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## Impact of Fear on Interpersonal and Economic Decision-Making

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**Impact of Fear on Interpersonal and Economic Decision-Making**

**by**

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**Advisor: Dr. Andy Brownback**

**An Honors Thesis in partial fulfillment of the requirements for the degree Bachelor of  
Science in Business Administration in Business Economics**

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Fayetteville, Arkansas**

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## **Introduction**

Fear is one of the most basic, intrinsic, and powerful emotions an individual may experience when faced with known or unknown threats, imminent pressures, or expectations of approaching doom. Fear may allow an individual to act quickly in a fight-or-flight response. Fear can alter both physiological and psychological frameworks to avoid certain calamity. Fear provides motivation to protect oneself or to effectuate altruistic behavior towards others for the greater good. One lesser explored area of research pertaining to fear and its implications is the influence of fear on interpersonal and economic decision-making. Economic volatility can produce both immediate consequences as well as somewhat contingent but forthcoming hardships. These anticipated or unanticipated changes in economic climate can invoke fear, and such fear can manifest itself in varied interpersonal and economic decisions. Such economic decisions may greatly benefit or hinder one's foreseeable future.

Fear is a broad construct, and its implicating influences are ambiguous and customarily attributed to numerous emotions and reactions. To date, there is a multitude of literature related to and experimentation that has been conducted on the array of fear and subsequent outcomes that it induces. As aforementioned, fear cannot be confined nor constrained to one numerical or qualitative value, thus it is imperative to consider the measurable but accompanying dispositions that fear can encompass. Specific to this work, which is concerned with fear's influence on interpersonal and economic decision-making, the encompassing dispositions that fear includes but is not limited to are stress, anxiety, and the avoidance of fear, decision-making, and risk. Further, it is essential to explore how an individual's pre-existing characteristics and demographics, such as personality type, psychological tendencies, gender, and level of education culminate in an interrelating relationship with the above dispositions.

## **Importance of Fear**

It is essential to analyze how fear is considered at the macroeconomic level when explicitly focusing upon the economy or a monetary domain. Cedrini, M. A., & Novarese, M. (2015) posited numerous positions concerning how fear motivates and manipulates economics around the world. The researchers additionally detail that fear elicits specific behaviors that serve as imperative tools that have served as crucial components throughout human evolution. The researchers continue into their discussion by indicating that in modern society there is a presumptive and highly supported notion to reduce fear through the creation of mechanisms, institutions, and rationalizations by which to navigate, monitor, and avoid fear at all levels, especially when the economy is questioned. The researchers dispute the macro-level relationship between fear and public policy, yet their position remains solidified that fear needs to be weighed, researched, tested, and analyzed in conjunction with public policy creation and reform. Cedrini, M. A., & Novarese, M. (2015) summarize their overall point by stating:

The strength of fear, that of transcending the various dichotomies of human existence individual and collective, rational, and emotional, theoretical, and practical—by “imposing” its complexity and ambivalence on our reasoning is also a main weakness of conventional economics (and economic policy). While coping with the complexity of fear, economics will cope with the complexity of the environment wherein economists are called to operate, or rather to co-operate with contiguous disciplines in the management of societal contexts. (p. 105)

Cedrini, M. A., & Novarese, M. (2015) literary review and bifurcation position is a step-in support of the motive to further place an important theoretical and empirical focus on fear and its influence on the individual specifically and the economy as a whole.

## **Decision-Making & Welfare**

Societal outcomes are determined by a collection of individual decisions. These decisions require requires an individual to evaluate complex data, analyze trends, and execute strategies to ensure economic and personal advancements. Specifically, individual decision-making pertains directly to individual, investor, institutional, and societal welfare. The individuals making such decisions are under immense pressure, whether recognized or not, despite having a plethora of resources at their disposal, and each decision made results in a series of subsequent events that can either be unforeseen and disastrous or foreseen and advantageous.

Brennan, M. J., & Torous, W. N. (2003) reviewed empirical data concerning individual investment decision-making (401(k)'s). The researchers developed a model that factored these individual investment decisions into sub-optimal leverage and diversification models which can be used to observe how differences in decisions impact societal welfare. Although proposed as a theoretical model, the researchers simulated the model including the empirical data and reported interesting outcomes further citing the implications. The researchers found that at an individual level both models produced results that were far more impactful and at a far greater magnitude to the individual themselves as compared to an institution like a bank. The researchers continue by noting that both leverage and diversification of an individual's assets are crucial when the individual begins to compute or weigh their decision. This is an imperative point in that individuals that are making decisions that directly affect their assets, salaries, portfolios, etc., will place more security, thought, and scrutiny on their decision-making approach. This distinctive point will become more important once other factors related to this study's main objective are further explained.

### **Risk-Taking**

Risk is an important factor when analyzing fear from an economic perspective. Along with risk is the possibility of stigma. Schulze, W., & Wansink, B. (2012) define and describe stigma in the economic medium as "an extreme emotional response to risk, occurs because the emotion system can be triggered whenever people consider abandoning perceived zero risk." (p. 679) The interaction between risk, stigma, and economic behavior is imperative to individuals, especially during situations when something surprising or unknown occurs to the normal functions and operations of society. Schulze, W., & Wansink, B. (2012) specifically reviewed three historical examples of situations that directly caused individuals mortal harm both in an economic and in a personal sense. The researchers discussed the 1982 Tylenol catastrophe that killed seven consumers via cyanide poisoning, the September 11<sup>th</sup> attacks that killed approximately 2,000 people and its implications on airlines and security, and annual car accidents and car manufacturer errors and recalls. Each instance was weighted through the concept that rational individuals and their emotional and economic responses to such respective events are more likely than not proportional to the overall situation. The researchers detailed the various changes that companies, and governmental institutions took to revise preexisting policy to combat such situations occurring in the future. Additionally, the researchers reviewed five experimentally controlled studies that examined the relationship between the individual, situation, risk, stigma, and overall fear. Ultimately, Schulze, W., & Wansink, B. (2012) concluded that stigma, respective to the situation, is an imperative construct to analyze before initiating policy revisions or implementations. Stigma, which has traditionally been viewed as an "overreaction to risk", has now become an important construct for economists to analyze when investigating the relationship between fear and decision-making, regardless of which level or type of decision-making is in question. The researchers emphasize the importance of stigma and its implications on individuals and institutional risk-taking. The Schulze, W., & Wansink, B.

(2012) review provides an exemplarily outline that brings stigma and its influence on risk into the equation when discussing fear and decision-making. Stigma is a key factor in the individual's decision-making process, in that stigma is directly related to the amount of risk, both quantitatively and qualitatively, to which individuals will commit to alleviate their fears. Stigma is additionally important when analyzing risk. Although it will be subsequently discussed, risk is the immediate benchmark by which individuals will view, weigh, and commit when in a fear-induced situation, notwithstanding the situation being constrained to an economic or personal disruption.

Risk affects the conscious or unconscious decision to commit oneself to an uncertain outcome and is an important factor to discuss when investigating fear and its influences and implications on decision-making. To refrain from increased complexity, risk can be dissected into two separate conditions respective to an individual: risk tolerant or risk averse. To be risk tolerant, or risk seeking, can be defined as an individual who prefers an action more if the outcome is uncertain (e.g., those that gamble because the possibility increases the variance concerning their total payout).. To be risk averse, or risk avoidant, can be defined as an individual who prefers an action less if the outcome is uncertain (e.g., those that purchase insurance in order to guarantee that their expenses will not accumulate a set amount). A myriad of research and meta-analyses have been published specifically focusing on the different influences causing an individuals to lean to either polar end of the tolerant and adverse risk spectrum. Moreover, there has been a plethora of research conducted examining how individuals' risk-taking abilities influence their decision-making. In the confines of this specific study, it must be noted that an individual's personality must be investigated far more closely. Zaleskiewicz, T. (2001) research titled *Beyond Risk Seeking and Risk Aversion: Personality and the Dual Nature of Economic Risk Taking* detailed exactly the question of personality and its relation to risk's implications on economic decision making. The researcher separated risk into two distinguishable theoretical conditions that were compounded upon by previous research: stimulating risk taking and instrumental risk taking. It must be noted that "risk taking" is used synonymously with "decision-making". Instrumental risk taking is described as "a more rapid, effortless, and even automatic behavior. This form of risk is taken as a response to a strong need of immediate sensations and excitement" (Zaleskiewicz, T, 2001, p. S107). Stimulating risk taking is conversely described as "to be more achievement oriented, based on a more complex way of information processing and the use of cognitive cues" (Zaleskiewicz, T, 2001, p. S107). Merely, an individual who utilizes an approach of instrumental risk taking does not factor in situational constraints, future outcomes, and acts upon impulse and on the automatic. Opposingly, an individual who utilizes an approach of stimulating risk taking will analyze the situation, supplementary information, and cognitively strategize actions. Zaleskiewicz, T. (2001) conducted two separate experiments. The first study required participants to read and scale a set of decisions by self-rating the likelihood of the participants committing to that decision. The data was analyzed, and the research found that it is clear to identifiably differentiate between those that categorize themselves as a stimulating risk taker or an instrumental risk taker, again noting risk taker being synonymous with a decision-maker. The researcher's second experiment focused on whether an individual's personality was correlated to their self-identified risk-taking embodiment. The research utilized four separate subscales: thrill and adventure, experience seeking, disinhibition, and boredom susceptibility, noting that the research reported increased internal validity and consistency for each scale. The subscales were affixed into one inventory. Participants were then instructed to rate themselves on a five-point scale ranging from a rating of

one (1), “does not describe me at all” to five (5), “describes me very well”. In the second study, the researcher found that a participant’s personality is not significantly related to an individual’s stimulating or instrumental risk taking. Although the researcher’s original hypotheses was disproved, it was noted that the studies were conducted using decisions that directly involved the possibility of attaining higher profits (i.e., gambling for a higher payout, acceptance of a high salary, taking a risk to earn more profit, etc.). The researcher interpreted that potential monetary gains or increased monetary placement in the constraints of these studies points to the fact that personality and one’s risk-taking temperament, although inconclusive as being directly related to one another, both exhibit influences when economic and personal welfare is prudent. Ultimately, this study provided evidence that there are numerous factors contributing to how one makes decisions given situational constraints, despite the two factors not being interrelated or influential upon one another or in a sense acting idiosyncratically of one another. These factors include the risk-taking temperament in which the individual acts and the personality of the individual who is making the commitment or decision. As stated previously, one’s susceptibility to being either risk tolerant or risk seeking along with their overall personality is imperative in formulating a clearer picture when economic and personal welfare are in question.

### **Stress & Anxiety**

Fear induces a predominant decision to value risk. With such valuation, both an individual’s psychological and physiological tendencies can manifest or be overwhelmed by anxiety and stress. Anxiety and stress can idiopathically influence an individual or combine to simultaneously influence.

A discussion review by Porcelli, A. J., & Delgado, M. R. (2016) titled, “Stress and decision-making effects on valuation, learning, and risk-taking” discussed stress as a construct and how it is interrelated with decision-making, valuation of reward, risk-taking, and learning. The researchers begin by biological defining stress and where in the human body stress originates and targets. The biological basis for stress is found within the sympathetic-adrenal-medullary, or the SAM axis, and the slow-acting hypothalamic-pituitary-adrenal, or HPA axis. Commonly, these two systems can be thought of as the foundations or engines of the fight-or-flight response. The researchers discuss in depth the hormonal factors that increase and decrease stress. Moreover, the researchers pointed out that reward-related processing, or how an individual places a future value on a reward, can be easily manipulated by acute and chronic stress. This manipulation is noted by Porcelli, A. J., & Delgado, M. R. (2016) as:

Initial evidence supports the idea that acute stress reduces sensitivity to rewards, including behavioral [22,23] and neuroimaging studies highlighting an influence in regions including orbitofrontal cortex (OFC), medial prefrontal cortex (mPFC), amygdala and striatum [24–26,27]. Consistent with this, there have been demonstrations that chronic (i.e., cumulative early life) stress is associated with blunted ventral striatal reward responses in adulthood [28]. (p. 34)

Additionally, the researchers discuss how stress influences risk-taking. Referring back to acute and chronic stress, it is detailed that those who suffer from either form of stress respond differently to the amount or probably of committing to a risk, in that regardless of type of stress, decision making is impaired. The researchers note that in experimental settings when stress is manipulated but an overall decision to commit to risk has to be made, participants have difficulty in making the decision, and controlling their emotional and physiological responses (i.e., heartbeat).

The researchers concluded with a heightened sense of focus and importance in analyzing how stress influences decision-making, both retroactively and proactively. Stress is an important sub-construct of fear. As stated previously, stress can manifest from physiological bases into manipulating cognitive processes and ultimately the physiological state of an individual. The analyses and cumulative discussion about stress is imperative in understanding fear as a construct.

It must be noted that stress and anxiety are ordinarily used interchangeably. However, there are key differences between stress and anxiety. The American Psychological Association (2022) defines the differences between the two constructs:

People under stress experience mental and physical symptoms, such as irritability, anger, fatigue, muscle pain, digestive troubles, and difficulty sleeping. Anxiety, on the other hand, is defined by persistent, excessive worries that don't go away even in the absence of a stressor.

To focus on anxiety in the context of fear is equally as crucial as focusing on stress. A study conducted by Miu, A. C., Heilman, R. M., & Houser, D. (2007) explored how trait-anxiety (TA) influences decision-making in a gambling task. The study was designed requiring participants to complete a manual version of the Iowa Gambling Task (IGT). The IGT can be described as a decision-making game that simulates real-world outcomes and includes uncertainties of the premises and outcomes and rewards and punishments of the initial decision-making. The participants were shown a deck of cards (40 cards in each deck) face-down. At the beginning of the game, the participants were given two thousand (2000) Romanian currency, and then instructed to begin the game with the mindset to lose the least amount of money and win the most amount. During the game, researchers monitored each participant using electrocardiography (ECG) and their skin conductance (SCR).

The researchers analyzed the data, both from a behavioral and electrophysiological perspective. In terms of the participants' behavior, it was found that there was a statistically significant effect during the IGT in that participants with high TA (trait-anxiety) exhibited poorer performance as compared to low TA participants. The researchers also noted that there was no main effect on the sex. The finding that those who displayed high levels of TA did worse comparative to those with low levels of TA when gambling was interpreted that these participants resorted to the normative benchmark in which their pre-inclination to anxiety began to influence their decision-making resulting in poorer performance in the task. Concerning the electrocardiography results, researchers split the results into two sub-sections: anticipatory somatic responses and somatic responses to outcomes. Both the anticipatory somatic responses and somatic responses encompass heart rate (HR) and the skin conductance (SCR). Anticipatory somatic responses are simply the measurements taken before the participants made a decision in the task, and the somatic responses to outcomes are the measurements taken after the participants made a decision and processed the outcome of such decision(s). Researchers found that, specific to anticipatory somatic responses, participants' HR declined, and SCR increased before making a decision. High TA participants exhibited increased deceleration of HR as compared to low TA participants. In regard to somatic responses to outcome results, high TA participants exhibited an increase in HR deceleration after learning of the outcome of their respective decision. The researchers detailed four distinct mechanisms that could potentially explain why high TA is statistically related to impaired decision-making. The researchers concluded that there is substantial evidence that those with high TA are more likely to suffer from impaired decision-

making, along with experiencing higher levels of anticipatory somatic responses and somatic responses to outcomes, which were noted to connect directly to emotion.

It is clear that both stress and anxiety are crucial in understanding the multiplicity of fear, in which there are numerous tiers of constructs that amass into fear. It is also evident that both stress and anxiety influence decision-making, primarily for the worse, and specifically for individuals who are either pre-inclined with high trait-anxiety or who dissolve, emotionally and physiological, under stress.

### **Uncertainties**

Not to dissuade from the preceding constructs (risk-taking, stress, and anxiety), there is another construct that must be considered when investigating fear's implications on decision-making, and this construct is uncertainty. With any decision, regardless of the decision being contemplated or having already been committed, the outcome is sometimes uncertain. The concept of uncertainty is critical both in a retroactive and proactive framework. Uncertainties can be elevated, just as the previously mentioned constructs, when fear looms in the decision-making equation. Researcher Sandmo, A. (1970) claims that uncertainty drives, if not intrinsically motivates, an individual's risk-taking and decision-making. This motivation can manifest into different decisions with totally different outcomes that might or might not have been foreseen by the original decision maker.

Sandmo, A. (1970) proposed a paper detailing a theoretical mathematical model based on the effect of uncertainty and its relationship with individuals' saving decisions. Although this current work has no distinctive relation to saving decisions, the relative takeaways from the Sandmo, A. (1970) model and subsequent discussion regarding how such a model could be applied aligns with the overall principle being put forth. Sandmo, A. (1970) notes that there is an unambiguous difference between individuals who monetarily earn at different rates (salary versus wages). and how such individuals weigh uncertainties. Admittedly, there is not a comprehensive nor ample amount of experimental evidence pertaining to how uncertainties affect or relate to decision-making. Yet Sandmo, A. (1970) provided a theoretical model to indeed add uncertainty into the equation of decision-making. Sandmo, A. (1970) provided the basic and essential building blocks for bringing the concept of uncertainties into the present research concerning fear and its implications on economic decision-making.

From both macroeconomic and microeconomic perspectives, uncertainties actuate modern economies entirely. Uncertainties are constantly being analyzed by institutions, governments, and individuals, economically speaking. It can be argued that uncertainties are the most broadly influencing element that not only affects individual and institutional decision-making, but by which such decisions transpose into the volatility in inflation, price of durable and nondurable goods, investments, and the unemployment rate, to name a few. Gilchrist, S., Sim, J. W., & Zakrajšek, E. (2014) conducted empirical research and proposed a model to aid policy advocacy which specifically focused on uncertainties in the economy. The researchers also attempted to link uncertainties to macro-level institutions and markets (corporate bond market and banks) to investment dynamics. The researchers concluded the following:

Model simulations indicate that financial frictions are a powerful conduit through which uncertainty shocks affect aggregate investment. A jump in uncertainty leads to a sharp and persistent widening of credit spreads, which induces firms to simultaneously slash capital expenditures and deliver. This quantitatively important channel is absent in an economy without financial distortions, where the significantly more-attenuated response



of investment to uncertainty shocks reflects solely the aggregation of the standard wait-and-see decisions of individual firms. (p. 39)

To simplify the above findings, the researchers simulated their model using empirical economic data (credit spreads, capital expenditures, etc.) from corporate firms dealing specifically in investment. The findings exhibit that uncertainty, especially during a volatile economic atmosphere, can influence the entire economy, directly influencing markets, financial institutions, and individuals.

It must be noted that despite the researchers proposing and testing a theoretical model, they utilized empirical data consisting of numerous quantitatively and monetarily based data. The work of Gilchrist, S., Sim, J. W., & Zakrajšek, E. (2014) implicates the concept that uncertainties are fundamentally necessary to analyze and consider when investigating decision-making in respect to any entity functioning in an economy.

Conclusively, uncertainties are important in seeking to understand the association between fear and decision-making; uncertainties remain and are inherent with any decision, although it could be argued that if the outcome is known then logically there are no uncertainties. Yet the principle remains, that uncertainties influence all aspects of the decision-making process.

### **Fear Avoidance**

To avoid making a decision is common for many individuals. If the decision requires immense study or complex solving, if the decision is surrounded by fear, or if the decision warrants uncertain outcomes and repercussions, the initial task to undertake the decision might be difficult, regardless of the contextual nature of the decision itself. If such latter scenarios are evident, the easiest path forward is to avoid the decision entirely.

Avoidance behavior can overwhelm individuals when confronted with fear. Individuals who suffer from anxiety, who are stressed, or who are unknowing of an outcome could potentially exhibit distinct avoidant behavior. Focusing on fear's implications in decision-making and the association with avoidant behavior, Pittig, A., Brand, M., Pawlikowski, M., & Alpers, G. W. (2014) conducted an experiment, The cost of fear: Avoidant decision making in a spider gambling task, which analyzed the costs, or welfare lost, when fear (arachnophobia or fear of spiders) is introduced into a gambling task.

The researchers tasked the participants to complete a spider gambling task (SGT). The SGT is a version of the formerly mentioned Iowa gambling task (IGT) that replaces a regular deck of cards with pictures of insects, including a spider. The researchers also added three additional neuropsychological variables that included the measurement of risky decisions that were operationalized via the game of dice task (GDT), which is a computerized dice task that estimates risky decision-making, a modified card sorting test (MCST), which is a card sorting task with constant alterations of the rules concerning how to sort the cards, and a performance test system-Subtest 4 (LPS-4), which measured participants reasoning abilities and the subsequent influences on the SGT performance. The researchers also screened participants by requiring them to record basic demographic data and their level of anxiety as well as any preexisting inclinations to volatile psychological states, such as arachnophobia (fear of spiders). After conducting the experiment, the researchers found that fearful participants exhibited avoidant decision-making behavior during the initial phases of the gambling task when the outcome was uncertain. This aligns with the concept that individuals who are afraid will exhibit avoidant behavior when exposed to fear-relevant stimuli. Further, it was found that fearful participants exhibited deterioration in learning new advantageous methods that resulted in maximal payoff. The researchers concluded the following:

Potential rewards can diminish avoidant decisions, performance in our experimental context may even have predictive value for therapy outcome or relapse. Taken together, this novel paradigm provided evidence for costly avoidant decisions in fearful participants, which may be diminished by potential rewards. (p. 332)

This experiment provides sufficient evidence to support the claim that individuals who fear an outcome or possibility will indeed avoid deciding altogether. Along with such avoidant behavior, if strategies are known or if an individual is allowed to learn and understand the situation, the cost of utilizing avoidance behavior will decrease their potential gains, payoffs, or benevolent outcomes. This is an imperative indication that points to the presumption that individuals who are afraid of suffering or losing something valuable will avoid attempting to solve or commit to a decision that could potentially alleviate or worsen the outcome, versus remaining neutral which is equally or if not more unfavorable than deciding on a regrettable outcome.

When faced with a problem, individuals can either make a decision in which they can utilize avoidant behavior by committing to an outcome with lower payoffs, welfare, and safety or utilize approach behavior by committing to an outcome with higher payoffs, welfare, and safety. This avoidant/approach behavior can also be manipulated further by a concept known as threat-of-shock. This concept occurs when a decision has been made and the outcome is opposite of what was intended or thought to have occurred. This threat-of-shock will then influence individuals to a greater extent to rely either on their avoidance or approach behavior. This is an imperative concept relating specifically to reward-based outcomes.

Bublitzky, F., Alpers, G. W., & Pittig, A. (2017) conducted an experiment that concretely engaged in analyzing the relationship between individuals' avoidant/approach behaviors and threat-of-shock when tasked with selected reward-based outcomes. The researchers' experiment asked participants to choose from two card decks. The decks of cards were labeled to differentiate the two as being the "low reward deck" and "high reward deck". After their selection, the participants would be prompted with a visual image (two different colored squares: blue and yellow) and if they had gained or lost a fixed amount (€0.50). Additionally, the researchers disclosed to the participants that the "high reward deck" could possibly prompt a blue square which would initiate an electrical stimulation or shock. Alternatively, it was disclosed that the "low reward deck" would not prompt the participants with a blue square, which indicated that there would be no electrical stimulation or shock, but the payoff would be always and consistently lower as compared to the "high reward deck". The participants were separated into two groups, a control group (instructed threat group) and an experimental group (non-instructed threat group) wherein the experimental group received electrical stimulation or shocks and the condition group did not despite the researchers disclosing the threat information. The participants completed two trials consisting of forty decisions (or selections) between the two decks for a total of eighty individual decisions.

After completing the experiment, the researchers found that the threat-of-shock for the instructed threat group exhibited a decrease in overall selection rates of the "high reward deck", as the instructed threat group avoided the "high reward deck" out of fear that they might receive an electrical stimulation or shock. Concerning the physiological results, the researchers found that the skin conductance response (SCR) for groups increased before selecting the "high reward deck". The researchers concluded with the following takeaways:

Having the choice between high or low reward options – that were contingent with instructed threat or safety – participants initially preferred safe but non-profitable

decisions. However, as instructed threat was not substantiated by actual aversive consequences, avoidance was transient and decision behavior changed in favor of profitable but potentially threatening decisions. Thus, conflicting threat and reward-based learning revealed initial avoidance of profitable decisions.

This study provides a clearer illustration of the initial paradigm that avoidance is the best strategy when faced with a possible fear or in this particular confine, threat. This experimental evidence strongly supports the notion that individuals who can comprehend both the decision and the potential outcome of such a decision, will initially avoid taking a risk or committing to a harmful outcome in which their overall welfare could be damaged. It was mentioned that this initial avoidant behavior could become more lenient, sometimes completely altering into approach behavior, but this would require time and numerous trials or exposure to a set of stimuli or situations. Nevertheless, these findings on specifically initial avoidant behavior is vitally relevant to the main topic of this work, as individuals who are experiencing unexperienced or irregular situations will more likely than not choose avoidant behavior, resulting in a decrease in that individuals' welfare, either interpersonally or economically.

### **Interpersonal & Economic Decision-Making**

Thus far, the multiplicities of fear's importance, implications, constructs, forms, and related behaviors have been presently and identifiably outlined in full. It has been justifiably stated that fear should and does play a vital role in an individual's daily life, especially in the context of economic decisions and analyses. Further, fear introduces a tiered-level of decision-making that can influence an individual's predispositions, such as their inclination to anxiety or stress, to approaches to a decision, such as utilizing avoidant behavior or being risk-tolerant or averse to the uncertainties of an outcome of a decision, which can retroactively and proactively manipulate an individual. Fear directly manipulates, influences, and at times confounds even the most mentally-sound when a decision is immediately pertinent; wherein, the outcome directly affects the future of the individuals, their inner-circles, institutions, or society as a whole.

At any rate, this current study is focused on the actual effects that fear can intrude itself upon, which have been operationalized between interpersonal and economic decisions. Will the gender of an individual exhibit stronger influence than the education level? Will all individuals be risk averse in regard to each interpersonal scenario? Does fear actually influence individuals, regardless of scenario? This current study will analyze such relationships and will attempt to comport the results into a clear and meaningful analysis of whether fear truly influences an individual's decision-making. Four hypotheses will be put forth to examine if fear influences interpersonal and economic decision-making. The hypotheses are as follows:

Hypothesis #1 = it is predicted that there will be no relationship within interpersonal scenarios and economics scenarios, or between interpersonal scenarios and economics scenarios.

Hypothesis #2 = it is predicted that there will be a difference between gender responses within interpersonal scenarios and economics scenarios, and between interpersonal scenarios and economic scenarios.

Hypothesis #3 = it is predicted that there will be a difference between those that are risk averse and risk tolerant within interpersonal scenarios and economic scenarios, and between interpersonal scenarios and economic scenarios.

Hypothesis #4 = it is predicted that the overall averages between interpersonal and economic scenarios will be different in that economic decisions will be greater than interpersonal decisions regardless of the scenario in question.

## Methods

### Participants

Forty-seven participants were recruited for this particular study. Each participant was above the age of eighteen (18) years of age, all of whom come from a broad and diverse background. All participants were recruited via email or text message through the means of social networks to which the researcher belongs.

### Materials

This study utilized a survey system called Qualtrics. No additional materials were used. Participants used either their smartphones or computers to complete the survey. There were six researcher-created narratives that were used in the survey.

### Procedure

Participants were sent an email or text-message containing a link to a survey from Qualtrics. After accessing the link, the participants read a brief participant consent form that detailed their rights and informed consent as a participant. After reading the consent materials, participants were prompted to fill out six (6) demographic questions: gender, age, undergraduate classification (if applicable), highest level of education attained (if not currently an undergraduate), current employment status, and self-identified risk-tolerance. After completing each required demographic item, participants read a preface which explained what the participants were about to read and what questions they were about to answer in the survey.

After reading the preface, the participants read six narratives. Three of the narratives were concerned with an interpersonal manipulation, and three of the narratives were concerned with an economic manipulation. The economic and interpersonal fear scenario narratives that participants were asked to read were created within context-specific narratives that developed a set of imaginary constraints (e.g., You have a stable job, but no foreseeable promotion or raise. Without warning, a close family member (spouse, sibling, or child) receives news that they are terminally ill. Regarding treatment options of the illness, there is an innovative, but extremely costly treatment that could subside the detrimental effects and possibly cure the illness fully). The six narratives that were used can be found in each's respective entirety in the appendix.

After reading each individual narrative, the participant had to make a decision based off of the six questions pertaining to various interpersonal and economic decisions. The questions were rated using a researcher created Likert-scale that was on a ten-point scale corresponding with one (1) "not likely at all" to ten (10) "extremely likely to". The questions pertained to either specific interpersonal or economic contexts (e.g., How likely are you to downsize to a less expensive home?). The six questions that were used can be found in each's respective entirety in the appendix.

The narratives and questions were not in any particular order. After reading the six (6) narratives and completing the six (6) questions for each narrative, the participant read a brief statement that thanked them for their time and effort in the study. The study took approximately ten (10) to fifteen (15) minutes in length.

### Results

The following data was recorded based on and in respect to the original hypotheses put forth earlier. Figure 1 details the overall answer averages for each scenario and compares each scenario to its subtype (Interpersonal Fear Scenario #1 versus Interpersonal Fear Scenario #2) and compares each scenario to the alternative scenario (Interpersonal Fear Scenario #1 versus Economic Fear Scenario #1). Figure 2 is relative to Figure 1 in that the data was averaged; however, it also includes the comparison between gender and each response. Figure 3 pertains to

the risk averse or tolerance identification of each participant and each response. Figure 4 details the relationship between education level and response to each narrative. Figure 1 begins on pg. 25 and the following figures are chronologically ordered on the following pages thereafter.

Concerning the hypotheses put forth above,  $H_0$ ,  $H_1$ , and  $H_2$ , were all rejected as there was no statistically significant evidence that the overall responses, gender, or identifiable risk were different between each respective demographic regardless of scenario compared (within or between). Contrarily,  $H_3$  can be accepted as there was statistically significant evidence that educational level differed in each respective educational degree regardless of scenario compared (within or between). Concerning the overall averages between scenarios, gender, and risk tolerance respectively (i.e., Figures 5-7), it was found that regardless of which variable is being evaluated, individuals' weight economic decisions more heavily (more likely to commit to an economic decision) than interpersonal decisions.

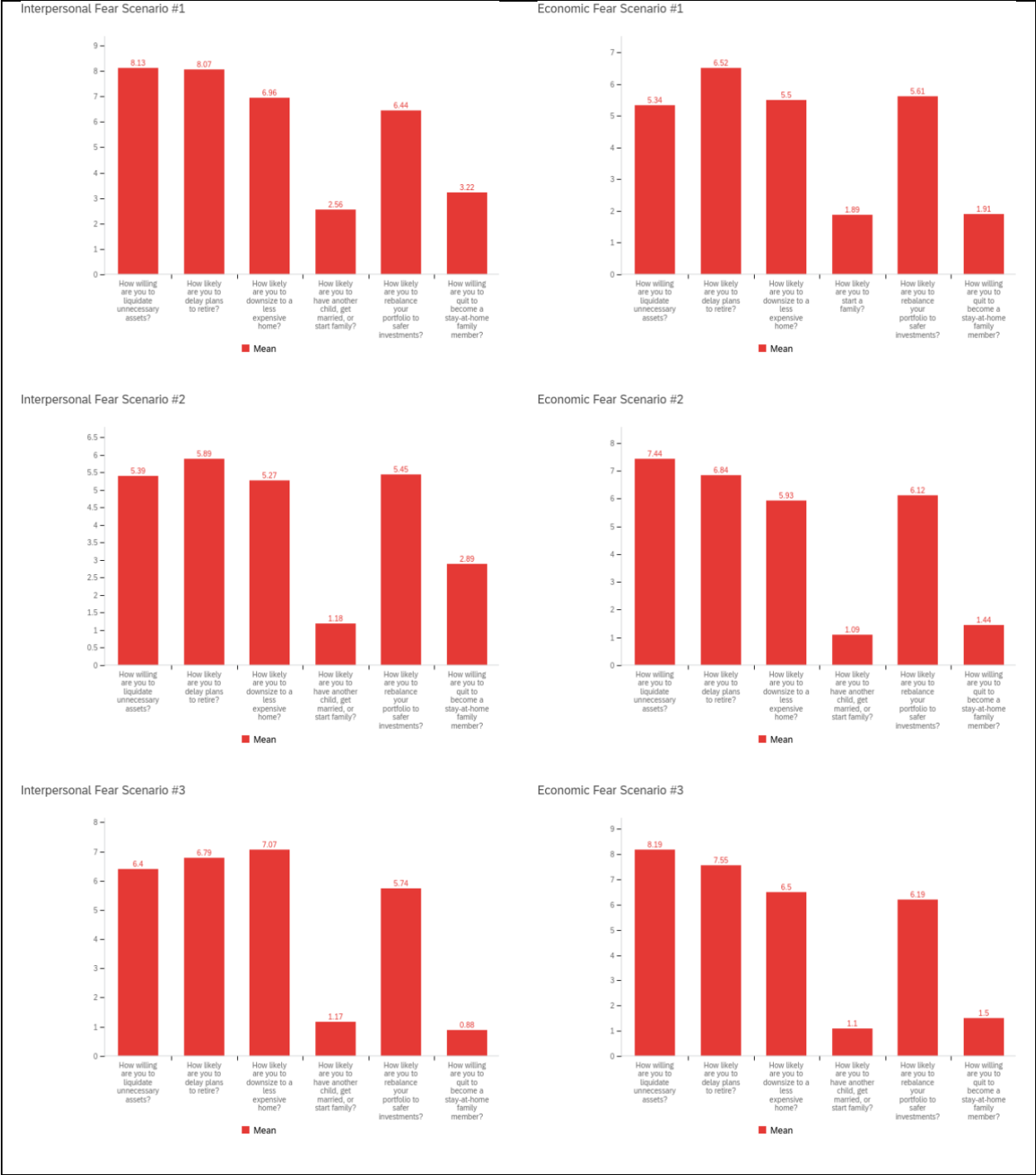


Figure 1: Non-Aggregated Averages

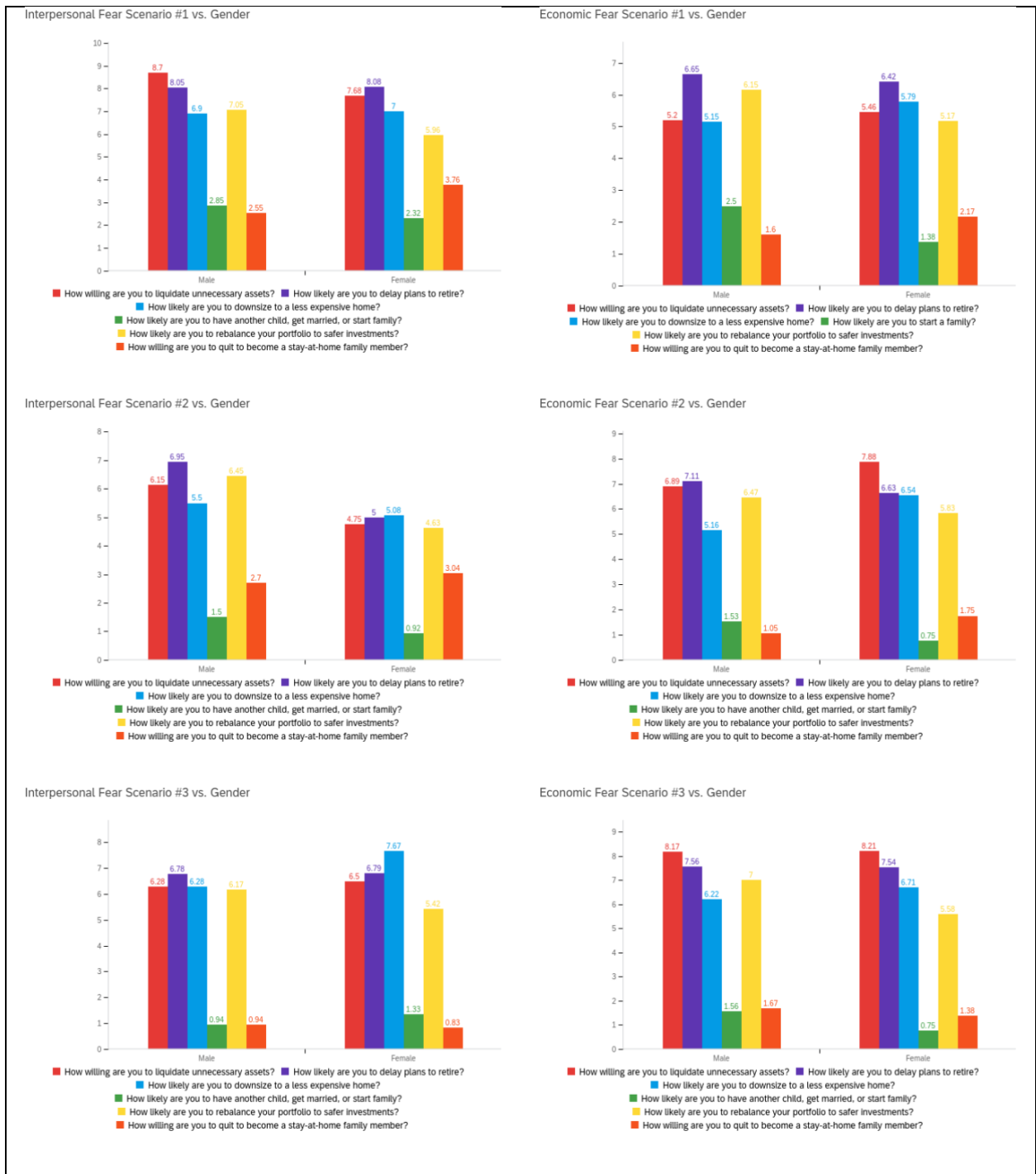


Figure 2: Non-Aggregated Gender Averages

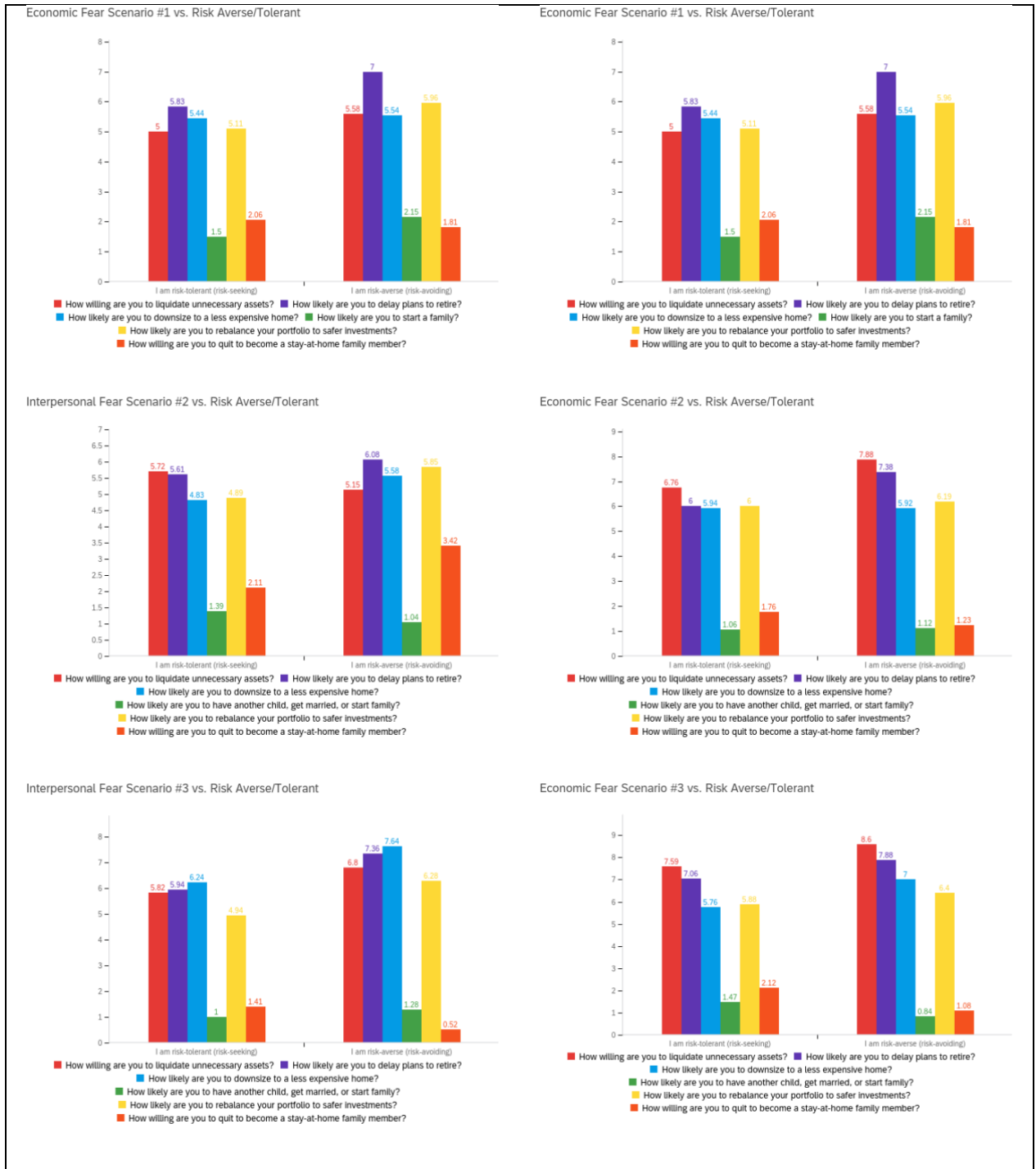


Figure 3: Non-Aggregated Risk Tolerance Averages





Figure 4: Non-Aggregated Education Level Averages

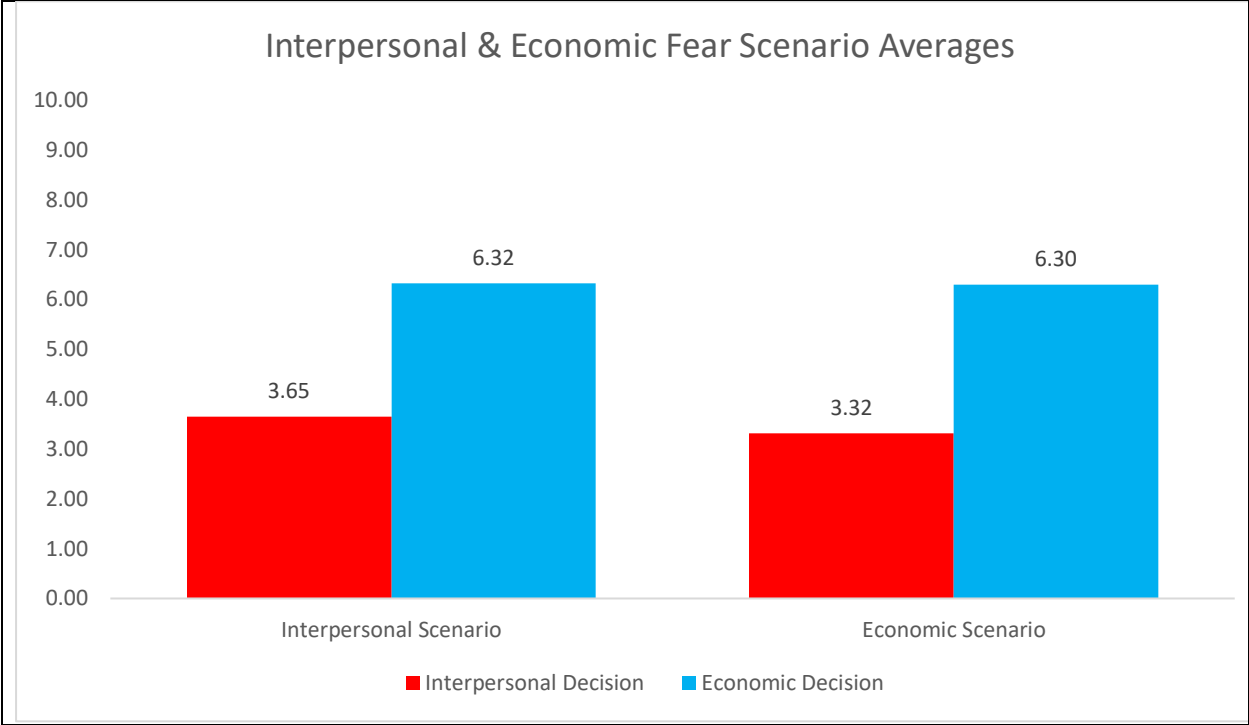


Figure 5: Aggregated Averages

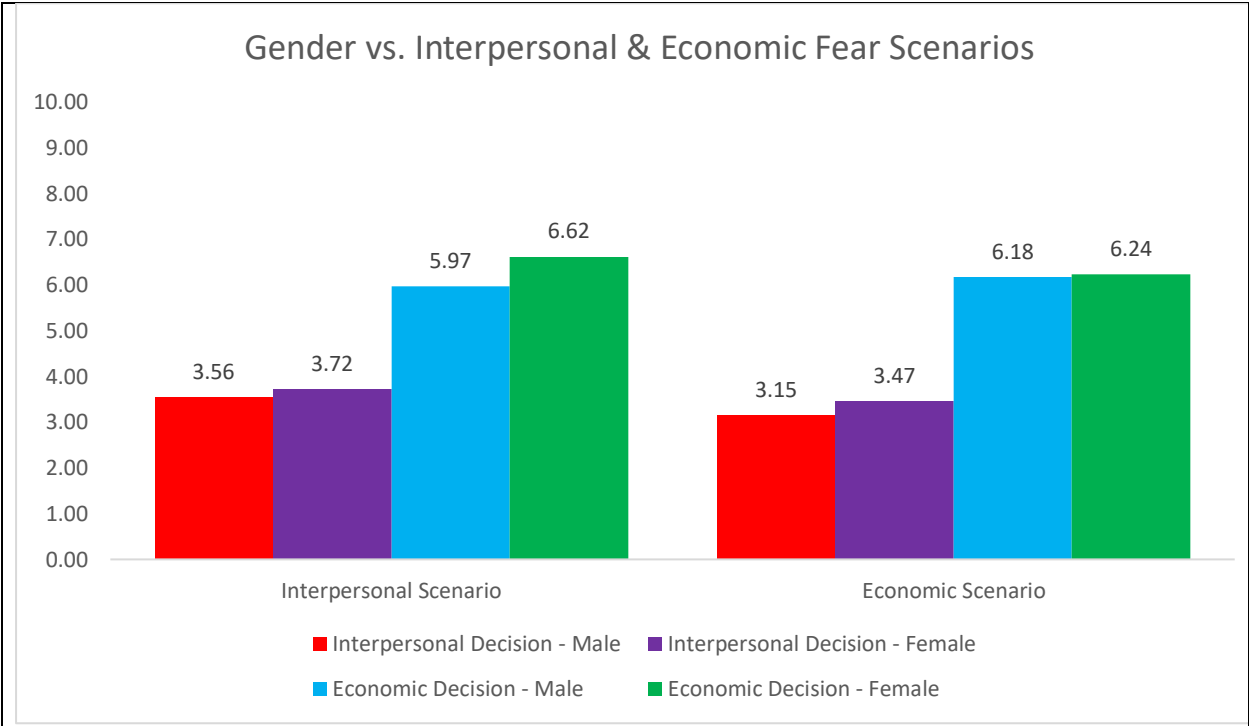


Figure 6: Aggregated Gender Averages

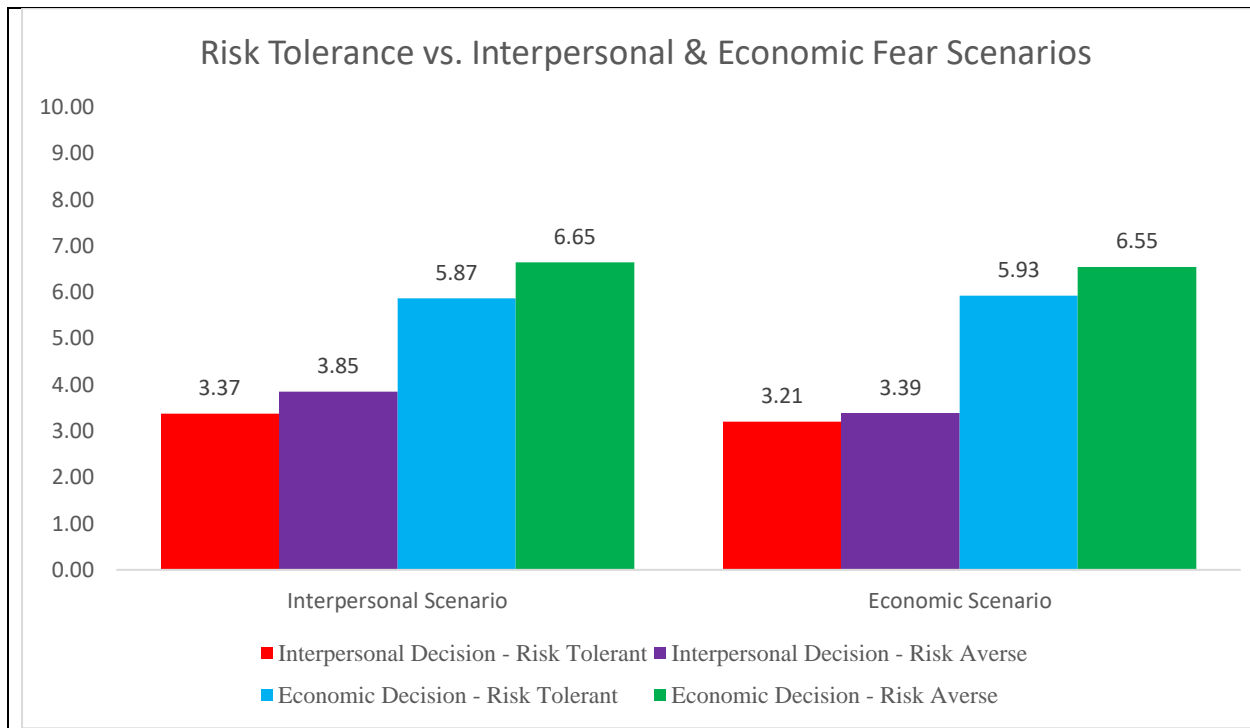


Figure 7: Aggregated Risk Tolerance Averages

### Overall Analysis

Based off of the results, it is evidently clear that the overall effect between each respective scenario and the comparison between each interpersonal scenario and economic scenario relatively mirror one another. In other words, analyzing individuals' responses, without focusing on specific demographic of the individual(s) themselves, weigh each decision approximately the same regardless of whatever context-specific narrative is in question. This finding propports two major implications.

Implication #1: Individuals, when faced with a fearful scenario or set of fear inducing circumstance(s), will decide to weigh safer and a more secure economic decisions, regardless of the scenario or circumstance relating to the individual in an interpersonal fashion. The economic decisions increase the individual's capital and economic safety are inherent to that individual and a seriously considered.

Implication #2: s.

These two implications remain consistent throughout the gender, risk-taking inclination, and education level analyses. This is imperative in itself too that there is internal consistency between each comparison. The internal consistency provides support that regardless of an individual's gender, how willing that individual is susceptible to taking a risk, or that individual's level of education, they still weigh economic decisions higher than interpersonal decisions. It must be noted that the third interpersonal question used within this study, "How likely are you to delay plans to retire?" could have been ambiguously perceived by the participants as relating specifically to an economic context; however, the researcher initially meant for this question to be designed to relate to an interpersonal question in which the specific question would illicit an interpersonal response rather than an economic response. This is evident

that that specific question quantitatively follows the economic questions and the corresponding averages.

### **Gender Variable**

On average, females tend to weigh or take riskier actions versus males, but only by a small margin. However, the overall average analysis (Figure 6) suggests that both males and females in the interpersonal and economic scenarios weigh economic decision greater than interpersonal decisions. It must be noted that this effect was not statistically significant, rather it can be observed in the different values presented in Figure 6. This could be due to a smaller sample being analyzed yet this does implicate that male and females do not necessarily underweight or overweight interpersonal or economic decisions differently, regardless of the scenario.

### **Risk Aversion & Risk Tolerance Variable**

It must be noted that there is an ample amount of literature and evidence to support the notion that those that are risk averse or risk tolerant make decisions in different capacities when introduced to fear or scenarios that might induce fear. It was found that participants that are either risk averse or risk tolerant relatively both weigh economic decisions greater than interpersonal decisions regardless of what type of scenario they are in. This is an important note in that individuals who either avoid or take risk will more likely than not place more emphasis and security in economic decisions versus interpersonal decisions.

However, this variable could have been confounded as it was a self-reported by the participants, in which the participants might think they are either risk averse or tolerant, but in reality, the opposite. Regardless of this specific limitation of self-identifying risk, the results relatively mirror the overall average and gender comparison.

### **Education Level Variable**

The analysis of the education level variable did exhibit difference between the education level variable. There was not statistically significant different within the interpersonal scenarios or economics scenarios or between the interpersonal scenarios and economics scenarios. Despite the scenarios not exhibiting differences between one another, it is imperative to note the difference in response averages though between education level. There was a negative-linear slope across all scenarios from those with a high school degree or GED to those with a professional degree. There was also statistically significant evidence that those with a high school degree or GED valued both economic and interpersonal decisions higher on average than those with associates degree, and so forth.

There are a few possibilities to as why this might have occurred. The first could be that those with little to no education percieve fear far more threatening to their interpersonal and economic safety due to having little to no education or existential knowledge bout how to protect assets or wealth. The second could be that those with little to no education percieve their interpersonal wealth and economic wealth greater due to not having qualitatively and quantitatively having an abundance of wealth, whereas those with higher levels of education do. The latter explanation about wealth simply promotes the idea that those with lower levels of education do not make as much wealth in proportion to those with higher levels of education, thus the value of wealth is different in which the responses based off of scenarios are weighted differently between the groups moving linearly higher in education status.

### **Limitations**

Although it has been noted, the sample size was statistically small, which can confound the overall analysis. Additionally, and previously noted, the third interpersonal question (“How

likely are you to delay plans to retire?") used within the study might have been perceived from an economic perspective rather than the researcher's intention of it being an interpersonal question. Lastly and again previously noted, the demographic question requesting the participants to identify with being risk averse or risk neutral could have produced errors based off of how the question was structured or if the participant incorrectly identified with the wrong selection. In totality, a larger sample size should be used, preferably exceeding one hundred participants, a new question that relates specifically and clearly as an interpersonal question should be added, and the identifiable risk demographic question should be either removed or explained in more depth for the participant.

### **Conclusions**

Throughout this study, it is discernably clear that fear affects individuals in thousands of different ways and through thousands of different contexts. Fear does not discriminate to an individual's demographics, it is unbiased, it is clear, it is concise, it overwhelms, and it motivates either for better or worse. There is an extensive and expansive profusion of literature discussing and experimenting on fear and how it affects decision-making, both from an economic an interpersonal perspective. This study attempted to dissect the line between interpersonal fear and economic fear. Ultimately, it was found that individuals place more time, effort, and wealth into economic decisions when faced with fear regardless of its context to the individual in question. It is imperative to know that individuals will protect their economic interest in order to promote, secure, and advance both their interpersonal and economic prosperity. Despite this study's particular limitations, the basis of research, discussion, experimentation, and results should not be overlooked or devalued. Rather, further research, discussion, and experimentation should be conducted so that other researchers can continue and expand upon such work, and for society as a whole, so that it might be in a better position of knowledge to judge the best decision to proceed with when faced with fear.

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## Appendix

*Interpersonal Fear Scenario #1:* “You have a stable job, but no foreseeable promotion or raise. Without warning, a close family member (spouse, sibling, or child) receives news that they are terminally ill. Regarding treatment options of the illness, there is an innovative, but extremely costly treatment that could subside the detrimental effects and possibly cure the illness fully.”

*Interpersonal Fear Scenario #2:* “You are currently married and have two children. Your spouse has a full-time job, and your children are both in college. You have a stable job, but the economy is one of the worst recessions in the past decade. The job market is saturated, and unemployment is high. Your employer has asked you to move to another state to continue work in your current position for the next three years. You have asked if your spouse and children can accompany you in your transition; however, your employer informs you that it does not have any policy that requires it to support any relocation efforts.”

*Interpersonal Fear Scenario #3:* “You have recently divorced from your spouse. After the divorce hearing, the court concludes that you will have to pay childcare. You have two children, and they have plans to attend college within the next two years. You also have made plans to move out of your home. You have a stable job, but no plans of finding a new job or receiving a promotion. The economy is stable.”

*Economic Fear Scenario #1:* “Your employer has just informed you that you will be transferred to new department that requires you to enter into a required training program. Your salary will be temporarily frozen until you complete the required training (training can last between three to nine months). Additionally, the labor market has a severe surplus of workers and unemployment has increased by ten points. The FED has increased interest rates from 2% (30YA) to 8% (30YA). Inflation is projected to increase from 2% to 5% within a year. You only have a bachelor’s degree, with no post-graduate certifications.”

*Economic Fear Scenario #2:* “You are currently employed; however, your company is hiring new, and more-qualified employees. With such hires, you been asked to sign a contract that will ultimately demote your position and decrease your salary. You will earn approximately 20% less than your current salary once you sign the demotion contract. You have no ambition or motivation to look for a new job outside of your current employer. The economy is stable and has no signs of impending volatility. You currently have two properties. Property #1’s mortgage has had 65% of it paid off, and Property #2’s mortgage has had 25% of it paid off. You have three vehicles, that are financed, but not paid for. You are married and your spouse is not currently employed.”

*Economic Fear Scenario #3:* “You currently are the sole owner of a successful restaurant business. Without warning, a pandemic ensues. The state government in which your restaurant business resides, enacts strict mandates that restricts any customer from physically dining in your restaurant. Further, your core customers have begun to spend

their money more conservatively. You are faced with debt payments and employee wages. There is no sign of future economic relief.”

*Interpersonal Question #1:* “How likely are you to have another child, get married, or start family (dependent on relationship to the close family member)?”

*Interpersonal Question #2:* “How willing are you to quit your job to become a stay-at-home family member?”

*Interpersonal Question #3:* “How likely are you to delay plans to retire?”

*Economic Question #1:* “How willing are you to liquidate unnecessary assets (cars, condos, etc.)?”

*Economic Question #2:* “How likely are you to downsize to a less expensive home?”

*Economic Question #3:* “How likely are you to rebalance your portfolio to safer investments (in an effort to protect capital)?”