Anxiety Effects on Decision Making by College Students

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ABSTRACT

With rising levels of anxiety among college students, understanding its effects on decision-making is crucial, such as whether to enter the workforce or attend graduate school. In two studies with undergraduate business students, we examined the correlation between anxiety and decision making (Study 1; $N = 204$) and experimentally induced anxiety to test for causality (Study 2; $N = 249$). We assessed decision-making using a hypothetical choice scenario between an entry-level job offer versus an MBA program, as well as standard measures of decision-making traits: time preference, risk aversion, and loss aversion. We hypothesized that higher anxiety levels would lead to greater preference for immediate rewards, greater risk and loss aversion, and thus greater preference for the job over the MBA. Counter to our hypotheses, neither study found a significant relationship between either measured or induced anxiety and participants' decision between the job and the MBA. In addition, our anxiety manipulation did not work as planned in Study 2, with no differences in self-reported anxiety between conditions. We also did not find relationships between anxiety and either risk or loss aversion, but did find that anxiety correlated with more impatient time preferences in Study 1. Participants in the experimental condition had marginally more impatient time preferences and greater loss aversion than those in the neutral condition in Study 2. Future research should explore alternative methods of anxiety induction and other student populations to better understand how anxiety changes student decision making.

KEYWORDS: Behavioral Psychology, Anxiety, Decision-making, Graduation, College Students, Future Plans

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INTRODUCTION

Student anxiety levels have increased dramatically over the past decade (Hoyt et al., 2021). How does this rise in anxiety affect this generation's future and decision-making skills?

Anxiety is an emotional state characterized by uneasiness and is commonly experienced in high stress situations. It involves intense emotions of fear and discomfort, often leading to physiological symptoms such as increased heart rate, dizziness, rapid breathing, and headaches. Might anxiety impact decision-making ability? Understanding how anxiety affects decision-making in college students regarding their future goals is essential–particularly in decisions related to entering the workforce versus continuing education in graduate school. These decisions can be influenced by various psychological factors such as emotional states, risk tolerance, time preference, and loss aversion.

To capture a full picture of how anxiety affects decision making among college students, we combine a correlational and an experimental study. The correlational study can assess naturally occurring relationships between students' anxiety levels and their post-graduation decision making and thus offers high ecological and external validity that an experiment might miss. The experimental study, in contrast, can temporarily induces anxiety in a controlled setting to test for the causal impact of anxiety. Taken together, the two methods provide complementary evidence—one mapping the phenomenon in the field, the other testing its causal mechanism in the lab—thereby producing a much stronger, more generalizable answer to our research question than either approach could yield on its own.

For both studies, we hypothesized that students with higher anxiety levels will prefer choice options with more immediate rewards, lower risk, and less potential for financial loss, thus leading them to prefer entering the workforce. We made this prediction due to anxiety reducing cognitive resources and thus leading to greater reliance on heuristics as suggested in dual-process theories of decision making (Kahneman, 2011). Together, these studies will provide insight to improve understanding of how negative emotional states, such as anxiety, shape cognitive processes and decision-making in college students. The study findings also have the potential to help college administrators to provide more effective assistance for students in achieving their academic and career goals. This would include refining interventions and programs while emphasizing the mental and psychological challenges students may experience.

Next, we review the literature on common sources of anxiety in college students and anxiety's relationship to decision making.

Anxiety in College Students

Decisions regarding graduate school or entering the workforce require strong academic performance, social skills, and extracurricular achievements—all of which contribute to stress and anxiety. Anxiety levels among college students have steadily increased in recent years due to various environmental factors (Anghel & Gati, 2021). College students have many stressors embedded within their daily routines as they aim to balance responsibilities, achieve academic goals, and compete for positions in graduate school or the workforce. The three primary contributors of anxiety among college students are academic performance, pressure to succeed, and post-graduation plans (Beiter et al., 2015). Further, negative emotionality is higher in students who are indecisive about their future plans in their fourth year of college (Anghel & Gati, 2021). Research has found a strong positive correlation between these stressors and students with severe depression, stress, and anxiety levels (Beiter et al., 2015). Beiter et al. (2015) also reported a 231% increase in yearly clients at the Franciscan University Counseling Center, highlighting the growing demand for mental health support among students.

Anxiety and stress levels have been exacerbated by the COVID-19 pandemic which introduced additional long-lasting uncertainties and disruptions. On average, college students reported significantly higher levels of stress and anxiety during the pandemic (Hoyt et al., 2021). Factors such as online learning, irregular routines, and doubts about the academic year contributed to this increase (Yang et al., 2021). As social interaction decreased, college students increasingly struggle with their ability to network with professors and peers in the learning environments–skills essential for self-confidence in making future career and academic decisions (Son et al., 2020). Financial uncertainty was also a result of this pandemic due to job and economic stress, which created

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anxiety for students trying to manage their educational expenses. Results found that 88% of college students have reported moderate to high anxiety levels (Lee et al., 2021).

Decision making requires cognitive functions such as attention, problem solving, and critical thinking skills. These functions may become impaired when stress and anxiety levels are increased. Risk aversion, time preference, and loss aversion–important decision making traits for making all kinds of decisions–may also be impacted by anxiety. The potential impacts of anxiety on each of these factors are discussed below.

Anxiety and Risk-Taking Behavior

Risk aversion is the tendency to prefer and choose outcomes with low uncertainty rather than high uncertainty. Previous research has found mixed findings on how anxiety affects decision-making. Previous research on anxiety's impact on decision making is mixed. Lerner and colleagues (2015) reported that anxiety increases preferences for low risk, low reward options, fostering a cautious approach, whereas Nash and colleagues (2021) found that economic anxiety was linked to both risk aversion—evidenced by heightened activation in the right anterior insula and dorsomedial prefrontal cortex—and increased risk taking, as shown by elevated ventromedial prefrontal cortex activity; similarly, Giogetta and colleagues (2012) observed that individuals with anxiety-related disorders made significantly fewer risky choices than non-anxious controls, particularly after wins. These mixed findings highlight the complexity of anxiety's impact on risk-taking and the need for further research. However, I hypothesize that anxiety among college students will cause them to shift their risk preferences towards being more risk averse.

Anxiety and Time Preference

Time preference reflects whether individuals value immediate rewards over potentially greater future benefits, and anxiety often drives a bias toward immediate gratification. For example, Shavit and colleagues (2014) examined how engaging in anxiety-inducing activities, such as skydiving, affected time preference. Findings revealed that when individuals engage in anxiety inducing activities, they elicit the tendency to make decisions leaning towards short-term thinking in information processing, prioritizing the present over the future which contributes to making short-sighted, but impulsive and risky decisions (Shavit, T., et al, 2014). The significant choice for short time preferences was specific to financial decisions–a factor that is crucial when making college students make future career decisions. Similarly, Xia and colleagues (2017) found that people with high trait anxiety favor smaller, immediate rewards over larger, delayed ones, highlighting anxiety's role in impulsive decision making.

Anxiety and Loss Aversion

Loss aversion is a cognitive bias highly impacting decision making due to the loss being emotionally experienced more strongly than the pleasure of an equivalent gain. Loss aversion results in people preferring decisions where losses can be avoided, rather than decisions where gains are acquired. Previous studies found that loss aversion can be significantly affected by anxiety. For example, Xu and colleagues (2020) found that anxious individuals display increased loss aversion, along with associated reduced connectivity between the amygdala and prefrontal cortex. These results suggest that anxious individuals have decreased emotion regulation skills when approached with increased loss inducing situations, leading to increased loss-averse and "cautious" decision making (Xu et al., 2020). These findings intensify the need to examine decision making in college students to allow for administrators and academic counselors to not overlook the possible effects of anxiety on life-altering decisions.

Research Question

These past research findings raised the question: How does anxiety affect college student decision-making traits in post-graduation decisions, especially when choosing between entering the workforce or pursuing graduate school? To test this question, we conducted two studies: Study 1 was correlational and Study 2 experimentally induced anxiety.

STUDY 1

Methodology

Participants: In this IRB-approved study, we explored the relationship between naturally-occurring levels of student anxiety and decision making. We recruited 204 undergraduate students (118 male and 86 female; White 17.1%, African

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American 6.4%, Hispanic 33.8%, Asian 44.6%) at the University of California, Riverside (UCR). Participants completed this study as part of a series of studies in exchange for partial course credit. Participants completed a series of hypothetical scenarios and standardized measures to assess decision-making tendencies, risk aversion, loss aversion, time preference, and anxiety levels.

Decision-Making Scenario and Assessments: Participants saw a hypothetical scenario in which they had to choose between entering the workforce or attending graduate school. Following their decision, an open-ended response box allowed them to provide a written explanation for their choice. To assess participants' risk-taking tendencies, they engaged in a financial gambling scenario in which they chose between a guaranteed monetary reward and a higher-risk option with the possibility of earning more or losing money. Higher selections of the risk-averse option indicated a preference for certainty over potential gain. Loss aversion was measured using another hypothetical gambling task in which participants were presented with two options: one that minimized potential losses and one that maximized potential gains. Participants' selections provided insight into their tendency to avoid losses, a behavior commonly associated with anxiety-related decision-making. Participants' time preference was measured using a series of hypothetical financial decisions where they had to choose between receiving a smaller amount of money immediately or larger amount after a delay. More choices of smaller, sooner rewards over larger, later gains was indicative of impatient time preferences. These methods are standard measures for measuring these decision-making traits.

Anxiety Measurement: Participants' current emotional anxiety was assessed using items adapted from the Beck Anxiety Inventory (BAI), presented on a Likert-scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The items evaluated symptoms such as nervousness, difficulty relaxing, and feeling like one has minimal control. Random positive affect items were included as attention checks to ensure response validity. Additionally, participants completed the Generalized Anxiety Disorder Assessment (GAD-7) to measure anxiety levels over the past two weeks. This measure consists of seven items evaluating the frequency of anxiety-related symptoms (e.g., "Over the last TWO WEEKS, how often have you been bothered by the following problems?"), with response options ranging from 1 (Not at all) to 4 (Nearly every day). Higher scores on the GAD-7 indicate greater levels of anxiety.

Procedure: Participants completed the study online through Qualtrics, ensuring accessibility and efficiency in data collection. The entire survey was estimated to take approximately 10 minutes to complete.

Results of Study 1

Of the 204 participants who completed the study, 106 participants (51.96%) chose to pursue graduate school and 98 (48.04%) opted to enter the workforce. To examine the relationships between the independent variables, we conducted a correlational analysis. The results revealed almost no associations among most of the independent variables, as most correlation coefficients were close to zero. Next, we analyzed the correlation between each independent variable (risk aversion, loss aversion, time preference, and anxiety measures) and decision outcome (graduate school vs. workforce) and found only a significant correlation ($r = 0.19$, $p = 0.006$), with participants who had a stronger preference for immediate rewards were more likely to enter the workforce. There were no other significant correlations between the decision making variables decisions (all p-values > 0.05). Correlation coefficients remained close to zero (r ranging from 0.012 to -0.19). These findings suggest that time preference may play a role in post-graduation decision-making, offering partial insight into our broader question of how anxiety may influence college students' choices in post-graduation plans. The other measured variables were largely independent of one another and did not predict post-graduation decisions. Although anxiety did not correlate with the decision making measures, a null correlation does not rule out a causal effect—the effects of measured anxiety can be masked by unmeasured confounds or restricted range. Thus, we next turned to running an experiment in Study 2, in which we can test whether experimentally-induced anxiety can alter decision making when other variables are held constant.

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Variable	*r* with state anxiety	*p*	*r* with general anxiety	*p*	*r* with preferring workforce	*p*
Risk Aversion	-0.07	0.29	-0.03	0.67	0.10	0.16
Loss Aversion	0.08	0.25	0.08	0.27	-0.02	0.74
Time Preference	-0.02	0.78	0.03	0.72	-0.19	0.006
BAI State Anxiety	-	-	0.63	<0.001	0.01	0.86
General Anxiety	0.63	<0.001	-	-	-0.08	0.27

Table 1: Correlations between decision making variables, state and general anxiety, and scenario decision (grad school = 0, workforce = 1)

STUDY 2

Study 1 did not find correlations between self-reported levels of students' anxiety and their hypothetical decision between graduate school and work. The lack of an inherent relationship does not eliminate the possibility of anxiety influencing decision-making, since anxiety levels may be confounded with other factors. Therefore, we will test our hypotheses in a study in which we experimentally induce anxiety. This will provide a more direct examination of anxiety's potential effects on decision-making.

Methodology

Participants: Following IRB approval, UCR undergraduate participants (N = 249), in exchange for partial course credit, completed a series of hypothetical scenarios and standardized measures assessing decision-making tendencies, risk aversion, loss aversion, time preference, and anxiety levels. Unlike Study 1, this study implemented an experimental manipulation to investigate the effects of anxiety on decision-making.

Anxiety Induction Manipulation: Participants were randomly assigned to either the experimental anxiety-induction condition or the control condition. In the experimental condition (high-anxiety group), participants were informed that they would be completing an IQ test designed to determine intelligence levels. This anxiety-induction method was established and tested by Beaurenaut et al. (2020). The test was presented as a high-stakes evaluation, with a strict and non-achievable 3-minute time limit, creating a sense of uncontrollability and stress (Almazrouei et al., 2023). In the control condition (low-anxiety group), participants were given the same set of questions but were instead told that this was a fun and engaging cognitive activity with no time constraints. The perceived uncontrollability and pressure in the experimental condition were expected to elicit stress and anxiety, aligning with prior research on anxiety induction.

Anxiety Measures: Participants' anxiety levels were assessed using multiple measures to capture both psychological and physiological responses to the anxiety induction. Similar to study 1, the BAI measured current emotional anxiety using a Likert-scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The GAD-7 assessed anxiety over the past two weeks, with responses ranging from 1 (Not At All) to 4 (Nearly Every day). Additional self-reported physical symptoms (e.g., heart rate, muscle tension, restlessness, sweating) and state emotions with some relating to anxiety were included to further assess participants' immediate reactions to the anxiety induction.

Decision-Making Scenario and Assessments: Following the anxiety induction task, participants completed a slightly modified

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version of the hypothetical decision-making scenario from Study 1. They were asked to choose between entering the workforce or attending graduate school, followed by an open-ended response box where they explained their choice. The same financial decision-making tasks from Study 1 were used to assess participants' risk-taking tendencies, loss aversion, and time preference.

Procedure: Participants completed the study online through Qualtrics. After providing informed consent, they were randomly assigned to either the experimental or control condition. The experimental group completed the IQ test with a strict 3-minute time limit, reinforcing pressure and uncontrollability, while the control group completed the same questions but were told it was a casual, low-stakes activity with no time limit. After the anxiety induction, participants chose between entering the workforce or attending graduate school and provided an open-ended explanation for their choice. Participants then completed the BAI and GAD-7 to assess both state and trait anxiety and reported physical symptoms and state emotions related to anxiety. The same financial decision-making tasks from Study 1 were administered in the same order. Lastly, participants were informed of the true purpose of the study and reassured that the Matrices task was not an actual intelligence test. The study took approximately 15 minutes to complete.

Results of Study 2

To verify whether the anxiety induction was effective within the experimental group, we compared reported physical and emotional anxiety using independent-samples *t*-test. Participants in the experimental group did not report significantly higher anxiety in comparison to the control group (emotional anxiety: *t*-stat = 1.5, *p*-value = 0.11 and physical anxiety: *t*-stat = 1.14, *p*-value = 0.256). We then conducted independent-samples *t*-tests to examine whether time preference, loss aversion, and risk preference differed between both groups. For time preference, there were no significant differences found (*t*-stat = 1.72, $p = 0.09$), but the trend suggests that the anxiety condition may lead to greater preference for immediate rewards. Loss aversion showed no significant difference (*t*-stat = 1.65, $p = 0.10$), though the anxiety condition showed a trend toward greater loss aversion. Risk preference also did not show any significant differences (*t*-stat = -1.17, $p = 0.25$), with the anxiety group trending toward slightly lower risk-taking behavior. Although not significant, trends suggest anxiety may impact financial decisions, increasing loss aversion and influencing time preference. Fisher's exact test compared the proportion of participants choosing graduate school versus the workforce between conditions. In the control group, 34.1% chose graduate school and 65.9% chose the workforce, while in the anxiety group, 33.3% chose graduate school and 66.7% chose the workforce. To further explore potential relationships, we conducted

Variable	$M_{Anxiety}$	$M_{Control}$	*t*-statistic	*p*-value
Emotional Anxiety	2.55	2.73	1.59	0.11
Physical Anxiety	1.93	2.07	1.14	0.26
Time Preference	16.01	16.47	1.72	0.09
Loss Aversion	11.48	11.73	1.65	0.10
Risk Preference	2.7	2.43	-1.17	0.25

Table 2: Differences between the experimental and control conditions.

correlation analyses between anxiety measures, decision-making traits, condition, and post-graduation decision. No significant correlations were found between any of the variables. Altogether, these findings suggest that while the anxiety induction may not have had a strong effect, subtle trends point to potential influences of anxiety on decision-making patterns.

DISCUSSION

Two studies examined the impact of anxiety on decision making, specifically the choice between entering the workforce or attending graduate school. We hypothesized that anxiety would influence financial decision-making traits such as risk preference, loss aversion, and time preference, leading the higher anxiety group to choose the workforce option. Results showed no significant differences between the anxiety and control groups. However, our findings suggested that anxiety may nonetheless impact decision making by leading to greater preference for immediate rewards (i.e., impatient time preferences). This pattern aligns with prior research finding anxiety may heighten present-focused thinking and discourage delaying gratification.

Despite the lack of significant results, the study continues to offer insights into decision-making processes within college students. These findings can be interpreted through the lens of dual-process theories (Kahneman, 2011), which suggest that anxiety impairs cognitive capacity and shifts individuals from analytical to heuristic-reliant thinking. The observed trends of a greater preference for immediate rewards and slightly higher loss aversion within more anxious individuals are consistent with a reliance on quicker and emotion-driven decision-making. This suggests that anxiety may not directly determine specific decisions, but rather biases by which these decisions are made.

Our findings have implications for career centers as advisors may begin to recognize how underlying anxiety could nudge students toward immediate, but potentially less beneficial choices. Institutions might also consider implementing decision-making support programs that focus on emotional experiences related to career planning. Targeted support for students experiencing anxiety could improve not only emotional well-being but also the quality of long-term academic and career-choices ensuring the best future outcomes for students. This study highlights the complexity of anxiety's role in decision-making and underscores the need for further research to explore these relationships. If anxiety influences decision-making tendencies, interventions aimed at reducing decision-related stress could help individuals make more rational long-term choices. Broadening the definition of a "successful" post-graduation path to include the emotional factors, not just financial or academic milestones, may better reflect the difficult realities students face.

While the study emphasizes the complexity of anxiety effects on decision-making within the specific scenario of post-graduation plans, several limitations should be considered. The main limitation of the study is that the anxiety manipulation was ineffective. While we used an established manipulation from previous research, we did not include an attention check immediately after the "intelligence test," which could have resulted in participants not reading the instructions in detail due to lack of attention. As the study relied on an online sample, participants could have completed the survey in uncontrolled environments (i.e., in a casual setting with friends), which may have influenced their engagement with the study. Future research should implement lab-based designs to create more controlled settings for anxiety induction while adding attention checks to ensure all instructions are understood.

An important limitation is that decisions about post-graduation plans are typically made over an extended period of time and influenced by numerous personal factors. Since many students may have already considered their future plans before participating in the study, the hypothetical scenario may have not been an accurate measure of this complex decision. Because participants were making hypothetical decisions and not real ones, their responses may not reflect how they would behave in an actual, high stakes situation. Future research could control for this by asking participants whether they have already made this decision and how confident they are in pursuing it in the future. Additionally, researchers should explore real-world decisions by tracking students' long-term decision-making process within the experimental design. These limitations highlight the need for future research to employ stronger anxiety manipulations,

control for third variables, and explore real long-term decision making to better understand how anxiety influences major life decisions.

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