

The Associations Between Early Challenges and Psychological Functioning

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Failure can be defined as not meeting one's personal goal or standard in any realm of personal importance. With the present study, we assessed self-reported levels of failure and mental health variables, including measures of anxiety, depression, fear of failure, growth mindset, and hope. Our primary hypotheses were that more frequent early failure experiences would be associated with less fear of failure, anxiety, and depression, and that fear of failure will be positively correlated with anxiety and depression. The inverse relationship between frequency of failure and fear of failure was hypothesized due to the extant literature supporting exposure as a mechanism to overcome phobias. Our secondary hypothesis was that increased fear of failure would be negatively correlated with growth mindset, hope, and resiliency. Our primary hypotheses were partially supported. Counter to our primary hypotheses, we observed significant positive correlations between frequency of failure and fear of failure, anxiety, and depression. This may be partially explained by an unintentional retrospective memory biases in which depressed and anxious individuals are more likely to remember an inflated proportion of negative experiences. In line with our primary hypothesis, fear of failure was positively associated with anxiety and depression. Our secondary hypotheses were also partially supported. Counter to our hypotheses, there was no significant correlation in any direction between fear of failure and growth mindset. However, in line with our hypotheses, there was a negative correlation between fear of failure and hope and resiliency. Future studies should explore ways to most objectively measure past naturalistic failure experiences or focus on longitudinal research to measure naturalistic failure as it takes place and identify its correlates.

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Table of Contents

Abstract.....	2
Acknowledgements.....	3
List of Tables.....	6
List of Figures.....	7
Introduction.....	8
1.1 Perceptions of Failure.....	9
1.2 Learning, Behavior, and Performance After Failure.....	12
1.3 Failure and Mental Health Outcomes.....	14
1.4 Present Study.....	15
Methods.....	17
2.1 Participants.....	17
2.2 Measure.....	17
2.3 Detailed Study Procedure.....	19
2.4 Data Analysis Plan.....	20
Results.....	21
3.1 Correlational Analysis.....	21
3.2 Failure as a Mediator Variable.....	21
Discussion.....	23
4.1 Primary Hypotheses.....	23
4.2 Secondary Hypotheses.....	26
4.3 Implications.....	28
4.4 Limitations.....	29

4.5 Future Directions.....	30
4.6 Conclusions.....	31
References.....	33
Appendix A: Tables.....	41
Appendix B: Figures.....	45
Appendix B: Study Materials.....	48

List of Tables

Table 1. Demographic characteristics of participants.....	42
Table 2. Descriptive statistics of key variables.....	43
Table 3. Correlations between key variables.....	44

List of Figures

Figure 1. Simple mediation model of fear of failure mediating the relationship between reported past levels of failure and anxiety.....	46
Figure 2. Simple mediation model of fear of failure mediating the relationship between reported past levels of failure and depression.....	47

Introduction

Failure is universally experienced; however, even agreeing on how to define failure can be difficult. In the research literature, failure has been operationally defined in several different ways (see Deneault et al., 2020; Klein et al., 1976; Wang et al., 2019). Individuals themselves also differ in their perceptions and appraisals of similar failure experiences (see Brown & Dutton, 1995; Brunstein et al., 1996; Miller & Seligman, 1975; Wang et al., 2019). According to a study done by Jungic and colleagues (2020) based on qualitative data, some individuals view failure negatively; one participant described failure as aversive, threatening, and potentially disastrous. Their study also indicates that some view failure positively; some participants described failure as beneficial, with one individual even stating it is a “key component of transformative learning” (p. 34). Differential appraisals of failure may have important implications for mental health. In fact, extant literature suggests a relationship between failure appraisals and psychopathology. For example, failure plays an important role in the learned helplessness model of depression. Specifically, behaviors associated with learned helplessness observed in depression could be induced via failure in non-depressed individuals. For example, when asked to solve a non-solvable task, non-depressed individuals gave up on future attempts to solve solvable problems, which is a sequence that is also observed in depressed individuals (Klein et al., 1976; Miller & Seligman, 1975). Furthermore, learned helplessness in depressed individuals may be propagated by the belief that there is an internal cause of failure, as opposed to failure being caused by an external factor (Klein et al., 1976). In line with this, individuals diagnosed with depression are more likely than their non-depressed counterparts to attribute failure to internal causes, as opposed to external causes (Kuiper, 1978). Experiencing failure has also been shown to lead to decreased performance on a laboratory card sorting task and greater

pessimism in depressed individuals (Loeb et al., 1971). Furthermore, low self-esteem, which is related to anxiety and depression (Nguyen et al., 2019; Rosenberg, 1962), is associated with more negative reactions to failure. Specifically, individuals with low self-esteem are more likely to “overgeneralize the implications of negative feedback to other aspects of their identity” (Kernis et al., 1989, p. 707). With the present study, we aim to understand the associations of reports of early failure experiences, fear of failure, and symptoms of anxiety and depression.

Perceptions of Failure

Perceptions of failure may influence whether one fears failure. Eskreis-Winkler and Fishbach (2019) conducted a study where participants were given ten questions relating to obscure information with only two potential answers. Some participants were assigned to the initial-failure-feedback group, where they would obtain feedback indicating they got the answer incorrect on the first four wrong responses they provided, and no feedback of any kind on the other questions. If they provided fewer than four incorrect responses, they obtained failure feedback on as many questions they got incorrect. In the initial-success-feedback group, participants were given success feedback on the first four questions they got right, or on all of the questions they got right if they answered fewer than four questions correctly. Before being introduced to the initial questions, participants were told that they would be tested on these topics again and would receive a monetary reward in the second round for each correct answer. Still, individuals in the initial-failure condition performed worse than those in the initial-success condition in the second round with binary questions relating to the same information. The researchers then replicated the study with new participants but, instead of initial-failure and initial-success conditions, participants were now randomized to initial-failure-feedback or no-feedback conditions; there was no longer an initial-success-feedback condition. Further,

instructions were shifted so that participants were asked to give the same answers they gave in the first round of questions in the second round, as opposed to providing the correct answers based on what they gathered from the feedback. Participants in the initial failure condition still remembered fewer of their initial answer choices than those in the no-feedback condition. Finally, a third iteration of the original study was conducted in which participants were grouped into initial-success-feedback and initial-feedback failure cohorts, completed both rounds of the questions, and then were asked to rate their self-esteem. As in prior iterations, those in the initial-failure group performed worse than those in the initial-success group. Furthermore, those in the initial-failure group indicated decreased self-esteem after the task. In sum, this indicated that learning that one has failed at a task (an event known as “failure feedback”) is perceived as threatening to one’s ego and can lead individuals to miss valuable information contained in the feedback about how to avoid that failure again in the future.

One’s trait self-esteem, as opposed to state self-esteem that can be influenced by success or failure, can also impact perception of failure. For example, a study by Brown and Dutton (1995) supported the notion that individuals who have low trait self-esteem tend to have more adverse emotional reactions to experiencing failure. This includes a more intense experience of negative emotions, such as humiliation and shame, and higher-level overall distress when faced with failure.

There are also demographic and cultural factors that are related to failure attributions. Specifically, the city or larger region that one resides in can impact the attributions people make to explain their experiences of failure. For example, a study by Cardon and colleagues (2011) that included participants who had entrepreneurial-related failures showed that individuals in Atlanta, Austin, and San Francisco viewed entrepreneurial failures as more misfortune driven,

while individuals in Chicago, New York, and Washington D.C. tended to attribute their failures to entrepreneurial mistakes. Based on these data, the authors proposed that culture may be at play with how one perceives failure and its root causes. As there is evidence that internal attributions of failure can be a risk factor for depression, the role culture plays in making attributions for failure is important to consider when looking at the potential links between failure and mental health.

The way individuals view other processes, such as learning, may also impact the way that they view and react to failure. In her book released in 2000, psychologist Carol Dweck proposed two different paradigms in which individuals view learning. The first paradigm was coined the *entity mindset*, also known as a *fixed mindset*, in which individuals view intelligence as something that is constant since birth and believe that an individual cannot do anything to change their levels of innate intelligence. The second paradigm, the *incremental mindset*, also known as a *growth mindset*, applies to individuals who view intelligence as something that is malleable and can be expanded and increased over time. A study by Niiya and colleagues (2004) found that the endorsement of a growth mindset, as opposed to a fixed mindset, is an effective way to minimize the threat to self-esteem for individuals whose self-esteem is contingent on academics and who experience an academic failure. It is possible that this finding could extend to self-esteem after other types of failures, such as failures in a moral or interpersonal sense.

Fear of failure is likely a relatively common view relating to failure. There are several factors that might make one particularly susceptible to fear of failure. First, a study by Deneault and colleagues (2020) supported the idea that perceived *parental control*, or parental behaviors that have the effect of manipulating, limiting, or refuting the experiences of their children (Barber, 1996), is positively associated with fear of failure in both male and female students.

Another study by Sagar and Stoeber (2009) found that perfectionism is positively correlated with fears of failure. The participants in this study were athletes, which makes sense as it is relatively easy to determine if they did or did not fail based on outcomes of their sporting event. However, it is possible that perfection is also associated with fear of failure in non-athlete populations. Furthermore, in another sample of athletes, Sagar and colleagues (2009) found that the most commonly perceived consequences of failure were diminished perception of self, no sense of achievement, and emotional cost. The authors proposed that these perceived consequences highlight the negative perceptions of failure and, therefore, facilitate the development of fear of failure. Despite the relatively niche pool of participants, these data reveal findings about failure that may generalize to other populations.

Learning, Behavior, and Performance After Failure

One of the ways in which failure is assumed to be useful is when someone learns from the failure and is able to succeed in the same domain following a failure experience. In this scenario, it is expected that the individual would have low fear of failure going forward, given that the failure may be seen as being a useful steppingstone towards future success. Several factors are associated with learning after failure. High quality relationships with others are a predictor of learning from failure; this is mediated by psychological safety (Carmeli et al., 2009). High self-esteem is also associated with learning from failure (Kernis et al., 1989). As previously discussed, people with low self-esteem are more likely to become less motivated in the face of failure compared to people with high self-esteem; self-esteem and overgeneralization regarding the implications of failing were found to be inversely correlated (Kernis et al., 1989). In other words, at low levels of self-esteem, people are more likely to report overgeneralization regarding

failure. Thus, those with low self-esteem are likely to believe one's experience of failure indicates that future experiences, even in unrelated realms, will result in failure as well.

There is ample evidence that perceptions of failure affect subsequent behavior and performance (see Brunstein et al., 1996; Feather, 1966; Wang et al., 2019). For example, a study by Feather (1966) indicated that, generally, individuals that have moderate initial expectations regarding their performance on a task (i.e., expectations that are neither extremely positive nor extremely negative) experience a greater change in expectations regarding future performance when facing repeated failure on the initial task as opposed to repeated success. However, further analysis paints a more nuanced picture, and indicates that two types of individuals are observed: those who are failure-oriented and those who are success-oriented. The authors found that failure-oriented individuals change their expectations about future performance most drastically based on failures, while success-oriented individuals change their expectations most drastically based on successes. Therefore, all individuals do not react to failure in a homogeneous matter.

A study by Wang and colleagues (2019) concerning career trajectory following early career failures illustrated this phenomenon in a naturalistic domain. The authors concluded that early career shortcomings have powerful but opposing effects on individuals; these events will hurt the careers of some individuals but will strengthen outcomes for others. Unfortunately, the authors provided no definitive explanation for what differentiates the two groups and may account for their divide. What the study shows, though, is that individuals who fail by a narrow margin in their professional endeavors consistently outperform those who have solely experienced "wins" by a small margin in the long run.

A study by Brunstein and colleagues (1996) demonstrates that performance after failure may differ based on the domain of the subsequent tasks. In the study, failure in a domain of

relevance to self-definition (i.e., a domain that is relevant to one's identity and perception of themselves) led to improved subsequent performances for tasks in that area but worse performance in unrelated domains. The study indicated that improved performance in tasks related to one's self-definition was mediated by increased motivation. Conversely, the relationship between diminished performance in subsequent tasks in domains unrelated to one's perception of themselves was null after controlling for rumination. Therefore, motivation and rumination may be factors that are linked as both reactions to failure and influences on future performance.

Failure and Mental Health Outcomes

Previous research shows evidence of failure affecting mental health outcomes. This can clearly be seen with depression, as many of its associated responses (e.g., isolation, withdrawal of goal-relevant effort) may be linked to failure. As previously mentioned, failure is linked to the learned helplessness model of depression, which states that individuals who are depressed are more likely to feel that there is little to no connection between actions they take and the associated reinforcement and are, thus, less likely to take action to solve problems and meet goals (Miller & Seligman, 1975). In other words, the learned helplessness model of depression states that depressed individuals are more prone to a cognitive distortion that weakens or removes the nexus between one's effort and the desired result. A study then explicitly linked this theory to the concept of failure by showing that depressed individuals were more likely to fail on problem solving tasks than non-depressed individuals, except when they learned that the problems were also difficult for others to solve (Klein et al., 1976). In other words, the study appeared to support the idea that the learned helplessness paradigm of depression leads depressed individuals to have more experiences failing, unless they had a reason to attribute

failure experiences to the difficulty of the situation itself instead of their own abilities. A study by Kuiper (1978) indicated that failure experiences in depressed individuals are also linked to the perceived cause of failure. In Kuiper's study, he asked both depressed and non-depressed participants to attribute their success or failure to internal factors (specifically "ability" and "effort") or external factors (specifically "luck" or "task difficulty"). The data showed that depressed participants attributed both success and failure to internal factors, while non-depressed participants attributed their success to internal factors and their failure to external factors.

Failure also appears to be linked to anxiety (Conroy, 2001; Conroy et al., 2002; Hazlett-Stevens & Craske, 2003). For example, individuals that have been diagnosed with Generalized Anxiety Disorder have a more pervasive fear of failure than non-anxious individuals (Hazlett-Stevens & Craske, 2003). This may be explained by catastrophizing, a cognitive distortion that is well-linked to anxiety in which an individual regularly expects extreme, disastrous consequences to result from a negative event (Chan et al., 2015; Noel et al., 2012). Catastrophizing may make an individual feel that failure in any area would lead to far more grave consequences in the long-term than is likely the case in reality, leading to an exaggerated fear of failure among anxious individuals.

Present Study

The studies reviewed here make it clear that experience with and perspective on failure varies in predictable ways. This helps us move away from the question of whether failure is beneficial or detrimental and toward questions such as for whom failure is beneficial and under which circumstances. Additionally, it may be useful to include more ecologically valid assessments of failure. Many prior studies on failure focus on laboratory-induced failures, which are useful for ensuring equivalent failure experiences across participants but may not generalize

to “real world” settings. Furthermore, many studies look at very specific potential consequences of failure, such as how it affects performance on a very similar task to which the failure took place in the immediate aftermath of the failure, which makes it hard to investigate the potential broader sequelae of failure. In this study, we attempted to address some of these limitations by allowing participants to use their own failure experiences. In the present study, we investigated the relationship between self-reported, real-life failure experiences before the age of 18 and current reports of mental health constructs, including anxiety, depression, resilience, mindset, and hope. Furthermore, we evaluated if there was an indirect relationship between failure experience and mental health outcomes through fear of failure.

We hypothesized that 1) early failure experiences would be inversely associated with fear of failure, and 2) higher frequency of failures experienced would be associated with lower levels of self-reported anxiety and depression symptoms. We also hypothesized that 3) fear of failure would mediate the relationship between frequency of failure and anxiety, and the relationship between frequency of failure and depression. Hypotheses relating to our secondary measures were: 4) fear of failure would be positively correlated with a growth mindset, 5) fear of failure would be inversely correlated with hope, and 6) resilience would be positively correlated with failure experiences and negatively correlated with a fear of failure.

Methods

Participants

The sample included 129 undergraduate students enrolled in an “Introduction to Psychology” course at The Ohio State University. Originally, data were collected from 197 participants. The responses from 68 participants were excluded due to incorrect or incomplete answers on the questions designated to check for attention and engagement, or because the individual completed the study more than once. The participants were recruited from the Research Experience Program (REP) and received participation credit in their Introduction to Psychology course for their involvement in the study. Approximately half of the sample identified as female (50.4%), while the rest identified as male (47.4%) and gender non-conforming (2.3%). The mean age of the included participants was 19.20 years. Most participants identified as White (69.2%); with the other participants identifying as Black or African American (10.5%), Asian (10.5%), multi-racial (4.5%), or other (2.3%). A small portion (3%) of the participants did not disclose their race. As for ethnicity, 5.3% identified as Hispanic or Latinx. The only requirement to participate in the study was to be at least 18 years old.

Measures

The following self-report measures were completed by participants.

Demographics Questionnaire. The Demographics Questionnaire is a self-report questionnaire used by participants to record basic information about age, sex, sexuality, race, ethnicity, relationships, family income, mental health, and education.

Failure Questionnaire. The Failure Questionnaire was created for this study. The questionnaire is a 48-item self-report scale used to measure fear of failure and frequency of past failures.

Participants were asked about prior and current failure experiences, perspectives, and fears of failures using both multiple choice questions and five-point Likert scales.

We assessed the failure experiences of participants along three domains: achievement failures, relationship failures, and moral failures. We chose to specifically ask participants about failures among these three domains to spur participants to think about failure in a broader sense. From conversations and reflection from our research team, we realized that our perceptions of failure are largely related to achievements. Thus, although we broadly defined failure at the beginning of the study, we also used this approach of specifically prompting participants to reflect on different types of failures to encourage them to think about failure as holistically as possible. Although we administered the whole 48-item questionnaire to participants, we only used the first three questions, relating to frequency of failure before the age of 18 in each of these three domains, in the analyses. This three-question sub-scale had adequate internal reliability in this sample ($\alpha = .69$).

Patient Health Questionnaire (PHQ-9). The PHQ-9 (Kroenke et al., 2001) is a 9-item self-report scale that measures depressive symptom severity. Participants were asked how often they have been bothered by a variety of symptoms of depression in the past 2 weeks on a 4-point Likert scale. This scale had excellent internal reliability in this sample ($\alpha = .92$).

Generalized Anxiety Disorder Scale-7 (GAD-7). The GAD-7 (Spitzer et al., 2006) is a 7-item self-report scale that measures generalized anxiety disorder symptoms. Participants are asked how often they have been bothered by a variety of symptoms related to GAD over the past 2 weeks on a 4-point Likert scale. The scale had excellent internal reliability in this sample ($\alpha = .92$).

Performance Failure Appraisal Inventory (PFAI). The PFAI (Conroy, 2001) is a 25-item questionnaire that measures the strength of individuals' beliefs in five aversive consequences of failing. Participants are asked how often each statement describes their attitude on a 5-point Likert scale. The scale had excellent internal reliability in this sample ($\alpha = .95$).

Dweck Mindset Scale (DMI). The Dweck Mindset Scale (Dweck, 2006) is a 16-item self-report scale that measures how much people believe that they can get smarter if they work at it. Participants are asked to what extent statements on intelligence and talent describe them on a 6-point Likert scale. The scale had excellent internal reliability ($\alpha = .93$).

Brief Resilience Scale (BRS). The BRS (Smith et al., 2008) is a 6-item self-report scale that measures the ability to bounce back or recover from stress. Participants are asked the degree to which they agree or disagree with statements regarding difficult situations on a 5-point Likert scale. The scale had good internal reliability ($\alpha = .83$).

The Hope Scale. The Hope Scale (Snyder et al., 1991) is a 12-item self-report scale that measures a respondent's level of hope relating to pathway and agency. Pathway can be defined as finding a way to meet one's goal, while agency can be described as having the motivation to meet take the desired path to meet the goal. In The Hope Scale, participants are asked to rate true or false statements on agency and pathways using an 8-point Likert scale. The scale had excellent internal reliability ($\alpha = .91$).

Detailed Study Procedure

We used a correlational, cross-sectional design. Participants enrolled in this study via The Ohio State University's Research Experience for Program (REP). Once enrolled, participants received a link to a self-paced survey to be completed at a day and time of their choosing; all participants completed the survey within 5 days of receiving the link. Participants began by

filling out an informed consent document, and then completed the Demographics Questionnaire. Following this, participants completed the Failure Questionnaire, symptom measures (i.e., PHQ-9, GAD-7), the Perceptions of Failure Appraisal Inventory, Dweck Mindset Instrument, Brief Resilience Scale, and Hope Scale, in that order. The questionnaire took no longer than one hour to complete. Upon completion, REP participants received 1 REP credit.

Data Analysis Plan

First, data were reviewed for completeness and attention check items to determine which participants should be excluded. If a participant completed the survey more than once, the survey that was most fully completed was kept from the participant. We only included questionnaire scores in analysis if approximately 70% of the items for that questionnaire were completed. Next, to do a preliminary check on the coding of the data, we looked at basic descriptive data for each variable and examined the relationships between variables to make sure both were in line with what was expected for this population based on prior studies. Afterwards, we ran a correlation table with the variables of interest. We also used the PROCESS procedure on SPSS (Hayes, 2022) to run mediational analyses to determine if fear of failure served as a mediator between frequency of failure and depression, or as a mediator between frequency of failure and anxiety. The model was run with 10,000 bootstrap samples for purposes of indirect effect analyses.

Results

Correlational Data Analysis

Correlational analyses were conducted to identify significant bivariate relationships between variables. Table 2 includes a correlation table of all primary and secondary variables in the study. Correlations between early failure experiences and other variables of interest relating to our primary hypothesis were as follows: early failure experiences were positively correlated with fear of failure, depression, and anxiety. Fear of failure was positively correlated with depression and anxiety. Relating to our secondary hypothesis, there was no significant correlation between fear of failure and growth mindset, but there was a significant negative correlation between fear of failure and the two hope subscales (i.e., agency and pathways). Fear of failure and frequency of failure were both significantly negatively correlated with resiliency.

Failure as a Mediator Variable

A goal for the study was to examine whether fear of failure mediated the association between frequency of failure and anxiety, and the association between frequency of failure and depression. In the first model, anxiety was the outcome variable, frequency of failure was the independent variable, and fear of failure was the mediator variable. The direct effect between frequency of failure and anxiety was not significant, $B = .19$, $SE = .21$, $t = .91$, $p = .36$. The indirect effect between frequency of failure on anxiety was significant, $B = .75$, $BootSE = .15$, $95\% CI [.15, .45]$. This data supports the notion that fear of failure serves as a mediator for the relationship between frequency of failure and anxiety. In line with our correlational results, there was also a significant direct effect between fear of failure and anxiety, $B = 4.36$, $SE = .53$, $t = 8.22$, $p < .01$.

The second mediation model mirrored the initial model, except that depression was the outcome variable instead of anxiety; frequency of failure was still the independent variable, and fear of failure remained the mediator variable. This model is shown in Figure 2. The direct effect between frequency of failure and depression was significant, $B = .61$, $SE = .23$, $t = 2.65$, $p < .01$. The indirect effect between depression and frequency of failure was also significant, $B = .89$, $BootSE = .19$, $95\% CI [.54, 1.27]$. Taken together, these results suggest that fear of failure is a mediator in the relationship between depression and anxiety. Furthermore, on par with our correlational results, there was a significant direct effect between fear of failure and depression, $B = 5.20$, $SE = .58$, $t = 8.97$, $p < .01$.

Discussion

Primary Hypotheses

Our primary hypothesis was that early failure experiences would be negatively correlated with fear of failure. However, contrary to our hypothesis, there was a positive relationship between frequency of failure and fear of failure, suggesting that those who reported more frequent failures also reported more fear of failure. While our hypothesis was rooted in theory regarding exposure therapy as a treatment for fear (e.g., obsessive compulsive disorder and phobias), the key to successful exposure therapy is an observation that the true outcome was not as bad as one's feared consequences (Abramowitz et al., 2019). Thus, exposure therapy relies on diminishing the link between the stimuli and the imagined fear-inducing consequence. However, with the present study, there was no way to test for the immediate consequences of the perceived failure nor were we able to measure what the participants feared might result from a failure. Instead, the hypothesis relied on an inherent assumption that the failures would not lead to consequences as disastrous as the participants feared, but there was no real way to test the perceived or actual consequences of participant's failure experiences.

Another reason this hypothesis may not have been supported is due to retrospective biases. Multiple studies suggest that, at least in terms of visual attention, which can be easily measured, individuals pay more attention to fear-inducing stimuli than neutral stimuli (Ohman et al., 2001; Phelps et al., 2006). Thus, if one fears failure, that person may be more likely to pay more attention to failure experiences than neutral experiences, and thus be able to recall them relatively quickly, which may lead one to overestimate the number of times they failed in the past.

The next portion of the primary hypotheses was that frequency of failure would be negatively correlated with anxiety and depression. This was not supported by the data. Instead, the data demonstrated significant positive correlations between frequency of failure and anxiety and depression. One potential explanation for this may be disorder-specific retrospective biases. In depression, there is a well-known phenomenon of memory bias in which people disproportionately recall memories associated with negative emotions (Urban et al., 2018). Similarly, there is a memory bias in anxious individuals, in which anxious individuals are more likely to recall anxiety-inducing memories (Burke & Matthews, 1992), which may include failures, especially considering the strong positive correlation observed between fear of failure and anxiety. However, the relatively low levels of depression and anxiety symptoms of patients may put this explanation into question. In this study, the average score for PHQ-9 was just between the upper bound of mild depression symptomology and the lower bound of moderate depression symptomology per scoring guidelines, and the average score for GAD-7 aligned with mild anxiety per scoring guidelines (Kroenke et al., 2001; Spitzer et al., 2006). In addition, this study did not ask participants whether they had ever been formally diagnosed with clinical depression or anxiety by a healthcare professional. Thus, while the role of retrospective biases may be a plausible explanation for the positive correlation between fear of failure and both anxiety and depression, it is not likely that symptoms of clinical anxiety and depression are the main reason why this trend was observed in a non-clinical sample.

A related, albeit distinct explanation between the relationship between frequency of failure and anxiety may be that individuals who have more anxiety symptoms may have better encoded failure experiences prior to adulthood than those who have less symptoms of anxiety. The GAD-7 asks questions relating to levels of worry, fear, and nervousness to evaluate anxiety

symptoms. It makes sense that individuals who are currently prone to these responses as adults may have also been prone to anxiety before the age of eighteen, and experienced greater emotional responses to failures (feeling defeated, angry, sad, fearful, etc.) before adulthood than non-anxious individuals, as they may have had exaggerated beliefs about the implications of their failures. This is relevant, as various studies have demonstrated that heightened emotional states contribute to the formation of more salient long-term memories (Cahil & McGaugh, 1995; Kensinger & Corkin, 2003). Thus, these individuals may be able to recall more failure experiences not because they necessarily experienced more failure experiences, and not due to an anxiety-specific retrospective bias, but because the failure memories are more strongly encoded in the memories of more-anxious individuals than less-anxious individuals.

An alternative explanation for the relationship between early frequency of failure and anxiety is that individuals that numerous early failures may ultimately cause one to have lesser perception of oneself and question one's ability to succeed, which can contribute to rumination, general worry, and nervousness about meeting important goals and one's general ability. Worry, nervousness, and fear are explicitly assessed on the GAD-7 and can explain why these individuals scored higher on that anxiety measure and have higher levels of anxiety symptoms overall.

A second potential explanation for the positive correlation between fear of failure and depression is that frequent, early failure promotes learned helplessness. As discussed, learned helplessness is the notion that there is a minimal, or even non-existent, connection between one's actions taken to achieve a goal and the progress towards the goal itself. If an individual fails a lot as a child, despite presumed effort towards one's goals, the individual may believe that their effort does not impact the results, and learned helplessness may develop. This will likely create a

sense of a lack of agency or control over one's life, which may contribute to hopelessness and depression.

Other parts of our hypotheses were supported by the data. The next portion of the primary hypotheses, which stated that fear of failure would be positively correlated with both depression and anxiety, was supported. In addition, our hypotheses that fear of failure would mediate the relationship between frequency of failure and anxiety, as well as the relation between frequency of failure and depression, were also supported. When reviewing the mediation analyses, we observed that the total effect of frequency of failure on anxiety was significant, but the direct effect was no longer significant when accounting for the indirect effect of fear of failure. This is understandable, as anxiety is often viewed as a fear-based disorder. Therefore, it makes sense that when experiencing lots of failure, which is positively correlated with fearing failure (as shown by this study's correlations between the constructs), that will account for most of the anxiety associated with the increased failure. Thus, when fear of failure is accounted for, the direct effect between frequency of failure and anxiety would not be statically significant. However, when looking at depression mediation analyses, we observed that the total effect frequency of failure had on depression was significant, and the direct effect remained significant even when accounting for the indirect effect of fear of failure. This contrast from anxiety makes sense based on the understanding that depression, at its simplest, is a disorder pertaining to low mood and is not explicitly linked to fear. Therefore, although there is an established, significant positive correlation between depression and fear of failure, it makes sense that the relationship between frequency of failure and depression is accounted to a significant degree by more factors than just a construct based in fear (e.g. learned helplessness), making the direct effect of frequency of failure remain significant even when accounting for fear of failure.

Secondary Hypotheses

Secondary hypotheses were that fear of failure would be negatively correlated with hope, resiliency, and a growth mindset, and would be positively correlated with a fixed mindset. These hypotheses were partially supported. As expected, fear of failure was significantly negatively correlated with hope and resiliency. However, fear of failure was not correlated with mindset. We reasoned that those that fear failure are likely to do so because they think failure experiences mean that a goal cannot be met, and this failure is final. These interpretations are in line with a fixed mindset, in which one thinks that both talent and intelligence are fixed constructs that cannot be expanded. We also based our hypothesis on research in the field; researchers have found that growth mindset is significantly negatively associated with fear of failure (Noskeau et al., 2021; Tao et al., 2022). Although one potential explanation for these results, which differ from the results of our study, may be that the association between fear of failure and mindset would be unrelated specifically in college students, Tao and colleagues found significant positive associations between the constructs in a sample of college students, which makes this explanation unlikely. Thus, these results are surprising, and paint a picture that there is no significant relationship between how malleable one considers intelligence and talent, and how fearful one is of failure. This potentially indicates that in this sample, individuals may fear failure not just because of the obstacle it poses towards their goals (as this would, theoretically, be less present in growth mindset groups) but also because of other factors, which may include social shame, perceived inconvenience, and diminished view of self.

The final secondary hypothesis is that resiliency would be positively correlated with the frequency of failure experiences. This portion of the hypothesis was also not supported; instead, we observed a strong negative correlation between resiliency and frequency of failure

experiences. Although not what we hypothesized, these results do make sense. Per our definition, failure is an inability to meet a goal that you have set for yourself. Individuals with resilience, which is the ability to adapt in the face of adversity to meet one's goals, would likely continue to adapt despite initial failures to ultimately meet their goals. Thus, while individuals who have low resilience may give up upon an initial failure towards the goal, and naturally solidify the failure per the provided definition as the goal was never met, individuals who are resilient would likely continue to adapt based on that initial failure to find a different way to ultimately reach their goal. Because of that, when they look back on it retrospectively, they would think they had much less failures, as any failure-like experiences they did have did not ultimately prevent them from reaching their goal, thus not meeting the criteria we provided for failure.

Implications

Because this study was cross-correlational, and thus directionality cannot be determined, the results concerning the correlations between past levels of failure and depression and anxiety can be read in one of two ways, depending on what is imagined as a potential causal variable. The first potential interpretation is that increased frequency of failure before adulthood may spur anxiety and depression later in life. We view this as unlikely, as this contradicts literature on exposure therapy. However, if other future studies were to provide support that that early failure does indeed make it more likely to experience anxiety or depression later on, then the implication from there would be to shield young people from failure to increase the chances they will have minimal depression and anxiety symptoms as adults. The other way these results could be interpreted is that higher, current levels of depression and anxiety symptoms are associated with *perceiving* higher quantities of past failure, because of retrospective biases associated with depression and anxiety. This is much more likely, as it aligns best with literature. If this were the

case, the implication would be further validation of retrospective biases at play in these disorders in a slightly new context—relating to failures.

The study also looked at correlations between various constructs and fear of failure. These correlations suggest that fear of failure is a construct that we should be paying more attention to, especially in consideration of the way that individuals think about engaging with their goals. Even setting aside our failure questionnaire that was developed for this study, correlations between the other scales in the study, which have been used by a myriad of other publications, support the notion that there is a positive correlation between fear of failure and symptoms of both depression and anxiety, and there is a negative correlation between fear of failure and the often-sought-after constructs of resilience and hope. Thus, this study may provide an impetus to study fear of failure further and examine any interventions to reduce fear of failure not only because of the natural hinderance that is often associated with a fear of failure, but also due to its negative correlations with desired outcomes and positive correlations with undesired outcomes.

Limitations

The study had several limitations. First, our measure of early failure experience was based on retrospective reporting. As discussed earlier, there are several documented attentional biases that may have affected how past failure experiences were reported. Specifically, depression is associated with memory biases that result in disproportionately recalling negative memories, such as failure (Urban et al., 2018). Similarly, as discussed before, there is evidence that individuals with anxiety are more likely to remember anxiety-provoking memories (Burke & Matthews, 1992), which may include failure experiences. Thus, like depression, this could lead to overinflated reports of frequencies of failure. Memory biases may be at play even in

individuals who do not have anxiety or depression. It is well documented that negative information plays a greater role in forming evaluations than positive information (Peeters & Czapinski, 1990). For example, when looking at faces, individuals spent more time looking at those depicting negative than positive emotions (Fiske, 1980). A bias towards negative events can also be seen in one's memory; negative events are even remembered with relatively high detail, whereas positive events are more often remembered by the fact that they happened as opposed to being detailed (Kensinger, 2009). Therefore, it is reasonable that if failure elicits negative emotions, people may inflate the amount of past failure they report due to the relative salience of these experiences. Another limitation is that there was no verification of the amount of failure that occurred, as no other individuals that were present in the lives of the participants before the age of eighteen were contacted to weigh in on the past failure levels of the participants.

A further limitation of this study is that there was no measure of consequences of early failure experiences. For example, we didn't ask participants what happened when they failed or ask them to describe the failures. This made it impossible to determine if the perceived "costs" of early failure experiences impacted the relationship between early failure experiences and fear of failure.

The sample was also a limitation of the study. All participants were recruited as a convenience sample—a Psychology Department Research Experience for Undergraduates Program at the Ohio State University. Thus, these individuals were pursuing higher education, were enrolled in a psychology course, and were of a similar age. Additionally, the sample was a relatively homogeneous participant group in terms of race; over 70% of the participants

identified as white. Because of the numerous similarities between participants, the results of this study might not generalize to other groups of people.

Future Directions

Many changes can be implemented to address the limitations of the present study in future iterations. In future iterations of the study, a more diverse sample could be beneficial. Conducting this study not only among individuals that are enrolled in a college course, but also in individuals who are not enrolled in college, and across a variety of ages, ethnicities, races, and locations would result in increased ecological validity for this study. Furthermore, recruiting one or two caretakers or guardians, if available, who were present across the childhood and adolescence of participants would be helpful in future iterations of the study so that they can evaluate levels of failure in participants as well. This would provide a corroborating measure for the amount of failure and may help provide a more objective measure of failure for participants. In addition, conducting follow-up interviews with participants, or with individuals in general, to determine how failure is conceptualized would be helpful to better contextualize findings and get a more meaningful idea of what failure means to participants. Finally, a longitudinal study from childhood to adulthood in which researchers collect data regarding naturalistic failure of individuals as they take place and then examine mental health in adulthood would be the most ideal future iteration of this study, as reporting failure experiences as they take place will reduce the role of retrospective bias in reporting.

Conclusions

Studying the relationship between naturalistic failure experiences, fear of failure, and mental health outcomes helps broaden the field's understanding about a universal experience. This study provides a foundation to ask further questions about failure and fear of failure to continue to

gain information about their relationship and long-term implications. This study also provided insights for future studies about the benefits and pitfalls of measuring naturalistic failure retrospectively, which can be used to shape future studies. Overall, this study provides a step towards more fully understanding failure and its implications.

References

- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). *Exposure therapy for anxiety: principles and practice*. Guilford Publications. <https://books.google.com/books?id=YZ-BDwAAQBAJ>.
- Bandura, A. (1977). *Self-efficacy: Toward a unifying theory of behavioral change*. *Psychological Review*, 84(2), 191-215.
- Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, 67(6), 3296–3319. <https://doi-org.proxy.lib.ohio-state.edu/10.2307/1131780>
- Brown, J. D., & Dutton, K. A. (1995). The thrill of victory, the complexity of defeat: Self-esteem and people's emotional reactions to success and failure. *Journal of Personality and Social Psychology*, 68(4), 712–722. <https://doi.org/10.1037/0022-3514.68.4.712>
- Brunstein, J. C., & Gollwitzer, P. M. (1996). Effects of failure on subsequent performance: The importance of self-defining goals. *Journal of Personality and Social Psychology*, 70(2), 395–407. <https://doi.org/10.1037/0022-3514.70.2.395>
- Burke, M., & Mathews, A. (1992). Autobiographical memory and clinical anxiety. *Cognition and Emotion*, 6(1), 23–35. <https://doi.org/10.1080/02699939208411056>
- Cahill, L., & McGaugh, J. L. (1995). A novel demonstration of enhanced memory associated with emotional arousal. *Consciousness and cognition*, 4(4), 410–421. <https://doi.org/10.1006/ccog.1995.1048>
- Cardon, M. S., Stevens, C. E., & Potter, D. R. (2011). Misfortunes or mistakes?: Cultural sensemaking of entrepreneurial failure. *Journal of Business Venturing*, 26(1), 79–92. <https://doi.org/10.1016/j.jbusvent.2009.06.004>

- Carmeli, A., & Gittell, J. H. (2009). High-quality relationships, psychological safety, and learning from failures in work organizations. *Journal of Organizational Behavior*, 30(6), 709–729. <https://doi.org/10.1002/job.v30:610.1002/job.565>
- Chan, S. M., Chan, S. K., & Kwok, W. W. (2015). Ruminative and catastrophizing cognitive styles mediate the association between daily hassles and high anxiety in Hong Kong adolescents. *Child psychiatry and human development*, 46(1), 57–66. <https://doi.org/10.1007/s10578-014-0451-9>
- Conroy, D. E. (2001). Progress in the development of a multidimensional measure of fear of failure: The Performance Failure Appraisal Inventory (PFAI). *Anxiety, Stress & Coping: An International Journal*, 14(4), 431–452. <https://doi.org/10.1080/10615800108248365>
- Conroy, D. E., Willow, J. P., & Metzler, J. N. (2002). Multidimensional fear of failure measurement: The Performance Failure Appraisal Inventory. *Journal of Applied Sport Psychology*, 14(2), 76-90. <https://doi.org/10.1080/10413200252907752>
- Deneault, A. A., Gareau, A., Bureau, J. F., et al. (2020). Fear of failure mediates the relation between parental psychological control and academic outcomes: A latent mediated-moderation model of parents' and children's genders. *Journal of Youth and Adolescence*, 49, 1567-1582. <https://doi.org/10.1007/s10964-020-01209-x>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of personality and social psychology*, 92(6), 1087–1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality, and development*. Psychology Press. <https://books.google.com/books?id=P0Mccblm6eUC>
- Dweck, C. (2006). *Mindset: The new psychology of success*. New York, NY: Ballantine Books.

- Erozkan, A. (2016). Understanding the Role of Dimensions of Perfectionism on Anxiety Sensitivity. *Universal Journal of Educational Research*, 4, 1652-1659.
<https://doi.org/10.13189/ujer.2016.040717>
- Eskreis-Winkler, L., & Fishbach, A. (2019). Not learning from failure—The greatest failure of all. *Psychological Science*, 30(12), 1733–1744.
<https://doi.org/10.1177/0956797619881133>
- Feather, N. T. (1966). Effects of prior success and failure on expectations of success and subsequent performance. *Journal of Personality and Social Psychology*, 3(3), 287–298.
<https://doi.org/10.1037/h0022965>
- Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of personality and social psychology*, 38(6), 889-906. <https://doi.org/10.1037/0022-3514.38.6.889>
- Fleming, J., & Ledogar, R. J. (2008). Resilience, an evolving concept: A review of literature relevant to aboriginal research. *Pimatisiwin*, 6(2), 7–23.
- Hazlett-Stevens, H., & Craske, M. (2003). The catastrophizing worry process in generalized anxiety disorder: A preliminary investigation of an analog population. *Behavioural and Cognitive Psychotherapy*, 31(4), 387-401.
doi:10.1017/S1352465803004016
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis, third edition: A regression-based approach*. Guilford Press.
- Jungic, V., Creelman, D., Bigelow, A., Côté, E., Harris, S., Joordens, S., Ostafichuk, P., Riddell,

- J., Toulouse, P., & Yoon, J.-S. (2020). Experiencing failure in the classroom and across the university. *International Journal for Academic Development*, 25(1), 31–42.
<https://doi.org/10.1080/1360144X.2020.1712209>
- Kanfer, R., & Zeiss, A. M. (1983). Depression, interpersonal standard setting, and judgments of self-efficacy. *Journal of Abnormal Psychology*, 92(3), 319–329. <https://doi.org/10.1037/0021-843X.92.3.319>
- Kensinger E. A. (2009). Remembering the details: Effects of emotion. *Emotion review: journal of the International Society for Research on Emotion*, 1(2), 99–113.
<https://doi.org/10.1177/1754073908100432>
- Kensinger, E. A., & Corkin, S. (2003). Memory enhancement for emotional words: Are emotional words more vividly remembered than neutral words?. *Memory & cognition*, 31(8), 1169–1180. <https://doi.org/10.3758/bf03195800>
- Kernis, M. H., Brockner, J., & Frankel, B. S. (1989). Self-esteem and reactions to failure: The mediating role of overgeneralization. *Journal of Personality and Social Psychology*, 57(4), 707–714. <https://doi.org/10.1037/0022-3514.57.4.707>
- Klein, D. C., Fencil-Morse, E., & Seligman, M. E. (1976). Learned helplessness, depression, and the attribution of failure. *Journal of Personality and Social Psychology*, 33(5), 508–516. <https://doi.org/10.1037/0022-3514.33.5.508>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, 16(9), 606–613.
<https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kuiper, N. A. (1978). Depression and causal attributions for success and failure. *Journal of*

- Personality and Social Psychology*, 36(3), 236–246. <https://doi.org/10.1037/0022-3514.36.3.236>
- Loeb, A., Beck, A. T., & Diggory, J. (1971). Differential effects of success and failure on depressed and nondepressed patients. *Journal of Nervous and Mental Disease*, 152(2), 106–114. <https://doi.org/10.1097/00005053-197102000-00003>
- Luthar, S. S. (2006). Resilience in development: A synthesis of research across five decades. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Risk, disorder, and adaptation* (pp. 739–795). John Wiley & Sons, Inc..
- Miller, W. R., & Seligman, M. E. (1975). Depression and learned helplessness in man. *Journal of abnormal psychology*, 84(3), 228–238. <https://doi.org/10.1037/h0076720>
- Nguyen, D. T., Wright, E. P., Dedding, C., Pham, T. T., & Bunders, J. (2019). Low self-esteem and its association with anxiety, depression, and suicidal ideation in Vietnamese secondary school students: A cross-sectional study. *Frontiers in Psychiatry*, 10. <https://doi.org/10.3389/fpsy.2019.00698>
- Niiya, Y., Crocker, J., & Bartmess, E. (2004). From vulnerability to resilience: Learning orientations buffer contingent self-esteem from failure. *Psychological Science*, 15(12), 801–805. Retrieved May 26, 2021, from <http://www.jstor.org/stable/40064051>
- Noël, V. A., Francis, S. E., Williams-Outerbridge, K., & Fung, S. L. (2012). Catastrophizing as a predictor of depressive and anxious symptoms in children. *Cognitive Therapy and Research*, 36(4), 311–320. <https://doi.org/10.1007/s10608-011-9370-2>
- Nolen-Hoeksema S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of abnormal psychology*, 100(4), 569–582. <https://doi.org/10.1037//0021-843x.100.4.569>

- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and the duration of episodes of depressed mood. *Journal of Abnormal Psychology, 102*(1), 20–28. <https://doi.org/10.1037/0021-843X.102.1.20>
- Noskeau, R., Santos, A., & Wang, W. (2021). Connecting the dots between mindset and impostor phenomenon, via fear of failure and goal orientation, in working adults. *Frontiers in psychology, 12*, 588438. <https://doi.org/10.3389/fpsyg.2021.588438>
- Öhman, A., Lundqvist, D., & Esteves, F. (2001). The face in the crowd revisited: A threat advantage with schematic stimuli. *Journal of Personality and Social Psychology, 80*(3), 381–396. <https://doi.org/10.1037/0022-3514.80.3.381>
- Öst, L.-G. (1989). One-session treatment for specific phobias. *Behaviour Research and Therapy, 27*(1), 1–7. [https://doi.org/10.1016/0005-7967\(89\)90113-7](https://doi.org/10.1016/0005-7967(89)90113-7)
- Peeters, G., & Czapinski, J. (1990). Positive-negative asymmetry in evaluations: The distinction between affective and informational negativity effects. *European Review of Social Psychology, 1*(1), 33–60. <https://doi.org/10.1080/14792779108401856>
- Phelps, E. A., Ling, S., & Carrasco, M. (2006). Emotion facilitates perception and potentiates the perceptual benefits of attention. *Psychological science, 17*(4), 292–299. <https://doi.org/10.1111/j.1467-9280.2006.01701.x>
- Rosenberg, M. (1962). The association between self-esteem and anxiety. *Journal of Psychiatric Research, 1*(2), 135–152. [https://doi.org/10.1016/0022-3956\(62\)90004-3](https://doi.org/10.1016/0022-3956(62)90004-3)
- Sagar, S. S., & Stoeber, J. (2009). Perfectionism, fear of failure, and affective responses to success and failure: The central role of fear of experiencing shame and embarrassment. *Journal of sport & exercise psychology, 31*(5), 602–627. <https://doi.org/10.1123/jsep.31.5.602>

- Shang, Z., Wang, Y., & Bi, T. (2021). How does fearful emotion affect visual attention?. *Frontiers in psychology, 11*, 584412.
<https://doi.org/10.3389/fpsyg.2020.584412>
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International journal of behavioral medicine, 15*(3), 194–200. <https://doi.org/10.1080/10705500802222972>
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*(4), 570–585. <https://doi.org/10.1037/0022-3514.60.4.570>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine, 166*(10), 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Tao, V. Y. K., Li, Y., & Wu, A. M. S. (2022). Incremental intelligence mindset, fear of failure, and academic coping. *Journal of Pacific Rim Psychology, 16*.
<https://doi.org/10.1177/18344909221144703>
- Timmermans, J. A., & Sutherland, K. A. (2020). Wise academic development: Learning from the ‘failure’ experiences of retired academic developers. *International Journal for Academic Development, 25*(1), 43–57. <https://doi.org/10.1080/1360144X.2019.1704291>
- Urban, E. J., Charles, S. T., Levine, L. J., & Almeida, D. M. (2018). Depression history and memory bias for specific daily emotions. *PloS one, 13*(9), e0203574.
<https://doi.org/10.1371/journal.pone.0203574>

Wang, Y., Jones, B. F., & Wang, D. (2019). Early-career setback and future career impact.

Nature Communications, 10(1), 4331. <https://doi.org/10.1038/s41467-019-12189-3>

Appendix A: Tables

Table 1*Demographic characteristics of participants*

	<i>n</i>	<i>%</i>	<i>M</i>	<i>SD</i>
Age			19.20	4.402
Biological Sex				
Male	63	47.4		
Female	70	52.6		
Gender				
Male	63	47.4		
Female	67	50.4		
Gender Non-Conforming	3	2.3		
Year in College				
1 st	79	59.4		
2 nd	37	27.8		
3 rd	11	8.3		
4 th	2	1.5		
5 th or more	3	2.3		
Other	1	0.8		
Estimated Family Income				
Under \$10,000	3	2.3		
\$10,000-19,999	6	4.5		
\$20,000-\$29,999	4	3.0		
\$30,000-\$39,999	2	1.5		
\$40,000-\$49,999	4	3.0		
\$50,000-\$59,999	7	5.3		
\$60,000-\$69,999	9	6.8		
\$70,000-\$79,999	6	4.5		
\$80,000-\$89,999	7	5.3		
\$90,000-\$99,999	7	5.3		
Over \$100,000	61	45.9		
No Response	17	12.8		

Table 2*Descriptive statistics of key variables*

	<i>M</i>	<i>SD</i>	<i>Range</i>
Frequency of Failure	7.3952	1.96646	11.00
PHQ9	9.7578	7.09635	29.00
GAD7	8.2902	5.96566	23.00
PFAI- General	-.2228	.84641	3.58
DMI- Intelligence	32.28	7.549	40.00
DMI- Talent	32.18	7.399	32.00
BRS	3.0999	.72846	3.67
HS- Agency	23.0272	4.98565	24.00
HS- Pathway	22.9762	4.50327	21.00
HS- Total	46.0034	8.93694	41.00

Note: PHQ9 = Patient Health Questionnaire; GAD7 = Generalized Anxiety Disorder Scale-7; PFAI – General = Perceptions of Failure Appraisal Inventory, General Fear of Failure Result; DMI- Intelligence = Dweck Mindset Instrument, intelligence sub-score; DMI- Talent = Dweck Mindset Instrument, talent sub-score; HS - Agency = The Hope Scale, agency sub-score; HS - Pathway = The Hope Scale, pathway sub-score; Frequency of Failure = Failure Questionnaire, frequency of failure sub-score; BRS = Brief Resiliency Scale. The mean for the Frequency of Failure row indicates that, on average, among the three prompted categories of failure (achievement-based, relationship-based, and moral-based), the average participant indicated that they failed somewhere between “never” and “rarely” before the age of 18.

Table 3
Correlations between key variables

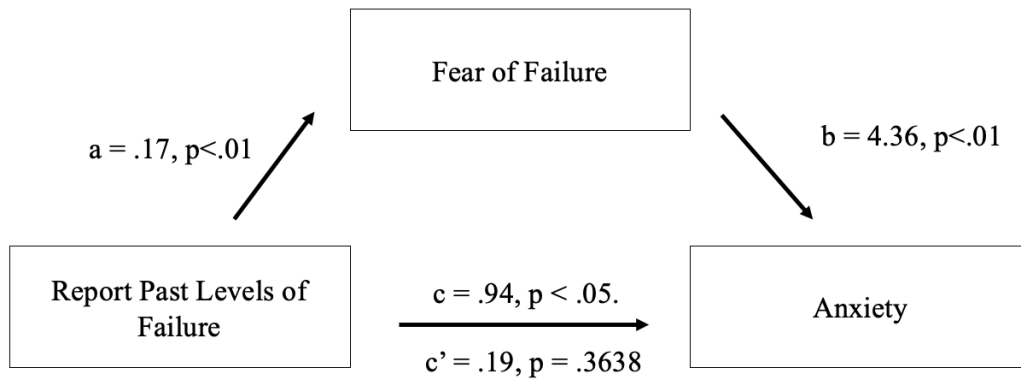
	1	2	3	4	5	6	7	8	9	10
1. PHQ9	-									
2. GAD7	.795**	-								
3. PFAI	.700**	.649**	-							
4. DMI_Intelligence	-.106	-.114	-.090	-						
5. DMI_Talent	-.071	-.017	-.040	.519**	-					
6. HS_Agency	-.416**	-.235**	-.386**	.313**	.228*	-				
7. HS_Pathway	-.247**	-.180*	-.280**	.369**	.229*	.773**	-			
8. HS_Total	-.357**	-.222*	-.357**	.361**	.243*	.948**	.935**	-		
9. Freq_Failure	.467**	.351**	.441**	-.018	.090	-.366**	-.247**	-.329**	-	
10. BRS	-.510**	-.603**	-.533**	.152	-.026	.409**	.426**	.443**	-.400**	-

Note: PHQ9 = Patient Health Questionnaire; GAD7 = Generalized Anxiety Disorder Scale-7; PFAI = Perceptions of Failure Appraisal Inventory; DMI_Intelligence = Dweck Mindset Instrument, intelligence sub-score; DMI_Talent = Dweck Mindset Instrument, talent sub-score; HS_Agency = The Hope Scale, agency subscore; HS_Pathway = The Hope Scale, pathway subscore; Freq_Failure = Failure Questionnaire, frequency of failure sub-score; BRS = Brief Resiliency Scale. The value of n for the correlations varies between 121 and 126 due to missing data. ** indicates that $p < .01$, and * indicates that $p < .05$.

Appendix B: Figures

Figure 1.

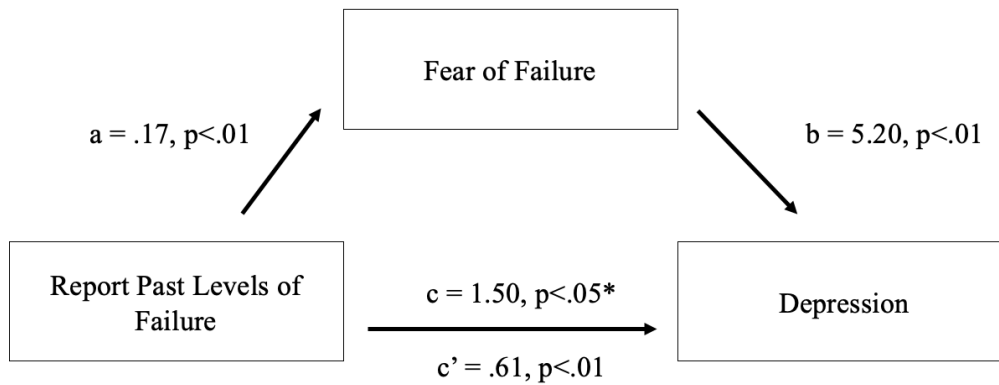
Simple mediation model of fear of failure mediating the relationship between reported past levels of failure and anxiety.



Indirect effect via Fear of Failure: $B = .75$,
BSE = .1488, Bootstrap CI [.45, 1.04].

Figure 2.

Simple mediation model of fear of failure mediating the relationship between reported past levels of failure and depression.



Indirect effect via Fear of Failure: $B = .89$,
 $BSE = .1859$, Bootstrap CI [.54, 1.27].

Appendix C: Study Materials

****Bolded questions are annotations on the original questionnaire for clarity purposes of this appendix.****

Failure Questionnaire

For the following questions, please consider your experiences before college.

1. I failed to achieve my goals in areas (ex.- academics, athletics, extracurriculars) that were important to me.
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Often
 - e. Most of the Time

2. I failed in my relationships (with friends, family, romantic partners, coaches, mentors, etc.) That were important to me.
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Often
 - e. Most of the time

3. I failed to live according to my values.
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Often
 - e. Most of the time

4. Failure made me feel...
 - a. Significantly worse about myself
 - b. Slightly worse about myself.
 - c. No different about myself.
 - d. Slightly better about myself.
 - e. Significantly better about myself.

5. After failures, I...
 - a. Avoided trying tasks in that area in the future
 - b. Was less likely to try tasks in that area in the future
 - c. Was not impacted on whether or not I would try the tasks in that area in the future.
 - d. Was more likely to try tasks in that area in the future
 - e. Was committed to trying tasks in that area in the future.

6. I was _____ responsible for my failures.
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Often

7. Failures were _____ the result of circumstances outside of my control.
- Never
 - Rarely
 - Sometimes
 - Often
 - Always
8. **[Presented as a matrix]** Please select the degree to which you agree with each statement.
To cope with the results of failures, I...
- Answer choices:
 - Strongly Disagree
 - Somewhat disagree
 - Neither agree nor disagree
 - Somewhat agree
 - Strongly agree
 - Statements:
 - Actively tried to suppress thinking about the failure.
 - Avoided situations where similar failures could occur.
 - Got stuck in thinking about the why.
 - Avoided discussing the failure with friends and family.
 - Thought about what I could do different in the future.
 - Allowed thoughts about the failure to come and go.
 - Sought out situations where similar failures could occur.
 - Came to a conclusion about the meaningfulness of the failure.
 - Discussed the failure with friends and family.
9. I experienced negative or unpleasant emotion(s) following failures.
- True
 - False
10. [To lessen or decrease the intensity of those emotions, I ... (check all applicable options).
 _____ Accepted the situation and/or my emotions.
 _____ Found an activity to keep myself busy and distracted.
 _____ Thought over and over again about the situation and my feelings.
 _____ Made a plan to make the situation better.
 _____ Reminded myself that things could be worse.
 _____ Found a friend or family member to talk to.
 _____ Thought about how I could become stronger or learn from this situation. Controlled my emotions by not showing them.
 _____ Thought about something pleasant instead of what had happened. Thought about the situation in a different way.
 _____ Went to sleep.
 _____ Ignored my feelings.
 _____ Smoked a cigarette/drank alcohol/got high.
 _____ Acted like the situation had never happened at all.
 _____ Exercised.
 _____ Hurt (pinched/cut/burned/hit) myself.
11. Failures in an area of personal importance _____ my motivation to pursue the area.
- Increased

- b. Decreased
 - c. Did not affect
12. I talked about my failures with a ... (select all applicable answers).
- Parent.
 - Sibling.
 - Friend.
 - Mentor.
 - Other.
 - I did not talk to anyone about my achievement-based failures.
13. My parents/mentors usually reacted to my achievement-based failures by... (select all applicable answers).
- Rejecting me for my failure.
 - Punishing me for my failure.
 - Comforting me.
 - Encouraged me.
 - Pointing out areas where I could learn from my failure.
14. I wish my parents/mentors had ...
- a. Been more comforting.
 - b. Pushed me harder/expected more out of me.
 - c. Done nothing differently- I am content with the way they reacted.
15. My siblings/friends/other peers usually reacted to my achievement-based failure by...
- a. Rejecting me for my failure.
 - b. Punishing me for my failure.
 - c. Comforting me.
 - d. Encouraged me.
 - e. Pointing out areas where I could learn from my failure.
16. I wish my siblings/friends/peers had ...
- a. Been more comforting.
 - b. Pushed me harder/expected more out of me
 - c. Done nothing differently- I am content with the way they reacted.
17. Growing up, my authority figures ...
- a. Allowed me to fail and experience its natural consequences.
 - b. Allowed me to fail but shielded me from its natural consequences.
 - c. Protected me from failure and its natural consequences.
18. Growing up, do you feel that your friends and peers...
- a. Allowed me to fail and experience its natural consequences.
 - b. Allowed me to failure but shielded you from its natural consequences.
 - c. Protected you from failure and its natural consequences.

For the next set of questions, please think about failure more generally (not limited to your experiences before college).

19. I am worried about failing in the near future. (Sliding scale)
- a. 0 - Not at all
 - b. 1
 - c. 2
 - d. 3
 - e. 4- Quite a bit

- f. 5
20. I am currently worried about experiencing... (select all applicable options)
- Achievement-based failures.
- Relationship-based failures.
- Moral-based failures.
21. **[Presented as a matrix]** Please select the degree to which you agree with each statement.
To cope with the worry of this potential failure, I...
- a. Answer choices:
- i. Strongly Disagree
 - ii. Somewhat disagree
 - iii. Neither agree nor disagree
 - iv. Somewhat agree
 - v. Strongly agree
- b. Statements
- i. Avoiding thinking about the situation where I may fail.
 - ii. Actively trying to suppress thinking about the situation where I may fail.
 - iii. Avoiding activities where the situation I may fail could occur.
 - iv. Avoiding discussing the situation where I may fail with friends and family.
 - v. Thinking about how I can approach this situation where I may fail.
 - vi. Allowing thoughts about the situation where I may fail to come and go.
 - vii. Seeking out situations where the situation where I may fail can occur.
 - viii. Discussing the situation where I may fail with friends and family.
22. **[Presented as a Matrix]** Please indicate to your level of agreement with the following statements.
- a. Answer choices:
- i. Strongly Disagree
 - ii. Somewhat disagree
 - iii. Neither agree nor disagree
 - iv. Somewhat agree
 - v. Strongly agree
- b. Statements
- i. My achievements are the result of my personal efforts.
 - ii. The success of my relationships is the result of my personal efforts.
 - iii. Living according to my values is the result of my personal efforts.
 - iv. Living according to my values is the result of my personal efforts.
 - v. My achievements are the result of circumstances outside of my control.
 - vi. My successes of my relationships is the result of circumstances outside of my control.
 - vii. Living according to my values areas is the results of circumstances outside of my control.
23. Failure to me is... **(open response)**
24. The most impactful failure experience I have ever had was... **(open response)**