

Owusu, Godfred Matthew Yaw; Korankye, Gabriel; Yankah, Nana Yaw Mark;
Josephine Baaba Agyekum Donkor

Article

Financial risk tolerance and its determinants: The perspective of personnel from security services in Ghana

Borsa İstanbul Review

Provided in Cooperation with:

Borsa İstanbul Anonim Şirketi, İstanbul

Suggested Citation: Owusu, Godfred Matthew Yaw; Korankye, Gabriel; Yankah, Nana Yaw Mark; Josephine Baaba Agyekum Donkor (2023) : Financial risk tolerance and its determinants: The perspective of personnel from security services in Ghana, *Borsa İstanbul Review*, ISSN 2214-8469, Elsevier, Amsterdam, Vol. 23, Iss. 4, pp. 852-864, <https://doi.org/10.1016/j.bir.2023.02.005>

This Version is available at:

<https://hdl.handle.net/10419/340402>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Financial risk tolerance and its determinants: The perspective of personnel from security services in Ghana

Godfred Matthew Yaw Owusu^a, Gabriel Korankye^{b,*}, Nana Yaw Mark Yankah^c,
Josephine Baaba Agyekum Donkor^d

^a Department of Accounting, University of Ghana Business School, Legon-Accra, Ghana

^b Department of Accounting, University of Professional Studies, Accra, Legon-Accra, Ghana

^c Ministry of Finance Ghana, Ghana

^d Institute of Postgraduate Studies, Malaysia University of Science and Technology, Malaysia

Received 6 July 2022; revised 26 February 2023; accepted 26 February 2023

Available online 6 March 2023

Abstract

The main objective of this paper is to evaluate the financial risk tolerance of personnel in the various security services in Ghana (i.e., people who serve in the various public security divisions, including the military, immigration, police, customs, firefighting, and prisons). In particular, we examine the predictors and outcomes of financial risk tolerance and further assess whether financial risk tolerance mediates the relationship between the predictor variables and financial behavior. A partial least square structural equation modeling analysis of data collected from a cross-section of security service personnel revealed that financial threat, trust, and deliberative thinking significantly influence financial risk tolerance. We also found that financial risk tolerance is a strong predictor of financial behavior. In addition, financial risk tolerance mediates the relationship between financial threat and trust and financial behavior. The findings in this study are relevant to the leaders of the security services in developing strategies to ensure the financial security of the personnel.

Copyright © 2023 Borsa İstanbul Anonim Şirketi. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: Financial risk tolerance; Family financial socialization; Financial behavior

1. Introduction

Following the outbreak of the Covid-19 pandemic in 2019, the financial sector, like most sectors, suffered immense decline, which has had a negative impact on investors' confidence in the sector. Evidence from the International Center for Finance at the Yale School of Management suggests that individuals and institutional investors' confidence in the financial sector decreased from 72.12 percent in 2018 to 69.17

percent at the end of 2019 and dipped further, to 61.54 percent at the end of 2020 in the US. According to [Heo, Rabbani, and Grable \(2021\)](#), this statistic is not isolated but, rather, a reflection of the global outlook as investor confidence in the financial sector continued to decline in many parts of the world. In Ghana, the effect of the pandemic was more devastating, worsening already-fragile conditions due to the banking sector financial crisis in 2017, that led several people to lose their lifetime savings and investment (BoG, 2019; PwC Ghana, 2019; 2020).

It has been argued that extreme events, such as the Covid-19 pandemic, can cause downward pressure on the financial sector and subsequently alter people's financial risk tolerance ([Kaplanski & Levy, 2010](#)). Given that an individual's financial risk tolerance level has important implications for investment decisions, financial planning, and portfolio optimization ([Heo,](#)

* Corresponding author.

E-mail addresses: gmowusu@gmail.com, gmyowusu@ug.edu.gh (G.M.Y. Owusu), gabriel.korankye@upsamail.edu.gh, gkorankye2015@gmail.com (G. Korankye), NYankah@mefep.gov.gh (N.Y.M. Yankah), jmanful@hotmail.com (J.B. Agyekum Donkor).

Peer review under responsibility of Borsa İstanbul Anonim Şirketi.

Rabbani, & Grable, 2021; Heo, Rabbani, & Min, 2021; Zhu, 2019), it has become important to revisit the concept of financial risk tolerance in this pandemic era. Financial risk tolerance (FRT) is the minimum level of uncertainty that an individual is willing to accept when making financial decisions (Grable, 2000). It is basically the margin of risk that a person is willing to take immediately, in anticipation of future benefits.

In terms of research focus, extant studies over the years have explored the determinants of FRT. In particular, demographic factors, including age, gender, income level, and education level have been found to be associated with FRT by individuals (Bannier & Neubert, 2016; Dickason-Koekemoer & Ferreira, 2019; Fisher & Yao, 2017; Kannadhasan, Aramvalathan, Mitra, & Goyal, 2016). Some emerging studies have also explored the impact of other economic and cognitive factors, such as financial literacy and financial knowledge, on an individual's FRT (Heo, Rabbani, & Min, 2021; Reddy & Mahapatra, 2017), and the effect of some personal characteristics like personality traits on FRT, has also been investigated (Nguyen, Gallery, & Newton, 2019; Pinjisakikool, 2017). Although the evidence in these studies contributes substantially to understanding the relevant determinants of individual levels of FRT, it has been argued that these factors alone do not adequately explain variations in individual risk tolerance levels (Hartnett, Gerrans, & Faff, 2019; Kannadhasan et al., 2016). The need for further studies into other determinants of FRT is therefore highlighted in the literature (Dickason-Koekemoer & Ferreira, 2019; Rahman, 2020).

The current study takes a closer look at the determinants of FRT, focusing on psychological and environmental (psychosocial) factors overlooked in prior studies even though they are believed to be fundamental in behavioral development (Igra & Irwin, 1996; Kannadhasan et al., 2016). Relying on the prospect theory and the family financial socialization theory, we explore the effect of trust, optimism, financial threat, deliberative thinking, and family financial socialization on FRT, focusing on personnel of the security services in Ghana. Further, we examine the outcomes of FRT by ascertaining its effect on financial behavior.

Focusing on service members is particularly relevant given that extant studies tend to examine their physical and emotional issues, not financial matters. However, compared with the general population, service members are confronted with more severe financial challenges, including growing debt and overall financial insecurity, and it has been documented that financial concerns are among the main life stressors for them (Carlson, Britt, & Goff, 2015; Montegary, 2015). Prior studies (Bryan & Bryan, 2019; Bryan et al., 2019) link financial stress to suicide and suicidal ideation among service members. According to the Annual Suicide Report (ASR) in 2020, suicide rates are higher among service men and veterans than the civilian population, and nearly 15 percent of service members who attempted suicide experienced some financial difficulties in the 90 days beforehand. Skimmyhorn (2016) documents that, compared to their civilian counterparts, service members exhibit more problematic financial management behavior, such as poor credit card management. Again, the propensity to take

risk and engage in unsafe behavior is high among service members because of their combat exposure (Carlson et al., 2015).

Nevertheless, research on financial risk has largely focused on civilians, not service members (Nguyen et al., 2019; Pinjisakikool, 2017; Rahman, 2020). Although the experiences of service members are linked to elevated risk of substance abuse, depression, mental health issues, and other problems, very little is known about the impact of their particular risk exposure on financial risk taking behavior.

This study fills this important gap in the literature by examining the factors that influence the FRT of service members. The results from our structural model, using the bootstrapping procedure, show that psychosocial factors are good predictors of FRT, and FRT has important implications for individual's financial behavior. Ghana's financial sector has recently been plagued by many Ponzi schemes. Although several people have lost their savings and investments due to these fraudulent schemes, statistics by the Central Bank of Ghana shows that the security agencies are the most affected by them (Bank of Ghana, 2022). This motivates our focus on Ghana's security service personnel.

The rest of the paper is organized as follows. Section two provides some literature background, both theoretical and empirical for the study, while section three presents the methodology. Section four discusses the results and findings of the study, and the conclusions drawn, implications of the study and suggestions for future research are presented in section five.

2. Literature review

2.1. Theoretical review

Earlier studies have often relied on the utility theory (UT) when evaluating the financial decisions of individuals. UT suggests that an individual's financial decisions can be ranked based on the probability of frequency and the weight of outcome satisfaction attached to the decision (Grable & Lytton, 1999; Heo, Grable, & Rabbani, 2018; Shefrin & Statman, 1993). Individual financial decisions, therefore, are dependent not only on the perceived utility or expected satisfaction attached to the decision but also the likelihood of occurrence. Critics of the UT (Caplin & Leahy, 2001; Tversky & Kahneman, 1973) argue that, notwithstanding its contribution to the literature, application of this theory has some key limitations. For instance, it is difficult to attach probabilities to or weigh the outcome satisfaction of a particular decision. Also, in some cases, people choose decision bundles that yield lower expected utility (Grable & Lytton, 1999; Tversky & Kahneman, 1973). Because of the inherent limitations of the UT, researchers consequently apply Tversky and Kahneman's (1973) prospect theory.

2.1.1. Prospect theory (PT)

PT explains decision-making under uncertainty and risk as choice between alternate objects (prospects) that can be defined as potential gains or losses. The proponents provide evidence

that financial decision-making does not follow any rational calculations, as proposed by UT. Tversky and Kahneman (1973) argue that losses have a greater emotional impact on an individual than similar gains; therefore, given two options with the same outcome, an individual will choose the alternative with more perceived advantages. Again, PT suggests that a behavioral dimension to financial decision-making exists and that financial decisions by individuals are informed in part by psychological, social, and environmental factors (Rahman, 2020; Ricciardi, 2008; Tversky & Kahneman, 1973). Accordingly, this study explores some key psychological and environmental factors that are relevant to the risk tolerance and financial behavior of individuals. People's risk tolerance is dependent on their level of optimism, their level of trust, and their extent of deliberative thinking and evaluation. Further, the situational environment and the threat it poses to an individual may also affect that person's level of risk tolerance (Hartnett et al., 2019; Kannadhasan et al., 2016; Ricciardi, 2008). In addition to PT, researchers also rely on the family financial socialization theory to explain the framework of the study.

2.1.2. The family financial socialization theory

Propounded by Gudmunson and Danes (2011), the family financial socialization (FFS) theory emphasizes the critical role of the family in the socialization process of an individual, particularly on financial behavior (Vosylis & Erentaite, 2020). The FFS theory explains the development of financial values, attitudes, standards, norms, knowledge, and behaviors that contribute to the financial viability and well-being of an individual (Gudmunson & Danes, 2011; Payne, Yorgason, & Dew, 2014). The theory proposes that the family characteristics and interactions among members contribute to a person's future financial behavior. Gudmunson and Danes (2011) further opine that individuals learn the content, logic, and functioning of

financial systems through family relations and communications and, hence, can actively participate in and benefit from it.

Extant literature has employed the FFS theory to explain people's retirement preparedness (Payne et al., 2014), financial knowledge (Deenanath, Danes, & Jang, 2019), financial well-being (Lanz, Sorgente, & Danes, 2020), and financial behavior (Payne et al., 2014; Vosylis & Erentaite, 2020; Zhao & Zhang, 2020). This study extends this body of knowledge by studying the effect of FFS on FRT and examines the relationship between FFS and financial behavior (see Fig. 1).

2.2. Empirical review

2.2.1. Financial risk tolerance

Risk tolerance refers to the ability to withstand volatility or fluctuations in returns (Grable & Lytton, 1999; Shah, Khalid, Khan, Arif, & Khan, 2020). However, FRT refers to the minimum amount of uncertainty a person is willing and able to accept in making a financial decision (Grable, 2000; Nguyen et al., 2019). That is, FRT explains individual attitudes toward risk. Knowledge of an individual's level of FRT is necessary for the determination of the mix of investment packages that a person can accommodate (Rahman, 2020; Wall et al., 2005).

In line with the risk-return theory, which suggests that higher risk attracts higher returns, financially risk-tolerant individuals can take on more risk and therefore have a higher likelihood of receiving higher returns. Despite the proposition of the risk-return theory, FRT is influenced not only by financial returns but also by demographic, social, economic, and psychological factors (Rahman, 2020; Wall et al., 2005). Further, Shah et al. (2020) opine that FRT is subjective and influenced by behavioral biases. Nguyen et al. (2019) summarize these arguments as follows: FRT is a personal

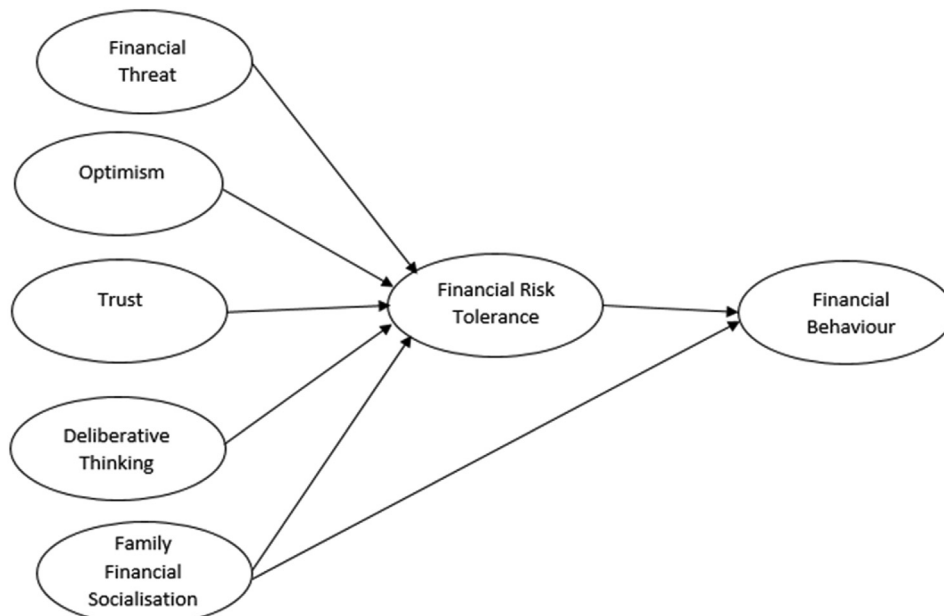


Fig. 1. Research Framework based on the Prospect Theory and Family Financial Socialization Theory.

characteristic that can change over time, and FRT is influenced by external factors. Following these arguments, this current study examines FRT from a behavioral perspective.

2.2.2. Financial threat

During economic downturns, an individual's ability to cope with the associated uncertainty diminishes (Marjanovic et al., 2015). Uncertainty regarding employment, business survival, and revamped economic activity, among others, can affect individual financial conditions (Ishtiaq, Tufail, Shahzad, & Naseer, 2019). As individual financial conditions worsen because of high debt and low income, people's perceptions about the security and stability of their financial resources deteriorate. Given that people's ability to provide for themselves and their families is dependent on maintaining a good balance between income and spending, any potential disruptions are considered financial threats.

Financial threat refers to people's mental state if it includes a feeling of ambiguity about their present or future financial circumstances (Adamus & Grezo, 2021; Ishtiaq et al., 2019). According to Fiksenbaum, Marjanovic, Greenglass, and Garcia-Santos (2017), a financial threat is a fearful-anxious uncertainty regarding an individual's current and future financial conditions. Thus, a financial threat is the level of uncertainty about a person's financial conditions. Previous studies have argued that financial threat influences economic hardship (Fiksenbaum et al., 2017; Mamun et al., 2020; Ofori, 2020), a decline in perceived mental health (Viseu et al., 2021), and anxiety and stress (Mamun et al., 2020; Ofori, 2020). Other studies seeking to find the antecedents of financial threat find evidence indicating that anxiety and stress are key determinants (Ishtiaq et al., 2019; Mamun et al., 2020). In addition, PT argues that an individual's psychological state influences that person's financial decisions (Ricciardi, 2008). Following the outcomes of these studies and in line with PT, we hypothesize that a perceived financial threat is positively associated with FRT.

2.2.3. Optimism

Keller (1968) defines optimism as “the faith that leads to achievement.” Other scholars have defined optimism in many different ways from various perspectives; however, the underlying commonality is that “optimism is not without risk” (Angelini & Cavapozzi, 2017; Beazley, 2009; Strömbäck, Lind, Skagerlund, Västfjäll, & Tinghög, 2017). That is, optimistic individuals may be exposed to some level of harm, danger, or loss. The different forms of optimism identified in the literature include dispositional optimism, unrealistic optimism, optimism as attributional style, comparative optimism, situational optimism, strategic optimism, realistic optimism, and optimism bias. This study focuses on dispositional optimism, which refers to a global expectation that more good things will happen than bad things (Geers, Wellman, & Fowler, 2013; Scheier & Carver, 1985). Thus, optimistic people see the good in everything they do, they are always hopeful that the best will come out of every situation, and, so, they put in their all.

Optimism has been largely studied in the context of financial behavior (Angelini & Cavapozzi, 2017; Strömbäck et al., 2017). For example, Angelini and Cavapozzi (2017) study the relationship between optimism and investment and find that the two constructs are positively and significantly related. Strömbäck et al. (2017) indicate that optimism is a key determinant of good financial behavior. Given that optimistic individuals are hopeful that good things will happen, they work hard, save more, and retire later (Strömbäck et al., 2017). Further, from the perspective of PT, human psychology (in which optimism is key) plays a critical role in financial risk tolerance (Thanki, Shah, Sapovadia, Oza, & Burduhos-Nergis, 2022). It is argued that optimistic people can remain calm and hopeful under all circumstances. In light of these arguments, this study hypothesizes that a positive significant relationship exists between optimism and FRT.

2.2.4. Trust

A person who is confident of another's reliability and integrity is said to be trusting (Ou, Shih, & Chen, 2015; Rahman, 2020). That is, the person is willing to accept some level of vulnerability (exposure to risk) based on the expectation of positive or good behavior by another person. Individuals who trust in others rely on them, bank their hopes in them, and are willing to go the extra mile with or for the people whom they trust. Evidence in the prior literature suggests that trust is a necessary condition for risk taking (Delis & Mylonidis, 2015; Nguyen, Gallery, & Newton, 2016; Rahman, 2020). For instance, Delis and Mylonidis (2015) reveal that a positive relationship exists between trust and household financial decisions as investment.

In relational contexts, trust is an essential element (Gudmunson & Danes, 2011). Prior studies have found trust to be a determinant (Rahman, 2020) and also a consequence (Nguyen et al., 2016) of FRT. Nevertheless, other studies find no relationship between trust and FRT. These conflicting results make it imperative to conduct further investigations into the relationship between trust and FRT. According to PT, behavioral traits such as trust underpin individuals' financial decision-making and risk tolerance behavior (Brooks & Williams, 2021). Rahman (2020) posits that people who trust in others are generally willing to take risks. Further, Rahman (2020) argues that, for trust to occur, risk must exist, and even more risk becomes attractive when trust occurs. We therefore hypothesize that there exists a significant positive relationship between trust and FRT.

2.2.5. Deliberative thinking

Decision-making is largely undertaken using two systems: intuition and deliberative thinking (Kahneman, 2003; Moxley, Ericsson, Charness, & Krampe, 2012). Whereas intuition is fast, effortless, and reflexive, deliberative thinking is slower and controlled and requires substantial effort. Unless the deliberative thinking system sets in, the default human responses, decisions, and actions are based primarily on intuition (Moche, Gordon-Hecker, Kogut, & Vastfjäll, 2022). In the past, researchers have argued that

decisions were a result of intuition, emanating from an accumulation of experience (Benner & Tanner, 1987). However, proponents have argued that, in certain areas of operation, such as music and athletics, expertise is not necessarily created out of experience but, rather, from longer training (deliberate activity) (Ericsson, Krampe, & Tesch-Romer, 1993; Moxley et al., 2012).

Extant literature suggests that if decision makers employed more deliberative thinking, rather than intuitive thinking, they would be doing more comparison of alternative choices by estimating the probability of events, their possible outcomes, and perform a cost-benefit analysis of each option before making a final choice (Mata, 2016; Regier, Sicsic, & Watson, 2019). Moxley et al. (2012) and Derfler-Rozin et al. (2016) support the assertion that deliberative thinking makes for better decision-making. Based on PT, which suggests that psychological factors, such as deliberative thinking, underpin deviation from the usual logical proportional decision-making, this study hypothesizes that, deliberative thinking negatively influences an individual's FRT.

2.2.6. Financial Behavior

Financial behavior has attracted a lot of research interest over the years (Dew & Xiao, 2011; Mokhtar & Rahim, 2018; Strömbäck et al., 2017). This is because bad financial decisions, such as overspending, poor savings, and impulse buying, have become common (Sotiropoulos & d'Astous, 2013; Strömbäck et al., 2017). Financial behavior encompasses all activities and actions that regard planning, handling, use and control of cash, credit or debt use, savings and investment, and insurance (Dew & Xiao, 2011). The concept of financial behavior is broadly divided into four aspects: budgeting, debt management, savings and investment, and insurance. Many studies focuses on a few aspects of the broader concept. Further, studies on behavioral finance have largely paid attention to the demographic and cognitive factors that affect financial behavior.

Whereas extant studies have established the relationship between FRT and financial behavior, most of these studies examine this relationship in light of one of these aspects. For instance, Finke and Huston (2003) posit that people who are risk tolerant are more likely to invest in stocks than risk-averse individuals. Similarly, Chapman and Domain (2000) and Corter and Chen (2006) reveal positive a relationship between FRT and investing in risky assets. Other studies have also linked FRT to retirement readiness or savings (Nguyen, Nguyen, Tran, & Trinh, 2021; Reyers, 2018). In this study, we evaluate the relationship between FRT and financial behavior, taking into consideration all the dimensions of financial behavior. According to PT, the FRT of an individual affects that person's financial behavior. Thus, our study posits that FRT has a significantly positive relationship to financial behavior.

2.2.7. Family financial socialization

As defined by Danes (1994: 128), financial socialization is the process of acquiring and developing values, attitude,

norms, knowledge, standards, and behaviors that contribute to the financial viability and individual well-being. Family socialization focuses primarily on the parent-child relationship, because it is influential. Earlier studies on family socialization limit family socialization to the early childhood. However, more recent studies argue that socialization transcends adulthood (Gudmunson & Danes, 2011). Gudmunson and Danes (2011) further posit that the quality of interpersonal family relationships serves as a catalyst for success in an explicit attempt to socialize another family member financially. As such, families that have made the effort to teach their younger members about money have been more successful when a good relationship already exists.

Empirical studies have largely found a positive relationship between FFS and financial behavior (Lanz et al., 2020; Payne et al., 2014; Ullah & Kong, 2020; Vosylis & Erentaite, 2020; Zhao & Zhang, 2020). For instance, Zhao and Zhang (2020) find that the effectiveness of FFS positively influences an individual's financial literacy, financial behavior, and eventual financial well-being. However, Lanz et al. (2020) studied the relationship between implicit FFS (enmeshment and role modeling) and financial behavior and came out with a mixed result. Their study found that while family/parental role modeling has a positive influence on one's financial behavior, family economic enmeshment negatively affects financial behavior among young people. In this study, we try to determine whether a relationship exists between FFS (as a single construct) and FRT. We therefore posit that a significant positive relationship exists between FFS and FRT. Additionally, in line with the proposition of the FFS theory that family financial interactions contribute to financial behavior, we propose that a positive and significant relationship is found between FFS and financial behavior.

3. Methodology

3.1. Research design

To test the hypothesis in this study, we employed a quantitative approach, specifically, the survey method, with cross-sectional data from a sample of security service personnel. The data were collected electronically using web-based survey designed with Google Forms. Service members working at the headquarters of each of the six services and pursuing a postgraduate program at the researchers' institutions at the time of the data collection were contacted to assist with data collection. The service members identified assisted in sharing the link to the survey with their colleagues. The link was made accessible to the respondents for 10 weeks in order to allow the respondents ample time to complete the questionnaire.

3.2. Sample and sampling method

The multistage sampling technique was employed in selecting the study sample. First, we grouped the target population based on the six public security departments, namely, the Ghana Police Service, Ghana Armed Forces, Ghana Immigration

Services, Ghana National Fire Service, Customs Service, and Ghana Prisons Service. To ensure that each service is fairly represented in the sample, the link was shared with each of the divisions, though participation was purely voluntary. The sample of 600 was chosen based on the argument by Hair, Sarstedt, Hopkins, and Kuppelwieser (2014), suggesting that the minimum sample for an exploratory study of this nature should be ten times the number of constructs in the study framework. Thus, given that the conceptual framework consists of seven constructs, a sample of at least 70 is acceptable, hence, 600 respondents is a sizable sample.

3.3. Questionnaire development and data analysis technique

The measurement scales for the various constructs of the study were adapted from previous studies. The questionnaire has two main parts, A and B. Part A consists of 51 questions that reflect both the endogenous (FRT and financial behavior) and exogenous variables (deliberative thinking, FFS, financial threat, optimism, and trust). A six-item scale designed by Kapteyn and Teppa (2011), and later modified by Pinjisakikool (2017), was employed to measure FRT. Financial behavior was measured using the financial management behavior scale (FMBS) established by Dew and Xiao (2011). The study also adapted the financial socialization scale by Hira et al. (2013) in measuring FFS, whereas financial threat was measured using the financial threat scale from the adapted scale of Marjanovic et al. (2015). Further, we employed two- and ten-item scales to measure deliberative thinking and optimism, respectively. The measurement scales for deliberative thinking and optimism were adapted from the Unified Scale to Assess Differences in Intuition and Deliberation and the Life Orientation Scale, respectively (Strömbäck, Lind, Skagerlund, & Vastfjall, 2017). In addition, trust was measured with the general trust scale established by Yamagishi and Yamagishi (1994). All questions in this section were assessed on a scale of 1 (strongly disagree/not at all/rarely) to 7 (strongly agree/extremely/a lot). Finally, Part B requests demographic information from the respondents to describe their characteristics and put the discussion in a proper context. The information includes age, gender, income, and education level.

The data collected were analyzed using the structural equation modeling (SEM) technique. SEM allows for efficient estimation and evaluation of models that use unobserved variables. Specifically, we use the partial least square structural equation modeling (PLS-SEM) technique to evaluate the measurement model and structural model. The PLS-SEM approach is more appropriate for this study due to the complex nature of the study model and the several constructs involved (Avkiran, 2018; Sarstedt, Ringle, Smith, Reams, & Hair, 2014). The order of the analysis is as follows. First, we perform descriptive analyses of the respondents and the constructs. Second, we conduct a measurement model estimation, followed by a structural path analysis.

3.4. Brief profile of respondents (Ghana security services)

Ghana's public security community consists of the Ghana Police Service, Ghana Armed Forces, the National Intelligence Bureau, Research Department of the Ministry of Foreign Affairs, Defense Intelligence, Ghana Revenue Authority, Narcotics Control Board, and the National Disaster and Management Organization. Others are the Ghana National Fire Service, the Ghana Immigration Services, the Prisons Service, the Financial Intelligence Center, and the Economic and Organized Crime Office. At the top of the security community is the National Security Council (NSC), made up of the president, vice president, and ministers of foreign affairs, defense, interior, and finance. In addition, the service chiefs of the Armed Forces, Police Service, Prisons Service, Customs, Military Intelligence and External Intelligence are also members of the council (Ministry of Justice, 2005).

Ghana's security services have sometimes been accused of committing infractions such as extorting civilians. These behaviors are attributed to poor financial incentives and compensation, as well as financial insecurity. Thus, the services have undergone several reforms (the first of which was in the 1990s) following the increasing incidence of crimes and the dwindling image of the services in the eyes of the public. For instance, the most recent reform, in 2020, led to a new law, the Security and Intelligence Agency Act (Act 1030). However, the reform is yet to achieve the intended objective as there has been no significant improvement in their behavior and conduct. Thus, this study focuses on these security personnel to examine their level of risk tolerance, given their poor financial conditions. Given that, these groups of people are ready and willing to take on all forms of risk in their work, it will be interesting to determine their financial risk-taking behavior.

4. Results and discussion

4.1. Respondents' profile

Out of the 600 surveys distributed, we received a total of 206 responses, a response rate of 34.33 percent. However, 10 of the responses were incomplete and thus omitted, leaving 196 valid responses for analysis. The gender distribution of the respondents was skewed in favor of males (77.17%). This supports the argument that security services are male-dominated professions (Scott, 2019). The respondents span the six main security services. A majority of the respondents work at the Ghana Immigration Service (36.22%), followed by the Ghana Military (34.69%) and the Ghana Police Service (11.73%). In addition, a majority of the respondents (about 87.50%) are young—that is, below age 45 (47.96% between ages 30 and 45, and 39.80% below age 30). This is a reflection of the age distribution in the country. Further, most of the respondents had at least a bachelor's degree (97.45%). This indicates that the respondents have an appreciable level of education and are highly literate. Finally, the

majority of the respondents earn a minimum monthly income of GHC 2000 (about USD 156), which is far above the minimum wage in the country. Table 1 summarizes the demographic information on the respondents.

Table 2 provides information on the descriptive statistics of the constructs. It shows the means of the constructs as well as the means and standard deviations of the respective measurement items. The results reveal that the respondents are generally agree with the measurement statements, with a few exceptions. For instance, trust in financial advisers and institutions is not very high, with a mean of 4.26 (which is slightly above the median, 3.5). This indicates that even though there is some level of trust in the financial sector, it is not very high. The specific items TR7 (most people are trustworthy) and TR4 (most people are trustful of others) have the lowest mean scores, 3.37 and 3.43, respectively. This suggests that respondents seldom trust others and do not believe that other people are trustful. At the same time, the responses suggest that security service personnel are deliberative thinkers. The overall mean score for deliberative thinking is 6.38, which indicates a high level of meticulousness in the thinking of the respondents. This does not come as a surprise because the respondents are expected to be much disciplined in action and highly logical in their thinking, due to the nature of their profession.

In general, the respondents perceived themselves as optimistic (overall mean score of 5.14). The measurement item with the highest mean score is OPT 10 (overall, I am optimistic) whereas the item with the lowest mean score is OPT 3 (if something can go wrong for me, it will). It could also be deduced from the results that the respondents perceive themselves as moderately financially threatened (mean = 4.46) and fairly socialized financially by their families (mean = 4.32). The respondents may be financially threatened due to the high cost of living, coupled with a continuous increase in prices

whereas income levels remain stagnant. In terms of financial behavior, the respondents ranked themselves quite high (mean = 4.72, SD = 1.98). This means that the respondents perceived themselves as having good savings, cash and credit management, and insurance behaviors.

4.2. Reliability and validity

In this study, the two-stage approach suggested by Hair, Ringle, and Sarstedt (2011) is employed in the data analysis. First, the study assesses the measurement model, which assesses the reliability and validity of the construct and measurement items. Then, the structural model is considered. The composite reliability measure is employed for assessing the reliability. According to Nunally and Bernstein (1994) and Hair et al. (2014), a composite reliability measure of 0.70 or greater is acceptable. Table 3 shows that all the constructs show a composite reliability measure greater than 0.70, indicating that the constructs are reliable. For instance, the construct with the lowest composite reliability, financial behavior, had a score of 0.77. Also, all the factor loadings are above 0.50, hence they are acceptable. Further, in testing the validity of the constructs, the convergent validity discriminant validities were examined. The average variance extracted (AVE) was used in assessing the convergent validity. The minimum threshold for AVE is 0.50 (Hair et al., 2011). The results in Table 3 suggest that all the constructs meet the minimum threshold, with the lowest reported AVE being 0.53 (for financial behavior).

The study employs the Fornell and Larcker criterion in evaluating the discriminant validity. This approach compares the square root of the AVEs with the correlations of a construct with other constructs. If the squared AVEs are greater than the correlations between constructs, then discriminant validity is confirmed (Fornell & Bookstein, 1982; Sarstedt et al., 2014). Table 4 shows that the discriminant validity is assured for the various constructs in the study, as all the constructs satisfy the recommended conditions.

4.3. Structural path analysis

Next, we evaluate the structural model and test the hypothesized relationships. First, the variance inflation factor (VIF) was estimated to test for the existence of multicollinearity among the constructs. The VIF values, as shown in Table 5, were all below the threshold of not more than 5 (Hair et al., 2011), indicating the absence of multicollinearity between any of the constructs in the model. Further, we estimated the coefficient of determination (R^2) and the predictive relevance (Q^2) of the model. According to Hair et al. (2014), R^2 of 0.25, 0.50, and 0.75 implies weak, moderate, and strong significance levels, respectively. The assessment of R^2 reveals values of 0.159 and 0.341 for financial behavior and FRT, respectively. This implies that the psychosocial factors explain up to 34.10 percent of the variations in FRT, whereas FRT and FFS explain about 15.90 percent of the variations in financial behavior. The blindfolding technique is employed in estimating Q^2 . The results showed Q^2 of 0.182 for FRT and 0.070 for financial behavior, which are both greater than

Table 1
Descriptive statistics of respondents.

Variable	Group	Frequency (n = 196)	Percentage (%)
Gender	Female	47	23.98
	Male	149	76.02
Age	under 30 years	78	39.80
	31–45 years	94	47.96
	Over 45 years	24	12.24
Level of education	Higher National Diploma	5	2.55
	Undergraduate	112	57.14
	Master's degree	71	36.22
	Other	8	4.08
Income	Less than GHC 2000	25	12.76
	GHC 2001 to GHC 4500	110	56.12
	GHC 4501 to GHC 10,000	49	25.00
	Above GHC 10,000	12	6.12
Service	Ghana Military	68	34.69
	Ghana Police Service	23	11.73
	Ghana Immigration Service	71	36.22
	Ghana National Fire Service	5	2.55
	Ghana Prisons Service	14	7.14
	Customs Service	15	7.65

Note: GHC = Ghana Cedi.

Table 2
Descriptive statistics of the constructs and measurement items.

Code	Item	Mean	Standard Deviation
Financial behavior		4.72	
FB1	I do comparison shopping when purchasing all my products or services.	5.55	1.65
FB2	I pay all my bills on time (electricity, water, and phone).	5.92	1.56
FB3	I keep a written or electronic record of all my monthly expenses.	3.95	1.99
FB4	I stay within my budget or spending plan.	5.02	1.78
FB5	I pay off overdraft balance in full each month.	4.81	2.04
FB6	I normally exceed the maximum withdrawal limit on one or more ATM cards.	2.96	2.15
FB7	I make only minimum payments on loans.	3.68	2.19
FB8	I have begun or maintain an emergency savings fund.	5.52	1.84
FB9	I save some amount from every pay check or income.	5.45	1.83
FB10	I save for long-term goals (such as car, education, business startup).	5.73	1.70
FB11	I contribute money to a retirement account.	5.41	2.04
FB12	I have purchased bonds, stocks or shares, Treasury bills, or mutual funds.	4.32	2.37
FB13	I maintain or purchase an adequate health insurance policy.	4.46	2.13
FB14	I maintain or purchase adequate property insurance, such as comprehensive auto or homeowners' insurance.	3.68	2.20
FB15	I maintain or purchase adequate life insurance.	4.37	2.27
Financial risk tolerance		4.59	
FRT1	If I believe an investment will earn a profit, I am willing to borrow money to make this investment.	4.03	2.21
FRT2	I believe I need to take more financial risks if I want to improve my financial position.	5.16	1.88
FRT3	I am willing to run the risk of losing money if there is also a chance that I will make money.	4.69	2.02
FRT4	I am willing to take risks, such as starting a business or gambling, unlike other people, who prefer a secure job with fixed pay to an uncertain venture.	4.00	2.15
FRT5	I am prepared to take greater risks (possibility of initial losses) in order to earn greater future returns.	4.92	1.97
FRT6	I feel more comfortable taking risks (possibility of initial losses) when my investments are performing well.	4.77	2.04
Deliberative thinking		6.39	
DET1	Developing a clear plan is very important to me.	6.41	1.01
DET2	I like to analyze problems.	6.37	1.02
Optimism		5.14	
OPT1	In uncertain times, I usually expect the best.	5.75	1.42
OPT2	It's easy for me to relax.	5.11	1.68
OPT3	If something can go wrong for me, it will.	4.20	1.83
OPT4	I'm always optimistic about my future.	6.38	1.03
OPT5	I enjoy my friends a lot.	4.92	1.65
OPT6	It's important for me to keep busy.	5.69	1.34
OPT7	I hardly ever expect things to go my way.	3.93	2.01
OPT8	I don't get upset too easily.	5.13	1.66
OPT9	I rarely count on good things happening to me.	3.97	2.22
OPT10	Overall, I expect more good things to happen to me than bad.	6.32	1.10
Trust		4.22	
TR1	Most people are basically honest.	3.48	1.61
TR2	Most people are trustworthy.	3.29	1.60
TR3	Most people are basically good and kind.	3.64	1.54
TR4	Most people are trustful of others.	3.40	1.50
TR5	Most people will respond in kind when they are trusted by others.	4.69	1.58
TR6	I am trustful.	5.79	1.30
TR7	I am confident that I can trust people to be involved in making financial investments.	4.71	1.65
TR8	I am confident that I can trust financial institutions, mutual fund managers, and financial advisers.	4.80	1.76
Financial threat		4.46	
FTS1	How uncertain do you feel?	3.96	1.69
FTS2	How much do you feel at risk?	4.36	1.70
FTS3	How much do you feel threatened?	3.68	1.77
FTS4	How much do you worry about it?	4.88	1.86
FTS5	How much do you think about it?	5.43	1.63
Family Financial Socialization		4.32	
FFS1	My family discussed family financial matters with me.	3.52	2.20
FFS2	My family spoke to me about the importance of saving.	4.62	2.09
FFS3	My family discussed how to establish a good credit rating.	3.67	2.10
FFS4	My family taught me how to be a smart shopper.	4.29	2.14
FFS5	My family taught me that my actions determine my success in life.	5.49	1.81

Table 3
Psychometric characteristics of constructs.

Construct/Item	Composite reliability	AVE
Deliberative thinking	0.87	0.77
Family financial socialization	0.90	0.65
Financial threat	0.87	0.57
Optimism	0.79	0.56
Trust	0.88	0.60
Financial risk tolerance	0.89	0.59
Financial behavior	0.77	0.53

Table 4
Fornell-Larcker criterion.

	DET	FB	FFS	FRT	FTS	OPT	TR
DET	0.878						
FB	0.161	0.729					
FFS	0.229	0.238	0.807				
FRT	0.217	0.372	0.269	0.766			
FTS	−0.029	−0.013	0.157	0.362	0.758		
OPT	0.603	−0.057	0.088	0.201	0.087	0.749	
TR	0.111	0.229	0.276	0.333	0.122	−0.038	0.771

Table 5
Variance inflation factor (VIF).

Construct	VIF
Age	1.253
Deliberative thinking	1.726
Education level	1.090
Family financial socialization	1.235
Financial threat scale	1.141
Gender	1.089
Optimism	1.656
Trust	1.162

Table 6
Direct path analysis.

Hypothesized path	co-efficient (β)	t-statistic	p-value	Remarks
FTS - > FRT	0.293	4.078	0.000	Accepted
TR - > FRT	0.203	3.467	0.001	Accepted
OPT - > FRT	0.114	1.635	0.102	Not accepted
DET - > FRT	0.126	1.936	*0.053	Accepted
FFS - > FRT	0.059	0.816	0.415	Not accepted
FFS - > FB	0.149	1.687	*0.092	Accepted
FRT - > FB	0.332	5.002	0.000	Accepted
Age - > FRT	−0.279	3.519	0.000	Accepted
Ed_Level - > FRT	0.109	1.664	*0.096	Accepted
Gender - > FRT	0.104	1.630	0.103	Not accepted
R^2 (0.341; 0.159)				
Q^2 (0.182; 0.070)				

Notes: *significant at the 10% level; DET = deliberative thinking; FRT = financial risk tolerance; Ed_Level = education level; FFS = family financial socialization; FTS = financial threat; OPT = optimism; TR = trust.

zero, thus, that the exogenous variables have predictive relevance over their corresponding endogenous variables (Hair et al., 2014; Sarstedt et al., 2014). A test of common method bias showed a rate of 14.87 percent, which is far less than the threshold of 50 percent (Podsakoff & Organ, 1986). Therefore, there is no evidence of common method bias in the data collected.

Using the bootstrapping procedure in Smart PLS, we evaluate the relationships among the various constructs (see Fig. 2). The results are presented in Table 6. First, we find a significantly positive relationship between financial threat and FRT ($\beta = 0.293$; $p = 0.000$). This implies that individuals who perceive themselves as financially threatened are more likely to

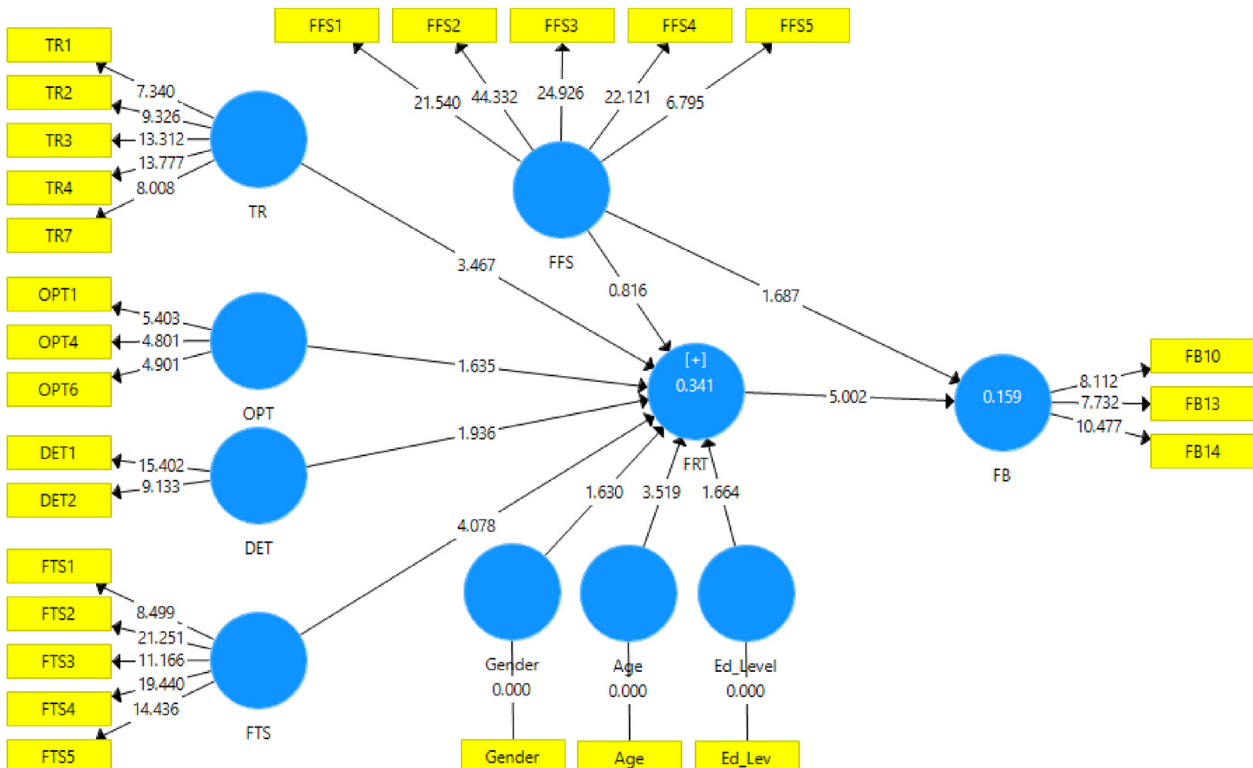


Fig. 2. Structural model of psychosocial factors, financial risk tolerance and financial behavior.

exhibit higher levels of FRT. Individuals who feel financially threatened are anxious and uncertain about their current and future financial conditions. This fear and uncertainty fuel a desire to take on more risk. According to the risk-reward theory, which posits that when risk is higher, so are returns, individuals who perceive themselves as financially threatened take on more risk in anticipation of higher returns that will help salvage their situation. This finding supports the proposition of PT that emotional processes may influence an individual's decision-making under certain circumstances (Ricciardi, 2008). Therefore, the fear and anxiety surrounding future and current financial conditions may heighten FRT. Prior studies by Mamun et al. (2020), Ishtiaq et al. (2019), and Fiksenbaum et al. (2017) provide empirical support for this finding.

The results also indicate a positive and significant relationship between trust and FRT. This suggests that individuals who have built trust in the financial system as well as in financial advisers are more willing to take on more financial risk in expectation of higher returns. Given that trust occurs when risk exists, and that when trust exists, it provides an avenue for more risk (Delis & Mylonidis, 2015), individuals who are trusting tend to take on more risk. Additionally, individuals who trust others, especially their financial advisers, believe in the knowledge and competence of these advisers and thus are prepared to accept their suggestions *en bloc*, irrespective of the associated risks. According to PT, behavioral and emotional characteristics such as trust nullify the cognition that underpins rational decision-making (Ricciardi, 2008). Thus individuals who trust their financial advisers are likely to agree with their recommendation to take on more risk, irrespective of what logic predicts. Results in the extant literature (Delis & Mylonidis, 2015; Rahman, 2020) provide empirical support for this finding, affirming the positive and significant relationship between trust and FRT.

Contrary to our hypothesis, the relationship between optimism and FRT is found to be positive but not significant. The positive relationship means that optimistic individuals are willing to take on more financial risk. The literature suggests that individuals who are optimistic expect more favorable things to happen (Scheier & Carver, 1985), hence, their willingness to accept situations that are more uncertain. Optimistic individuals are hopeful that things will work out to their benefit, even in hard times. As a result of this good feeling, optimistic individuals are not afraid to take on huge risk in anticipation of favorable outcomes. According to PT, an individual assigns a positive value to an option if the value is greater than the reference point (Tversky & Kahneman, 1973). As a result, optimistic individuals, given their positive expectations, are more likely to perceive the value of their preferred option more highly than the reference point even when the risk is high. This finding is in line with the argument by Stromabck et al. (2017) that optimism positively influences financial behavior.

Additionally, the bootstrap results show a positive and significant relationship between deliberative thinking and FRT ($\beta = 0.126$; $p = 0.053$). This implies that individuals who take time to think through financial and investment options are more likely to exhibit higher levels of FRT. This can be attributed to the

fact that deliberative thinkers, after assessing the alternative financial and investment options, realize that taking on more risk is not bad but, rather, a chance to make higher gains. Consistent with PT, deliberative thinkers choose higher returns over conservative returns. Thus, it is expected that deliberative thinkers will not subscribe to the “take the first” heuristics (Moxley et al., 2012), which means “to choose the first alternative that seems good”. Rather, the deliberative thinker will go through a careful evaluation of the alternatives, which may lead to a more informed decision. Although the decision may seem risky, the deliberative thinker might deem the risk manageable. Extant studies by Moxley et al. (2012) and Derfler-Rozin, Moore, and Staats (2016) provide evidence to support this finding.

Further, the results of the study indicate the existence of a positive but statistically insignificant relationship between FFS and FRT. This means that individuals who receive guidance from their family on how to shop smart, save, and maintain good credit rating have a higher tendency to accept uncertainty. The family is the first socialization unit for every individual, thus a good starting point for financial education. According to FFS theory, individuals are equipped with the knowledge, skills, and values they need to build up financial viability and well-being through family financial socialization (Danes, 1994; Lanz et al., 2020). Given the financial knowledge, skills, and values acquired through FFS, people can shrug off the fear of risk and make well-informed investment and financial decisions and thus take on more financial risk. Prior studies (Payne et al., 2014; Vosylis & Erentaite, 2020; Zhao & Zhang, 2020) serve as empirical support, concluding that FFS is positively related to financial behavior and well-being.

Based on the tenets of PT and our hypothesis, we find a positive and highly significant relationship between FRT and financial behavior ($\beta = 0.332$; $p = 0.000$). This suggests that individuals who perceive themselves as risk tolerant and hence willing to take on more risk are likely to exhibit responsible financial behavior. According to PT, and arguments by Finke and Huston (2003), risk-tolerant individuals are willing to make an effort to invest or save, so they are willing to take risk. In addition, individuals who are risk tolerant tend to be aware of the finance and investment landscape and have some understanding of financial matters. Armed with this knowledge and understanding of financial matters and markets, financially risk-tolerant individuals can save, invest, and manage their cash and credit appropriately. Extant literature (Fisher & Yao, 2017; Pinjisakikool, 2017) provides consistent findings to support this study.

Moreover, the results of this study in Table 6 indicate a significantly positive relationship between FFS and financial behavior (at the 10% significance level). This suggests that individuals who are exposed to financial training and education by their families are more likely to exhibit responsible financial behavior. Consistent with FFS theory, Danes (1994) explains financial socialization as a process through which one acquires values, norms, knowledge, and standards that contribute to financial viability and well-being. Thus, equipped with the knowledge and values concerning financial matters, individuals can effectively and efficiently save, invest, and manage their

cash and credit. This finding is supported by prior studies (Deenanath et al., 2019; Jorgensen, Rappleyea, Schweichler, Fang, & Moran, 2017; Zhao & Zhang, 2020), which conclude that FFS has a significantly positive relationship with financial behavior.

The study controls for age, gender, and education. First, the results show a significantly negative relationship between age and FRT. This means that individuals who are older are less likely to take on more risk. As people age, they have more responsibilities and hence are more likely to develop a propensity for short-term investment with some certainty in returns. Previous studies by Nguyen et al. (2019), and Zhao and Zhang (2020) support this finding, concluding that younger people perceive themselves as more risk tolerant than older counterparts. Further, we find a positive and statistically significant relationship between the level of education and the level of FRT. Individuals who have acquired higher educational qualifications are more likely to appreciate and understand the financial system better and hence are willing to accommodate more financial risk. This result corresponds to the findings in prior studies (Heo, Rabbani, & Min, 2021; Ramudzuli & Muzindutsi, 2015) that argue that the level of FRT varies with the level of education. Lastly, among the demographic factors, the results show no significant relationship between gender and FRT. By implication, the level of FRT is not dependent on gender, thus, there are no significant differences between males and females in terms of FRT. This finding is in sharp contrast to the results by Yao and Hanna (2005), which show that males are more risk tolerant than females.

4.4. Mediating effect

Following the guidelines set out by Hair et al. (2014), we perform a mediation analysis, and the results are presented in Table 7. Specifically, we evaluate the mediation role of FRT in the relationships between deliberative thinking, FFS, financial threat, optimism and trust, and financial behavior. The results indicate that FRT significantly mediates the relationship between financial behavior and financial threat and trust. The significant indirect relationship between financial threat and financial behavior through FRT implies that individuals who

perceive a looming financial threat are likely to exhibit improved financial behavior, given that fear of the threat is translated into an increased capacity and willingness to take more risk. Similarly, trust in financial systems and financial advisers boost a person's confidence to accept more risk and uncertainty in anticipation of higher returns. This enhanced risk tolerance subsequently leads to a more responsible financial behavior and practices.

At the same time, the indirect relationships between deliberative thinking, FFS and optimism, and financial behavior through FRT are not significant. According to FFS theory, family socialization normally takes place in the early stages of individual's life (Jorgensen et al., 2017; Vosylis & Erentaite, 2020). Given that the sample in this study generally comprises adults, it is possible that new financial values have been developed, eroding the gains of FFS. The FRT of such individuals are likely to be influenced by their newly developed financial values and not their FFS—hence, the insignificant relationship between FFS and FRT and, subsequently, financial behavior.

5. Conclusion

Employing the prospect theory and the family financial socialization theory, this study examines the FRT of security service personnel in Ghana. The study specifically investigates the relationship between some psychosocial factors and FRT, as well as the relationship between FRT and financial behavior. The results demonstrate that financial threat, trust, and deliberative thinking significantly influence FRT. Additionally, the results reveal that FRT and FFS are key predictors of financial behavior. Furthermore, the findings indicate that FRT mediates the relationship between financial behavior and financial threat and trust.

The results of the study imply that to encourage responsible financial behavior among security service personnel, efforts should be focused on building their risk tolerance. Given that, FRT is predicted by financial threat, trust, and deliberative thinking, as well as education level, it is pertinent to consider these psychosocial factors. For instance, financial institutions and advisers should position themselves well to earn people's trust. This will encourage investors to take on more risk and subsequently exhibit good financial behavior. Further, a focus on building trust in the financial system is key. This is because trust enhances the risk tolerance, which has implications on financial behavior. Thus, policy makers should focus on establishing resilient financial systems that can be trusted. Our findings add to the literature by extending studies on FRT and FFS to include psychosocial factors.

Although this study makes some significant contributions, it also has some shortcomings. First, the study sample was selected from among personnel of the various security services in Ghana, ignoring members of other professions. Thus, future studies should consider employing a more diverse sample by including members from other professions. Further, although there are many psychosocial factors, this study includes only five of them (financial threat, trust, optimism, deliberative thinking, and family financial socialization). Future studies can

Table 7
Indirect path analysis.

Hypothesized path	co-efficient (β)	t-statistic	p-values	Remarks
FTS -> FRT -> FB	0.097	3.246	0.001	Accepted
TR -> FRT -> FB	0.068	2.640	0.008	Accepted
DET -> FRT -> FB	0.042	1.634	0.102	Not accepted
OPT -> FRT -> FB	0.038	1.542	0.123	Not accepted
FFS -> FRT -> FB	0.020	0.778	0.437	Not accepted
Age -> FRT -> FB	-0.093	2.709	0.007	Accepted
Ed_Level -> FRT -> FB	0.036	1.490	0.136	Not accepted
Gender -> FRT -> FB	0.035	1.438	0.150	Not accepted

Notes: DET = deliberative thinking; FRT = financial risk tolerance; Ed_Level = education level; FFS = family financial socialization; FTS = financial threat; OPT = optimism; TR = trust.

explore other factors, such as culture, herding, and financial knowledge. Lastly, we encourage future researchers to investigate the reasons for the insignificant direct relationship between family financial socialization and FRT. Researchers should consider examining a much younger population in exploring the implications of family financial socialization on risk tolerance, given that FFS is generally targeted at younger generations in the family.

References

- Adamus, M., & Grezo, M. (2021). Individual differences in behavioral responses to the financial threat posed by the COVID-19 pandemic. *Personality and Individual Differences*, 179(1), 1–7.
- Angelini, V., & Cavapozzi, D. (2017). Dispositional optimism and stock investments. *Journal of Economic Psychology*, 59, 113–128. <https://doi.org/10.1016/j.joep.2017.01.006>
- Avkiran, N. K. (2018). Rise of the partial least squares structural equation modeling: An application in banking. In N. K. Avkiran, & C. M. Ringle (Eds.), *Partial least squares structural equation modeling associate series editor* (pp. 211–226). Cham: Springer International.
- Banner, C. E., & Neubert, M. (2016). Gender differences in financial risk taking: The role of financial literacy and risk tolerance. *Economics Letters*, 145(2), 130–135. <https://doi.org/10.1016/j.econlet.2016.05.033>
- Beazley, C. (2009). The many sides of optimism. *Positive Psychology*, United Kingdom <http://positivepsychology.org.uk/pp-theory/optimism/97-the-many-sides-of-optimism.html>
- Benner, P., & Tanner, C. (1987). How expert nurses use intuition. *AJNR: American Journal of Nursing*, 87(1), 23–34.
- Brooks, C., & Williams, L. (2021). The impact of personality traits on attitude to financial risk. *Research in International Business and Finance*, 58(1), 1–20. <https://doi.org/10.1016/j.ribaf.2021.101501>
- Caplin, A., & Leahy, J. (2001). Psychological expected utility theory and anticipatory feelings. *Quarterly Journal of Economics*, 116(1), 55–79. <https://doi.org/10.1162/003355301556347>
- Carlson, M. B., Britt, S. L., & Goff, B. N. (2015). Factors associated with a composite measure of financial behavior among soldiers. *Journal of Financial Counseling and Planning*, 26(1), 30–42.
- Carter, J. E., & Chen, Y. J. (2006). Do investment risk tolerance attitudes predict portfolio risk? *Journal of Business and Psychology*, 20(3), 369–381.
- Deenanath, V., Danes, S. M., & Jang, J. (2019). Purposive and unintentional family financial socialization, subjective financial knowledge, and financial behavior of high school students. *Journal of Financial Counseling and Planning*, 30(1), 83–96.
- Delis, M. D., & Mylonidis, N. (2015). Trust, happiness, and households' financial decisions. *Journal of Financial Stability*, 20(1), 82–92.
- Derfler-Rozin, R., Moore, C., & Staats, B. R. (2016). Reducing organizational rule breaking through task variety: How task design supports deliberative thinking. *Organization Science*, 27(6), 1361–1379.
- Dew, J., & Xiao, J. J. (2011). The financial management behavior scale: Development and validation. *Journal of Financial Counseling and Planning*, 22(1), 43–59.
- Dickason-Koekemoer, Z., & Ferreira, S. (2019). Risk tolerance: The influence of gender and life satisfaction. *Journal of Economics and Behavior al Studies*, 11(1), 66–72.
- Ericsson, K. A., Krampe, R. T., & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363–406. <https://doi.org/10.4324/9780203109427>
- Fiksenbaum, L., Marjanovic, Z., Greenglass, E., & Garcia-Santos, F. (2017). Impact of economic hardship and financial threat on suicide ideation and confusion. *Journal of Psychology*, 151(5), 477–495. <https://doi.org/10.1080/00223980.2017.1335686>
- Finke, M. S., & Huston, S. J. (2003). The brighter side of financial risk: Financial risk tolerance and wealth. *Journal of Family and Economic Issues*, 24(3), 233–256.
- Fisher, P. J., & Yao, R. (2017). Gender differences in financial risk tolerance. *Journal of Economic Psychology*, 61(1), 1–17. <https://doi.org/10.1016/j.joep.2017.03.006>
- Fornell, C., & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, 19(4), 440–452.
- Geers, A. L., Wellman, J. A., & Fowler, S. L. (2013). Comparative and dispositional optimism as separate and interactive predictors. *Psychology and Health*, 28(1), 30–48. <https://doi.org/10.1080/08870446.2012.707200>
- Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology*, 14(4), 625–630. <https://doi.org/10.1023/A:1022994314982>
- Grable, J., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 8(3), 163–181.
- Gudmunson, C. G., & Danes, S. M. (2011). Family financial socialization: Theory and critical review. *Journal of Family and Economic Issues*, 32(4), 644–667. <https://doi.org/10.1007/s10834-011-9275-y>
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/MTP1069-6679190202>
- Hair, J. F. J., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hartnett, N., Gerrans, P., & Faff, R. (2019). Trusting clients' financial risk tolerance survey scores. *Financial Analysts Journal*, 75(2), 91–104. <https://doi.org/10.1080/0015198X.2019.1575160>
- Heo, W., Grable, J. E., & Rabbani, A. G. (2018). A test of the relevant association between utility theory and subjective risk tolerance: Introducing the profit-to-willingness ratio. *Journal of Behavior al and Experimental Finance*, 19, 84–88. <https://doi.org/10.1016/j.jbef.2018.05.003>
- Heo, W., Rabbani, A., & Grable, J. E. (2021). An evaluation of the effect of the COVID-19 pandemic on the risk tolerance of financial decision makers. *Finance Research Letters*, 41(1), 1–6. <https://doi.org/10.1016/j.frl.2020.101842>
- Heo, W., Rabbani, A. G., & Min, J. (2021). Mediation between financial risk tolerance and equity ownership: Assessing the role of financial knowledge underconfidence. *Journal of Financial Services Marketing*, 26(3), 169–180. <https://doi.org/10.1057/s41264-021-00088-y>
- Igra, V., & Irwin, C. E. (1996). Theories of adolescent risk-taking behavior. In R. DiClemente, W. Hansen, & L. Ponton (Eds.), *Handbook of adolescent health risk Behaviour* (pp. 35–51). Boston, MA: Springer US. https://doi.org/10.1007/978-1-4899-0203-0_3
- Ishtiaq, M., Tufail, M. S., Shahzad, K., & Naseer, M. A. (2019). Impact of financial threat on individual's willingness to change financial behavior. *Dialogue*, 14(2), 265–281.
- Jorgensen, B. L., Rappleyea, D. L., Schweichler, J. T., Fang, X., & Moran, M. E. (2017). The financial behavior of emerging adults: A family financial socialization approach. *Journal of Family and Economic Issues*, 38(1), 57–69. <https://doi.org/10.1007/s10834-015-9481-0>
- Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *The American Economic Review*, 93(5), 1449–1475. <https://doi.org/10.1257/000282803322655392>
- Kannadhasan, M., Aramvalarthan, S., Mitra, S. K., & Goyal, V. (2016). Relationship between biopsychosocial factors and financial risk tolerance: An empirical study. *Journal for Decision Makers*, 41(2), 117–131. <https://doi.org/10.1177/0256090916642685>
- Kaplanski, G., & Levy, H. (2010). Sentiment and stock prices: The case of aviation disasters. *Journal of Financial Economics*, 95(2), 174–201. <https://doi.org/10.1016/j.jfineco.2009.10.002>
- Kaptein, A., & Teppa, F. (2011). Subjective measures of risk aversion, fixed costs, and portfolio choice. *Journal of Economic Psychology*, 32(4), 564–580.
- Lanz, M., Sorgente, A., & Danes, S. M. (2020). Implicit family financial socialization and emerging adults' financial well-being: A multi-informant approach. *Emerging Adulthood*, 8(6), 443–452. <https://doi.org/10.1177/2167696819876752>

- Mamun, M. A., Akter, S., Hossain, I., Hossain, L., Haque, A., Hossain, S., et al. (2020). Financial threat, hardship and distress predict depression, anxiety and stress among the unemployed youths: A Bangladeshi multi-city study. *Journal of Affective Disorders*, 276(2), 1149–1158. <https://doi.org/10.1016/j.jad.2020.06.075>
- Marjanovic, Z., Greenglass, E. R., Fiksenbaum, L., Witte, H., De Garcia-Santos, F., Buchwald, P., & Mañas, M. A. (2015). Evaluation of the financial threat scale (FTS) in four European, non-student samples. *Journal of Behavioral and Experimental Economics*, 55, 72–80. <https://doi.org/10.1016/j.socec.2014.12.001>
- Mata, A. (2016). Proportion dominance in valuing lives: The role of deliberative thinking. *Judgment and Decision Making*, 11(5), 441–448.
- Moche, H., Gordon-Hecker, T., Kogut, T., & Västfjäll, D. (2022). Thinking, good and bad? Deliberative thinking and the singularity effect in charitable giving. *Judgment and Decision Making*, 17(1), 14–30.
- Mokhtar, N., & Rahim, H. (2018). Determinants of employee perception on financial well-being in Putrajaya. *Malaysian Journal of Consumer and Family Economics*, 1(1), 27–52.
- Montegary, L. (2015). An army of debt: Financial readiness and the military family. *Cultural Studies*, 29(5–6), 652–668.
- Moxley, J. H., Ericsson, K. A., Charness, N., & Krampe, R. T. (2012). The role of intuition and deliberative thinking in experts' superior tactical decision-making. *Cognition*, 124(1), 72–78. <https://doi.org/10.1016/j.cognition.2012.03.005>
- Nguyen, L. T. M., Gallery, G., & Newton, C. (2016). The influence of financial risk tolerance on investment decision-making in a financial advice context. *Australasian Accounting, Business and Finance Journal*, 10(3), 3–22. <https://doi.org/10.14453/aabfj.v10i3.2>
- Nguyen, L. T. M., Gallery, G., & Newton, C. (2019). The joint influence of financial risk perception and risk tolerance on individual investment decision-making. *Accounting and Finance*, 59(3), 747–771. <https://doi.org/10.1111/acfi.12295>
- Nguyen, L. T. M., Nguyen, P. T., Tran, Q. N. N., & Trinh, T. T. G. (2021). Why does subjective financial literacy hinder retirement saving? The mediating roles of risk tolerance and risk perception. *Review of Behavioral Finance*. <https://doi.org/10.1108/RBF-03-2021-0036>. ahead-of-p.
- Ofori, E. (2020). The effects of Ponzi schemes and revocation of licences of some financial institutions on financial threat in Ghana. *Journal of Financial Crime*. <https://doi.org/10.1108/JFC-01-2020-0003>. ahead-of-p.
- Ou, W.-M., Shih, C.-M., & Chen, C.-Y. (2015). Effects of ethical sales behaviour on satisfaction, trust, commitment, retention and words-of-mouth. *International Journal of Commerce and Management*, 25(4), 673–686. <https://doi.org/10.1108/IJCoMA-04-2013-0040>
- Payne, S. H., Yorgason, J. B., & Dew, J. P. (2014). Spending today or saving for tomorrow: The influence of family financial socialization on financial preparation for retirement. *Journal of Family and Economic Issues*, 35(1), 106–118. <https://doi.org/10.1007/s10834-013-9363-2>
- Pinjisakikool, T. (2017). The influence of personality traits on households' financial risk tolerance and financial behaviour. *Journal of Interdisciplinary Economics*, 30(1), 32–54. <https://doi.org/10.1177/0260107917731034>
- Podsakoff, P. M., & Organ, D. W. (1986). Self reports in organizations research: Problems and prospects. *Journal of Management*, 12(4), 531–544.
- Rahman, M. (2020). Propensity toward financial risk tolerance: An analysis using behavioural factors. *Review of Behavioral Finance*, 12(3), 259–281. <https://doi.org/10.1108/RBF-01-2019-0002>
- Ramudzuli, P. M., & Muzindutsi, P. F. (2015). Financial knowledge and subjective financial risk tolerance among students at a South African university. *Risk Governance and Control: Financial Markets & Institutions*, 5(3), 180–185. <https://doi.org/10.22495/rgecv5i3c2art3>
- Reddy, K. S., & Mahapatra, M. S. (2017). Risk tolerance, personal financial knowledge and demographic characteristics: Evidence from India. *The Journal of Developing Areas*, 51(3), 51–62. <https://doi.org/10.1353/jda.2017.0060>
- Regier, D. A., Sicsic, J., & Watson, V. (2019). Choice certainty and deliberative thinking in discrete choice experiments: A theoretical and empirical investigation. *Journal of Economic Behavior & Organization*, 164, 235–255. <https://doi.org/10.1016/j.jebo.2019.05.031>
- Reyers, M. (2018). Perceptions of retirement adequacy: Evidence from South Africa. *Journal of Financial Counseling and Planning*, 29(2), 343–356. <https://doi.org/10.1891/1052-3073.29.2.343>
- Ricciardi, V. (2008). The psychology of risk: The behavioral finance perspective. In F. J. Fabozzi (Ed.), *Investment management & finance management*, 2 pp. 85–111. John Wiley & Sons Ltd.
- Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, 5(1), 105–115. <https://doi.org/10.1016/j.jfbs.2014.01.002>
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4(3), 219–247.
- Shah, N. H., Khalid, W., Khan, S., Arif, M., & Khan, M. A. (2020). An empirical analysis of financial risk tolerance and demographic factors of business graduates in Pakistan. *International Journal of Economics and Financial Issues*, 10(4), 220–234. <https://doi.org/10.32479/ijefi.9365>
- Shefrin, H., & Statman, M. (1993). Behavior al aspects of the design and marketing of financial products. *Financial Management*, 22(2), 123. <https://doi.org/10.2307/3665864>
- Skimmyhorn, W. L. (2016). Comparing military and civilian household finances: Descriptive evidence from recent surveys. *Journal of Consumer Affairs*, 50(2), 471–483.
- Sotiropoulos, V., & d'Astous, A. (2013). Attitudinal, self-efficacy, and social norms determinants of young consumers' propensity to overspend on credit cards. *Journal of Consumer Policy*, 36(2), 179–196. <https://doi.org/10.1007/s10603-013-9223-3>
- Strömbäck, C., Lind, T., Skagerlund, K., Västfjäll, D., & Tinghög, G. (2017). Does self-control predict financial behavior and financial well-being? *Journal of Behavioral and Experimental Finance*, 14(1), 30–38. <https://doi.org/10.1016/j.jbef.2017.04.002>
- Thanki, H., Shah, S., Sapovadia, V., Oza, A. D., & Burduhos-Nergis, D. D. (2022). Role of gender in predicting determinant of financial risk tolerance. *Sustainability*, 14(1), 1–13.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5(2), 207–232.
- Ullah, S., & Kong, Y. S. (2020). Financial socialization, childhood experiences and financial well-being: The mediating role of locus of control. *Frontiers in Psychology*, 11(September), 1–11. <https://doi.org/10.3389/fpsyg.2020.02162>
- Viséu, J. N. R., de Jesus, S. N., Leal, A. R. C., dos Santos Pinto, P. S. L. G., Ayala-Nunes, L., & Matavelli, R. D. (2021). Coping and social support as moderators: Relationship between financial threat and negative psychological outcomes. *Current Psychology*, 40(1), 2229–2241.
- Vosylis, R., & Erentaite, R. (2020). Linking family financial socialization with its proximal and distal outcomes: Which socialization dimensions matter most for emerging adults' financial identity, financial behavior s , and financial anxiety? *Emerging Adulthood*, 8(6), 464–475. <https://doi.org/10.1177/2167696819856763>
- Wall, T. D., Wood, S. J., Leach, D. J., Salas, E., Stagl, K. C., Burke, S. C., et al. (2005). In G. P. Hodgkinson, & K. J. Ford (Eds.), *International review of industrial and organizational psychology*: 20. *International review of industrial and organizational psychology* (pp. 41–70). John Wiley & Sons Ltd. <https://doi.org/10.1002/0470029307.ch6>
- Zhao, H., & Zhang, L. (2020). Talking money at home: The value of family financial socialization. *International Journal of Bank Marketing*, 38(7), 1617–1634. <https://doi.org/10.1108/IJBM-04-2020-0174>
- Zhu, A. Y. F. (2019). Financial risk tolerance of Hong Kong adolescents: A hierarchical model. *Children and Youth Services Review*, 102(1), 193–200.