Consequently, the purpose of this study is to address this gap in the financial behavior literature. In this context, nonprofessional individual investors in Turkey were taken as a sample and the findings were compared with other studies in the literature, and the results and recommendations were given to the relevant sections. Therefore, the goal of the current study is to investigate the relationship among FoMO, involvement, engagement, and satisfaction. To our knowledge, the present study is the first empirical study to examine the role of FoMO on financial behavior.

This study makes three important contributions to the behavioral finance literature. The first contribution relates to a conceptual model that reveals the relationships between envy, FoMO, involvement, engagement, and satisfaction. Second, the current study validates and measures the measurement dimensions, which are developed integrating the FOMO toward addressing individual investment behavior. Third, it extends the literature on behavioral finance, by examining the role of FoMO among individual investors from a developing country, and provides some managerial implications for practitioners or institutions working on individual investor decisions.

Research background

When studies in the field of economics and finance are examined, there are many theories and studies that reveal how individuals behave when making investment decisions. These theories, which were put forward many years ago, are basically based on the rational behavior of people. The "Rational Choice Theory," introduced by Bernoulli in 1730 and used by researchers to understand human behavior, forms the basis of many theories in this field.

According to the "Expected Utility Theory" developed by Neumann and Morgenstern depending on this theory, individuals are rational, and therefore, even in an environment of uncertainty, the individual makes the best decision by calculating the option that will provide the highest benefit for himself in the most accurate way (Edwards 1996; Yigit 2019).

Expected Utility Theory states that market participants take their decisions at risk by comparing the expected utility values of available alternatives. Rational investors act to maximize their expected utility, which is calculated as the weighted sum of utility values multiplied by their own probabilities. The model classifies decision makers as risk-averse, risk-neutral, and risk-loving individuals (Çeri 2022).

On the other hand, the "Expectation Theory," which was founded by Vroom in 1964 and developed by Kahneman and Tversky (1979) emphasized that man is not always a rational being, and argued that the decisive decision criterion underlying the behavior of the individual is the situation he expects to occur as a result of this behavior (Yigit 2019).

Kahneman and Tversky (1979) stated empirically that people make decisions only below the probable outcomes compared to the results obtained with certainty. In prospect theory, value is assigned to gains and losses rather than final assets; also, the probabilities are replaced by decision weights.

Tversky and Kahneman (1992) developed the theory in their later work and expressed the theory's basic assumption as loss aversion. In other words, they emphasized that losses and disadvantages have a greater effect on preferences than gains and advantages. This situation reveals that investors cannot always be rational contrary to what is expressed in classical investment theories.

Many studies in the field of behavioral finance have revealed that individuals do not always act rationally and that different factors affect their decisions (Simon 1955; Camerer and Loewenstein, 2004; Jurevičienė and Ivanova, 2013; Tekin, 2016; Hidajat et al. 2020). Thus, investment decisions of individuals have started to be the subject of more studies in the field of

behavioral finance, and it has led to more research on which factors are affected by individuals when making decisions.

According to limited rationality, which is the basic assumption in behavioral finance, individuals are only rational to a certain extent and a large part of their behavior is determined by their emotions (Simon 1955; Yigit 2019). Behavioral finance, which emerged depending on this understanding, has pioneered studies that include the economic and financial dimensions of concepts such as problem solving and decision making (Camerer and Loewenstein 2004). In this study, FoMO, which is thought to be effective on the investment decisions of individuals and FoMO's relationship to involvement, engagement, and satisfaction are explained with the above theories and behavioral finance perspective.

Envy

Envy is known to affect the behaviors and attitudes of individuals (Foster et al., 1972), and has been defined as "an emotion that functions to alert individuals to fitness-relevant advantages enjoyed by rivals and to motivate individuals to acquire those same advantages" (Hill and Buss 2006, p. 131; Parrott and Smith 1993, p. 906). Envy can take two different forms, being constructive and disruptive envy. The first of these focuses on the sense of admiration that motivates and encourages people to take a path of self-improvement and self-development (Lange and Crusius 2015), while the latter, destructive envy, is considered the malicious side of envy, and is marked by an inclination to hurt others (Lee and Eastin 2020).

Financial envy can be considered a benign rather than malicious form of envy, and economists have even suggested that it may even promote economic prosperity (Corneo and Jeanne 1997, 2001; Taffler 2018). Individual investors become envious when they see people around them profiting from their investments, and in such cases, rather than feeling hate, they make an effort to achieve profit. This effort may be expended to cover the obtaining of information that will aid them in making the right financial decision. Individual investors, therefore, explore saving and spending behaviors, and may be influenced to varying degrees by religion, culture, justice, emotional status, social accountability, their desires and needs, but also by aspects of their personality, in addition to envy, when making decisions (Statman 2014; Albaity and Rahman 2012). For example, Breaban and Noussair (2018) found that view that market dynamics were closely related to emotions, revealing that a positive emotional situation was associated with buying and overpricing, while negative emotional situations such as envy, fear and panic were associated with selling, underpricing and price decreases.

FoMO

With the widespread use of smartphones, which have become an integral part of daily life, the fact that individuals spent more time in the virtual world brought about an increase in feelings of FoMO by increasing the desire of young people in particular to stay connected on the social media platforms in which they have developed an interest (Tomczyk and Selmanagic-Lizde 2018). FoMO has been defined as a "pervasive apprehension that others might be having rewarding experiences from which one is absent, characterized by the desire to stay continually connected with what others are doing" (Przybylski et al. 2013, p. 1841).

One of the most important reasons why the concept of FoMO is so popular in many fields of social sciences lies in its power to influence human behavior. Studies in literature have been conducted to reveal the relationships between FoMO and people's purchasing preferences; behavior patterns, social media and brand dependence; their attitudes toward particular products and services; consumer experience; financial decision-making attitudes; and motivations in business and education (Hershfield 2020; Good and Hyman 2020; Shiva, Narula, and Shahi 2020; Young and Cowden 2020; Rozgonjuk et al. 2021; Przybylski 2013). Studies of FoMO in finance, however, are limited.

FoMO can lead individuals to feel that others are making a lot of money, and to trade in the relevant markets to avoid missing out on those gains. In other words, it leads to the development of herd behaviors in individuals in some markets by affecting their financial investment decisions, as a result of which prices fluctuate more than they should (Hershfield 2020). Kristoufek (2013) claims that the media constantly emphasizes the global interest and demand for Bitcoin from cryptocurrencies, and as a result, FoMO was the main driver of the speculative Bitcoin bubble. Gupta and Shrivastava (2022) investigated to understand the impact of loss aversion and herding on investment decisions of retail investors. The results of this study revealed that investment decisions of retail investors are significantly influenced by loss aversion, herd behavior as well as FOMO. Potsaid and Venkataraman (2022) investigated to measure investors' susceptibility to fear of missing out (FoMO)—and they find that high-FoMO investors react more negatively to trading restrictions than low-FoMO investors but are relatively less-affected by non-gains versus non-losses. Considering these aspects, examining FoMO in behavioral finance and investigating its effects on investors will contribute to the relevant literature and contribute to future studies.

Investment involvement

Involvement refers to the tendency of an individual to increase their personal interest in a decision, while in a broader definition, it is "a person's perceived relevance of the object based on inherent needs, values and interests" (Zaichkowsky 1985, p. 342). There are many different variables affecting the level of involvement, among which can be counted perceived risk (Parihar, Dawra, and Sahay 2019). Financial risk, which is an important perceived risk in financial investments, may result in a certain level of income loss, and the higher the perceived risk in such cases, the higher the level of involvement (Dholakia 1997).

According to Richins and Bloch (1986) involvement refers to an investor's engagement in investment thinking when there is no immediate purchasing incentive. Individual investors have a wide range of involvement. Individual investors related to the investment decision may have different levels of involvement. For example, while some investors deposit their savings in a traditional time deposit accounts with a known net yield in advance, requiring less attention, another investor may look for high involvement, and so may choose investment instruments with different returns and risks, and follow websites related to these instruments, keeping an eye on the economy channels and entering clubhouse finance rooms (Laurent and Kapferer 1985; Loibl and Hira 2009). The level of involvement of individual investors differs according to the type of investment, the risk level and the financial literacy of the investor. Individual investors are constantly interested in investment choices, and look to make the right buying decision rather than engaging in impulse buying behaviors. These investors are in a constant state of involvement, reviewing their portfolios, exploring current market trends, and following the up-to-date financial news and the financial instruments in which they have invested.

The ever-changing financial markets, the wealth of information and the proliferation of financial products make information-seeking an important and challenging pastime for individual investors. Due to the potential for a large financial losses and the high costs of reviewing or recovering from an incorrect investment decision, investment selections are characterized as high-outcome decision tasks requiring the consumer's fullest attention (Kahn and Baron 1995; Kunreuther et al. 2002). Individual investors make regular use of social media channels for corporate and individual investment consultancy and education, and to increase their awareness, and this increases the ability of nonprofessional investors to access investment information in real time, and they may feel like they are missing out on something if they are not constantly connected (Proell, Guggenmos, and Rennekamp 2020; Shiva, Narula, and Shahi 2020). Nonprofessional individual investors, unlike professional/rational investors, are more vulnerable to

cognitive errors and misleading emotions and may act according to the information and news they obtain from different sources in their investment decisions (Statman 2014). Accordingly, individual investors experience more discrepancies in their investment decisions, gather more information to reduce such discrepancies, and, during the information gathering stage, do not want to miss opportunities by trying to keep abreast of the investment decisions of others. In short, involvement emerges as a process that is closely related to the search for the desired information.

Investment engagement

Engagement, or the state of being engaged, is defined "as emotional involvement or commitment, and as being in gear" (Schaufeli 2013). The engagement concept is employed in the fields of psychology, sociology, political science, corporate behavior and behavioral finance (France, Merrilees, and Miller 2016; Purcell 2014; Schneider et al. 2009), and has often been used in literature to emphasize a situation, leading to such different concepts as work, employee, brand, social media, customer and financial engagement to emerge. Each of these engagement concepts has been employed to emphasize statements such as deeply engaging, committing, involving and participating in relevant subjects (Alt 2018; Guillaumont and Hua 2015; Schaufeli 2013).

Although used in different fields, it can be said that the concept of engagement has no common definition, and discussions of engagement tend to be about whether the concept is a process, state or behavior. In the present study, engagement is considered in accordance with the definition of Van Doorn et al. (2010) while financial engagement is defined based on the definitions made in different fields in literature, as being deeply engaged in financial matters, having a desire to invest in financial instruments, and following financial instruments as well as financial news and information flows.

Investment engagement refers to the interactions of individual investors with experts in financial matters in parallel with their financial involvements, the taking of action as a result of a specific decision by increasing their level of awareness about an investment, and their long-term engagement in such a situation. Today, there is easy access to information, and the widespread use of smart devices enables people who are interested in financial investments to interact easily based on their ability to follow their financial investment instruments or the markets continuously throughout the day. This increases the level of financial involvement of individuals, and ensures their awareness of their investments. The investment process (action), on the other hand, is dependent on the tracking of prices and

price movements, which are inherently uncertain, depending on the type and the perceived risk of the investment, and require constant engagement with investment decisions (Vivek 2009). In addition, in investment engagement, investors engage in marketing activities in which they promote or recommend certain types of investments and services to other potential investors (Chen et al. 2016), which can sometimes lead to speculation in the financial markets, and is somewhat different to traditional investment products.

Satisfaction

Satisfaction is defined by Churchill and Surprenant (1982) as "the result of a favorable correspondence between a customer's expectations and his/her experiences with a firm," and the same expectancy-disconfirmation paradigm can be applied to investors (Helm 2007). Financial decisions, on the other hand, are difficult tasks for the individual, and the return on such decisions affects one's satisfaction with the investment (Shiller 2003)

Investment satisfaction is similar to the concept of financial satisfaction, referring to the general assessment of an individual's financial situation and the subjective judgment of investors regarding the quality of their decisions and performance (Asif 2016). As such, it can be quite difficult for customers to evaluate investment services and standardize their evaluations (Ribeiro-Navarrete et al. 2021) although the end result that the investor making the investment decision is interested in is obtaining a sufficient level of satisfaction from one's investment.

From this perspective, satisfaction is very important when choosing financial investment instruments and making financial investment decisions. Investment decisions are made with the expectation that one will achieve a certain return, but due to market conditions, there may be differences between the expectations and the result. If this difference is at or above the expected return level, there will be satisfaction with the investment, and if it is below, dissatisfaction occurs (Dickason, Ferreira, and Nel 2017; Taffler 2018; Schwaiger et al. 2020).

Research hypotheses and model

Hypotheses

Envy has also been described as an admiration emotion with a hostility component (Smith and Kim 2007) and this condition occurs as a result of comparing one's state with that of another, and especially in upward comparisons (Van de Ven, Zeelenberg, and Pieters 2009) and requires at least

one target person. FoMO, on the other hand, is formed when comparison is made after learning about the experiences of another. Studies conducted in different fields have identified a relationship between Envy and FoMO. For example, there have been studies revealing relationships between envy, psychological behavior patterns, social media and Internet addiction, and the level of one's engagement in social media and FoMO (Przybylski 2013; Varga 2016; Wang et al. 2019; Good and Hyman 2020).

In addition to studies identifying the effect of envy on individual behavioral patterns and financial decisions, there have also been studies highlighting its relationship with FoMO (Przybylski et al. 2013; Varga 2016; Wang et al. 2019). When individuals make investment decisions, they desire to maximize their earnings (Yen et al. 2013) and for this reason, envy can be felt against those who earn high returns from their investments when seen on social media or on the channels followed. Good and Hyman (2020) examining the effects of FoMO on purchasing probability, reported that first, emotions such as joy and envy affected the FoMO in the individual, and FoMO in turn affected their purchasing behaviors. Hershfield (2020) found that individual investors caused volatility in the prices of assets in the financial markets after acting with a sense of FoMO. Similarly, Pichet (2017) reported FoMO to be a driving force especially in extreme fluctuations in the cryptocurrency and other financial markets, and so the following hypothesis was developed, taking into account the results of related studies.

H_1: The envy experienced by individual investors is positively correlated with FoMO.

Several studies of FoMO and involvement have been carried out in different fields (product, brand, social media, mobile phone, job, social network, sports team, etc.), and relationships between these two variables have been revealed (Eide et al. 2018; Kang, He, and Shin 2020; Brown et al. 2021).

In reference to these studies, it can be said that increased choices in financial investment decisions and the desire for higher profits in risky environments may lead investors to experience FoMO, leading them to seek more information and news about investments as a means of reducing their fears. In some cases, investors ignore their own knowledge and follow instead the investment decisions of other investors made at certain times (Cipriani and Guarino 2005). After taking a more detailed look, we are of the opinion that when individual investors make investment decisions, they establish connections with other people, including family members, school friends, colleagues, neighbors and social groups within their close circle, and those with experience in investments. Individual investors who experience FoMO tend to be more aware and connected to the investment

decisions of others, and the high returns of an investment vehicle can increase investor involvement in such an investment vehicle, causing them to experience FoMO. It was assumed for the reasons given above that a positive correlation would exist between the feelings of FoMO in an individual and their involvement in investments, so the following hypothesis was developed for testing in the study.

H_2: FoMO perceived by individual investors is positively correlated with investment involvement.

Various studies have reported FoMO to be related to engagement. Proell, Guggenmos and Rennekamp (2020) examined how information disseminated through mobile device applications influences the decisions of non-professional investors, and noted that such applications increased the users' ability to access real-time investment information, leading some to feel that they are missing out something if not constantly connected.

Shiva, Narula, and Shahi (2020) found that individuals without access to mobile devices and the internet feel like they are missing out on important information in the stock market, and they develop a desire to follow their investments and stock market news all the time, meaning that a close relationship exists between nomophobia and FoMO. Statman (2014) indicated that individual nonprofessional investors are more vulnerable to cognitive errors and misleading emotions than professional or rational investors, and act in accordance with their financial engagement levels and with information obtained from different sources.

Based on studies in literature on FoMO, and the discussions of social media, consumer, brand and financial engagement among researchers (Przybylski et al. 2013; Elhai et al. 2018; Alt 2018), it is apparent that individual investors may try to be aware of the investments of others so as not to miss out on developments related to their investments by tracking and comparing the profit and loss of both their own investment decisions and other investment choices that they have not invested in through their interactions with other investors, and by sharing their investments within their traditional circles and via social media. In accordance with the reasons mentioned above, it can be assumed that a positive correlation exists between FoMO and investment engagement, and so the following hypothesis was developed.

H_3: FoMO perceived by individual investors is positively correlated with investment engagement.

Involvement and engagement, which define an investor's attention or interest, have certain common points. While involvement occurs as a result of the interest and relevance of the individual investor to the investment

category, as well as its profitability, involvement describes the investor's commitment to maintaining an active relationship (time, money and effort) with a particular investment opportunity (Brodie et al. 2013; Abdul-Ghani et al. 2012). The main difference between investor engagement and involvement is that involvement does not reflect interactive or co-creative experiences. Involvement is cognitive, emotional or motivational, but not behavioral, while engagement, on the other hand, is seen as cognitive, emotional and behavioral (Başkol 2019). Accordingly, investor involvement is a precursor to investor engagement (Bailey, Bonifield, and Elhai 2021). In social science studies, significant relationships have been encountered between the engagement and the involvement of the consumer, brand, product, website, sport and education (Harrigan et al. 2018; Park and Ha 2021). While there have been studies of involvement and engagement in finance literature, the relationship between involvement and engagement in investors has yet to be examined. In the present study, the following hypothesis was developed, assuming the existence of a correlation between investment involvement and engagement, in accordance with studies conducted in different fields.

H_4: Investment involvement is positively correlated with investment engagement.

Rothschild (1978, 1979) suggested that involvement had an impact on the cognitive process and that consumers experience a sense of consistency in their behavior, given that high involvement increases a person's state of arousal by motivating them to seek high information processing and to improve their level of awareness. Bowen and Chaffee (1974) indicated that different levels of involvement led to different purchasing decisions, while Oliver and Bearden (1983) stated that consumers used their attitudes before purchasing a product in the satisfaction process and that involvement had an effect on the formation of consumer attitudes (Wirtz and Bateson 1999). On this issue, researchers such as Richins and Bloch (1986) reported consumer involvement levels to be associated with satisfaction. There are two primary factors explaining the relationship between consumer involvement and satisfaction. First, involved consumers spend more time thinking about the product category than those with low engagement and so become more motivated to make appropriate decisions. Second, involved consumers have more information and more accurate expectations regarding the performance and characteristics of the product, which leads them to make more satisfying and better product decisions (Porral, Ruiz-Vega, and Lévy-Mangin 2021).

Investors with investment involvement will be motivated to access the necessary financial information to make the right decision. Investment decisions

made based on information obtained from different channels will lead to satisfaction. Helm (2007) stated that the company reputation had an impact on satisfaction and emotional commitment when establishing relations with investors, and one of the moderators of these effects is investment involvement. Franco (2009) identified the moderator effects of involvement in the relationships between satisfaction, trust and commitment in e-banking services. We believe it to be important to include emotions when modeling investment decision satisfaction processes, and based on that assumption, the following hypothesis was developed, taking into account studies identifying a positive correlation between involvement and satisfaction in different fields, such as psychology, sociology, marketing, finance and organization management.

H_5: Investment involvement is positively correlated with satisfaction.

Investors with a high level of investment engagement may be more cognitive individuals, with the ability to process financial information, solve problems, classify financial investment instruments in terms of their risks/profitability, and reach a reasoned decision when considering investment choices (Kassarjian 1981). When realizing an investment decision, they follow the opinions of experts, such as financial advisers, fund, portfolio and investment managers, and analysts, who may influence their investment decisions (Schwaiger et al. 2020). As a result of these follow-ups, an investor seeking the most accurate investment decisions will tend to make decisions that best meet their expectations. The fact that individuals make financial investments and are deeply engaged in their investments affect their satisfaction levels (Vera-Toscano, Ateca-Amestoy, and Serrano-Del-Rosal 2006). Based on previous studies in literature (Brodie et al. 2013; Leckie, Nyadzayo, and Johnson 2016) revealing a relationship between engagement and satisfaction, it can be assumed that a positive correlation exists between investment engagement and satisfaction/reassurance, leading to the following hypothesis to be developed.

H_6: Investment engagement is positively correlated with satisfaction.

The variables and the relationships among the variables in our research model based on the rationale presented above are shown in Figure 1.

The conceptual model described in Figure 1 shows the relationships among the variables.

Method

Measurement scales

To test the relationships presented in the theoretical model, a survey that includes items for scales and demographics was conducted. Respondents evaluated the study main scales (FoMO, envy, involvement, engagement,

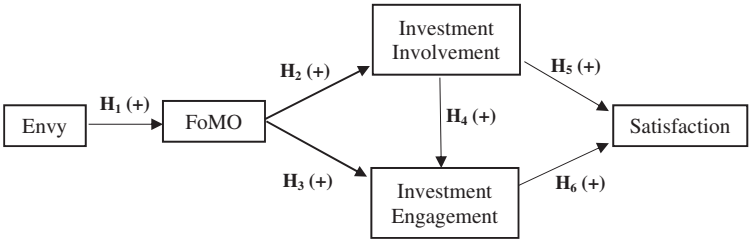

Figure 1. Conceptual model.

and satisfaction) using multi-item measures. FoMO phenomenon represents a key component of emotion-based behavior, and an essential condition for a person to tend to community-based choice. FoMO scale, developed by Przybylski and colleagues, has been widely used in many areas since 2013. Accordingly, FoMO was measured using 10 items adopted from Przybylski et al. (2013). Envy construct closely related to FoMO, having six items, was adopted from Tandoc, Ferrucci, and Duffy (2015). For measuring involvement representing high level of interest and enthusiasm for the specific product, service or scope, four items were adapted from Gligor, Bozkurt, and Russo (2019). The three items for financial saving engagement were adapted from France, Merrilees, and Miller (2016). Finally, for measuring satisfaction with financial saving as the dependent variable, all three items were adapted from Taylor and Baker (1994). The modifications in the wording of items regarding involvement, engagement, and satisfaction were made to suit the financial saving or individual investment context. Except FoMO, all items in the research scales were measured on a five-point Likert scale where "1" stands for "strongly disagree" and "5" stands for "strongly agree." The items for FoMO scale were evaluated on a five-point scale (5 = "extremely true of me," 1 "not at all true of me").

Sampling and procedure

Research ethics board of corresponding author's university granted ethical approval, and all participants provided online consent before participating in the study. The inclusion criteria for participation included individuals over 18 years of age who reported individual investment. The current study adopted convenience sampling of Turkish people who report individual investment behavior. Participants from various socio-economic and demographic backgrounds were invited to participate the present study via online and/or social media using a convenience sampling method. Data collecting was conducted using an online version (Google Form) of the survey between September 2020 and March 2021. The screening question: "Do you invest financially to make use of your money?" was used in order to

Table 1. Characteristics of demographic and saving behavior.

	f	%		*f*	%
Gender			Age		
Male	976	56.1	18-25	510	29.3
Female	765	43.9	26-40	679	39.0
Education	16	9.9	41–55	463	26.6
High school or <	276	15.8	56 and >	89	5.1
University	1,232	70.8	Monthly income[a]		
Post graduate	233	13.4	625 USD and <	528	30.3
Marital status			626–1,250 USD	785	45.1
Single	765	44.0	1,251–1,875 USD	281	16.1
Married	918	52.7	1,876–2,500 USD	90	5.2
Other	58	3.3	2,501 USD and >	57	3.3
Occupation			Monthly savings[a]		
Public official	423	24.3	313 USD and <	1,182	67.9
Labour	149	8.6	314–626 USD	382	21.9
Retired	165	9.5	627–939 USD	109	6.3
Manager	132	7.6	940–1,252 USD	41	2.4
Tradesman	58	3.3	1,251 USD and >	27	1.5
Self-employed	111	6.4	Saving frequency		
Employer	49	2.8	Daily	103	5.9
Student	258	14.8	Weekly	133	7.6
Housewife	84	4.8	Once in 15 days	73	4.2
Other	312	17.9	Monthly	758	43.5
			Once in 3 months	178	10.2
			Once in 6 months	140	8.0
			Annual or less frequent	353	20.3

$N = 1{,}741$. [a]Applied exchange rate: 1 USD equals 8 TRY.

filter out. Participants who answered "no" were not included in the analysis of the study. Out of 2,308-collected online survey, 567 participants were excluded through the screening question because they never invested financially to make use of their money, resulting in an effective response rate of 75.4%. Thus, a convenience sample consisted of 1,741 participants, reporting financial investments.

Sample characteristics

The sample consisted of 1,741 participants, reporting financial investments, of whom approximately 56% were males, and 44% were females. The participants ranged in age from 18 to 75 years ($M = 34.5$, $SD = 11.6$), with the majority of respondents being aged 25–40 (39%). Participants were well educated, with nearly two-thirds (70.8%) reporting at least a 4-year university degree. Approximately half of the participants were married (52.7%) and a quarter were public official (24.3%). Regarding monthly income, 45.1% participants gets monthly income 626–1,250 USD followed by monthly income less than 625 USD (30.3%). Concerning monthly individual investment, approximately 68% of participants reported less than 313 USD. Finally, approximately half of the participants (43.5%) reported monthly saving (Table 1).

Results

Measurement model

In order to evaluate the measurement model of constructs in our model, the present study examined construct validity and reliability criteria, as suggested by Hair et al. (2016). Regarding the normal distribution assumption, skewness (range from −.02 to 1.02) and kurtosis (range from −.22 to 1.30) indices for the scale expressions in our model were evaluated and they were found to be within the recommended values of 3 and 8, respectively (Kline 2011). Thus, there was no violation of the normality assumption.

A useful statistical procedure, CFA is used to test the fit of data in measurement models (Hunter and Gerbing 1982). CFA is applied to measure constructs with multiple items. In addition, CFA is used "when the researcher has a preliminary idea about the items that reveal the dimensions, also when the scale items have a linear relationship to the scale average or total" (Levine 2005, p. 336). CFA is useful for three reasons as it tests the fit of models with a theoretical and empirical basis to the data. First, CFA allows to examine whether competing models fit the data and highlights the role of falsification in scientific research. Second, it forces researchers to be precise in identifying constructs. Third, it encourages parsimony, which suggests that simpler models are more likely to be correct when the fits of competing models are assumed roughly equal (Graham et al. 2003).

Six items (three items from each of the FoMO and envy constructs) did not load well onto any factor or did cross loading, thus, they were removed from the CFA model. After deletion of six items, the results showed a good fit for the revised five-factor measurement model. All FL ranging from .55 to .91 were significant ($p < .01$). Remain items of the CFA was presented in Table 2. Fit indices and acceptable indices' values for CFA were considered as $X^2/df < 5$, Root Mean Square Error of Approximation (RMSEA), the standardized root mean square residual (SRMR) < 0.08, Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Incremental Fit Index (IFI), Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) $> .9$ (Byrne 1998; Hooper et al. 2008; Steiger 2007). X^2/df (1,687.81/199) for our measurement model was 8.48, indicating poor model fit. The χ^2 test is too sensitive to the measurement-invariance evaluation in large samples ($N > 300$; Chen 2007), as it is well known in CFA and/or SEM. When the same items were kept constant in CFA and the sample size was fixed as 400 and 200 for our data, the X^2/df ratios were found to be 1.194 and .97, respectively. Thus, X^2/df ratio can be ignored for our large sample size (>400). Thus, CFA model for present study indicated adequate model fit for all indicators except the χ^2/df ratio.

Table 2. Factor loadings (FL) and descriptives.

	FL[a]	Mean	SD
FoMO			
I fear my friends have more rewarding experiences than me	.71	2.05	1.21
I get worried when I find out my friends are having fun without me	.83	2.26	1.30
I get anxious when I don't know what my friends are up to	.82	2.17	1.25
It is important that I understand my friends "in jokes"	.72	2.74	1.34
Sometimes, I wonder if I spend too much time keeping up with what is going on	.59	2.72	1.34
It bothers me when I miss an opportunity to meet up with friends	.55	3.12	1.28
When I have a good time it is important for me to share the details online (e.g. updating status)	.55	2.36	1.29
ENVY			
I generally feel inferior to others	.57	2.63	0.94
It is so frustrating to see some people always having a good time	.79	2.89	1.13
It somehow doesn't seem fair that some people seem to have all the fun	.66	3.25	0.94
I wish I can travel as much as some ofmy friends do	.62	3.19	0.96
Many of my friends have a better life than me	.69	2.90	0.94
INVOLVEMENT			
Financial investment means a lot to me	.85	3.41	1.20
Financial investment is significant to me	.91	3.55	1.18
For me personally, financial investment is important	.90	3.61	1.19
I am interested in financial investment	.82	3.50	1.23
ENGAGEMENT			
When I am dealing with the financial investment, I am deeply engrossed	.84	2.86	1.31
I am passionate about the financial investment	.87	2.63	1.33
I am enthusiastic toward the financial investment	.88	3.05	1.34
SATISFACTION			
Financial investment (foreign exchange, stock market, or gold) makes me happy	.81	3.37	1.28
I am satisfied with my financial investments I made	.73	3.42	1.16
Making a financial investment meets my expectations	.79	3.27	1.16

[a]FL: Factor loading; *t* value is significant at 0.01 level. SD: Standard deviation.

Values of the RMSEA (.066) and the SRMR (.040) were lower than .08. Furthermore, all of fit indices (CFI = .97, NFI = .97, NNFI = .97, IFI = .97, GFI = .92, and AGFI = .90) were equal or well above .9, indicating good model fit. Overall, fit indices were found to be within acceptable levels, thus the confirmatory model was suitable for the carry out the structural equation model.

Construct validity was evaluated by considering two criteria methods, convergent and discriminant validity, which are widely discussed in the literature. To evaluate convergent validity, the significant factor loadings and average variance extracted (AVE) were examined. Table 2 shows that all FLs were equal or greater than .55 and significant ($p < .01$), indicating higher t value than critical number of 3.29 (Tabachnick and Fidell 2007). The average variance extracted (AVE) as suggested by Fornell and Larcker (1981) was used to assess convergent validity, and AVEs of each construct, one except (.45) were higher than .50, indicating convergent validity (Fornell and Larcker 1981). Discriminant validity was evaluated according to the correlations between constructs in the model and comparing the correlation coefficients with the square root of AVE for each construct. The correlations between constructs were significant ($p < .01$) and lower than .8, indicating discriminant validity existence. Moreover, the square roots of

Table 3. Validity, reliability, correlation matrix and descriptive.

Constructs	FoMO	ENVY	INVO	ENGA	SATI
FoMO	.74				
ENVY	.57**	.67			
INVO	.13**	.07**	.87		
ENGA	.17**	.11**	.70**	.87	
SATI	.13**	.05*	.71**	.70**	.77
Mean	2.49	2.43	3.51	2.84	3.35
SD	0.95	0.99	1.08	1.20	1.03
Alpha	0.86	0.80	0.92	0.90	0.82
AVE	0.55	0.45	0.76	0.75	0.60
CR	0.86	0.80	0.93	0.90	0.82

Notes: ENVY: envy; FoMO: fear of missing out; INVO: involvement; ENGA: engagement; SATI: satisfaction. *$p < .05$; **$p < .01$; SD: Standard deviation; Diagonal elements in the "correlation of constructs" matrix are the square root of AVE.

AVE were greater than the relevant inter-construct correlations in the construct correlation matrix, providing evidence for discriminant validity. The constructs of scales had Cronbach's alpha value ranging from .80 to .92, which indicate sufficient reliability (Nunnally 1978). Similarly, the value of composite reliability (CR- ranging from .80 to .93) indicated the internal consistency of each constructs in measurement model (Table 2).

Table 3 displays validity, reliability, descriptive statistics (means, standard deviations), correlations between constructs, and the square root of AVE. As can be seen, the bivariate relationships indicated that all of the constructs significantly correlated (ranged between .34–.76), and all correlations were significant ($p < .01$). According to the mean scores of all dimensions, investment involvement had higher score (mean = 3.51; SD = 1.08) followed by satisfaction (mean = 3.35; SD = 1.03). The lowest scores had envy and FoMO.

Structural model

After assessing the validity of study's constructs, hypotheses for the relationships depicted in our conceptual model (Figure 1) were tested using structural equation modeling (SEM). SEM, a combination of confirmatory factor analysis (CFA) and multiple regression (Schreiber et al. 2006) is characterized as a statistical method that allows simultaneous testing of direct and indirect relationships between different structures or variables (Kline 2011). Except χ^2/df ratio = (1,699.11/203 = 8.37), all fit indexes (CFI = .97, NFI = .97, NNFI = .97, IFI = .97, GFI = .92, and AGFI = .90) indicated acceptable model fit. Further, the RMSEA and the SRMR were .065 and .041 respectively, which are lower than the recommended level of .08. As indicated earlier, it is commonly accepted that X^2/df ratio grows and chi-square statistic is rejected in large samples. Therefore, this ratio can be ignored in large samples when evaluating the measurement or structural model. Overall, the structural model represents acceptable model fit.

Table 4. Path coefficients and hypotheses testing.

Hypotheses	Relationship	Std. beta	*T*-value	Decision
H1	ENVY → FoMO	0.69**	23.40	Supported
H2	FoMO → INVO	0.14**	5.28	Supported
H3	FoMO → ENGA	0.08*	4.23	Supported
H4	INVO → ENGA	0.73**	30.27	Supported
H5	INVO → SATI	0.44**	14.37	Supported
H6	ENGA→ SATI	0.49**	15.63	Supported

*$p < .05$; **$p < .01$.

Results of the SEM analysis are shown in Table 4 and show that all six hypotheses in our proposed conceptual model all hypotheses were positively significant. The first relationship in the model predicts a positive relationship between envy and FoMO, revealing that jealousy triggers FoMO. Result confirms relationship between envy and FoMO ($\beta = .69$, $t = 23.40$, $p < .01$), supporting acceptance of hypothesis 1. Standardized estimates path coefficients and t values establish a positive relationship between FoMO and investment involvement ($\beta = .14$, $t = 5.28$, $p < .01$) and investment engagement ($\beta = .08$, $t = 4.23$, $p < .05$). Findings thus support hypotheses 2 and 3. Significant paths emerge for involvement → engagement ($\beta = .73$, $t = 30.27$, $p < .01$) and involvmenet → satisfaction ($\beta = .44$, $t = 14.37$, $p < .01$) relationships, thus supporting hypotheses 4 and 5. Finally, hypothesis 6 proposing a positive relationship between investment engagement and satisfaction ($\beta = .49$, $t = 15.63$, $p < .01$) is also significant and supported. Findings, overall, indicates that all six hypotheses presented in the model are supported (Table 4).

Mediation effects

Mediation analysis was applied to determine the mediation status of the relations between the variables in the conceptual model. Table 5 shows the direct and indirect effects in the mediation relationships. Considering the direct effects of independent variables (envy, FoMO and involvement) on dependent variables (involvement, engagement and satisfaction), the results showed the relationships of "FoMO → SATI," "FoMO → ENGA," and "INVO → SATI" were significant ($\beta = .04$, $p < .05$; $\beta = .08$, $p < .01$; $\beta = .41$, $p < .01$, respectively). The mediation analysis indicated that the full mediating effect of FoMO between envy and involvement was significant ($\beta = .08$, $p < .01$). The 95% confidence interval (CI) was .04–.11, excluding 0, which indicated that the mediating effect of FoMO was significant. The relationship between envy and engagement (95% CI = .04–.11) was fully mediated by FoMO ($\beta = .09$, $p < .01$). In addition, the full mediating effect of engagement between FoMO and satisfaction (95% CI = .04–.11) was significant ($\beta = .12$, $p < .01$). Further, involvement was found

Table 5. Mediation test results.

Direct effects		Indirect effects			95% CI		
Relationships	β	Relationships	β	Sd error	Lower	Upper	Results
ENVY → INVO	.01	ENVY → FoMO → INVO	.08**	.02	.04	.11	Full
ENVY → ENGA	.02	ENVY → FoMO → ENGA	.09**	.02	.06	.12	Full
FoMO → SATI	.04*	FoMO → INVO → SATI	.10**	.02	.06	.13	Partial
FoMO → ENGA	.08**	FoMO → INVO → ENGA	.10**	.02	.06	.13	Partial
FoMO → SATI	.02	FoMO → ENGA → SATI	.12**	.02	.09	.16	Full
INVO → SATI	.41**	INVO → ENGA → SATI	.25**	.02	.22	.28	Partial

*$p < .05$; **$p < .01$.

to be a partial mediator on the relationship between "FOMO and satisfaction," "FoMO and engaement". Furthermore, three partial mediation effects were found in the relations between the variables in the model. Involvement is found to be a partial mediator on the relationship between "FoMO and satisfaction" ($\beta = .12$, $p < .01$; 95% CI = .09–.16), "FOMO and engagement" ($\beta = .10$, $p < .01$; 95% CI = .06–.13). Further, engagement was shown to partially mediate the relationship between involvement and satisfaction ($\beta = .25$, $p < .01$; 95% CI = .22–.28).

Discussion

Little research has investigated the relationship between envy and FoMO, investment involvement, investment engagement, and satisfaction, and underlying these associations remains largely unknown. Therefore, the aim of the current study was to investigate the associations among FoMO, involvement, engagement, and satisfaction in the individual investor population.

One of the predictions in our conceptual model was envy, which is one of variables that affects the feeling of FoMO. This hypothesis proposes that envy functions as an antecedent for FoMO, just as the literature emphasizes. As expected, envy showed a significant positive relationship with FoMO, which is consistent with the finding of Wang et al. (2019). Envy could be seen as a key element in the emergence of the feeling of FoMO. As mentioned earlier, in order to emerge of FoMO feeling, jealousy as a triggering emotion is also a crucial factor. Individuals who perceive themselves as being at high risk of missing out in the future are more likely to find an easier way to involving with such experiences compared with individuals with lower FoMO. Implication is that individuals with high FoMO are more likely to engage with financial investment if they're more easily influenced by the bandwagon effect (Ionescu and Rădulescu 2019). On financial behavior, due to the high-emulation demonstrated by many investors, FoMO becomes one of the most important elements for involving financial subjects.

Our findings go beyond the previous studies by revealing that FoMO, as one of the determining emotions in decision-making and behavior process, is positively related to involve and engage with a financial subject such as individual investment or money saving. To our knowledge, this is the first study to report such relationships in financial behavior area. Given that FoMO has impacts on behaviors in different context such as marketing, finance, consumption, a more comprehensive understanding of the antecedents and consequences of FoMO is important in strategy development toward investors.

In terms of FoMO as the influencing variable, we have found positive and significant relationships between FoMO, financial investing involvement, and investor individual's engagement. We consider that FoMO toward individual investment instruments (such as foreign currency, gold, stocks) is an antecedent of involvement and/or engagement. The results of the current study indicated the existence of a positive and significant effect of FoMO on both variables, involvement and engagement. Besides, the results also indicated involvement and engagement as important two predictors for satisfaction in the context of individual financial investment. This assumes that to make individual investors more engaging with financial issues and involving with the specific subject, such as saving or investment, it will be important for them being satisfied because of this experience.

In addition, it should be taken into account that FoMO and jealousy can lead individuals to systems that engage in fraudulent activities by promising above-normal earnings. When the literature is examined, it has been observed that in some studies in the field of behavioral finance (Blanchard and Weil, 2001; Nesvetailova and Palan, 2013; Hidajat et al. 2020; Bulut 2022) individuals are deceived through the system defined as Ponzi finance. Ponzi financing is a financial model based on the inflow of financial assets obtained from those involved in the system, the temporary elimination of asset shortages and the fulfillment of liabilities (Nesvetailova 2008). Although this model is a fraud-based financing model, it is a system that results in bankruptcy as a result of no new participants entering the system or a decrease in cash inflows.

Hidajat et al. (2020) adhering to behavioral finance, investigated the psychological factors that push individuals to Ponzi and Pyramid schemes. The conclusion of this study is that optimism (emotional bias), confirmation bias, representativeness bias, framing bias and overconfidence (cognitive bias) positively influenced investment decisions related to Ponzi and pyramid schemes.

Ponzi finance has entered a new era with the widespread use of smart devices, increased access to the internet and digitalization in financial

intermediation services. The rapidly increasing digitalization in this area creates a decentralized structure that increases information asymmetry and uncertainties in financial markets. This new situation provides a very favorable environment for entrepreneurs based on the Ponzi system to carry out their activities (Bulut 2022). For this reason, it would be beneficial to carefully warn individual investors, especially those with low level of financial knowledge that they may turn to this system under the influence of FoMO and jealousy, and to investigate the subject in detail in future studies.

Implications

The findings of the current study have several important theoretical and practical implications. First, our findings underline the important role of FoMO in the behavioral finance context. Given that the effect of envy hence of the FoMO on individual investor's behavior are taken into account, it is important to understand its relationship with consumption behavior in finance area. The present study demonstrated that envy was positively related to FoMO, as expected, and indicated in the literature. Given the potential effect of FoMO on individual investor or saving behavior, it is crucial for the financial managers to make efforts to evaluate the relationships between variables in the model for potential investors. Second, the findings showed that FoMO was positively related to involvement and engagement use among individual investors. Thus, approaches that initiate FoMO sense would help in increasing usage of investment instruments for investors. Given that FoMO can be regarded as a comparison issue (Przybylski et al. 2013) it might be useful for practitioners or managers to use feeling of scarcity to increase people's financial investment tool usage. Third, the results of our study indicate that the mediating effect of FoMO in the links between "envy and engagement," and "envy and involvement." The results also reveal that FOMO have a partial effect on engagement and satisfaction. The positive link between FoMO and involvement, and engagement, indicate that special interest in specific topics such as finance can arise through leading variables such as FoMO. Consequently, our research adds contribution to personal investment decision and financial behavior research by evidencing that FOMO is a key mediator for the linkage between antecedents and consequences.

Conclusion

In brief, this study contributes to the literature by testing relationships among envy, FoMO, involvement and engagement for individual investment context. The results indicate that FoMO is an antecedent factor for decision of investment among potential individual investors. In other

words, FoMO can be considered an emotional tool for individual investors to be interested in investment instruments that can be considered special. Besides, the analyses reveal that FoMO can be one of the emotion for why envy is indirectly related to financial decision-making and behavior among individuals. Easy access of individual savers to financial instruments due to a sense of FoMO and financial technology services has an impact on the financial engagement levels of the individual, their financial involvement levels and their desire for profit. In this study, it was observed that investment involvement had a positive impact on financial satisfaction. Moreover, findings indicate that being engaged with an important issue or attributed to a financial subject can have a positive effect on satisfaction.

Limitations and future research

Although this study contributes to the literature, it has several limitations that should be noted. First, the study only involves individual investors from Turkey, a developing country. The data from the single-country context limits the generalization of the findings to other countries and global investing community. Results might be different if other countries and cultures were taken into consideration. To generalize the results of this study, future studies are needed to test among individual investor from different countries and/or cultures. Second, the research data were collected from individual investors through convenient nonrandom sampling. Thus, generalizations cannot be made about the whole investors. Third, the current research data were self-reported by individual investors. Self-reported data, especially on behavioral variables, may cause common bias issue. Future research should apply approach regarding a time-series or a panel data to confirm the causal relationships that we found. Fourth, although our proposed model is supported and provides important insights, other aspects could also be relevant for individual investors' behavior, such as scarcity and impulsiveness. Therefore, these other aspects are out of the scope of this study and should be addressed in future research. Lastly, the monetary value of the investment was asked in the form of intermittent options in our survey. Future studies should use of an open-ended question to identify average value of the investment.

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