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Impact of COVID-19 pandemic on household financial decisions: A consumer vulnerability perspective

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Abstract

This study joins a rapidly growing body of research that investigates the multi-faceted impacts of the Covid-19 pandemic on consumers' behavior. Specifically, we examine how the pandemic-induced state of vulnerability impacts consumers' saving, investing, and spending decisions. Using survey data from four different countries (i.e., USA, UK, South Africa, and Mexico), we examine the role of personality on consumer vulnerability, create an index of consumer vulnerability, and establish the role of vulnerability in impacting important financial decisions. We report evidence that perceptions of vulnerability and the pandemic-induced changes in financial and consumption behaviors vary across residents of developed and developing countries. The results indicate that vulnerability is experienced and reflected through a multitude of fears and concerns and is influenced by personality traits (agreeableness, neuroticism, conscientiousness, need for material resources, and need for body resources) and can result in increased spending on products/services that are not normally perceived as necessities. Our findings carry important theoretical and managerial implications.

1 | INTRODUCTION

Coronavirus Disease 2019 (Covid-19) was officially declared a pandemic by the World Health Organization (WHO) on March 11, 2020. To slow down the spread of the virus, many countries went into lockdown, mandating people to stay at home and closing many sectors of the economy for months. During the second half of 2020, with the emergence of new variants, the second and third waves of the pandemic were declared, and many countries and states considered, or even implemented, new tighter restrictions (e.g., on December 19, 2020, the BBC reported that a fourth tier of coronavirus restrictions is expected to be introduced in London and south-east England). By first quarter of 2021, and despite the cheerful reports of successful vaccine results, most countries around the world have kept the social distancing, mask-wearing mandates, and travel restrictions almost intact.[1]

These restrictions, being enforced for more than a year, have posed a threat to people's financial wellbeing and dramatically reduced their quality of life. For instance, stay-at-home and social distancing orders have cut individuals off from social interactions and rituals, and often from their sources of income. The news reports of mounting death tolls have made most people scared and fearful. The shortage of supply of basic necessary medical equipment and the overwhelmed hospital operations have posed additional threats and concerns (Campbell & Murphy, 2020; Jacobs et al., 2020; Togoh, 2020). At the retail level, consumers have experienced scarcity of necessary items (e.g., disinfectants and masks). Besides, lack of information, misinformation, and conflicting information have weakened consumers' ability to understand, plan, and cope with the health, economic, and social threats.

In fact, the extent to which both households and the economy have been upended is without a recent precedent. This is because the speed at which the restrictions were implemented, and economic dislocation occurred has made it difficult to deliver financial support to households and businesses in a timely fashion. As a result, people were left to deal with health-related threats, reduced social interactions, unprecedented changes to normal ways of life, and a gloomy

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financial future. These unusual circumstances have led to remarkable psychological impacts including stress and depression and noticeable shifts in consumers' behaviors (Galoni et al., 2020).

According to WHO, the coronavirus pandemic is not only an epidemiological crisis, but is also a psychological and financial crisis. That is, not only people's health is threatened, but also are their financial wellbeing and psychological stability. Anecdotal observations indicate that the pandemic has provoked a state of vulnerability that has caused remarkable shifts in consumers' perceptions and behaviors. Nevertheless, little is known about the antecedents and consequences of such vulnerability experiences and how important household decisions, such as spending decisions, are influenced in an environment marked with intense fear and uncertainty. The present research thus, aims to answer questions such as to what extent do consumers feel vulnerable? How does consumer vulnerability influence their reactions? How do consumers respond and adapt to the threats caused by the Covid-19 pandemic? What factors contribute to such reactions? And are these reactions universal or do they differ across countries?

The extant literature defines consumer vulnerability as a temporary situation where consumers lose control and make decisions influenced by external factors (Baker, 2006; Baker et al., 2005). This literature has focused on singular contexts in which a subset of consumers is embedded and has ignored the collection of selves that exist across consumption environments (e.g., Baker et al., 2005; Hill & Stamey, 1990). In contrast, we argue that consumers vary in the extent to which they experience the state of vulnerability. Specifically, both the designation and magnitude of consumer vulnerability may vary from individual to individual, from country to country, and across consumption environments, and this variability influences the coping mechanisms that consumers pursue (Bronfenbrenner & Morris, 2006). Thus, it is relevant to examine how individual characteristics affect reactions to the pandemic, and how these relationships vary across social, political, and economic contexts.

We draw on the Meta-Theoretic Model of Motivation (3 M; Mowen, 2000), indicating that personality attributes influence individuals' inclinations and proclivity, to examine the role of individual characteristics on vulnerability experiences. Moreover, we draw our sample from four regions, namely the North America (i.e., USA), Europe (i.e., UK), Africa (i.e., South Africa), and Latin America (i.e., Mexico). This selection is motivated by the need to maximize the potential variations in Covid-19 severity, wealth, socioeconomic, political, and cultural conditions across these countries. This approach responds to recent calls for academic research that spans beyond a specific country to examines behavioral changes in response to the pandemic (Liu et al., 2020).

According to psychological reactance theory (Brehm, 1966), humans react with defensive behavioral and attitudinal changes when their freedom to control their own lives is threatened. If the threat is substantial, it may provoke long-lasting coping mechanisms. Accordingly, we evaluate the effects of consumer vulnerability, experienced due to the pandemic, on households' financial and consumption decisions. That is, unlike the majority of literature, which focuses on immediate responses during the pandemic, we explore the possibility that the pandemic-induced vulnerability will affect consumers' behaviors post-pandemic as well.

The results provide evidence that personality traits are important antecedents of consumer vulnerability, and pandemic-induced vulnerability is substantial across different regions and countries but varies among counties in terms of magnitude. We find that vulnerability is reflected through high levels of concerns related to professional life, social life, and wellbeing of loved ones, among others, and that it impacts saving, investing, and spending decisions of households. Our investigation provides specificity regarding the change in various spending categories (e.g., alcohol, transportation, personal care products, entertainment, charity, and luxury items) and identifies factors that contribute to such changes.

Our work contributes to literature in several ways. First, our approach links together a growing body of research on household finance with consumer behavior research. Household finance is an emerging field of research (Alhenawi et al., 2022; Campbell, 2006) that examines the role of individual and situational/environmental conditions in addition to household's financial profile in affecting household decisions (e.g., Xu et al., 2017; Yazdanparast & Alhenawi, 2017; Zhao, 2020). We attempt to explain the impact of the pandemic on consumers' state of vulnerability and how such experiences impact important decisions such as overall spending (vs. investing and saving) and specific spending patterns at the household level. Second, in line with percepts of psychological reactance theory, suggesting that acute stress might cause long-term reactions, our work focuses on potential post-pandemic changes in financial and consumption behaviors. Third, the study examines these effects in a multi-country framework. By doing so, we are controlling for variations in pandemic intensity and available support, which varies across countries.

2 | LITERATURE REVIEW

The existing research on the impact of the Covid-19 pandemic can be divided into three broad groups. The first group focuses on pandemic's impacts at the macro level and primarily addresses financial markets movements. For instance, Sharif et al. (2020) provide evidence that the effect of the Covid-19 on the geopolitical risk is substantially higher than on the economic uncertainty. Mnif et al. (2020) find that the Covid-19 risk is perceived differently over the short and the long-run and may be firstly viewed as an economic crisis. Ashraf (2020) shows that government announcements regarding protective measures (e.g., social distancing) have a direct, negative effect on stock market returns. Further, government announcements regarding public awareness programs (e.g., testing and quarantine policies and income support packages) result in positive market reactions.

The second group of Covid-19 research has focused on marketing strategy and how the retail industry has been impacted by, and reacted to, the pandemic (e.g., He & Harris, 2020). For instance, Corbet et al. (2021) investigate sentiments generated by coronavirus-related news and reputational-based contagion (i.e., the impact of the

coronavirus outbreak on companies related to the term "corona"). Dannenberg et al. (2020) examine the impact of the pandemic on online grocery retail markets. Similarly, Pantano et al. (2020) provide guidelines for how retailers can handle the pandemic and discuss retail strategies during a period of emergency.

A third stream of research has focused on the psychological impacts of the pandemic on individuals and their behaviors, specifically, coping behavior (e.g., Campbell & Murphy, 2020; Laato et al., 2020). For instance, Kirk and Rifkin (2020) examine behaviors during three phases: reacting (e.g., hoarding and rejecting), coping (e.g., maintaining social connectedness, do-it-yourself behaviors), and long-term adapting (e.g., transformative changes in consumption and individual and social identity). Other research examines the emotional responses to the pandemic (Galoni et al., 2020) and finds that cues of contagious disease increase both fear and disgust. Huang and Sengupta (2020) draw on insights from evolutionary psychology and find that disease threat reduces consumers' relative preference for category-typical, mass products, as compared to category-atypical, niche products.

Despite the significant contributions, research on the impacts of the pandemic on consumer behavior has a few limitations. The majority of research on this topic is conceptual (e.g., Campbell et al., 2020; Sheth, 2020) or relies on rather small samples (e.g., Laato et al., 2020) and draws conclusions mainly from a single country (e.g., Liu et al., 2020; Stanciu et al., 2020). As such, researchers have called for the examination of household responses across different economies to explore potential differences between developed and emerging economies (Liu et al., 2020). Moreover, extant research has merely examined consumption patterns during the pandemic with little attention to the post-pandemic changes in consumer behavior (see Alhenawi & Yazdanparast, 2021 for an exception). Furthermore, many studies have largely focused on purchase-related decisions and ignored other decisions related to interpersonal relationships, individuals' emotional well-being, and financial situation. Lastly, researchers have generally focused on individual consumption choices and rarely examined household decisions.

Few studies that focus on household behavior amid the pandemic are generally limited to Chinese households. Yue et al. (2020), for instance, use data from the Survey and Research Center for China Household Finance (CHFS) and find that households who know someone infected with Covid-19 are more susceptible to losing confidence in the economy and are more likely to change their risk attitude and become risk-averse. Liu et al. (2020) rely on the same data (i.e., CHFS) and report a significant decline in households' consumption during the outbreak. They also find that urban households are more vulnerable than rural households. Nevertheless, their findings lack specificity because they study consumption at an aggregate level and do not examine specific consumption decisions (e.g., education, healthcare, food, and beverage).

In this study, we attempt to address the aforementioned research gaps and focus on the impact of the Covid-19 pandemic on household financial and consumption decisions. The focus on household finance is warranted given the far-reaching impacts of household's financial decisions on consumer welfare, marketing practices, financial service providers' strategies, and the stability and reliability of the financial system (Lynch Jr, 2011; Pirog & Roberts, 2007; Yazdanparast & Alhenawi, 2017).

2.1 | Consumer vulnerability

The term consumer vulnerability is used to describe a variety of difficult situations that consumers face. Generally, consumer vulnerability occurs when control is not in the consumer's hands, creating a state of dependence on external factors. In reality, vulnerability is an experience that people actively work to reduce in pursuit of getting their lives back to normal (Baker, 2006). Baker et al. (2005) emphasize the individual experience of vulnerability and define it as a state, not as a status, that encompasses powerful fears and concerns. For example, victims of natural disasters deal with fears about their own and their loved ones' safety, the unexpected loss of human lives, and the involuntary loss of collective landmarks and personal possessions, all resulting in consumer vulnerability states (Baker, 2006).

These are all situations experienced during the current Covid-19 pandemic in various degrees across the globe, creating a unique opportunity to examine vulnerability in a context that is not specific to a singular group or geographic location. Following this line of reasoning, we construct an index of consumer vulnerability that captures a multitude of fears and concerns experienced by consumers during the pandemic. (i.e., personal, interpersonal, material, and nonmaterial concerns). Specifically, we examine health-related concerns (pertaining to the individual and their loved ones), concerns related to individuals' professional and social life, and death inevitability concerns experienced by individuals during a pandemic.

More recently, consumer vulnerability research has focused on the relationship between resource scarcity, decision-making, and vulnerability (Briers et al., 2006; Hamilton et al., 2019). This line of research defines scarcity as a subjective sense of having more needs than available resources (Mullainathan & Shafir, 2013) and describes resources as assets that a person yearns to achieve as a desired end-state (Dorsch et al., 2017). According to Hill and Sharma (2020), the vast number of resources that contribute to consumer vulnerability can be grouped into individual resources, interpersonal resources, and structural resources. Individual resources are self-related assets and capabilities of consumers such as money, intelligence, and physical and mental health. Interpersonal resources refer to social factors such as social capital, belongings, and social support. Structural resources encompass marketplace and environmental factors such as common business practices, laws and enforcement, and marketspace configurations. Similarly, Baker et al. (2007) model of vulnerability identifies individual characteristic, community characteristics, and external conditions as factors influencing vulnerability experiences and resulting in behavioral, value-related, and policy changes.

Overall, prior research has argued that the causes of vulnerability may be associated with individual characteristics (e.g., age, physical capabilities), social phenomena (e.g., stereotypes, prejudicial

treatment), business practices (e.g., store layouts, marketer manipulations), and environmental forces (e.g., hurricanes, tsunamis; Baker et al., 2005). Thus, vulnerability arises from the influence of individual states and characteristics and structural/environmental conditions within a context where consumption goals may be hindered (Baker et al., 2007; Peñaloza, 1995).

The structural/environmental factors (e.g., economic welfare, country-level poverty, and overall economic stability) vary across countries but are relatively similar within each nation (refer to Hofstede, 2001). Therefore, it is paramount to explore how the current pandemic-induced vulnerability varies across different socioeconomic environments. We focus on four countries (i.e., USA, UK, South Africa, and Mexico) located in four different regions to maximize the potential variations in wealth, socioeconomic, political, and cultural factors as well as the impact of Covid-19 across these countries. For instance, two countries in our sample are developed countries (USA and UK) and two are developing countries (South Africa and Mexico) with differing levels of Covid-19 severity. We anticipate that the severity of the Covid-19 pandemic will intensify consumers' vulnerability, while the economic wealth of the nation will mitigate it. We hypothesize:

> **Hypothesis 1a.** *The pandemic-induced consumer vulnerability varies with socio-economic/pandemic conditions.*

In addition to the heterogeneity due to country-level differences in structural/environmental factors, individual traits and characteristics affect consumer experiences and behaviors. In other words, individuals who share common collective programming (i.e., belong to the same country) differ in a manner consistent with their psychological traits, allowing for greater influence of personality (refer to Hofstede, 2001). Personality traits are the dynamic organization of psycho physiological systems that make up a person's characteristic behavior, thoughts, and feelings (Lin, 2010; Mowen et al., 2007), and thus, may influence individuals' vulnerability experiences as reflected through fears and concerns. This is in line with research indicating that individuals' appraisal of stressors (as threatening or non-threatening) as well as their abilities to cope with the threats are influenced by personality (Liu et al., 2021).

We draw on the 3 M model, which accounts for how personality traits interact with the situation to influence consumer attitudes and behaviors (Mowen, 2000). At the elemental level, the 3 M model contains five traits from the big five personality model namely, neuroticism (e.g., tendency to be emotionally unstable and experience anxiety and fear), conscientiousness (e.g., tendency to be responsible, organized, and goal-directed), extroversion (e.g., tendency to be sociable, assertive, and with a high-activity level), openness (e.g., tendency to be perceptive, creative, reflective, and appreciate fantasy), and agreeableness (e.g., tendency to be kind, cooperative, altruistic, trustworthy, and generous), as well as three additional traits namely, need for material resources (e.g., tendency to desire material possession and wealth), need for arousal (e.g., tendency to desire stimulation and

excitement and counter fear), and body resource needs (e.g., tendency to devote more time to improve one's body and work hard to stay healthy and in good shape; Mowen et al., 2007; Vollrath, 2001).

Prior research provides evidence for the role of personality in experiencing mental health challenges during crisis. For instance, researchers have found that general psychological responses to crisis vary for individuals high versus low in neuroticism, openness, agreeableness, and conscientiousness (Stadler et al., 2020). For instance, neuroticism has been associated with adverse mental health outcomes for healthcare professionals who cared for patients with SARS and with negative affects during Covid-19 (Kroencke et al., 2020; Lung et al., 2009). However, to our knowledge, there are no published studies that systematically examine how a broad set of personality traits (not limited to the big five traits) is associated with consumer vulnerability experiences. This is particularly relevant given the fact that Covid-19 has been both a health crisis (affecting individuals' physical health and body) and a financial crisis (affecting individuals' ability to earn money and possess/keep their material resources) which has posed threats to individuals' lifestyle and changed normalcy. We hypothesize:

> **Hypothesis 1b.** *The pandemic-induced consumer vulnerability varies with individuals' personality traits.*

2.2 | Effect of consumer vulnerability on behavior

Hill and Sharma (2020) recognize a range of potential consequences of vulnerability as consumers try to cope with their situations and categorize their coping mechanisms as either non-defensive mechanisms (i.e., submitting to the situation) or defensive mechanisms (i.e., resisting or combating the situation). Both mechanisms reflect some kind of change in behaviors compared to the state of pre-vulnerability. This is consistent with Baker et al. (2007) model of vulnerability, recognizing change in behaviors, values, and policies as the consequences of vulnerability. We draw on psychological reactance theory (Brehm, 1966) to explain these behaviors. According to this theory, when something threatens or eliminates people's freedom of behavior, they experience psychological reactance, a motivational state that drives freedom restoration (Rosenberg & Siegel, 2018). Threats to freedom to control one's life may stem from varying sources including severe adversities and crises, and people's reactions include both psychological and behavioral changes (Cameron & Shah, 2015; Campbell, 2006).

For the most part, vulnerable consumers react in ways that depend on their perceptions of the malleability of a particular context and of their long-term prospects for improving their situation by obtaining more resources or control. Accordingly, the degree of change in behaviors serves to legitimize some combination of individual or structural resource constraints and the lack of control (Hill & Sharma, 2020). Indeed, ignoring the country level structural/environmental situations hinders researchers' abilities to meaningfully

interpret the role of individual differences in shaping responses during crisis (Eriksson et al., 2018). As such, we posit that behavioral changes in response to Covid-19 vulnerability vary across countries with different structural/environmental factors. Specifically, we examine change in important household decisions namely, saving, investing, and spending and expect to see more impact on spending patterns of developing countries (vs. developed countries) given the harsher economic impact of the pandemic on these countries. However, we expect a positive effect on post-pandemic saving and investing in developed countries. We hypothesize:

> **Hypothesis 2a.** *The pandemic-induced consumer vulnerability affects broad household financial behaviors.*

> **Hypothesis 2b.** *The impact of the pandemic-induced consumer vulnerability on household financial decisions varies with socio-economic/pandemic conditions.*

Household behavior during times of crisis, or unexpected shocks, is explained to be strategic in order to minimize the impact of shocks on household welfare (e.g., Nyamongo, 2002; Sauerborn et al., 1996). Households have limited resources to allocate to various spending categories. A fundamental trade-off is between spending money on necessities (i.e., items that cannot live without), such as ordinary food and medical care, or on nonessential items such as luxuries (Kivetz & Simonson, 2002). Such decisions become even more important when facing threats posed by an economic and/or health crisis. The pandemic-induced vulnerability experienced by individuals, then, is expected to impact the allocation of budget to spending categories. American Life Panel (ALP) has identified major categories that comprise household expenditures (e.g., food, beverages, tobacco, clothing, health care and personal care, entertainment, transportation, travel, and education; Chai et al., 2015). In line with this categorization and to add specificity to our analyses, we examine spending patterns across 10 product/service categories, namely food, alcohol, tobacco, healthcare, education, transportation, personal care, entertainment, charitable contributions, and luxury items.

We expect to see a post-pandemic decline in unnecessary, luxury expenditure categories (e.g., luxury items, travel, alcohol, tobacco, and entertainment) and an increase in healthcare, personal care, and education categories. However, we do not expect these results to be consistent across countries with varying socio-economic and pandemic severity conditions. We expect to see a stronger change among households residing in areas that were hit harder by the pandemic (and thus, experienced more vulnerability). We hypothesize:

> **Hypothesis 3a.** *The pandemic-induced consumer vulnerability affects specific household spending patterns.*

> **Hypothesis 3b.** *The impact of the pandemic-induced consumer vulnerability on specific household spending patterns varies with socio-economic/pandemic conditions.*

3 | METHOD

3.1 | Data collection procedure and sample statistics

Data were collected via an online survey created by Qualtrics data collection software. Research participants were household decision makers living in four countries located in four areas, namely the Americas (i.e., USA), Europe (i.e., UK), Africa (i.e., South Africa) and Latin America (i.e., Mexico).

We collected data on the intensity of Covid-19 situation in each country. This is important, as prior research indicated that the extent of threat is an important factor contributing to vulnerability states of individuals (Campbell et al., 2020). The extent of threat is influenced by severity, scope, and psychological distance. Severity refers to the "size" of the threat in terms of potential harm to wellbeing. Scope refers to the "size" of the threat in terms of the number of people, communities, and geographic areas that the threat can or does impact, as well as its duration. Psychological distance refers to how removed or close the threat seems to the person perceiving the threat (Trope & Liberman, 2010). As such, we consider the number of new cases and deaths in the month that precedes data collection. The numbers are obtained from the website of the WHO Covid-19 Dashboard.[2]

Following the WHO, we report number of cases and number of deaths per one million population. We also report economic prosperity measured as U.S.D. GDP per capita (obtained from the website of the World Bank[3]). The details are presented in Table 1.

Table 1 shows that the highest number of cases per million population is found in the United States, while the highest number of deaths per million population is in the United Kingdom. As expected, the highest GDP per capital is the in the United States, followed by the UK; there is a considerable gap in income between these two countries and the other two countries, South Africa and Mexico.

The questionnaire was designed in accordance with the underlying theories and the relevant variables of interest. When possible, constructs were measured using previously validated scales. In addition, we adopted questions from credible sources such as the Household Financial Planning Survey (administered by the Consumer Federation of America), Personal finance Survey (administered by the Bureau of Labor Statistics at the US Department of labor), and the content of the Certified Financial Planner Board of Standards.

Participation was restricted to individuals living in each specific country as a permanent resident or citizen and those who were at least 18 years old. To further ensure reliability of responses, participation was restricted to respondents who are one of the primary financial decision makers in their household (see Alhenawi & Elkhal, 2013; Campbell, 2006). Further, the survey included two attention check questions to ensure that participants read each question and answered accordingly. Incomplete responses and those who failed the attention checks were removed. The final dataset includes 1895

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[2]World Health Organization. Coronavirus Disease (Covid-19) Dashboard. https://covid19.who.int/. Accessed on September 29, 2020.
[3]World Bank. https://data.worldbank.org/indicator/. Accessed on September 29, 2020.

TABLE 1 Country key indicators

	USA	UK	South Africa	Mexico
Date	May 31, 2020	May 31, 2020	June 5, 2020	June 5, 2020
Number of cases	1,857,107	248,925	43,434	105,680
Number of deaths	108,915	37,435	908	17,687
Population	331,478,677	67,973,563	59,489,841	129,262,198
% of cases (per 1 million population)	5602	3662	730	818
% of deaths (per 1 million population)	329	551	15	137
GDP per capita (in 1000 USD, 2019)	65.12	42.30	6.00	9.86

complete responses, which represented 86% of the original 2195 responses. The final sample is well balanced among the four countries with 504, 499, 428, and 464 responses from the USA, UK, South Africa, and Mexico, respectively. Data were collected between July 1, 2020 and August 3, 2020.

3.2 | Common method bias and nonresponse bias assessment

To reduce common method bias, we followed Podsakoff et al. (2003) recommendations. First, the measures of predictor and criterion variables were placed throughout the survey and incorporated with other instrument materials. For instance, measures of personality and vulnerability were placed in two different sections of the questionnaire. Second, measurement items were mainly borrowed from previously validated scales and carefully adapted and improved to fit the specific context of the study. Third, respondent anonymity and confidentiality were assured.

However, given the fact that data were collected using the same measurement method, we checked for common method bias before hypotheses testing. To that end, a post-hoc evaluation of common method bias, Harman's one-factor (or single-factor) test, was performed by loading all metric variables in the study into an EFA and conducting an unrotated factor solution. EFA generated five factors, explaining 54% of variance and rejected the prospect that one single or general factor responsible for the majority of covariance among the measures (Podsakoff et al., 2003). In fact, a forced one-factor EFA explained only 21% of variance, indicating that common method bias was not present.

Moreover, existing literature has established that the non-respondents sometimes differ systematically from the respondents in attitudes, behaviors, personalities, motivations, demographics, and/or psychographics, in which any or all of which might affect the results of the study (Armstrong & Overton, 1977; Malhotra et al., 2006). We evaluated the possibility of non-response bias by comparing the responses of early versus late respondents. Responses to the constructs of interest and demographic variables were compared using t-tests to compare the late versus early respondents, where applicable. No statistically significant difference was found between the two groups ($p > .1$ for all comparisons), indicating that non-response bias was not a concern.

3.3 | Explanation of variables

3.3.1 | Control variables

We controlled for the demographic and financial characteristics that have been shown in previous literature as determinants of households financial and consumption decisions (e.g., Sherraden, 2013; Xiao & Porto, 2017; Yazdanparast & Alhenawi, 2017). Risk tolerance is the ability to handle risk, a characteristic that varies considerably among individuals and plays an important role in shaping their decisions (Grable & Lytton, 1999). Individuals' risk tolerance could impact the level of fears and concerns they experience during the pandemic. Risk tolerance was measured using the well-known investment risk tolerance quiz developed by Grable and Lytton (1999). This quiz is a reliable and valid measure of risk tolerance (e.g., Gilliam et al., 2010; Larkin et al., 2013) that captures the maximum amount of uncertainty that individuals are willing to accept when making financial and consumption decisions (Grable, 2000). Participant's responses to the 13 questions included in the quiz were scored and summed up to create a risk tolerance score. The score can take any value between 0 and 43.

We also controlled for financial planning, financial knowledge, and household's financial situation, because vulnerability states could be associated with respondents' financial situations and perceptions of their abilities to make financial decisions. Financial planning refers to methods of preparing for future household financial needs in an efficient manner (Altfest, 2004), which was measured using four items adapted from Parrotta and Johnson (1998) (Cronbach's alpha = .79). Responses were recorded on a 7-point scale (1 = strongly disagree to 7 = strongly agree). Financial knowledge was measured using Knoll and Houts (2012) tool. Respondents answered a short quiz comprised of five multiple-choice questions. We then graded their answers and gave each respondent a score that represents his/her financial knowledge. The score can take any value between 0 and 5. The higher the score, the greater the financial knowledge. Finally, following Lusardi and Mitchell (2008), we measured participants' financial situation

TABLE 2 Sample structure

		Risk tolerance	Financial planning	Financial knowledge	Financial situation-general	Financial situation-confidence	Age	Family size
USA	Max	40.00	7.00	5.00	5.00	7.00	76.00	6.00
	Average	23.92	4.48	2.49	2.13	3.92	31.47	2.92
	Median	24.00	4.50	2.00	2.00	4.00	28.00	3.00
	Min	13.00	1.00	0.00	1.00	1.00	18.00	1.00
	SD	4.41	1.25	1.37	0.93	1.73	12.59	1.42
UK	Max	37.00	7.00	5.00	5.00	7.00	73.00	6.00
	Average	23.49	4.35	2.06	1.98	3.86	32.82	3.00
	Median	23.00	4.50	2.00	2.00	4.00	30.00	3.00
	Min	13.00	1.00	0.00	1.00	1.00	18.00	1.00
	SD	4.36	1.13	1.29	0.80	1.60	11.77	1.31
South Africa	Max	43.00	7.00	5.00	5.00	7.00	70.00	6.00
	Average	25.93	4.77	2.24	2.37	3.89	29.70	3.46
	Median	26.00	4.75	2.00	2.00	4.00	27.00	3.00
	Min	15.00	1.00	0.00	1.00	1.00	18.00	1.00
	SD	4.74	1.10	1.19	0.95	1.57	9.78	1.48
Mexico	Max	39.00	7.00	5.00	5.00	7.00	60.00	6.00
	Average	26.06	4.67	2.16	1.97	3.61	27.43	3.49
	Median	26.00	4.75	2.00	2.00	3.00	26.00	4.00
	Min	14.00	1.25	0.00	1.00	1.00	18.00	1.00
	SD	4.09	1.08	1.19	0.75	1.54	7.37	1.26
All	Max	43.00	7.00	5.00	5.00	7.00	76.00	6.00
	Average	24.78	4.56	2.24	2.11	3.82	30.44	3.21
	Median	25.00	4.75	2.00	2.00	4.00	28.00	3.00
	Min	13.00	1.00	0.00	1.00	1.00	18.00	1.00
	SD	4.54	1.16	1.27	0.88	1.62	10.84	1.39

(using a bipolar scale where 1 = live comfortably and 5 = do not have enough to meet basic expenses) and confidence in making the best financial decisions (using a bipolar scale where 1 = very confident and 7 = not confident at all). Demographic information such as age, gender, household size, marital status, religion, ethnicity, and type of employment were captured as well.[4] Table 2 provides descriptive statistics for each country and for the entire sample.

The sample is reasonably balanced with the average age of respondents being 30.44 years, the maximum is 76 years, and the minimum, by construction, is 18. Respondents from Mexico are relatively younger (the average age is 27.43 years) and respondents from the UK are the oldest (the average is 32.82 years). The average family size is 3.21 people with Mexican and South African families being larger than USA and UK families. Moreover, 54% of our respondents are female. The UK subsample includes relatively more females (73%), and the Mexico subsample includes relatively less females (33%).

Risk tolerance is moderate in the sample with little variations across countries. The average financial planning is 4.56 (out of 7) and the average

financial knowledge score is 2.24 (out of 5). Financial situation average score is 2.11 (out of 5) and confidence in financial decision-making score is 3.82 (out of 7). All scores are reasonably balanced across countries.

3.3.2 | Personality traits

Personality traits were measured as in Licata et al., (2003) which were first developed by Mowen (2000). Respondents were presented with short phrases and asked "how often do you feel/act this way" (responses were reported on 7-point scales anchored by 1 = never to 7 = always). Table 3 shows the descriptive statistics of personality traits (Cronbach's alpha values for all personality traits >.8). The sample does not suffer any sever bias in any particular trait and does not show sever differences among countries.

3.3.3 | Consumers vulnerability

We constructed a consumer vulnerability index to capture individuals' pandemic-induced fears and concerns (adapted from

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[4]The effects of marital status, religion, ethnicity, and type of employment were found insignificant in regression analyses.

TABLE 3 Personality traits

Panel A—Measurement properties	
Personality trait	**Cronbach's alpha**
Introversion	.83
Need for material resources	.87
Openness to experience	.86
Neuroticism	.89
Need for body resources	.86
Agreeableness	.88
Conscientiousness	.87
Need for arousal	.89

Panel B—Descriptive statistics							Body resources			
		Introversion	Materialism	Openness	Neuroticism	Body resources	Agreeableness	Conscientiousness	Arousal
USA	Max	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Average	4.37	3.38	4.75	3.60	4.39	5.45	4.95	3.66
	Median	4.50	3.25	5.00	3.50	4.50	5.50	5.00	3.75
	Min	1.00	1.00	1.00	1.00	1.00	1.75	1.00	1.00
	SD	1.41	1.49	1.21	1.55	1.32	1.10	1.22	1.40
UK	Max	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Average	4.25	3.49	4.45	3.93	4.01	5.38	4.90	3.58
	Median	4.50	3.50	4.50	4.00	4.00	5.50	5.00	3.50
	Min	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00
	SD	1.25	1.40	1.18	1.44	1.28	1.07	1.19	1.47
South Africa	Max	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Average	3.94	3.89	5.14	3.77	4.57	5.73	5.03	4.24
	Median	4.00	3.75	5.25	3.75	4.50	5.75	5.25	4.50
	Min	1.00	1.00	1.50	1.00	1.00	2.25	1.50	1.00
	SD	1.22	1.45	1.08	1.45	1.37	0.99	1.25	1.43
Mexico	Max	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Average	4.17	3.91	5.03	3.91	4.60	5.26	5.09	4.13
	Median	4.25	4.00	5.25	4.00	4.75	5.25	5.25	4.25
	Min	1.00	1.00	2.00	1.00	1.00	2.00	1.75	1.00
	SD	1.37	1.40	1.07	1.37	1.28	1.04	1.11	1.38
All	Max	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Average	4.19	3.65	4.83	3.80	4.38	5.45	4.99	3.89
	Median	4.25	3.50	5.00	4.00	4.50	5.50	5.00	4.00
	Min	1.00	1.00	1.00	1.00	1.00	1.25	1.00	1.00
	SD	1.32	1.45	1.17	1.46	1.33	1.06	1.19	1.45

Cicirelli, 2002; Clarke et al., 1993; Cronbach's alpha = .75). Using 7-point Likert scales (1 = strongly disagree and 7 = strongly agree), the participants were asked to report their agreement/disagreement with statements capturing their fears/concerns induced by Covid-19 regarding their personal health, health of loved ones, their professional and social life, and death (see Appendix A for details).

3.3.4 | Pandemic-related attitudes and perceptions

We captured important perceptual and attitudinal factors that can affect consumers' fears and concerns (and thus vulnerability states). Perceptions about the financial impacts of Covid-19 pandemic could contribute to the degree of helplessness and vulnerability that consumers experience. This is in line with prior research arguing that

TABLE 4 Pandemic-induced fears and concerns (consumer vulnerability)

		Personal health	Health of loved ones	Professional life	Social life	Death
USA	Max	7.00	7.00	7.00	7.00	7.00
	Average	4.56	5.48	4.25	4.32	3.36
	Median	5.00	6.00	5.00	5.00	3.00
	Min	1.00	1.00	1.00	1.00	1.00
	SD	1.79	1.58	1.91	1.90	1.85
UK	Max	7.00	7.00	7.00	7.00	7.00
	Average	4.18	5.28	4.25	4.48	3.33
	Median	5.00	6.00	5.00	5.00	3.00
	Min	1.00	1.00	1.00	1.00	1.00
	SD	1.81	1.58	1.79	1.73	1.79
South Africa	Max	7.00	7.00	7.00	7.00	7.00
	Average	4.77	5.92	5.09	4.66	3.70
	Median	5.00	6.00	5.00	5.00	4.00
	Min	1.00	1.00	1.00	1.00	1.00
	SD	1.75	1.27	1.65	1.79	1.95
Mexico	Max	7.00	7.00	7.00	7.00	7.00
	Average	4.89	5.95	5.12	4.53	3.67
	Median	5.00	6.00	5.00	5.00	4.00
	Min	1.00	1.00	1.00	1.00	1.00
	SD	1.71	1.28	1.59	1.71	1.88
All	Max	7.00	7.00	7.00	7.00	7.00
	Average	4.59	5.64	4.65	4.49	3.51
	Median	5.00	6.00	5.00	5.00	4.00
	Min	1.00	1.00	1.00	1.00	1.00
	SD	1.79	1.47	1.80	1.79	1.87

being powerless and out of control results in vulnerability (Baker et al., 2007). We measured participants' perceptions of the post-pandemic world economy, national economy, and their own household's financial situation. In each of these questions, participants earned one point for choosing the first option, which corresponds to the most pessimistic view or the highest sense of insecurity, while they earned 0.5 point for choosing the second option, which describes modest views and average concerns. The third option received no points as it indicates a rather optimistic view and very little fear. The final result takes values between zero and three; where three indicates more negative perceptions and attitudes. More specifically, a participant with the score of three is someone who believes that because of the pandemic, the local and global economies will be devastated, and his/her household will wind up in an extremely bad financial situation. On the other end, a participant with the score of zero has much more optimistic financial views and little to no fear.

We also measured participants' attitude toward their country's health system (1 = very poor and 7 = Excellent). During health crises, the healthcare system becomes a safety net whose strength could

lower fears and concerns regarding the pandemic's consequences including mortality rate. Further, prior research has identified physical disabilities and poor health conditions as important and relevant individual factors contributing to vulnerability states (Baker et al., 2005). As such, we asked participants to rate their own personal health (1 = very poor and 7 = Excellent). Finally, overall satisfaction with life plays a role in one's perceptions and attitudes. Thus, we asked participants to rate their overall satisfaction with life (1 = very dissatisfied and 7 = very satisfied). Appendix A provides a complete list of the measurement items.

3.3.5 | Household financial and consumption decisions

The next set of questions measured participants' reactions to the pandemic as demonstrated by their spending, investing, and saving patterns before Covid-19 and after Covid-19. The goal was to capture how the pandemic has affected consumers' decisions. Participants reported how much of their household income was (vs. would be) saved, invested, and spent pre- (vs. post-) pandemic. The answers were reported on a scale that captured allocation percentage (1 = 0%,

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[5]Unreasonable answers were not allowed. For instance, if the total of spending, saving, and investing was above or below 100%, the respondent was alerted to re-enter valid responses.

TABLE 5 Pandemic-induced changes in household financial behavior

		Saved_pre-Covid	Invested_preCovid	Spent_preCovid	Saved_postCovid	Invested_postCovid	Spent_postCovid	Diff. in savings	Diff. in investing	Diff. in spending
USA	Max	6.00	6.00	6.00	6.00	6.00	6.00	3.00	2.00	4.00
	Average	2.74	1.97	4.08	2.76	1.87	3.94	0.02	−0.10	−0.14
	Median	2.00	2.00	4.00	2.00	2.00	4.00	0.00	0.00	0.00
	Min	1.00	1.00	1.00	1.00	1.00	1.00	−4.00	−3.00	−4.00
	SD	1.21	1.03	1.32	1.37	1.07	1.46	0.91	0.72	0.91
UK	Max	6.00	6.00	6.00	6.00	6.00	6.00	4.00	5.00	3.00
	Average	2.39	1.46	4.34	2.47	1.47	4.12	0.08	0.02	−0.22
	Median	2.00	1.00	5.00	2.00	1.00	4.00	0.00	0.00	0.00
	Min	1.00	1.00	1.00	1.00	1.00	1.00	−4.00	−3.00	−5.00
	SD	1.05	0.78	1.24	1.17	0.84	1.38	0.85	0.51	0.86
South Africa	Max	6.00	6.00	6.00	6.00	6.00	6.00	5.00	3.00	4.00
	Average	2.55	2.05	4.54	2.13	1.71	4.54	−0.42	−0.34	0.00
	Median	2.00	2.00	5.00	2.00	1.00	5.00	0.00	0.00	0.00
	Min	1.00	1.00	1.00	1.00	1.00	1.00	−5.00	−4.00	−4.00
	SD	1.10	1.10	1.10	1.26	1.05	1.44	1.33	0.91	1.24
Mexico	Max	6.00	6.00	6.00	6.00	6.00	6.00	3.00	2.00	4.00
	Average	2.88	2.04	4.14	2.80	1.74	3.94	−0.07	−0.30	−0.20
	Median	3.00	2.00	4.00	3.00	1.00	4.00	0.00	0.00	0.00
	Min	1.00	1.00	1.00	1.00	1.00	1.00	−4.00	−4.00	−5.00
	SD	1.10	1.07	1.14	1.36	1.07	1.44	1.21	0.84	1.14
All	Max	6.00	6.00	6.00	6.00	6.00	6.00	0.00	0.00	0.00
	Average	2.64	1.87	4.27	2.55	1.70	4.12	0.00	0.00	0.00
	Median	2.00	2.00	4.00	2.00	1.00	4.00	0.00	0.00	0.00
	Min	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00
	SD	1.13	1.03	1.22	1.32	1.02	1.45	0.00	0.00	0.00

TABLE 6 Determinants of consumer vulnerability

	(a) Personal health concerns	(b) Loved ones' health concerns	(c) Professional life concerns	(d) Social life concerns	(e) Death concerns	(f) Consumer vulnerability
Intercept	3.907***	5.334***	5.280***	4.996***	3.607***	4.625***
Country effect (relative to USA)						
UK	-0.374**	−0.083	0.014	0.214	−0.142	−0.074
South Africa	0.099	0.323***	0.432***	−0.001	0.198	0.211**
Mexico	0.306**	0.332***	0.552***	−0.077	0.266*	0.276***
Personality effects						
Introversion	0.044	0.077**	−0.046	−0.156***	0.025	−0.011
Materialism	0.067*	0.031	0.081**	0.161***	0.135***	0.096***
Openness	−0.001	−0.001	0.024	0.034	0.037	0.019
Neuroticism	0.131***	0.087***	0.028	0.061*	0.075*	0.077***
Body resources	0.091**	0.060*	0.104**	0.134***	0.104**	0.099***
Agreeableness	0.248***	0.213***	0.086*	0.126**	0.155***	0.166***
Conscientiousness	0.1001**	0.027	0.088*	0.002	0.063	0.056*
Arousal	−0.081*	−0.075**	0.006	0.057^	−0.058^	−0.030
Attitudes and perceptions						
Covid-19 financial perceptions	−0.099***	−0.091***	−0.250***	−0.079***	−0.141***	−0.265***
Personal health condition	−0.267***	−0.086**	0.015	−0.016	−0.206***	−0.112***
Assessment of health system	−0.032	−0.050*	0.014	0.002	0.028	−0.008
Satisfaction with life	−0.013	0.007	−0.081*	−0.157***	−0.089*	−0.067**
Controls						
Risk tolerance	−0.02*	−0.008	−0.006	−0.004	−0.017	−0.011
Financial planning	0.162***	0.083*	0.117**	0.043	0.124**	0.106***
Financial knowledge	−0.11***	−0.042	−0.031	−0.016	−0.121***	−0.064**
Financial situation-general	−0.011	−0.098*	0.003	−0.114*	−0.057	−0.056
Financial situation-confidence	−0.015	0.021	0.051^	−0.025	0.006	0.008
Age	0.012**	−0.007*	−0.015***	−0.021***	0.011**	−0.004
Gender	0.052	−0.060	0.178*	0.095	0.133	0.080
Household size	0.034	0.035	−0.003	0.024	−0.006	0.017
R squared	0.164	0.130	0.177	0.115	0.118	0.2038
Adj. R squared	0.154	0.119	0.166	0.104	0.107	0.194
df regression	1871	1871	1871	1871	1871	1871
F-stat (df)	16.02 (23)	12.18 (23)	17.49 (23)	10.62 (23)	10.92 (23)	20.83
Sig.	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Note: Significance codes: "***" 0.001; "**" 0.01; "*" 0.05; "^" 0.1.

2 = up to 20%, 3 = 21%–40%, 4 = 41%–60%, 5 = 61%–80%, and 6 = 81%–100%). To add specificity, we also captured specific spending categories by measuring respondents' anticipated changes in spending on several categories including food, education, healthcare, and luxury items.[5] This tool was adopted from the well-known Personal Finance Survey administered by the Bureau of Labor Statistics at the U.S. Department of Labor.

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[5]Unreasonable answers were not allowed. For instance, if the total of spending, saving, and investing was above or below 100%, the respondent was alerted to re-enter valid responses.

4 | ANALYSIS AND RESULTS

4.1 | Vulnerability and decisions

4.1.1 | Consumer vulnerability

As explained in the previous section, we captured participants' fears and concerns regarding their personal health, their loved ones' health, professional life, social life, and inevitability of death as indicators of vulnerability states due to the Covid-19 pandemic.

Table 4 Shows a summary of participants' responses in the sample and across countries

The results indicate that in general, the greatest fear experienced by the participants is health of loved ones, while the least is fear of death. Nevertheless, pandemic-induced fears are substantial. All reported values are higher than the scales' midpoints. Further, 50% of the respondents reported their concerns regarding their personal health, professional life, and social life to be high (i.e., 5 or higher on a scale of 1–7). Comparison across countries reveals that the average scores of fears in the United States and United Kingdom are consistently lower than their counterparts in South Africa and Mexico. Furthermore, the fear of death is concentrated in the less developed countries (see Table 4).

Moreover, we compared the level of consumer vulnerability across the four countries. ANOVA results indicated that there was a significant difference among the countries in terms of consumer vulnerability (F[1, 1891] = 25.33, p < .001), providing initial support for H1a. The post-hoc analysis (Tukey) revealed that consumers in South Africa and Mexico had significantly higher vulnerability compared to those in the United States and United Kingdom.

4.1.2 | Household financial decisions

Table 5 Provides details on how Covid-19 is expected to impact decisions with respect to saving, investing, and spending

In the United States, respondents indicated that they will save more, invest less, and spend less. In the United Kingdom, respondents will save and invest more and spend less. In South Africa, respondents' answers indicate that they will save and invest less with no change in spending. In Mexico, respondents anticipate that they will save, invest, and spend less. This finding is noteworthy because it reflects a total sense of powerlessness and lack of control in less developed countries. That is, despite the greater severity of the pandemic in the United States and United Kingdom, those in Mexico and South Africa are more influenced by pandemic induced vulnerability. This may be attributed to the fact that the health and the financial systems in these countries are more fragile.

4.2 | Regression analyses

4.2.1 | Consumer vulnerability

Multivariate regression analysis (ordinary least square model) was employed to test the hypotheses. The results are reported in Table 6. The regressands are personal health concerns (model a), loved ones' health concerns (model b), professional life concerns (model c), social life concerns (model d), death concerns (model e), and the overall consumer vulnerability (model f). The regressors include country of residence, personality traits, and a series of attitudes and perceptions (i.e., Covid-19 financial perceptions, perceived personal health, attitude toward the health system, and life satisfaction). Moreover, and

as mentioned earlier, we also controlled for a set of factors including age, gender, household size, risk tolerance, financial planning, financial knowledge, and financial situation. We first estimated full models with all possible regressors, then we ran concise models with significant coefficients only. We only present the results with the final models (the results for the full models are available upon request from the authors).

The findings in Table 6 generally support our first set of hypotheses (i.e., H1a and H1b). consumer vulnerability is associated with country effect (where UK and USA are not significantly different, but Mexico and South Africa are). Specifically, residents of Mexico seem to be significantly more concerned than the American participants regarding their personal health, their loved ones' health, their professional life. They also seem to be more worried about death. The same is true with residents of South Africa (with the exception of personal health and death concerns). Residents of the UK do not seem to have more concerns than residents of the USA except that personal health concerns are weaker in the United Kingdom. This could be due to the stronger public health systems and insurance coverage in the United Kingdom. As opposed to the USA where millions of individuals have no or insufficient medical insurance. These results support H1a.

Moreover, the results also indicate that consumer vulnerability varies across personalities, supporting H1b. Materialism is positively associated with consumer vulnerability (and specifically with almost all concerns and fears shaping vulnerability except for health of loved ones). This finding is consistent with extant research indicating that individuals with greater need for material resources are relatively more concerned with their social image (Christopher et al., 2004) and view possessions as means of achieving utilitarian and social status (Richins & Dawson, 1992). Thus, individuals with higher scores in materialism are more concerned about themselves and their lives compared to others. Neuroticism is also positively associated with consumer vulnerability (and with a variety of concerns). Neurotic individuals are more likely to experience negative emotions and are more susceptible to stress. The same finding applies to respondents who score high on body resource needs. Physical/body needs are related to devoting more time to improve one's body and physical appearance. Those who score higher on this trait work hard to keep their bodies healthy and in good shape (Mowen, 2000) and have active lifestyles. It is quite expected, therefore, that this trait is positively associated with consumer vulnerability (and specifically, all types of concerns related to the Covid-19 pandemic). Conceivably, the limitations associated with stay-at-home orders are dire threats to one's health and fitness. Agreeable consumers are also more vulnerable showing higher concerns for all areas of vulnerability. Agreeableness is the need to express kindness and sympathy to others (Mowen, 2000), and thus, it is expected that scoring higher on this trait to be more concerned about the wellbeing of others as well as theirs. Individuals with higher levels of conscientiousness also experience higher vulnerability. This could be due to the fact that these individuals are organized and goal oriented. However, the unprecedent changes and limitations imposed on individuals due to the pandemic

TABLE 7 Determinants of pandemic-induced changes in households' financial and consumption behaviors

	(a) Change in saving	(b) Change in investing	(c) Change in spending
Intercept	−0.0156	0.0510	0.761*
Country effect (relative to USA)			
UK	−0.1780*	−0.1008	0.089
South Africa	0.2675***	0.1640**	−0.069
Mexico	−0.0152	0.1288*	0.071
Attitudes and perceptions			
Covid-19 perceptions	−0.2143***	−0.0847***	0.078**
Personal health condition	−0.0042	0.0151	0.019
Attitude toward country's health system	0.0422*	−0.0070	−0.001
Satisfaction with life	0.0283*	0.0159	−0.023
Consumer vulnerability	0.0122*	0.0324*	0.004*
Controls			
Risk tolerance	0.0107^	0.0017	−0.013*
Financial planning	0.0423^	0.0260^	0.001
Financial knowledge	−0.0358^	−0.0207	−0.019
Financial situation-general	0.1147***	0.0345	−0.062*
Financial situation-confidence	−0.0173	−0.0116	−0.035*
Age	0.0061*	0.0037*	−0.007**
Gender	0.0588	−0.0080	−0.057
Household size	0.0205	0.0006	−0.027
R squared	0.0820	0.0579	0.0294
Adj. R squared	0.0742	0.0498	0.0211
df regression	1878	1878	1878
F-stat	10.49(16)	7.208(16)	3.553(16)
Sig.	0.000***	0.000***	0.000***

Note: Significance codes: "***" 0.001; "**" 0.01; "*" 0.05; "^" 0.1.

has significantly changed normalcy, compromised plans, and shifted goals.

4.2.2 | Household financial decisions

Multivariate regression analysis was also employed to assess the relationship between consumer vulnerability and change in saving (model a), investing (model b), and spending (model c) in response to Covid-19. The results are reported in Table 7.

In support of H2a, consumer vulnerability is significantly associated with changes in saving, investing, and spending. Consumers who experience a greater sense of vulnerability reported that they intend to save more (regression a) and invest more (regression b). Keeping in mind how the dependent variable in these regressions is constructed (see Table 5), a one-point increase on the 7-point scale of vulnerability is associated with $0.0122 \times 6 = 7.32\%$ increase in savings (regression a) and $0.0324 \times 6 = 19.44\%$ increase in investing (regression b). The results are in line with psychological reactance theory positing that

stressful conditions force people to take defensive mechanisms. As such, it is quite plausible that people have intention to save and invest significantly more. Empirically, our findings are in line with those of Liu et al. (2020) and Li et al. (2020) who analyzed the impact of the pandemic on households' behavior in China and reported significant increase in savings and a hike in liquidity constraints attributed to fears of losing employment or income. Regression c indicates an increase in spending as well, but the magnitude is much smaller ($0.004 \times 6 = 2.4\%$). The increase in spending, however, should be explained with respect to various spending categories (see H3 discussions).

The country effect is also strong. Specifically, compared to the USA, respondents in South Africa, indicated that they would save and invest more. Similarly, respondents in Mexico indicated that they would invest more (relative to the USA). However, in the United Kingdom, respondents will save less than the respondents in USA. The results are noteworthy given the fact that the residents of developing countries show more inclination toward investing than the developed countries, while general spending patterns are not different

TABLE 8 Determinants of pandemic-induced changes in household's specific spending behavior

	(a) Change in food expenditures	(b) Change in alcohol expenditures	(c) Change in tobacco expenditures	(d) Change in healthcare expenditures	(e) Change in education expenditures
Intercept	0.478^	−0.331	−0.164	0.781***	−0.045
Country effect (relative to USA)					
UK	−0.033	−0.007	−0.027	−0.071	−0.057
South Africa	−0.216***	0.291***	0.139***	−0.105**	−0.034
Mexico	−0.131*	0.183***	0.068*	−0.075^	0.011
Attitudes and perceptions					
Covid-19 perceptions	0.024	−0.023	−0.012	−0.073***	−0.017
Personal health condition	0.008	0.028*	0.006	0.008	0.033*
Attitude toward country's health system	−0.020	0.019^	0.013	0.015	0.006
Satisfaction with life	−0.018	−0.014	−0.019.	−0.020	−0.032*
Consumer vulnerability	−0.021	0.028*	−0.003	−0.032**	0.052***
Controls					
Risk tolerance	−0.007^	0.006^	0.009**	−0.005	−0.001
Financial planning	0.014	0.011	0.020^	−0.003	0.006
Financial knowledge	−0.022	0.003	−0.023*	−0.013	−0.040**
Financial situation-general	−0.020	0.026	−0.012	−0.020	0.023
Financial situation-confidence	0.006	−0.011	0.003	0.000	0.000
Age	−0.002	−0.003*	0.000	0.000	−0.001
Gender	−0.070^	0.053^	0.000	0.009	−0.051
Household size	−0.019	0.006	0.011	−0.018^	0.048***
R squared	0.022	0.063	0.037	0.024	0.039
Adj. R squared	0.014	0.055	0.028	0.016	0.031
df regression	1878	1878	1878	1878	1878
F-stat (df)	2.655 (16)	7.857 (16)	4.458 (16)	2.884 (16)	4.793 (16)
Sig.	0.000***	0.000***	0.000***	0.000***	0.000***
	(f) Change in transportation expenditures	(g) Change in personal care expenditures	(h) Change in entertainment expenditures	(i) Change in charitable contributions expenditures	(j) Change in luxury expenditures
Intercept	0.353	−0.170	−0.352	0.004	−0.332^
Country effect (relative to USA)					
UK	0.188**	−0.001	0.184**	−0.030	−0.098*
South Africa	0.178***	0.106*	0.251***	−0.025	0.038
Mexico	0.404***	0.153***	0.244***	−0.054	0.022
Attitudes and perceptions					
Covid-19 perceptions	−0.062**	−0.079***	−0.085***	−0.051***	−0.015.
Personal health condition	0.007	0.043**	0.037^	0.003	0.008
Attitude toward country's health system	0.006	−0.010	−0.014	−0.002	0.006
Satisfaction with Life	−0.009	−0.020^	0.049**	0.010	0.007
Consumer vulnerability	0.049**	0.025*	0.080***	−0.005	0.055***
Controls					
Risk tolerance	0.005	0.003	0.011*	0.002	0.007*
Financial planning	−0.001	0.028*	0.009	0.029*	0.046***

(Continues)

TABLE 8 (Continued)

	(f) Change in transportation expenditures	(g) Change in personal care expenditures	(h) Change in entertainment expenditures	(i) Change in charitable contributions expenditures	(j) Change in luxury expenditures
Financial knowledge	−0.021^	−0.024*	−0.016	−0.017^	−0.034***
Financial situation-general	−0.017	0.030	−0.024	0.032*	−0.022
Financial situation-confidence	−0.002	0.003	0.020	0.011	0.013
Age	−0.006***	0.002	−0.001	0.003*	0.000
Gender	0.083*	0.130***	0.188***	−0.017	−0.040
Household size	0.023^	0.025*	0.006	0.001	0.018^
R squared	0.078	0.074	0.072	0.021	0.055
Adj. R squared	0.070	0.069	0.064	0.013	0.047
df regression	1878	1878	1878	1878	1878
F-stat (df)	9.931 (16)	9.751 (16)	9.071 (16)	2.519 (16)	6.771 (16)
Sig.	0.000***	0.000***	0.000***	0.001***	0.000***

Note: Significance codes: "***" 0.001; "**" 0.01; "*" 0.05; "^" 0.1, "." 0.1.

across the countries. These findings support H2b and have significant implications for the country's economy during the post-pandemic recovery.

4.2.3 | Change in spending categories

To test H3 and to delve deeper into the effect of consumer vulnerability on spending patterns of consumers, we ran a set of regressions focusing on specific spending categories (see Table 8). We examined participants' responses to how the pandemic changes their spending on food, alcohol, tobacco, healthcare, education, transportation, personal care, entertainment, charity, and luxury items. The results provide general support for H3a and H3b, indicating that the vulnerability experienced by households due to the Covid-19 pandemic can impact spending decisions of consumers across spending categories.

The results provide evidence for a strong country effect that is consistently similar in South Africa and Mexico and remarkably different from the USA and the UK. For instance, consumers in South Africa and Mexico indicated that they would spend less on food and healthcare compared to the USA and more on alcohol, tobacco, entertainment, and transportation compared to the USA. However, the spending pattern among respondents in the United Kingdom is not much different from that of the respondent in the United States. The shift toward more unnecessary and potentially harmful expenses among the residents of the developing countries is definitely alarming and shows the consequences of the higher levels of vulnerability experienced among these consumers. This is further supported by the regression results indicating that higher levels of consumer vulnerability are associated with significantly less spending on food and healthcare and more spending on alcohol, entertainment, and luxury

items. These effects do not match our expectations and show an intriguing surge in spending on generally considered unnecessary items. According to psychological reactance theory, experiencing a threat and loss of freedom creates an unpleasant motivational arousal that results in behavioral and cognitive efforts to reestablish one's freedom. As such, when vulnerability is experienced in higher magnitude, spending money on items such as alcohol, tobacco, entertainment, and luxury items could be a way for consumers to feel that they have regained control. This is in line with prior research indicating that financial stress affects people's consumption behavior and increases their luxury consumption intentions (Wang et al., 2020). The vulnerability is also expected to be associated with higher spending on education, personal care, and transportation.

5 | DISCUSSION AND CONCLUSION

The present research uniquely links research on psychological reactance theory, personality, and consumer vulnerability and contributes to the growing body of research on household financial behavior in the context of Covid-19 pandemic. Household finance has attracted scholars from finance, economics, management, communication, and marketing (e.g., Besharat et al., 2014, 2015; Duclos, 2015; Lynch Jr, 2011 and Shefrin & Nicols, 2014). Extant research has recognized that financial decisions are influenced not only by household's financial profile, but also by decision makers' individual characteristics (Lynch Jr, 2011; Yazdanparast & Alhenawi, 2017) and situational/environmental conditions where they reside (Xu et al., 2017; Zhao, 2020). This study contributes to the existing literature by focusing on the role of personality traits in affecting consumer vulnerability (as manifested through health, social, professional, and death related concerns) in a cross-country context.

The results indicate that a broad range of personality traits are associated with consumer vulnerability and present the first study to examine the relationship between a comprehensive list of personality traits on Covid-19 induced vulnerability. Specifically, the results reveal that neuroticism, conscientiousness, need for material resources, body resource needs, and agreeableness are associated with enhanced vulnerability experiences among consumers.

Moreover, little is known about the psychological consequences of restrictions that have been imposed to fight the pandemic. We examine the impacts of consumer vulnerability on broad household financial decisions (i.e., spending, saving, and investing) as well as specific consumption choices (i.e., spending on specific expense categories). The results highlight the role of consumer vulnerability in affecting important household financial and consumption decisions. More specifically, the examination of spending patterns across various categories provide septicity into household consumption behavior across four countries with varying degrees of economic development and pandemic severity. We find that the magnitude of the pandemic-induced vulnerability varies across countries, and consequently, the changes in household behaviors in response to vulnerability are not similar among consumers in the developed and developing countries. The results contribute to the newly emerging branch of literature concerning the impact of large-scale catastrophes, like the pandemic, on consumer decisions (Yue et al., 2020) and is the first to provide empirical evidence on the role of vulnerability as the factor impacting spending decisions.

Understanding how individual differences shape responses to major public health events such as pandemics has the potential to inform public policy through the identification of at-risk individuals and the provision of targeted guidance (Siritzky et al., 2020). Social planners and government agencies tasked with ensuring the well-being of citizens should be aware of the level of vulnerability experienced by individuals with different personality traits. Indeed, people with different psychological profiles perceive the pandemic-induced adversities differently and consequently, are likely to react differently.

Moreover, the post-pandemic adjustments (changes) are not expected to be similar among individuals and across residents of developed and developing countries. As such, marketers and service providers need to be cognizant of the severity of the vulnerability experienced by consumers and plan for the post-pandemic recovery period accordingly. The results indicate that higher consumer vulnerability lowers households' expenditure on certain categories (i.e., food and healthcare). However, it is expected to increase spending on alcohol, entertainment, luxury items, transportation, and education, while not significantly changing charitable contributions. The decision to spend less on certain categories impacts the relevant industries and economic sectors. Moreover, the decision to spend more on products and services that have generally been considered as unnecessary (e.g., luxury items, alcohol, and entertainment) indicates a post-pandemic shift in consumers' perception of necessities. This finding is especially noteworthy as it indicates that the restrictions, fears, and vulnerabilities experienced during the pandemic have encouraged consumers to focus on product/services/experiences that give them a sense of freedom, joy, and extravagance to compensate for the lost opportunities during the pandemic. This is line with Norris and Williams (2016) who refer to consumers' perception of necessity as a psychological phenomenon associated with insecurities. Moreover, the findings contribute to psychological reactance theory (Rosenberg & Siegel, 2018), revealing that changes in behavior in response to threats could extend to redefining necessities. Moreover, advertisers and marketers are encouraged to shape their messaging in line with these findings, highlighting the new necessities and the sense of control (as opposed to containment) that consumers could gain through them.

6 | LIMITATIONS AND FUTURE RESEARCH

The findings of the present research should be considered in light of a few limitations. The results are limited to the four countries included in the analyses. Moreover, the samples are not necessarily representative of all households in these countries, lowering the generalizability of the results. Future research is encouraged to examine other developed and developing countries and compare the results with those of the present research. Moreover, the results indicate a clear change in post-Covid-19 spending across product and service categories that implies post-pandemic perceptions of necessities will be different from those of the pre-Covid-19 era. It would be worthwhile to explore these shifts through qualitative research to uncover the psychological motives behind the identified changes in spending patterns among consumers who are most vulnerable. Finally, our data were collected during the pandemic. It would be worthwhile to re-examine the findings with a longitudinal approach and re-explore households' financial behaviors once the pandemic is officially over.

CONFLICT OF INTEREST
There is no conflict of interest.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES
Alhenawi, Y., & Elkhal, K. (2013). Financial literacy of U.S. households: Knowledge vs. long-term financial planning. *Financial Services Review*, *22*, 1–43.
Alhenawi, Y., Hassan, M. K., & Hasan, R. (2022). Evolution of research in finance over the last two decades–a topographical view. *Research in International Business and Finance*, *59*(January), 101550. https://doi.org/10.1016/j.ribaf.2021.101550
Alhenawi, Y., & Yazdanparast, A. (2021). Households' intentions under financial vulnerability conditions: Is it likely for the COVID-19 pandemic to leave a permanent scar? *International Journal of Bank Marketing*. https://doi.org/10.1108/IJBM-05-2021-0200

Altfest, L. (2004). Personal financial planning: Origins, developments and a plan for future direction. *The American Economist*, *48*(2), 53–60.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*(3), 396–402.

Ashraf, B. N. (2020). Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. *Journal of Behavioral and Experimental Finance*, *27*, 100371.

Baker, S. M. (2006). Consumer normalcy: Understanding the value of shopping through narratives of consumers with visual impairments. *Journal of Retailing*, *82*(1), 37–50.

Baker, S. M., Gentry, J. W., & Rittenburg, T. L. (2005). Building understanding of the domain of consumer vulnerability. *Journal of Macromarketing*, *25*(2), 128–139.

Baker, S. M., Hunt, D. M., & Rittenburg, T. L. (2007). Consumer vulnerability as a shared experience: Tornado recovery process in Wright, Wyoming. *Journal of Public Policy & Marketing*, *26*(1), 6–19.

Besharat, A., Carrillat, F. A., & Ladik, D. M. (2014). When motivation is against debtors' best interest: The illusion of goal progress in credit card debt repayment. *Journal of Public Policy & Marketing*, *33*(2), 143–158.

Besharat, A., Varki, S., & Craig, A. W. (2015). Keeping consumers in the red: Hedonic debt prioritization within multiple debt accounts. *Journal of Consumer Psychology*, *25*(2), 311–316.

Brehm, J. W. (1966). *A theory of psychological reactance*. Academic Press.

Briers, B., Pandelaere, M., Dewitte, S., & Warlop, L. (2006). Hungry for money: The desire for caloric resources increases the desire for financial resources and vice versa. *Psychological Science*, *17*(11), 939–943.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 793–828). Wiley.

Cameron, L., & Shah, M. (2015). Risk-taking behavior in the wake of natural disasters. *Journal of Human Resources*, *50*(2), 484–515.

Campbell, C., & Murphy, S. (2020), "These 10 household essentials are selling out—Here's where you can still get them," USA Today. March 20, https://www.usatoday.com/story/tech/reviewedcom/2020/03/09/top-10-household-products-selling-out-across-country/5002793002/.

Campbell, J. Y. (2006). Household finance. *The Journal of Finance*, *61*(4), 1553–1604.

Campbell, M. C., Inman, J. J., Kirmani, A., & Price, L. L. (2020). In times of trouble: A framework for understanding consumers' responses to threats.

Chai, A., Rohde, N., & Silber, J. (2015). Measuring the diversity of household spending patterns. *Journal of Economic Surveys*, *29*(3), 423–440.

Christopher, A. N., Marek, P., & Carroll, S. M. (2004). Materialism and attitudes toward money: An exploratory investigation. *Individual Differences Research*, *2*(2), 109–117.

Cicirelli, V. G. (2002). Fear of death in older adults: Predictions from terror management theory. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *57*(4), 358–366.

Clarke, H. D., Dutt, N., & Kornberg, A. (1993). The political economy of attitudes toward polity and society in Western European democracies. *The Journal of Politics*, *55*(4), 998–1021.

Corbet, S., Hou, Y., Hu, Y., Lucey, B., & Oxley, L. (2021). Aye Corona! The contagion effects of being named Corona during the COVID-19 pandemic. *Finance Research Letters*, *38*, 101591.

Dannenberg, P., Fuchs, M., Riedler, T., & Wiedemann, C. (2020). Digital transition by COVID-19 pandemic? The German food online retail. *Tijdschrift voor Economische en Sociale Geografie*, *111*(3), 543–560.

Dorsch, M. J., Törnblom, K. Y., & Kazemi, A. (2017). A review of resource theories and their implications for understanding consumer behavior. *Journal of the Association for Consumer Research*, *2*(1), 5–25.

Duclos, R. (2015). The psychology of investment behavior: (De) biasing financial decision-making one graph at a time. *Journal of Consumer Psychology*, *25*(2), 317–325.

Eriksson, M., Ghazinour, M., & Hammarström, A. (2018). Different uses of Bronfenbrenner's ecological theory in public mental health research: What is their value for guiding public mental health policy and practice? *Social Theory & Health*, *16*(4), 414–433.

Galoni, C., Carpenter, G. S., & Rao, H. (2020). Disgusted and afraid: Consumer choices under the threat of contagious disease. *Journal of Consumer Research*, *47*(3), 373–392.

Gilliam, J., Chatterjee, S., & Grable, J. (2010). Measuring the perception of financial risk tolerance: A tale of two measures. *Journal of Financial Counseling and Planning*, *21*(2), 30–43.

Grable, J., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument☆. *Financial Services Review*, *8*(3), 163–181.

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.

Hamilton, R., Thompson, D., Bone, S., Chaplin, L. N., Griskevicius, V., Goldsmith, K., Hill, R., Roedder John, D., Mittal, C., O'Guinn, T., Piff, P., Roux, C., Shah, A., & Zhu, M. (2019). The effects of scarcity on consumer decision journeys. *Journal of the Academy of Marketing Science*, *47*(3), 532–550.

He, H., & Harris, L. (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business Research*, *116*, 176–182.

Hill, R. P., & Sharma, E. (2020). Consumer vulnerability. *Journal of Consumer Psychology*, *30*(3), 551–570.

Hill, R. P., & Stamey, M. (1990). The homeless in America: An examination of possessions and consumption behaviors. *Journal of Consumer Research*, *17*(3), 303–321.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Sage Publication.

Huang, Y., & Sengupta, J. (2020). The influence of disease cues on preference for typical versus atypical products. *Journal of Consumer Research*, *47*(3), 393–411.

Jacobs, A., Richtel, M., & Baker, M. (2020). At war with no ammo: Doctors say shortage of protective gear is dire. The NY Times, March 19, 2020.

Kirk, C. P., & Rifkin, L. S. (2020). I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic. *Journal of Business Research*, *117*, 124–131.

Kivetz, R., & Simonson, I. (2002). Self-control for the righteous: Toward a theory of precommitment to indulgence. *Journal of Consumer Research*, *29*(2), 199–217.

Knoll, M. A., & Houts, C. R. (2012). The financial knowledge scale: An application of item response theory to the assessment of financial literacy. *Journal of Consumer Affairs*, *46*(3), 381–410.

Kroencke, L., Geukes, K., Utesch, T., Kuper, N., & Back, M. D. (2020). Neuroticism and emotional risk during the COVID-19 pandemic. *Journal of Research in Personality*, *89*, 104038.

Laato, S., Islam, A. N., Farooq, A., & Dhir, A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, *57*, 102224.

Larkin, C., Lucey, B. M., & Mulholland, M. (2013). Risk tolerance and demographic characteristics: Preliminary Irish evidence. *Financial Services Review*, *22*(1), 77–91.

Li, J., Song, Q., Peng, C., & Wu, Y. (2020). COVID-19 pandemic and household liquidity constraints: Evidence from micro data. *Emerging Markets Finance and Trade*, *56*(15), 3626–3634.

Licata, J. W., Mowen, J. C., Harris, E. G., & Brown, T. J. (2003). On the trait antecedents and outcomes of service worker job resourcefulness: A hierarchical model approach. *Journal of the Academy of Marketing Science*, *31*(3), 256–271.

Lin, L. Y. (2010). The relationship of consumer personality trait, brand personality and brand loyalty: An empirical study of toys and video games buyers. *Journal of Product & Brand Management*, *19*, 4–17.

Liu, S., Lithopoulos, A., Zhang, C. Q., Garcia-Barrera, M. A., & Rhodes, R. E. (2021). Personality and perceived stress during COVID-19 pandemic: Testing the mediating role of perceived threat and efficacy. *Personality and Individual Differences*, *168*, 110351.

Liu, T., Pan, B., & Yin, Z. (2020). Pandemic, mobile payment, and household consumption: Micro-evidence from China. *Emerging Markets Finance and Trade*, *56*(10), 2378–2389.

Lung, F. W., Lu, Y. C., Chang, Y. Y., & Shu, B. C. (2009). Mental symptoms in different health professionals during the SARS attack: A follow-up study. *The Psychiatric Quarterly*, *80*(2), 107–116.

Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare? *American Economic Review*, *98*(2), 413–417.

Lynch, J. G., Jr. (2011). Introduction to the journal of marketing research special interdisciplinary issue on consumer financial decision making. *Journal of Marketing Research*, *48*(SPL), Siv–Sviii.

Malhotra, N. K., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Essentials of marketing research: An applied orientation*. Prentice Hall.

Mnif, E., Jarboui, A., & Mouakhar, K. (2020). How the cryptocurrency market has performed during COVID 19? A multifractal analysis. *Finance Research Letters*, *36*, 101647.

Mowen, J. C. (2000). *The 3M model of motivation and personality: Theory and empirical applications to consumer behavior*. Springer Science & Business Media.

Mowen, J. C., Park, S., & Zablah, A. (2007). Toward a theory of motivation and personality with application to word-of-mouth communications. *Journal of Business Research*, *60*(6), 590–596.

Mullainathan, S., & Shafir, E. (2013). *Scarcity: Why having too little means so much*. New York, NY: Times Books Henry Holt and Company.

Norris, J. I., & Williams, C. E. (2016). What do we really need? Goals and values, security, and the perception of consumer necessity. *Psychology & Marketing*, *33*(2), 73–81.

Nyamongo, I. K. (2002). Health care switching behaviour of malaria patients in a Kenyan rural community. *Social Science & Medicine*, *54*(3), 377–386.

Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. *Journal of Business Research*, *116*, 209–213.

Parrotta, J. L., & Johnson, P. J. (1998). The impact of financial attitudes and knowledge on financial management and satisfaction of recently married individuals. *Journal of Financial Counseling and Planning*, *9*(2), 59–74.

Peñaloza, L. (1995). Immigrant consumers: Marketing and public policy considerations in the global economy. *Journal of Public Policy & Marketing*, *14*(1), 83–94.

Pirog, S. F., & Roberts, J. A. (2007). Personality and credit card misuse among college students: The mediating role of impulsiveness. *Journal of Marketing Theory and Practice*, *15*(1), 65–77.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, *19*(3), 303–316.

Rosenberg, B. D., & Siegel, J. T. (2018). A 50-year review of psychological reactance theory: Do not read this article. *Motivation Science*, *4*(4), 281–300.

Sauerborn, R., Adams, A., & Hien, M. (1996). Household strategies to cope with the economic costs of illness. *Social Science & Medicine*, *43*(3), 291–301.

Sharif, A., Aloui, C., & Yarovaya, L. (2020). COVID-19 pandemic, oil prices, stock market, geopolitical risk and policy uncertainty nexus in the US economy: Fresh evidence from the wavelet-based approach. *International Review of Financial Analysis*, *70*, 101496.

Shefrin, H., & Nicols, C. M. (2014). Credit card behavior, financial styles, and heuristics. *Journal of Business Research*, *67*(8), 1679–1687.

Sherraden, M. S. (2013). Building blocks of financial capability. In *Financial education and capability: Research, education, policy, and practice* (pp. 3–43). New York, NY: Oxford University Press.

Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research*, *117*, 280–283.

Siritzky, M., Condon, D., & Weston, S. (2020). The role of personality in shaping pandemic response: Systemic sociopolitical factors drive country differences. *Social Psychological and Personality Science*, *13*(1), 246–263.

Stadler, M., Niepel, C., Botes, E., Dörendahl, J., Krieger, F., & Greiff, S. (2020). Individual psychological responses to the SARS-CoV-2 pandemic: Different clusters and their relation to risk-reducing behavior.

Stanciu, S., Radu, R. I., Sapira, V., Bratoveanu, B. D., & Florea, A. M. (2020). Consumer behavior in crisis situations. Research on the effects of COVID-19 in Romania. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics & Applied Informatics*, *26*(1), 1–13.

Togoh, I. (2020). Here's how some of the countries worst hit by coronavirus are dealing with shortages of protective equipment for healthcare workers. Forbes, March, 31.

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, *117*(2), 440–463.

Vollrath, M. (2001). Personality and stress. *Scandinavian Journal of Psychology*, *42*(4), 335–347.

Wang, W., Ma, T., Li, J., & Zhang, M. (2020). The pauper wears Prada? How debt stress promotes luxury consumption. *Journal of Retailing and Consumer Services*, *56*, 102144.

Xiao, J. J., & Porto, N. (2017). Financial education and financial satisfaction: Financial literacy, behavior, and capability as mediators. *International Journal of Bank Marketing*, *35*, 805–817.

Xu, Y., Briley, D. A., Brown, J. R., & Roberts, B. W. (2017). Genetic and environmental influences on household financial distress. *Journal of Economic Behavior & Organization*, *142*, 404–424.

Yazdanparast, A., & Alhenawi, Y. (2017). Personality and borrowing behavior: An examination of the role of need for material resources and need for arousal traits on household's borrowing decisions. *Financial Services Review*, *26*(1), 55–85.

Yue, P., Gizem Korkmaz, A., & Zhou, H. (2020). Household financial decision making amidst the COVID-19 pandemic. *Emerging Markets Finance and Trade*, *56*(10), 2363–2377.

Zhao, W. (2020). Effect of air pollution on household insurance purchases. Evidence from China household finance survey data. *PLoS One*, *15*(11), e0242282.

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APPENDIX A

Measurement Items

Consumer vulnerability (adapted from Cicirelli, 2002 and Clarke et al., 1993).

Please rate your agreement/disagreement with the following statements (1 = strongly disagree; 7 = strongly agree):

- I am afraid of the impact of Covid-19 on my personal health.
- I am afraid of the impact of Covid-19 on my loved ones' health.
- I am afraid of the impact of Covid-19 on my professional life.
- I am afraid of the impact of Covid-19 on my social life.
- I have felt that death is closer to me than ever before due to the COVID-19 pandemic.

Pandemic related perceptions and attitudes (developed for the present research in line with Baker et al., 2007).

Which one of the following statements best describes you?

- After Covid-19, the world economy will collapse. It will be a disaster that lasts for long years. (1)
- After Covid-19, the world economy will be in recession for 1–2 years. It will recover afterwards. (.5)
- After Covid-19, the world economy will slow down for a short period of time. Then it will be a fast recovery. (0)

Which one of the following statements best describes you?

- After Covid-19, the economy of my country will collapse. It will be a disaster that lasts for long years. (1)

- After Covid-19, the economy of my country will be in recession for 1–2 years. It will recover afterwards. (.5)
- After Covid-19, the economy of my country will slow down for a short period of time. Then it will be a fast recovery. (0)

Which one of the following statements best describes you?

- I and my family will be in severe financial distress. I am extremely concerned. (1)
- I and my family will have some financial difficulties. But we will be fine. (.5)
- I and my family will be just fine. (0)

How do you rate your general health condition? (1 = very poor; 7 = excellent).

How do you rate the health system in your country? (1 = very poor; 7 = excellent).

On the whole, how satisfied are you with the life you lead? (1 = very dissatisfied; 7 = very satisfied).

Personality traits (Licata et al., 2003).

How often do you feel/act this way? (1 = never; 7 = always**).**

Introversion

- Feel bashful more than others
- Quite when with people
- Shy
- Introverted

Need for material resources

- Like to own nice things more than most people
- Enjoy buying expensive things
- Enjoy owning luxurious things
- Acquiring valuable things is important to me.

Openness to experience

- Frequently feel highly creative
- Imaginative
- Find novel solutions
- More original than others

Neuroticism

- Moody more than others
- Temperamental
- Emotions go way up and down
- Testy more than others

Need for body resources

- Like to own nice things more than most people
- Enjoy buying expensive things

- Enjoy owning luxurious things
- Acquiring valuable things is important to me

   Agreeableness

- Tenderhearted with others
- Sympathetic
- Kind to others
- Softhearted

   Conscientiousness

- Efficient
- Organized
- Orderly
- Precise

   Need for arousal

- Drawn to experience with an element of danger
- Seek an adrenaline rush
- Actively seek out new experiences
- Enjoy taking more risks than others

Covid-19 induced changes in spending (adapted from the personal finance survey administered by the Bureau of Labor Statistics at the US Department of Labor).

In the following questions, we would like to know how the Covid-19 pandemic is affecting your spending patterns (Before Covid-19/Post Covid-19; 0%; up to 20%; 20%–40%; 40%–60%; 60%–80%; 80%–100%).

- % of your household income that is saved
- % of your household income that is invested
- % of your household income that is spent
- % of your spent income goes to food
- % of your spent income that goes to health care
- % of your spent income that goes to apparel and clothe
- % of your spent income that goes to education cost (for you or any of your dependents)
- % of your spent income that goes to personal care products (makeup, creams, hair products, …, etc.)
- % of your spent income that goes to transportation
- % of your spent income that goes to entertainment and tourism
- % of your spent income that goes to alcoholic beverages
- % of your spent income that goes to tobacco products
- % of your spent income that goes to philanthropy and charity contribution
- % of your spent income that goes to luxury items such as fancy cars, watches, jewelry

Risk tolerance (Grable & Lytton, 1999).

In general, how would your best friend describe you as a risk taker?

- A real gambler
- Willing to take risks after completing adequate research
- Cautious
- A real risk avoider

You are on a TV game show and can choose one of the following. Which would you take?

- $1000 in cash
- A 50% chance of winning $5000
- A 25% chance of winning $10,000
- A 5% chance of winning $100,000

You have just finished saving for a "once-in-a-lifetime" vacation. Three weeks before you plan to leave, you lose your job. You would:

- Cancel the vacation
- Take a much more modest vacation
- Go as scheduled, reasoning that you need the time to prepare for a job search
- Extend your vacation, because this might be your last chance to go first-class

If you unexpectedly received $20,000 to invest, what would you do?

- Deposit it in a bank account, money market account, or an insured deposit instrument
- Invest it in a safe high-quality bonds or bond mutual funds
- Invest it in stocks or stock mutual funds

In terms of experience, how comfortable are you investing in stocks or stock mutual funds?

- Not at all comfortable
- Somewhat comfortable
- Very comfortable

When you think of the word "risk" which of the following words comes to mind first?

- Loss
- Uncertainty
- Opportunity
- Thrill

Consider this scenario. Some experts are predicting prices of assets such as gold, jewels, collectibles, and real estate (hard assets) to increase in value; bond prices may fall, however, experts tend to agree that

government bonds are relatively safe. Most of your investment assets are now in high-interest government bonds. What would you do?

- Hold the bonds
- Sell the bonds, put half the proceeds into money market accounts (savings accounts), and the other half into hard assets
- Sell the bonds and put the total proceeds into hard assets
- Sell the bonds, put all the money into hard assets, and borrow additional money to buy more

Given the best and worst-case returns of the four investment choices below, which would you prefer?

- $200 gain best case; $0 loss worst case
- $800 gain best case; $200 loss worst case
- $2600 gain best case; $800 loss worst case
- $4800 gain best case; $2400 loss worst case

In addition to whatever you own, you have been given $1000. You are now asked to choose between two alternatives. Please indicate which you would choose.

- A sure gain of $500
- A 50% chance to gain $1000 and a 50% chance to gain nothing

In addition to whatever you own, you have been given $2000. You are now asked to choose between two alternatives. Please indicate which you would choose.

- A sure loss of $500
- A 50% chance to lose $1000 and a 50% chance to lose nothing

Suppose a relative left you an inheritance of $100,000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?

- A savings account or money market fund
- A mutual fund that owns stocks and bonds
- A portfolio of 15 common stocks
- Commodities like gold, silver, and oil

If you had to invest $20,000, which of the following investment choices would you find most appealing?

- 60% in low-risk investments 30% in medium-risk investments 10% in high-risk investments
- 30% in low-risk investments 40% in medium-risk investments 30% in high-risk investments
- 10% in low-risk investments 40% in medium-risk-investments 50% in high-risk investments

Your trusted friend and neighbor, an experienced geologist, is putting together a group of investors to fund an exploratory gold mining venture. The venture could pay back 50–100 times the investment if successful. If the mine is a bust, the entire investment is worthless. Your friend estimates the chance of success is only 20%. If you had the money, how much would you invest?

- Nothing
- One month's salary
- Three month's salary
- Six month's salary

Risk tolerance grading tool (43 total possible points).
13–22 Low-risk taker.
23–33 Moderate risk taker.
34–43 High-risk taker.
Financial planning (Parrotta & Johnson, 1998).
Please rate your agreement/disagreement with the following statements (1 = strongly disagree; 7 = strongly agree):

- I create financial goals.
- I make plans on how to reach my financial goals.
- I review my total financial situation on a regular basis
- I regularly discuss financial goals with experts in the field of finance

Financial knowledge (Knoll & Houts, 2012).
Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years how much do you think you would have in the account if you had left the money in the account to grow?

- **More than $110**
- Exactly $110
- Less than $110
- I do not know.

Imagine that the interest rate on your saving account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

- About 2% more
- About 1% more
- **About 1% less**
- About 2% less
- I do not know.

If the interest rate rises, what should happen to bond prices?

- They will rise
- **They will fall**
- They will stay the same
- There is no relationship between bond prices and the interest rate
- I do not know.

Considering a long time period (e.g., 10 or 20 years) which asset normally gives the highest return?

- Government bonds
- Corporate bonds
- Preferred stocks
- **Stocks**
- I do not know.

Normally, which asset displays the highest fluctuations over time?

- Government bonds
- Corporate bonds
- Preferred stocks
- **Stocks**
- I do not know.

After age 70 1/2, you have to withdraw at least some money from your 401(k) plan or IRA.

- **True**
- False
- I do not know.

If you buy a company's stock.

- **you own a part of the company**
- you have lent money to the company
- you are liable for the company's debt
- you have a say in the day-to-day running of the company
- I do not know.

An annuity is a financial product that pays a lump sum when you die.

- True
- **False**
- I do not know.

A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

- **True**
- False
- I do not know.

Financial Situation (adapted from Lusardi & Mitchell, 2008)

- How would you describe your own personal financial situation? Would you say you … (1 = live comfortably; 5 = do not even have enough to meet basic expenses)
- How confident are you that you are making the best choices for how to manage your money, savings, and investments? (1 = very confident; 7 = not confident at all)