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UNIVERSITY OF CALIFORNIA,  
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Linking Anxiety to Passion: Emotion Regulation and Entrepreneurs' Pitch Performance

DISSERTATION

submitted in partial satisfaction of the requirements  
for the degree of

DOCTOR OF PHILOSOPHY

in Management

by

Lily Yuxuan Zhu

Dissertation Committee:  
Associate Professor Christopher Bauman, Co-Chair  
Associate Professor Maia Young, Co-Chair  
Professor Jone Pearce

2022



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## VITA

### Lily Yuxuan Zhu

- 2022 Ph.D. in Management, University of California, Irvine
- 2016 Bachelor of Arts in Psychology & Economics (double major), Johns Hopkins University
- 2015 – 2016 Research Assistant & Teaching Assistant, Carey Business School, Johns Hopkins University
- 2015 Data Modeler, CG/LA Infrastructure, Inc.
- 2014 Researcher, Institute for Applied Economics, Global Health, & Business Enterprise
- 2014 Equity Research Analyst, China International Capital Corporation

#### SELECTED PUBLICATIONS AND WORKING PAPERS

- Zhu, L. Y. (2020). How entrepreneurs can turn anxiety into fuel of success, *BCERC Research Translation Showcase*. <https://www.babson.edu/media/babson/assets/bcerc-dc-translations/Zhu-Research--Translation-2020.pdf>
- Zhu, L.Y., Bauman, C.W., & Young, M.J. Unlocking creative potential: Reappraising emotional events facilitates creativity for conventional thinkers. *Revise and Resubmit (2<sup>nd</sup> round) at Organizational Behavior and Human Decision Processes*.
- Young, M.J., & Zhu, L.Y. How emotions move us: An integrative framework for emotions and decision making. *Under review at Emotion Review*.
- Zhu, L.Y., Kim, C.M., & Joseph, J.E. Feelings in the fog: The interplay of CEO affective dispositions, ambiguous feedback, and firm risk-taking. *In preparation to submit to Organization Science*.
- *Academy of Management Best Paper Proceedings*
  - *Distinguished Paper Award*, Strategic Management Division of the Academy of Management, 2021
- Zhu, L. Y. (2015). The currency board monetary system: The case of Malta (1939-1968). In S.H. Hanke (Eds.), *Currency boards studies on selected European countries* (Vol.2, pp.103-118). KSP Books. <http://books.ksplibrary.org/978-625-7813-50-1-2/>

#### TEACHING EXPERIENCE

Instructor of Record, UC Irvine, 2020

- Managing Organizational Behavior for undergraduates (part of the core curriculum for business majors; Composite teaching rating: 3.96/4.0; Enrollment: 83)



## **ABSTRACT OF THE DISSERTATION**

Linking Anxiety to Passion: Emotion Regulation and Entrepreneurs' Pitch Performance

By

Lily Yuxuan Zhu

Doctor of Philosophy in Management

University of California, Irvine, 2022

Dr. Chris Bauman and Dr. Maia Young, Co-Chairs

Entrepreneurial pitches are anxiety-provoking and pivotal for the success of the venture. Despite a wealth of research indicating that early-stage investors attend to entrepreneurs' emotions, little research focuses on how entrepreneurs themselves can manage their emotions to improve their pitches. I investigate how entrepreneurs can manage anxiety prior to pitches by acknowledging the anxiety and linking it to their entrepreneurial passion. I theorize that interpreting anxiety as a reflection of one's passion for the venture increases the momentary feeling of passion, facilitates expressions of passion during pitches, and increases persuasiveness. I also propose that linking anxiety to passion should be easier and more realistic than calming down, which people are often advised to do. Results from a field survey and two randomized

experiments support the theory. The findings offer insights for how entrepreneurs can mentally reframe their seemingly detrimental emotional experiences for beneficial outcomes in terms of their persuasiveness and judges' ratings of their pitch. This work also contributes to emotion regulation research by comparing the effects of different coping mechanisms for pre-pitch anxiety, unpacking the ways to reappraise stressful situations, and demonstrating the utility of fostering beneficial emotions and not just repairing negative ones.

## **Chapter 1: Emotion Experience and Emotion Regulation in Entrepreneurial Pitches**

Being an entrepreneur can be anxiety-provoking, due to volatile market conditions, uncertain income flow, and a high probability of failure (Boyd & Gumpert, 1983; Patzelt & Shepherd, 2011; Uy, Foo, & Song, 2013). In addition to the high levels of uncertainty and risk, entrepreneurs also assume full responsibility for securing resources and optimizing performance for their venture and bear the cost of their mistakes (Buttner, 1992). The entrepreneurial journey has been likened to trying to control a rollercoaster while riding it (Moltz, 2003).

There has been an upsurge of research on emotions in entrepreneurship, including the antecedents and the consequences of entrepreneurial emotions (see Delgado García, De Quevedo Puente, & Blanco Mazagatos, 2015, for a review). However, limited research examines how entrepreneurs can actively cope with the entrepreneurial “emotional rollercoaster” in general and anxiety in particular (Cacciotti, Hayton, Mitchell, & Giazitzoglu, 2016; Cardon, Foo, Shepherd, & Wiklund, 2012; Uy et al., 2013). Also, while extant research has examined emotional coping in the context of extreme events such as business failure (He, Sirén, Singh, Solomon, & von Krogh, 2018; Shepherd, 2003, 2009), little research focuses on anxiety-provoking events that are consequential for venture survival and growth during the entrepreneurial journey. The entrepreneurial environment is inherently stressful. Therefore, understanding how entrepreneurs deal with undesirable emotions and enriching their toolkit for managing anxiety will enhance wellbeing and performance.

My dissertation focuses on one particularly anxiety-provoking event in the entrepreneurial process: pitching in front of potential investors. Entrepreneurs often experience high levels of anxiety when pitching to investors given the high stakes involved; inability to raise funds could break the idea that someone has been working on for years (Cacciotti et al., 2016;

Timmons & Sander, 1989). However, when so much is riding on one's presentation of a new venture, anxiety can impair pitch performance. Although feeling anxious well in advance of a speech can motivate effort to prepare, feeling very anxious during a speech can decrease audience members' judgments of the presenter's confidence and persuasiveness (Mehrabian & Williams, 1969; Norem & Chang, 2002). Anxious individuals exhibit less confidence verbally and nonverbally, such as less eye contact and less fluidity in bodily gesture, which decreases others' judgments about their persuasiveness (Clevenger, 1959). Therefore, it is important to understand how entrepreneurs can actively manage their pre-pitch anxiety to perform their best.

The current research is the first to examine strategies to regulate entrepreneurs' anxiety prior to pitches. Building on psychological theories of emotion regulation (Elfenbein, 2007; Gross, 1998, 2015), I propose a novel strategy that entrepreneurs can use to regulate pre-pitch anxiety and improve pitch performance—*linking anxiety to passion*. That is, if entrepreneurs reinterpret their anxiety as a reflection of their passion for their venture, the experience of anxiety triggers the positive feeling of passion and facilitates expressions of passion during their pitches. Importantly, entrepreneurial passion is perceived favorably by investors and leads to better funding outcomes (Jachimowicz, To, Agasi, Côté, Galinsky, 2019; Murnieks, Cardon, Sudek, White, & Brooks, 2016), so adopting this emotion regulation strategy should improve investors' evaluation of the pitch.

The current strategy is novel because it involves being mindful of the anxious feelings and anxiety-provoking thoughts rather than denying or inhibiting them. As I discuss in more detail in Chapter 2, extant emotion regulation strategies in psychological research typically rely on overriding or denying at least some aspects of the undesirable emotions and the associated cognitive appraisals about the distressing situation (Brooks, 2014; Shiota & Levenson, 2012).

The current research breaks new ground by showing that one does not have to deny the felt emotion or its associated appraisals for the emotion regulation to be successful; acknowledging the emotional experience and its associated appraisals can ultimately help to facilitate performance.

In my dissertation, I test the effectiveness of linking anxiety to passion relative to alternative strategies in the process model of emotion regulation (Gross, 2015). Emotion regulation can take different forms, but all involve monitoring and controlling one's emotional experiences or expressions (Grandey, 2000; Gross, 1998). Linking anxiety to passion is a type of *cognitive reappraisal* (from here on, *reappraisal*), which refers to reframing the meaning of a situation in order to change the emotional response to it (Gross, 1998). Linking anxiety to passion is theoretically distinct and involves different cognitive processes than other common emotion regulation strategies, such as *distraction* (i.e., shifting attention away and attending to other stimuli), *suppression* (i.e., inhibiting the expression of emotions) or *detachment* (i.e., distancing oneself from the event by thinking that it is unimportant; Gross, 2015; Shiota & Levenson, 2012). Using an online experiment with entrepreneurs (Chapter 4), a field study of entrepreneurs (Chapter 5), and a randomized experiment with business students (Chapter 6), I test the feasibility and effectiveness of linking anxiety to passion in ways that provide evidence of external validity and verify the causal direction of the effect (Hsu, Simmons, & Wieland, 2017; Williams, Wood, Mitchell, & Urbig, 2019).

The current research makes four main contributions. First, it contributes to the existing literature on entrepreneurial resource acquisition by focusing on the experience of entrepreneurs. This focus complements prior research, which focuses exclusively on investors' perspectives (e.g., Hsu, Haynie, Simmons, & McKelvie, 2014; Huang & Pearce, 2015; Sudek, 2006).

Although we know that passion is an important investing criterion (Huang, 2018; Mitteness, Sudek, & Cardon, 2012), we know little about how entrepreneurs can boost their displays of passion during stressful moments. Instead of portraying entrepreneurs as those who passively experience their emotions and display stable individual characteristics, the current research sheds light on how entrepreneurs can actively manage their emotions to increase likelihood of success.

Second, the current research challenges assumptions about the primary importance of alleviating the intensity of the emotional rollercoaster in the entrepreneurial journey. Prior research on emotion regulation in general and entrepreneurial emotion regulation in particular focuses on how to mitigate the “peaks and valleys” of emotional experience by reducing stress during the entrepreneurial journey (Uy et al., 2013), controlling extreme emotions (De Cock, Denoo, & Clarysse, 2020), and recovering from grief (Shepherd, 2009). Although mitigating emotional intensity is critical for entrepreneurial wellbeing and resilience in the long term, there are realistic constraints on how much people can reduce pre-pitch arousal because high-stake situations automatically trigger alertness and bodily activation (Frijda, 1988). A central premise of linking anxiety to passion is that it may be more feasible and more effective to acknowledge and leverage those intense experiences than attempt to deny them.

Third, the current studies contribute to work on entrepreneurial emotions by differentiating among coping mechanisms. Most prior research treats entrepreneurial emotion regulation as a unitary construct; studies do not differentiate among strategies and implicitly assume that they all have the same effect (Byrne & Shepherd, 2015; Patzelt & Shepherd, 2011). Much remains to be learned about the cognitive processes that underlie different coping mechanisms and their associated outcomes. For example, emotion-focused coping—attempts to mitigate negative emotions without resolving the underlying situation—can help mitigate

entrepreneurs' negative emotions (Patzelt & Shepherd, 2011). However, emotion-focused coping incorporates a wide range of coping mechanisms, and the effects of different coping mechanisms remain underspecified. As Cardon and colleagues (2012) note in their review of the entrepreneurial affect literature, more research is needed to unpack how entrepreneurs can use emotion regulation to shape their interactions with key stakeholders.

Fourth, the current research also enriches the broader literature on emotion regulation, which is primarily concerned with the *downregulation* of negative emotions—or reducing the intensity of negative emotions—rather than the strategies people use to *upregulate* positive emotions—or increase the intensity of positive emotions (Gross, 1998, 2015). In particular, reappraisal research typically focuses on detachment, one type of reappraisal that reduces the intensity of undesirable emotions (Gross, 2002, 2015). However, research increasingly suggests that people use positive reappraisal, another type of reappraisal that enhances positive experiences (Denny & Ochsner, 2014; Shiota & Levenson, 2012). Still, we know little about *how* people positively reframe undesirable situations (McRae, Ciesielski, & Gross, 2012). Part of the challenge to study specific reappraisals lies in the diversity of situations and complexity of emotions. Most reappraisal research to date is insensitive to context (see Vishkin, Hasson, Millgram, & Tamir, 2020 for a review). This insensitivity to context is especially problematic because recent evidence indicates that training sessions that teach people to reinterpret one undesirable situation do not provide skills that transfer and help people reappraise other situations, which suggests a need for a contextualized approach to reappraisal (Denny & Ochsner, 2014; Vishkin et al., 2020). The current work builds a contextualized and fine-grained understanding of reappraisal by investigating linking anxiety to passion in an entrepreneurship setting. Entrepreneurial pitches are characterized by high stakes, intense anxious feelings, and

high demands for cognitive functioning and emotional display. These situational characteristics present unique constraints and opportunities for reappraisal, which I will unpack below.

In the remainder of this chapter, I review research on entrepreneurial anxiety, pitches, and entrepreneurial emotion regulation. I explain that more research is needed to understand how entrepreneurs could regulate emotions in the entrepreneurial journey in general and while pitching their ideas to investors in particular.

### **Entrepreneurial Anxiety**

I define entrepreneurs as those who found a new business to exploit an opportunity under uncertainty and assume full responsibility of the venture (Cunningham & Lischeron, 1991; McMullen & Shepherd, 2006; Shane & Venkataraman, 2000). The past decade has seen a surge of scholarly interest in the affective experiences of entrepreneurs (Baron, 2008; Delgado García et al., 2015). For example, research has demonstrated how entrepreneurs experience passion for their venture (e.g., Baum, Locke, & Smith, 2001; Cardon, Wincent, Singh, & Drnovsek 2009), fear of failure (e.g., Kollmann, Stöckmann, & Kensbock, 2017), and grief over failure (e.g., Jenkins, Wiklund, & Brundin, 2014). However, anxiety—another ubiquitous emotional experience among entrepreneurs—receives less attention (Cardon & Patel, 2015). Anxiety is an emotional state experienced in reaction to the potential for undesirable outcomes and a lack of clear means to achieve an important goal (Brooks & Schweitzer, 2011; Power & Dalgleish, 1997). As with other discrete emotions, anxiety involves multiple components, including unique appraisals (sense of uncertainty and lack of control; self-doubt; worry about negative outcomes), action tendencies (heightened attention and alertness, tendency to withdraw from the threatening situation and to protect oneself), and physiological changes (bodily activation, trembling body and voice, muscle tension; Frijda, Kuipers, & ter Schure, 1989; Smith & Ellsworth, 1985; Stein,



Walker, & Forde, 1996).

Entrepreneurs experience anxiety and related mental health issues more frequently than other workers (Freeman, Staudenmaier, Zisser, & Andresen, 2019; Gallup, 2012). The prevalence of anxiety among entrepreneurs may be due to many factors, including the lack of financial resources (Cacciotti et al., 2016; McManus, 2017), high rate of failure (Bureau of Labor Statistics, 2019; Nobel, 2011), great financial stakes involved (Buttner, 1992), and a sense of personal responsibility over venture outcomes (Boyd & Gumpert, 1983). Despite a body of work on entrepreneurial chronic stress and wellbeing in general (Harris, Saltstone, & Fraboni, 1999; Rahim, 1996), little is known about how entrepreneurs experience and respond to specific anxiety-provoking situations. In the current research, I focus on entrepreneurial pitches to potential investors, events in which anxiety is commonly felt and can be detrimental to performance.

### **Entrepreneurial Pitches and Emotions**

Securing financial support from investors is integral for venture survival and growth (Cooper, Gimeno-Gascon, & Woo, 1994). A considerable body of work examines factors that can enhance pitch success, and entrepreneurial passion has been identified as an important investment criterion (Hsu et al., 2014; Sudek, 2006). Entrepreneurial passion refers to an intense positive feeling entrepreneurs have when engaging in entrepreneurial activities that are meaningful to their identity (Cardon et al., 2009; Cardon & Murnieks, 2020).<sup>1</sup> Entrepreneurs' displayed passion can increase judgements about funding potential (Mittens et al., 2012), predictions about the likelihood of venture success (Davis, Hmieleski, Webb, & Coombs, 2017),

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<sup>1</sup> Research acknowledges various targets of entrepreneurial passion—passion for inventing, developing, founding (Cardon, Gregoire, Stevens, & Patel, 2013), as well as passion for a particular product or business domain (Warnick, Murnieks, McMullen, & Brooks, 2018). For the purpose of my research, I use the unitary construct of entrepreneurial passion and assume that the theory applies regardless of the specific targets of this passion.

and the amount of funds raised (Li, Chen, Kotha, & Fisher, 2017). These effects emerge in part because entrepreneurs' passion can evoke investors' enthusiasm about the venture through emotional contagion (Cardon, 2008; Li et al., 2017). Investors attribute their positive emotional experience (due to the entrepreneurs' passion) during the pitch to the venture, which in turn leads to more favorable evaluations (Barsade, 2002; Hatfield, Cacioppo, & Rapson, 1994). For example, one investor noted, "it's about passion. . . [a founder] was so passionate about it, that it made me passionate about it" (Huang, 2018, p. 1837). Moreover, investors tend to interpret displayed passion as signals of tenacity and inspirational leadership (Huang & Pearce, 2015; Murnieks et al., 2016). Investors view these traits as key indicators of potential for success (Mittiness et al., 2012). These factors play a salient role in early-stage investment decisions because the products and environment typically involve high levels of uncertainty, and investors make judgments about the venture's funding potential based on limited information (Brooks, Huang, Kearney, & Murray, 2014). As another investor noted, "...after the first few years, that's when things really get hard. [Entrepreneurs] that have true passion can get themselves past that point and into the arena of big, massive success" (Huang, 2018, p. 1837). Similarly, an angel investor noted that "Without passion, people quit or become discouraged when things get tough." And "If s/he isn't passionate about the business, no one else will be" (Murnieks et al., 2016, p. 471). In sum, evidence indicates that entrepreneurs should try to display passion when pitching to potential investors because it can enhance pitch performance through positive emotional contagion and through favorable attributions about the entrepreneur.

Despite research on early-stage investors' perceptions, little research focuses on entrepreneurs' own experience pitching their ideas. Pitching to potential investors can be anxiety-provoking given that financial resources are crucial for the survival and growth of new

ventures (Cooper et al., 1994; Shane & Stuart, 2002). For example, some entrepreneurs commented, “Where am I going to find even a first stage funding...that was probably the biggest fear at that point for sure.”, and “I think there is a lot of anxiety of just trying to get the funds necessary to launch the initiative” (Cacciotti et al., 2016, p. 132).

People often regulate their anxiety automatically with limited awareness or deliberation (Gross & John, 2003). However, spontaneous coping is not always effective, perhaps especially in the case of anxiety. People tend to see anxiety as debilitating to their performance, and this worry further impedes confidence and paradoxically elevates anxiety (Brady, Hard, & Gross, 2018; Crum, Salovey, & Achor, 2013; Jamieson, Nock, & Mendes, 2012). People may also attempt to hide anxiety and fake calmness or positive emotions, which is likely to be emotionally exhausting (Goldberg & Grandey, 2007) and can lead to unfavorable judgements if others perceive a lack of sincerity in emotional displays (Frank, Ekman, & Friesen 1993; Grandey, Fisk, Mattila, Jansen, & Sideman, 2005).

In sum, extant research on entrepreneurial pitches indicates that displays of passion are perceived favorably by early-stage investors, but existing research provides little guidance about how entrepreneurs can cope with anxiety and exhibit passion. In the next section, I review the current state of research on entrepreneurial emotion regulation. In the following chapters, I discuss how linking anxiety to passion can help entrepreneurs handle pre-pitch anxiety, and I compare it against well-established strategies in extant emotion regulation research.

### **Entrepreneurial Emotion Regulation**

Despite mounting evidence that emotions play an important role in the entrepreneurial journey, we know much less about how entrepreneurs can regulate these emotions. Research to date suggests that entrepreneurs seek to alleviate negative emotions (Byrne & Shepherd, 2015;

Patzelt & Shepherd, 2011). However, it remains unclear whether some coping strategies are more effective than others in specific situations. For example, recent research examines how reappraisal and suppression influence venture survival (De Cock et al., 2020), but it uses an aggregated measure of entrepreneurs' emotion regulation behavior over time rather than investigating the effects of different coping strategies for specific emotion-eliciting situations. Differentiating among coping mechanisms in specific emotion-eliciting situations should yield important insights because psychological research indicates that emotion regulation strategies may either help or hurt depending on the context (Troy, Shallcross, & Mauss, 2013).

My dissertation investigates specific strategies entrepreneurs use to handle their emotions. The goal is to enrich theories of emotion regulation and add to the toolkit entrepreneurs can use to regulate pre-pitch anxiety.

## Chapter 2: Speech Anxiety Regulation Strategies

Chapter 1 motivates the current research and provides a theoretical background for the project from the perspective of entrepreneurship research. The current chapter presents a psychological perspective on emotion regulation, articulates the mechanisms involved in linking anxiety to passion, and formulates hypotheses. I compare the effect of linking anxiety to passion with well-established strategies in the process model of emotion regulation (Gross, 1998, 2015). Linking anxiety to passion is a type of reappraisal because it involves reframing stimuli from a different perspective. Besides reappraisal, there are two other common ways to directly modify emotional experience or expressions: distraction and suppression (Elfenbein, 2007; Gross, 2015). *Distraction* involves turning attention away from the anxiety and focusing on something else (e.g., focusing on the pitch materials or positive memories). *Suppression* involves inhibiting verbal or nonverbal cues that others use to interpret one's emotional state (e.g., faking calmness).

Reappraisal is one of the most effective emotion regulation strategies in general (Hofmann, Heering, Sawyer, & Asnaani, 2009; see Webb, Miles, & Sheeran, 2012 for a meta-analysis). According to cognitive appraisal theory, emotions emerge from people's interpretations (or *appraisals*) of the meaning of events or stimuli for oneself (Frijda, 1986; Scherer, 1995). Therefore, interpreting the stimuli differently (*reappraising*) alters emotional experience (Gross, 1998). Reappraisal is more effective than suppression because attempting to mask emotions can ironically exacerbate the emotional experience (Hofmann et al., 2009; Scott & Barnes, 2011) and lead to detrimental effects on wellbeing (Gross & John, 2003). Also, reappraisal is often more effective than distraction. Even though distraction facilitates immediate relief from the distressing stimuli, it does not change how individuals interpret the situation, which is the source of the negative emotion (McRae et al., 2010). Therefore, although distraction

may be applicable to events that happened in the past and one cannot alter or control anymore, it is less suitable for situations in which active engagement with the focal event is needed (Sheppes & Gross, 2011) such as the moments when entrepreneurs are mentally focused on the upcoming pitch.

Despite a general consensus that reappraisal is one of the most adaptive ways to cope with undesirable emotional states, only a limited amount of research unpacks *how* people reappraise (McRae et al., 2012). Understanding effective specific reappraisals is valuable because people sometimes cannot successfully generate reappraisals on their own (see Ford & Troy, 2019 for a review). Moreover, reappraisals that are successful in one situation may not be effective in others (Denny & Ochsner, 2014). In the section below, I review existing research on anxiety reappraisal tactics and characterize them along two dimensions: the goals and the means of emotion regulation (Scott, Awasty, Johnson, Matta, & Hollenbeck, 2020). I then evaluate features of anxiety reappraisal tactics with respect to entrepreneurial pitches and present linking anxiety to passion as a novel strategy to regulate pitch anxiety.

### **A Review and Categorization of Reappraisal Tactics**

Reappraisal tactics can aim to change either the arousal level or the valence of an emotional experience (Scott et al., 2020; see Table 1 in Appendix A for features of anxiety reappraisal tactics in past research). If the goal is to reduce the arousal level, people can *detach* themselves from the emotional event by thinking that it is unimportant (e.g., Shiota & Levenson, 2012). In the entrepreneurial pitch context, it could involve thinking that the upcoming pitch is not so important because they will have other opportunities to raise funding. Alternatively, people may want to modify emotional valence while maintaining the level of arousal (Jamieson, Mendes, Blackstock, & Schmader, 2010) if the situation requires effortful cognitive functioning

(Beltzer, Nock, Peters, & Jamieson, 2014). Research on the relationship between stress and performance suggests that a moderate level of arousal promotes active, flexible, and effortful cognitive processing, whereas a low level of arousal results in inactivity and neglecting information (Flaherty, 2005; Goldman-Rakic, 1996; Yerkes & Dodson, 1908). In sum, prior research suggests that it is adaptive to shift the emotional valence while maintaining the arousal level in situations that require high levels of effort and cognitive processing (Jamieson, Crum, Goyer, Marotta, & Akinola, 2018; Jamieson, Mendes, & Nock, 2013). Entrepreneurial pitches provide a useful context to extend this notion, because pitching is not only cognitively taxing but also requires positive, activating emotional displays.

In addition to being associated with different emotion regulation goals, reappraisal tactics also differ according to the means through which these goals are achieved. Specifically, tactics can change either the interpretation of the situation or the interpretation of the emotional experience itself. Most research on emotion regulation focuses on how people can reduce undesirable emotions by interpreting the situation differently (Gross, 1998, 2015). For example, a person can reframe a tough situation as an opportunity (Blascovich, 2008; Crum, Salovey, & Achor, 2013). However, reappraising the situation may be difficult when the situation is high-stake and has unneglectable emotion-eliciting aspects. Recent research suggests an alternative approach that involves reappraising the emotional experience itself. For example, while most people automatically appraise anxiety as a debilitating experience, people can tell themselves that the bodily arousal could potentially benefit their performance. This reappraisal elevates confidence and ultimately mitigates the negative effect of anxiety (Beltzer et al., 2014). In the entrepreneurial pitch context, reappraising the emotion versus the situation may be more feasible because entrepreneurial pitches are undeniably high-stake and understandably triggers anxiety.

I propose that linking anxiety to passion is an emotion regulation strategy that can modify the emotional valence by reinterpreting pre-pitch anxiety in a positive way. I argue below that linking anxiety to entrepreneurial passion should (1) take less cognitive effort than attempting to calm down, and (2) improve pitch performance by reducing anxiety and enhancing passion.

### **Linking Anxiety to Passion**

Anxiety and passion are both based on appraisals that an event is very important and that great effort will be expended to achieve a desired end (Lazarus & Folkman, 1984; Vallerand & Houlfort, 2003). Although anxiety is typically viewed as debilitating and undesirable, people only feel anxious about things that they care about, that is, events with personally consequential outcomes (Frijda, 1988; Wolf, Lee, Sah, & Brooks, 2016). Similarly, entrepreneurial passion is associated with activities that one deeply cares about and finds highly important (Cardon & Murnieks, 2020). In the course of investing their time, energy, and resources into their venture, entrepreneurs likely form a deep identity connection with their ventures, experience psychological attachment to their ventures, and might even start to view their ventures as their children (Gielnik, Spitzmuller, Schmitt, Klemann, & Frese, 2015; Rouse, 2016). In short, the psychological identification with the venture is an integral part of entrepreneurial passion (Cardon et al., 2009), and the venture's personal importance also adds to the anxiety about their venture's survival and growth (Cardon, Zietsma, Saporito, Matherne, & Davis, 2005). For example, one entrepreneur in my pilot study noted: "I worry about people not liking what I was passionate about. It was personal." Another said, "It was difficult to calm down because it meant so much to me." Therefore, there is an inherent connection between anxiety and passion, even though they are opposite in valence.

Building on this commonality between anxiety and passion, I propose that entrepreneurs



can cope with their pre-pitch anxiety by recognizing anxiety as a reflection of how important the venture is for them and how committed they are to the venture. Casting the source of the anxiety in this new light reframes the emotional experience and evokes the feeling of entrepreneurial passion. *Linking anxiety to passion* involves being mindful of, accepting, and making sense of the emotions as well as the underlying appraisals, which in turn helps entrepreneurs to reexamine anxiety through a positive lens and evoke the positive experience of passion.

Below I discuss how entrepreneurs may benefit from linking anxiety to passion, in comparison with alternative emotion regulation strategies. One novel aspect of the current approach is that it involves understanding and interpreting anxiety, thereby acknowledging anxiety-provoking thoughts (i.e., the high stake of the situation) rather than denying or inhibiting them. In contrast, other reappraisal strategies often entail denying at least some aspects of the emotional experience. For example, a classic instance of reappraisal involves detachment, or thinking about the situation in a way that reduces its perceived importance (Gross, 1998). When people attempt to calm down by downplaying the importance of an event, they essentially deny that the event is highly significant (Shiota & Levenson, 2012). Therefore, detachment may have limited applicability to entrepreneurial pitches because fundraising is undeniably critical for venture survival and growth (Cacciotti et al., 2016). Accepting and understanding the emotion rather than denying it might be a more realistic and less effortful approach in these situations. Rather than seeking to override some appraisals, linking anxiety to passion capitalizes on the appraisal congruence between anxiety and passion: both share an underlying appraisal that the event is highly personally significant.

I propose that linking anxiety to passion may require less cognitive effort than attempts to calm oneself down before pitching. Cognitive effort refers to the amount of attentional capacity

one allocates to a specific process (Tyler, Hertel, McCallum, & Ellis, 1979). Due to limited working memory capacity and processing constraints, the less cognitive effort needed, the more likely an emotion regulation strategy can be successfully adopted (Sheppes & Meiran, 2007). Pitching to potential investors is a particularly cognitively taxing task because one needs to retrieve materials from memory, deliver them in a clear and cohesive manner, and respond to audience's reactions. Therefore, cognitive resources are likely to be in high demand when people pitch to investors, and people should opt for emotion regulation strategies that require fewer cognitive resources.

Analogically, as the distance between the origin (i.e., the naturally occurring emotion) and the destination (i.e., the desired emotional state) decreases, the effort needed to complete the journey decreases (Scott et al., 2020). As discussed above, both passion and anxiety are accompanied by the appraisals that the event is highly significant and a great deal of effort will be expended to achieve the goal (i.e., attract investments), whereas calmness is associated with appraisals of low significance and low anticipated effort (Cardon et al., 2009; Frijda et al., 1989; Gray, 1991; Smith & Ellsworth, 1985; Scherer, 2005). In short, appraisal congruence is higher between anxiety and passion than between anxiety and calmness. Therefore, it should be less cognitively effortful to evoke passion than to calm down when feeling anxious.

*Hypothesis 1. The cognitive effort needed to regulate anxiety decreases as the appraisal congruence between anxiety and the desired emotional state increases.*

In addition to requiring lower cognitive effort, linking anxiety to passion should enhance pitch performance for two reasons: mitigating anxiety and evoking passion. Linking anxiety to passion may mitigate anxiety by breaking the negative recursive cycle underpinning pitch anxiety. When people experience anxiety prior to an important task, they tend to believe that

anxiety is detrimental to their performance, and this worry further erodes confidence and intensifies anxiety (Brady et al., 2018; McGonigal, 2015). Linking anxiety to passion should disrupt the negative cycle and may even initiate a positive one. Moreover, the network theory of affect suggests that information in memory is organized according to specific emotion themes, and when an individual experiences an emotion, the past events and beliefs associated with that emotion become activated and salient (Bower, 1981; Niedenthal, & Halberstadt, 1995). Therefore, the experience of passion may bring to mind memories regarding the entrepreneurs' previous hard work on the venture and the positive beliefs associated with their ideas and achievements. These thoughts may mitigate the sense of helplessness and low controllability associated with anxiety (Frijda et al., 1989; Scherer, 2005) and assuage doubts about one's capability to perform the pitch, which reduces anxiety.

*Hypothesis 2a. Linking anxiety to passion will reduce pre-pitch anxiety.*

Linking anxiety to passion should also evoke passion. Although entrepreneurs experience passion over years when working on their ventures (Cardon et al., 2009), people's dominant emotional experience in any given moment is a function of how they are interpreting the immediate environment (Frijda, 1986). To the extent that the moments before pitches are stressful, passion is likely to fall outside of attention. By reframing the anxious experience as a reflection of entrepreneurial passion, linking anxiety to passion casts anxiety in a new light that may reignite feelings of passion.

*Hypothesis 2b. Linking anxiety to passion will enhance passion.*

I further propose that reduced anxiety and enhanced passion should both improve pitch performance. Lowering anxiety should improve pitch performance because anxiety adversely impacts the audience's judgement of the speakers' persuasiveness (Mehrabian & Williams,

1969). Increasing passion may also lead to better pitch performance because entrepreneurs' passion can evoke investors' enthusiasm about the venture (Cardon, 2008; Li et al., 2017) and can signal tenacity and inspirational leadership (Huang & Pearce, 2015; Murnieks et al., 2016). Therefore, an entrepreneur who links their anxiety to passion may be able to boost investors' evaluation of the venture.

Emotion regulation theories have primarily focused on ways to reduce the intensity of undesirable emotions, or *downregulation* of emotions (see McRae & Mauss, 2016, for a review). Ways to increase the intensity of desirable emotions, or *upregulation* of emotions, have received less attention. Although detachment may relieve anxiety to some extent, it may also reduce commitment and lead to less favorable inferences about an entrepreneurs' motivation to pursue the venture. Instead, using reappraisal to upregulate passion may be more conducive to success, given the utility of passion for pitch performance.

Taken together, I propose the following:

*Hypothesis 3. Linking anxiety to passion will lead to better pitch performance.*

*Hypothesis 4a. The positive effect of linking anxiety to passion on pitch performance will be mediated by reduced anxiety.*

*Hypothesis 4b. The positive effect of linking anxiety to passion on pitch performance will be mediated by enhanced passion.*

The rest of the dissertation proceeds as follows. Chapter 3 describes a pilot study that documents the prevalence of pre-pitch anxiety among entrepreneurs and investigates how they tend to cope with the anxiety without any direction or intervention. Chapters 4 – 6 describe three studies that test the hypotheses. Specifically, Chapter 4 presents an experiment that tests whether linking anxiety to passion requires less cognitive effort than attempting to calm down (H1).

Chapters 5 and 6 describe a field survey and a lab experiment that test whether linking anxiety to passion can mitigate anxiety (H2a) and has additional benefits of enhancing passion (H2b) and pitch performance (H3). Chapters 5 and 6 also test the mediating role of anxiety and passion in the overall effect of linking anxiety to passion on pitch performance (H4a and H4b).

## Chapter 3

### Pilot Survey: How Entrepreneurs Cope with Pitch Anxiety

#### Participants

The goal of the pilot study was to understand entrepreneurs' emotional experiences when pitching their ventures, and how they naturally cope with their emotions without any direction or intervention. I recruited 100 respondents from a panel of entrepreneurs recruited through *Prolific* (<https://www.prolific.co/>), an online crowdsourcing platform created for academic research. Respondents were from the United States and the United Kingdom. I included screening questions in the survey asking respondents to confirm that they were current or former entrepreneurs and to indicate whether they have experience pitching to key stakeholders, including potential investors and potential partners.<sup>2</sup> Respondents also indicated when they established the venture and when the specific pitch they recalled for the purposes of the study took place. I excluded participants whose ventures had been established over seven years before the pitch occurred, in accordance with prior operationalizations of entrepreneurs (e.g., Carter, Stearns, Reynolds, & Miller, 1994; Shrader, Oviatt, & McDougall, 2000). In the resultant sample ( $N = 49$ ), the ventures were established for less than one year on average when the recalled pitch took place. The sample was 42.9% female and ranged in age from 18 to 69 ( $M = 42$ ,  $SD = 11.68$ ); 73.5% identified as White, 14.3% as African American, 8.2% as Asian, 2.0% as Hispanic or Latino, and 2.0% from mixed ethnic background. The sample of entrepreneurs pitched eight times in the past on average ( $SD = 9.41$ ).

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<sup>2</sup> I included participants who pitched to key stakeholders other than investors to increase the sample pool. My theory focuses on pitching to potential investors, but pitching to other key stakeholders is also likely to be anxiety-provoking and critical to venture growth. Thirteen participants in the current sample answered the survey based their experience pitching to other key stakeholders. The results were similar whether or not I included them in the analysis.

## Measures

Respondents recalled their most recent pitch and answered a series of questions about their emotional experience prior to the pitch and how they regulated it. See Appendix B for the full survey.

**Emotions.** I included five common emotional states from the Positive and Negative Affect Schedule (PANAS), using two items to assess each emotion (happiness, sadness, anger, anxiety, calmness; see Brooks & Schweitzer, 2011). I also included passion as it is a relevant emotional state for the current research (Jachimowicz, 2019).

**Anxiety regulation strategies.** To examine what strategies entrepreneurs tended to use to regulate pre-pitch anxiety, an open-ended question asked respondents to describe in detail how they attempted to manage the anxiety in the moment before the pitch recalled. The instructions emphasized that respondents should describe how they actually managed their anxiety the moment before the pitch rather than what they think they should have done. The open-ended question allowed respondents to describe their regulation strategies without being cued into any specific strategy and provided a means to assess the dominant strategy used by each participant.

Two independent raters categorized participants' responses based on the process model of emotion regulation (Gross, 2015; Shiota & Levenson, 2012; Wolgast, Lundh, & Viborg, 2011): distraction, suppression, detachment, positive reappraisal, physiological response modulation, situation modification, and acceptance. Note that in addition to the cognitive strategies that aim at directly modifying emotional experience or expressions (i.e., distraction, suppression, detachment, and positive reappraisal), I added three categories—physiological response modulation, situation modification, and acceptance—to account for all the coping mechanisms mentioned by participants (Brooks, McCluskey, Turley, & King, 2015).

Specifically, physiological response modulation refers to physical activities (e.g., breathe deeply, having snacks) to mitigate physiological consequences of the emotional experience, without changing the emotional experience itself. Situation modification entails taking actions to alter the situation rather than directly modifying the emotional experience itself (Gross, 1998, 2015). Before entrepreneurial pitches, situation modification could involve trying to do something to improve their chance of success (e.g., checking over information to ensure they can answer all the questions). Because the current research focuses on the moment before the pitches rather than days or weeks in advance, there is arguably little that entrepreneurs can do to improve their preparation, which may explain why very few respondents reported using it. Acceptance means allowing the experience of the emotion and not attempting to control or avoid it (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). By definition, it is debatable whether acceptance can be considered a strategy to regulate emotions. However, it has been increasingly shown as an adaptive way to handle stressful situations relative to suppression (Campbell-Sills et al., 2006). Also, because linking anxiety to passion entails acceptance rather than denial of the anxiety and its associated appraisals, it is informative to examine how much entrepreneurs tend to accept their anxiety.

The two coders agreed on 90% of their codes. Discrepancies were resolved by discussion. See Table 2 in Appendix A for definitions, examples, and percentages of the emotion regulation strategy categories.

## **Results**

**Emotions.** The first goal of the pilot study was to verify that anxiety is a prevalent emotional experience prior to pitches. As depicted in Figure 1 in Appendix A, passion was rated highest ( $M = 5.57, SD = 1.24$ ) and anxiety was rated second highest ( $M = 4.28, SD = 1.44$ ). A



repeated-measures (i.e., within-subjects) ANOVA found significant differences between the respondents' six emotion ratings,  $F(5, 44) = 117.47, p < .0001, \eta^2 = 0.93$ . Pairwise comparisons revealed that anxiety was felt to a greater extent than sadness ( $M = 1.44, SD = 1.00$ ),  $t(44) = 11.92, p < 0.001, d = 2.29$ , anger ( $M = 1.24, SD = 0.67$ ),  $t(44) = 13.47, p < 0.001, d = 2.71$ , and calmness ( $M = 3.01, SD = 1.16$ ),  $t(44) = 3.82, p < 0.001, d = 0.97$ , although the reported level of anxiety was similar to happiness ( $M = 4.24, SD = 1.46$ ),  $t(44) = 0.10, p = 0.92, d = 0.04$ , and less than passion,  $t(44) = -4.84, p < 0.001, d = -0.96$ .

In terms of the frequency of specific levels of anxiety, 79.6% of the respondents reported feeling at least a “moderate” level of anxiety prior to the pitch they recalled, and 61.2% reported feeling at least “quite a bit” of anxiety. In short, the results indicated that anxiety is commonly experienced before pitching.

Although the current research focuses on the experience and regulation of anxiety, the high levels of positive emotions (passion and happiness) in this study might be worth noting. On the one hand, the presence of passion could facilitate reappraisal of anxiety using the focal strategy. On the other hand, the high level of happiness suggested that social desirability might partly account for the high levels of positive emotions reported in this study.

**Anxiety regulation strategies.** The second goal of the pilot study was to examine which strategies entrepreneurs tend to use without any direction or intervention. The most commonly used strategy was distraction; 49.0% of the respondents reported ignoring or distracting themselves from the anxiety as the primary way of managing their feelings in the moment before pitching. Examples include focusing on the speech materials and focusing on the potential positive outcomes. The second-most common strategy was physiological response modulation; 40.8% of the respondents reported mitigating physiological consequences of the emotional

experience, without changing the emotional experience itself. Examples include breathing deeply, wearing comfortable clothes, and having snacks. The third-most common strategy is detachment (14.3%). Examples include reminding themselves that there are other opportunities in the future even if this pitch does not go well, and thinking that they are already successful and a failure would not eliminate their past success. Notably, none of the open-ended responses mentioned linking anxiety to passion.

## **Discussion**

The pilot survey indicated that anxiety is a prevalent emotion entrepreneurs experience prior to pitches. To manage anxiety, the most common strategy is to distract themselves from the anxious feelings. Also, it is noteworthy that a small percentage (12.2%) reported using a form of positive reappraisal, which suggests that it is underutilized.

This pattern is consistent with prior findings that people tend to choose emotion regulation strategies that entail low cognitive effort (Brans, Koval, Verduyn, Lim, & Kuppens, 2013; Sheppes, Scheibe, Suri, & Gross, 2011; Suri, Whittaker, & Gross, 2015). Although reappraisal is generally an effective way to alter people's emotional experience (Webb et al., 2012), people are not always able to think about stressful events in positive ways even when they attempt to do so (Ford, Feinberg, Lam, Mauss, & John, 2019; Ford, Karnilowicz, & Mauss, 2017). It may be especially challenging to reappraise during the moments before pitches, when entrepreneurs experience heavy cognitive load from the upcoming pitch and have little bandwidth to formulate reappraisals in the moment. Providing people with specific ways to reappraise—thus eliminating the cognitive costs to come up with reappraisals—increases the likelihood they reappraise (Sheppes et al., 2014). Therefore, it is useful to design specific reappraisal tactics that entrepreneurs could directly deploy in high-stake moments. Moreover,

although distraction may decrease anxiety to some extent, linking anxiety to passion may have the added benefits of evoking passion and improving pitch performance. In Chapter 6, I report an experiment that compares the effectiveness of linking anxiety to passion with distraction.

## Chapter 4

### Study 1: Cognitive Effort Needed to Regulate Emotions

Study 1 tests Hypothesis 1, which predicts that appraisal congruence will reduce effort needed to achieve the emotion regulation goal. Specifically, Study 1 compares two emotion regulation goals in an anxiety-provoking pitch situation: evoking passion and calming down. I use calmness as the comparison because a considerable amount of research on emotion regulation in general and reappraisal in particular focuses on strategies that can help people to calm down (e.g., He et al., 2018; Hofmann et al., 2009; Jackson, Compton, Thornton, Dimmock, 2017).

#### Participants

I recruited 140 current or former entrepreneurs in the United States from *Prolific* to ensure I had at least 50 participants per between-subjects condition (Simmons, Nelson, & Simonsohn, 2011). After excluding those who failed the attention check, the resultant sample ( $N = 107$ ) was 63.6% female and ranged in age from 18 to 90 ( $M = 39.89$ ,  $SD = 13.12$ ); 7.5% identified as African American, 9.3% as Asian, 3.7% as Hispanic or Latino, 72.9% as White, and 5.6% from mixed ethnic background. The sample of entrepreneurs pitched about six times in the past on average ( $SD = 20.03$ ) and had 17 years of full time work experience on average ( $SD = 11.71$ ).

#### Study Design

The experiment was a 2 (Emotion Regulation Strategy: linking anxiety to passion, calming down)  $\times$  2 (Pitch Importance: high, moderate) mixed design, with emotion regulation strategy as a within-subjects factor and pitch importance as a between-subjects factor. The dependent variable was participants' perceptions of the effort needed to implement the emotion

regulation strategy. Depending on pitch importance condition, participants imagined that they would give a pitch to attract investments that were of either high or moderate importance to the venture's survival and growth.<sup>3</sup> Each participant read about both emotion regulation strategies, and rated how easy or difficult it would be to use each strategy. Appraisals of high importance are more congruent with passion than calmness. Therefore, when pitch importance was high, it should have been easier to evoke passion than to calm down. However, reducing pitch importance from high to moderate might attenuate this effect because lower perceived significance is less congruent with passion and more congruent with calmness. In short, there should be an interaction between pitch importance and emotion regulation strategy on perceived cognitive effort needed to implement the strategy.

### **Procedure and Materials**

Participants were told that they were participating in a simulation about entrepreneurial activities and experiences. First, they read a short vignette describing a scenario in which they were about to pitch to potential investors. Depending on pitch importance condition, they were randomly assigned to imagine that the upcoming pitch was of either high or moderate significance for their venture's survival and growth. Specifically, participants who were randomly assigned to the high importance condition read the following scenario:

Imagine that you started your company last year and received pre-seed funding from an angel investor. After spending enormous time and effort in researching customer preferences and developing product prototypes, you and your team finally entered the next stage: raising a round of seed funding from venture capitalists.

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<sup>3</sup> I did not include a low importance condition because pitching to investors is generally a consequential moment for entrepreneurs. This design also ensured that some degree of anxiety would be present.

However, after a series of meetings, you did not hear back from any investors. You doubt whether you would be able to keep the team running and whether your product will ever get built if you do not attract sufficient funds by the end of this quarter.

You fortunately connected with one last early-stage venture capital firm and they have arranged a meeting for you with a senior partner of the firm. This opportunity is promising, because the senior partner has the decision power and influence on other partners within the firm to make the deal happen. Therefore, it can potentially provide critical funding that your venture badly needs at this point. You do not want to let this opportunity pass by as the upcoming pitch seems to be crucial for your company's survival. The failure of your venture would have inevitable ramifications including financial insolvency and dissolution of the team.

Participants randomly assigned to the moderate importance condition read the following scenario:

Imagine that you started your company last year and received pre-seed funding from an angel investor. After spending enormous time and effort in researching customer preferences and developing product prototypes, you and your team finally entered the next stage: raising a round of seed funding from venture capitalists.

After a series of meetings, some investors expressed interest and would like to get involved, and you have some funding options on the table. However, you have not yet found the optimal deal and are still seeking to meet with more investors to be able to choose the best option available.

Now you are about to meet with an associate at an early-stage venture capital firm. Although this associate does not have the authority to directly make investment

decisions, you still want to try to use it at your advantage and hope that the associate could help to advocate for your venture within the venture capital firm. In short, this upcoming pitch is important for your venture, although it might not be the end of the company even if it does not go well.

After the pitch importance manipulation, all participants read a brief introduction to the emotion regulation strategies section.

Now you are on your way to meet with the investor and are feeling some anxiety about the upcoming pitch. You do not want to let anxiety get in the way of delivering your pitch smoothly and confidently. Therefore, you want to do something to try to manage your emotions before you step into the meeting room. There is more than one way people can handle their emotions, and you are considering two alternative tactics.

Next, participants read specific descriptions about emotion regulation strategies and evaluated how easy or difficult it would be to implement each strategy. The order in which the two emotion regulation strategies were presented was counterbalanced across participants.<sup>4</sup>

The description of linking anxiety to passion was as follows:

One way to manage your anxiety is to reconnect with your passion before you start your pitch. Part of the reason you are feeling anxious is your desire to attract funding for your venture. Anxiety is a sign that you are deeply identified with and passionate about your venture. Therefore, while recognizing any anxious feelings, remember that these come up because you care so much about your venture idea.

The description of calming down was as follows:

Another way to manage your anxiety is to focus on calming down before you start your

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<sup>4</sup> The emotion regulation strategy presented first started with “one way...”. The emotion regulation strategy presented second started with “another way...”.

pitch. For example, you can tell yourself that you will have other opportunities in the future, think about how the pitch is not as intimidating as it seems, or simply focus on the content of the speech and ignore the anxiety. In short, the goal is to calm down the moment before you step into the meeting room.

Immediately after reading each emotion regulation strategy, participants rated how easy or difficult it would be to implement the strategy. After reading the description of linking anxiety to passion, participants indicated how much they agreed or disagreed with three items on seven-point scales with scale point labels ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*: (1) “It would require a lot of effort to activate passion immediately before the pitch.” (2) “It would be difficult to activate passion in this scenario.” (3) “It would be easy to activate passion in this situation.” (Reverse-scored) ( $\alpha = 0.92$ ; See Cooper-Martin, 1994; Sheppes et al., 2014). After reading the description of calming down, participants indicated how much they agreed or disagreed with three items on seven-point scales with scale point labels ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*: (1) “It would require a lot of effort to calm down immediately before the pitch.” (2) “It would be difficult to calm down in this scenario.” (3) “It would be easy to calm down in this situation.” (Reverse-scored) ( $\alpha = 0.90$ )

To check whether the pitch importance manipulation was successful, an item assessed the perceived importance of the pitch (“How important is the upcoming pitch?”), with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*.

## **Results**

Table 3 in Appendix A provides the means, standard deviations, and correlations for the key variables in the study.

**Manipulation check.** Initial analysis indicated greater variability of perceived pitch



importance in the moderate pitch importance condition compared to the high pitch importance condition. An independent samples t-test not assuming equal variances found that perceived importance of the pitch was higher in the high pitch importance condition ( $M = 4.93, SD = 0.26$ ) than the moderate pitch importance condition ( $M = 4.40, SD = 0.53$ ),  $t(75.9) = 6.51, p < 0.001$ , Hedges'  $g = 1.26$ . Therefore, the manipulation was successful.

**Cognitive Effort.** Hypothesis 1 predicted that it will be easier to evoke passion than to calm down when pitch importance is high, but the magnitude of this effect should be attenuated when pitch importance is moderate. A 2 (Emotion Regulation Strategy: linking anxiety to passion, calming down)  $\times$  2 (Pitch Importance: high, moderate) mixed ANOVA on perceived cognitive effort with emotion regulation strategy as a within-subjects factor and pitch importance as a between-subjects factor tested Hypothesis 1. The main effect of Emotion Regulation Strategy was significant,  $F(1, 105) = 185.11, p < 0.001, \eta^2_p = 0.64$ . As expected, cognitive effort was lower for linking anxiety to passion ( $M = 2.88, SD = 1.50$ ) than for calming down ( $M = 5.26, SD = 1.38$ ). The main effect of Pitch Importance was not significant,  $F(1, 105) = 0.08, p = 0.78, \eta^2_p = 0.001$ . More important, the interaction of Emotion Regulation Strategy and Pitch Importance was marginally significant,  $F(1, 105) = 3.65, p = 0.059, \eta^2_p = 0.03$  (see Figure 2 in Appendix A). When Pitch Importance was high, participants reported lower cognitive effort needed to link anxiety to passion ( $M = 2.75, SD = 1.42$ ) than to calm down ( $M = 5.45, SD = 1.34$ ),  $F(1, 105) = 121.52, p < 0.001, \eta^2_p = 0.54$ . When Pitch Importance was moderate, participants also reported lower cognitive effort needed to link anxiety to passion ( $M = 3.02, SD = 1.58$ ) than to calm down ( $M = 5.06, SD = 1.40$ ),  $F(1, 105) = 67.75, p < 0.001, \eta^2_p = 0.39$ . The marginal significance of the interaction indicates that the magnitude of the difference was trending smaller when Pitch Importance was moderate than high. In short, the results generally

supported Hypothesis 1.

## **Discussion**

Study 1 indicated that linking anxiety to passion requires less cognitive effort than calming down, and the magnitude of the effect was slightly larger when pitch importance was high than moderate. Because participants in the current study imagined the upcoming pitch rather than experiencing it in real life, it should have been easier to detach themselves from the imagined scenario and downplay its importance than it would be in real life. Therefore, the current study provided a conservative test of Hypothesis 1. Overall, the results were consistent with the theory that the appraisal congruence between anxiety and passion makes it a relatively easy emotion regulation strategy for people to use.

## **Chapter 5**

### **Study 2: Linking Anxiety to Passion Before Pitching**

This chapter presents a field survey that examines entrepreneurs' use of various emotion regulation strategies and their associations with pitch outcomes. The goal is to examine whether linking anxiety to passion is associated with lower anxiety (H2a), greater passion (H2b), better pitch performance (H3), as well as the mediating roles of anxiety and passion in the effect of linking anxiety to passion on pitch performance (H4a and H4b), while simultaneously assessing other emotion regulation strategies entrepreneurs may use.

#### **Participants and Procedures**

I surveyed entrepreneurs and judges during the semifinals of annual new venture competitions at two major business schools in Southern California in two consecutive years (2020 and 2021). The semifinal rounds of the competitions included a total of 120 venture ideas. Cash prizes totaling \$100,000 were awarded to ventures at each competition, constituting high-stake events for the entrepreneurs. Judges in the competitions were drawn from the Southern California entrepreneurship community and included successful entrepreneurs, experienced investors, members of investment support organizations, and senior managers of large companies. All judges read written proposals about the ventures before the presentations. The entrepreneurs prepared a slide deck and pitched to the judges for 10 minutes.

Half an hour before each pitch, presenters received the survey described below, which assessed how they were managing anxiety in the moment (see Appendix C for the full prompts and measures). Immediately after each pitch, judges scored the venture's funding potential. The scores used in the study were the official ratings used in the competition to select which ventures advanced to the final round. Judges were also asked to indicate how much anxiety and passion

the presenters exhibited.

Of the 120 ventures in the semi-finals of the competitions, 75 provided complete data for the study. The presenters in the sample were 33.9% female, ranged in age from 18 to 52 ( $M = 26$ ,  $SD = 5.40$ ), and have pitched about nine times in the past ( $SD = 23.63$ ). The judges averaged 28 years ( $SD = 10.76$ ) of work experience, 55% had startup experience, 19% were female, and 75% had a master's degree, MBA, or a doctoral degree.

## Measures

**Linking anxiety to passion.** Two items assessed the extent to which respondents engaged in linking anxiety to passion using scale point labels ranging from 1 = *Not at all* to 5 = *Very much*: “Tell myself that I am anxious partly because I care about my venture so much.” “Tell myself that anxiety may reflect that I am a passionate entrepreneur.” ( $\alpha = 0.80$ ). Respondents were instructed to answer the questions based on what they were doing in that moment, not what they thought should be done.

**Alternative emotion regulation strategies.** I included alternative emotion regulation strategies to demonstrate the unique effect of linking anxiety to passion and rule out the possibility that the observed effects might be driven by heterogeneity in anxiety regulation more broadly. Specifically, I measured use of distraction and suppression because they are heavily researched emotion regulation strategies that are aimed at directly modifying the emotional experience or expressions (e.g., Gross, 1998, 2015). To assess distraction, participants indicated how much they agreed or disagreed with two items on five-point scales with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*: “Try to ignore my anxiety.” “Direct my attention away from my feelings.” ( $\alpha = 0.70$ ; Brans et al., 2013) Similarly, two items assessed suppression: “Control my anxiety by not expressing it.” “Keep my anxiety to myself.” ( $\alpha =$

0.80; Gross & John, 2003).

Also, because linking anxiety to passion involves one type of reappraisal, I included detachment as a comparison strategy that involves a different type of reappraisal. Two items assessed how much participants agreed or disagreed with two items on five-point scales with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*: “Tell myself that this pitch is not as important as it seems.” “Tell myself that there are other opportunities in the future even if this pitch does not go well.” ( $\alpha = 0.90$ ; Wirth, Isaacowitz, & Kunzmann, 2017).

I conducted a confirmatory factor analysis of all the items included the four emotion regulation strategies (linking anxiety to passion, distraction, suppression, and detachment) to assess convergent and discriminant validity. A confirmatory factor analysis with Promax rotation indicated that the four factors were distinct from each other (see the factor loadings and items for these four factors in Table 4 in Appendix A). Specifically, in a four-factor structure, all items loaded higher than 0.4 on its own factor, lower than 0.4 on other factors, and the differences between the loadings on its own factor and any other factors were greater than 0.1.

**Judges’ rating of anxiety.** Judges evaluated the entrepreneurs’ anxiety on a 7-point scale that indicated their agreement or disagreement with the statement “The presenter appears anxious.” (Beltzer et al., 2014). Single item measurement was required because there was little time between presentations in the competition. Evaluations were averaged across judges for each venture (ICC = 0.91).

**Judges’ rating of passion.** Judges evaluated the entrepreneurs’ passion on a 7-point scale that indicated their agreement or disagreement with the statement “The presenter appears passionate about the project idea.” (Li et al., 2017). Again, single item measurement was required because there was little time between presentations in the competition. Evaluations were

averaged across judges for each venture (ICC = 0.70).

**Funding potential.** Judges also completed the official rating form for the competition, which assessed the ventures' funding potential. The rating form differed across competitions; each competition used a rating form that included at least 10 questions, assessing aspects of the venture that contribute to its funding potential, such as unique value of the product or service, clear identification of the target market, viability of the business model, etc. Each presentation was evaluated by at least three judges, and evaluations were averaged across judges for each venture (ICC = 0.85). I standardized scores within each competition to account for differences between the rating forms used in the different competitions.

**Control variables.** I included four classes of control variables. First, some variables pertaining to entrepreneurs' human capital have been shown to have an impact on pitch outcomes (e.g., Davis et al., 2017). These variables include entrepreneurs' prior pitch experience, hours spent in preparation, and education. Because the distribution of the number of hours spent in preparation was positively skewed, I used a log transformation to adjust for outliers. Second, I measured trait speech anxiety on a seven-point scale from 1 = *Strongly disagree* to 7 = *Strongly agree*: "I have no fear of giving a speech." "Giving a speech makes me anxious." ( $\alpha = 0.72$ ; Daly, Vangelisti, Neel, & Cavanaugh, 1989). Third, because data collection occurred in two competitions over the course of two years, I included dummies for the competition site and year. Finally, I controlled for the gender and age of the entrepreneurs, because both variables can covary with the use of emotion regulation strategies (Nolen-Hoeksema & Aldao, 2011) and can influence resource providers' perceptions about the entrepreneurs (e.g., Becker-Blease & Sohl, 2007; Marlow & Patton, 2005; Warnick, Davis, Allison, & Anglin, 2021). The age of the venture was homogeneous in the current sample, because the competitions were for early-stage ventures

that had not received financial backing from professional organizations or venture capitalists. Therefore, I did not include venture age for parsimony. The results were the same whether or not I include these entrepreneurs' demographic control variables in the analyses.

## **Results**

Table 5 in Appendix A presents the means, standard deviations, and correlations for the variables of interest. The low to moderate correlations among explanatory variables suggest that multicollinearity was not an issue (Kennedy, 2003).

Table 6 in Appendix A provides OLS regression results testing Hypotheses 2a, 2b, and 3. Step 1 contained the control variables, including entrepreneurs' demographics, pitch experience, pitch preparation, trait speech anxiety, competition site, and competition year. In Step 2, I entered all emotion regulation strategies except for linking anxiety to passion. In Step 3, I entered linking anxiety to passion.

Hypothesis 2a predicts that linking anxiety to passion will decrease judges' ratings of entrepreneurs' anxiety. OLS regression with judges' ratings of the entrepreneurs' anxiety as the dependent variable found that the effect of linking anxiety to passion was nonsignificant,  $B = -0.06$ ,  $SE = 0.13$ ,  $p = 0.65$ . Therefore, Hypothesis 2a was not supported.

Hypothesis 2b predicts that linking anxiety to passion will enhance judges' ratings of entrepreneurs' passion. OLS regression results with judges' ratings of entrepreneurs' passion as the dependent variable found that linking anxiety to passion was positively related to passion,  $B = 0.23$ ,  $SE = 0.12$ ,  $p = 0.055$ , explaining 5.3% of unique variance. The results were consistent with Hypothesis 2b.

Hypothesis 3 predicts that linking anxiety to passion will enhance pitch performance. OLS regression results with funding potential evaluation as the dependent variable found that

linking anxiety to passion was positively associated with judges' assessment of the venture's funding potential,  $B = 0.25$ ,  $SE = 0.10$ ,  $p = 0.02$ , explaining 6.3% of unique variance. The results supported Hypothesis 3.

To test Hypotheses 4a and 4b, which predicts the mediating roles of perceived anxiety and perceived passion in the effect of linking anxiety to passion on funding potential evaluation, I used Model 4 of the PROCESS macro with 5000 bootstrap samples (Hayes, 2013). The indirect effect of linking anxiety to passion on funding potential evaluation through perceived anxiety was nonsignificant, *indirect effect* = 0.003, *Boot SE* = 0.02, 95% bias corrected CI [-0.03, 0.04]. Therefore, Hypothesis 4a was not supported. However, perceived passion mediated the effect of linking anxiety to passion on evaluated funding potential, *indirect effect* = 0.06, *Boot SE* = 0.04, 95% bias corrected CI [0.002, 0.184]. Therefore, Hypothesis 4b was supported.

I also considered controlling for unobserved entrepreneur heterogeneity using entrepreneur fixed effects. However, because each entrepreneur created only one business, such models would incur substantial multicollinearity between entrepreneur fixed effects and venture-level variables (see also Lee & Huang, 2018). To address this limitation, Study 3 experimentally manipulates anxiety management strategy to test its effect without the possibility of omitted variables.

## **Discussion**

Study 2 indicated that entrepreneurs' anxiety management techniques the moment before the pitches influenced judges' evaluations of passion and funding potential. Specifically, entrepreneurs who linked their anxiety to passion displayed more passion during the pitch, which in turn led to more favorable evaluation of the venture's funding potential. Interestingly, linking anxiety to passion did not influence the level of anxiety. While speculative, this may be because



the linking anxiety to passion strategy involves of being aware of the anxiety rather than attempting to downplay or eliminate anxiety.

Two aspects of the study are noteworthy. First, including alternative anxiety regulation strategies revealed the unique effect of linking anxiety to passion and ruled out the possibility that the observed effects were driven by something about emotion regulation in general. Second, the findings provide ecologically valid support for my theory. The effects emerged in a high-stakes field setting where entrepreneurs' pitch performance is consequential for funding outcomes of their ventures.

One limitation of this field survey is that there may be unobserved entrepreneur characteristics that covaried with use of emotion regulation strategy and were not fully accounted for because entrepreneur fixed effects were not feasible for the current study design. Second, while it is informative to observe the effects of entrepreneurs' emotion regulation strategies on judges' perceptions of entrepreneurs' anxiety and passion, examining the effects of emotion regulation strategies on their own emotional experience could enrich the evidence of the psychological mechanism. However, the correlational nature of the study makes it challenging to disentangle the causal direction between emotion regulation strategies and emotional experience.

I seek to overcome these limitations in Study 3, which experimentally manipulates emotion regulation strategy. Random assignment to experimental conditions ensures that the results would not be driven by unobserved variables and enables a clean test of the causal effect of emotion regulation strategies on emotions and pitch outcomes.

## **Chapter 6:**

### **Study 3: Linking Anxiety to Passion Intervention**

Study 3 is a randomized lab experiment designed to assess the causal direction of the effect of linking anxiety to passion (Stevenson, Josefy, McMullen, & Shepherd, 2020). Participants were randomly assigned to use either linking anxiety to passion or distraction to regulate anxiety before delivering a pitch. I used distraction as the comparison condition because the pilot study found that distraction was the strategy that entrepreneurs were most likely to use spontaneously.

#### **Participants**

With a goal of having at least 50 participants per cell of the design (Simmons et al., 2011), I recruited 114 students from an upper division business communication class at a large West Coast university to complete the study in exchange for extra credit in their class. Student samples are appropriate when the mechanism under investigation is grounded in a broad theory and the study is designed to resemble the real-world phenomenon (Hsu et al., 2017). Three aspects of the study design enhance ecological validity (see Williams et al., 2019): (1) students were asked to deliver pitches on topics that they were passionate about, (2) monetary awards were provided to increase the stakes, and (3) the pitches were video-recorded to add to the pitch anxiety, as explained in more detail in the Design and Procedure section below.

As the final requirement of the class, students were asked to deliver a three-to-five-minute pitch to solicit funding for a social cause they found meaningful to them or they already supported. This pitch task parallels entrepreneurial pitches in that both are aimed at soliciting investment into something personally meaningful to the speaker.

I predetermined that only native English-speaking students would be included in the

study (Brooks, 2014). The resultant sample ( $N = 95$ ) was 72.9% female and ranged in age from 19 to 30 years ( $M = 20.44$ ,  $SD = 1.60$ ); 67.7% identified as Asian, 10.4% as Hispanic or Latino, 10.3% as mixed race or ethnicity, 9.4% as White, and 2.0% as African American.

### **Design and Procedure**

Students were invited to the lab after they had been given the assignment instructions in class and before the final presentation. Upon arriving at the lab, participants were asked to deliver their final presentation in front of an experimenter with a video camera (Brooks, 2014). They were given three minutes to prepare and then deliver a three-to-five-minute speech. Participants were informed that their pitch would be video-recorded and assessed by an evaluation committee that would pick the best pitch and donate \$75 to the social cause in the name of the winning speaker. After finishing preparing their pitch but before delivering it, they read instructions about how to regulate their emotions. Participants received different emotion regulation instructions as a function of whether they were randomly assigned to the linking anxiety to passion or distraction conditions. Then, participants went to another room to deliver the speech in front of an experimenter with a video camera. After delivering the pitch, participants returned to the computer and completed a series of measures, including a manipulation check and other measures described below. See Appendix D for the full prompts and measures.

**Anxiety regulation strategy manipulation.** Participants in the linking anxiety to passion condition were instructed to reappraise their anxiety as a reflection of their passion about the topic. Specifically, they were reminded that the anxiety they were experiencing may stem from their desire to help their social cause. They also read that people often feel anxious about pitching when the idea being evaluated is deeply meaningful to them. In contrast, participants in

the distraction condition were encouraged to distract themselves from the anxious feelings and ignore the anxiety-provoking thoughts (Jamieson et al., 2012; Jamieson, Peters, Greenwood, & Altose, 2016).

## **Measures**

Both subjective report of emotional experience and observed emotional displays were collected to assess participants' emotions. I collected both measures because although emotional display ultimately has the direct effect on external evaluations, understanding the effect of emotion regulation strategies on emotional experience helps to illustrate the mechanism (Lucas Kerrick, Haugen, & Crider, 2016).

**Emotional experience.** At the end of the experiment, participants rated the extent to which they felt (1) anxious and (2) passionate during the moments right before delivering the pitches on five-point scales. To assess experienced anxiety, I averaged responses across three items (anxious, tense, nervous, Brooks, 2014; Brooks & Schweitzer, 2011;  $\alpha = 0.90$ ). To assess experienced passion, I averaged responses across three items (passionate, enthusiastic, excited;  $\alpha = 0.87$ ).

**Emotional displays.** Two senior undergraduate business students served as independent raters for the pitch videos. They were blind to the experimental condition and evaluated the participants' anxiety (ICC = 0.79) and passion (ICC = 0.77) during the pitch on seven-point scales. The raters were trained in assessing displayed anxiety and passion, attending to specific nonverbal signaling including body movements, facial expressions, and tone (Beltzer et al., 2014; Chen et al., 2009). See the coding scheme in Appendix E.

**Pitch performance.** Pitch performance was operationalized as persuasiveness and funding recommendation in the current study. The raters evaluated how persuasive the speakers

were in the recording on a seven-point scale (Brooks, 2014; ICC = 0.82). The raters also indicated their willingness to recommend the speaker to receive the fund on a five-point scale (ICC = 0.82). See the coding scheme in Appendix E.

**Covariates.** Amount of preparation and trait speech anxiety can affect emotional display and pitch performance. Therefore, participants completed brief measures about (1) how many hours they put into preparing the final presentation before coming to the lab session, and (2) trait speech anxiety using the same scale as in Study 2 (Daly et al., 1989,  $\alpha = 0.72$ ).

**Manipulation check.** To assess the extent to which participants followed the anxiety reappraisal manipulation, participants indicated the extent to which they agreed or disagreed with the following two items: “Told myself that I am anxious partly because I care about my charity so much.” “Told myself that anxiety is proof that I am passionate about the topic.” ( $\alpha = 0.89$ ). Responses to the two items were averaged for analysis.

## Results

Table 7 in Appendix A provides the means, standard deviations, and correlations for key variables in the study.

**Manipulation check.** A one-way ANOVA with experimental condition as the independent variable and the use of the focal reappraisal strategy as the dependent variable found a significant effect of condition,  $F(1, 93) = 13.36, p < 0.001, \eta^2 = 0.12$ . Participants were more likely to mentally reframe anxiety in terms of passion in the linking anxiety to passion ( $M = 2.81, SD = 1.27$ ) than distraction condition ( $M = 1.91, SD = 1.12$ ). Therefore, the manipulation was successful.

**Hypothesis testing.** Hypothesis 2a predicts that linking anxiety to passion should mitigate anxiety relative to the comparison condition. I tested this hypothesis in two ways, using

self-reported anxiety and raters' assessments of displayed anxiety, respectively. One-way ANOVA with experimental condition as the independent variable and self-reported anxiety as the dependent variable found no significant effect of condition,  $F(1, 93) = 1.13, p = 0.29, \eta^2 = 0.01$ . Similarly, one-way ANOVA with experimental condition as the independent variable and displayed anxiety as the dependent variable also found no significant effect of condition,  $F(1, 93) = 0.12, p = 0.72, \eta^2 = 0.001$ . Therefore, Hypothesis 2a was not supported.

Hypothesis 2b predicts that linking anxiety to passion should enhance passion relative to the comparison condition. As above, this hypothesis could be tested in two ways, using self-reported passion and raters' assessments of displayed passion, respectively. One-way ANOVA with experimental condition as the independent variable and self-reported passion as the dependent variable found a significant effect of condition,  $F(1, 93) = 5.34, p = 0.02, \eta^2 = 0.05$ . As predicted, experienced passion was higher in the reappraisal condition ( $M = 3.20, SD = 0.99$ ) than the distraction condition ( $M = 2.71, SD = 1.07$ ). In terms of displayed passion, one-way ANOVA with experimental condition as the independent variable and displayed passion as the dependent variable found no significant effect of condition,  $F(1, 93) = 2.68, p = 0.10, \eta^2 = 0.03$ , although the trend was consistent with the expectation that passion was higher in the reappraisal condition ( $M = 4.64, SD = 1.43$ ) than the distraction condition ( $M = 4.14, SD = 1.49$ ). In sum, the findings provided mixed support for Hypothesis 2b. I will further probe the findings in the post hoc analyses section.

Hypothesis 3 predicts that linking anxiety to passion should lead to greater pitch performance. As mentioned above, I operationalized pitch performance in two ways: persuasiveness and funding recommendation. A one-way ANOVA with experimental condition as the independent variable and persuasiveness as the dependent variable found that judges'

rating of persuasiveness was higher in the linking anxiety to passion ( $M = 4.63$ ,  $SD = 1.42$ ) than distraction condition ( $M = 3.82$ ,  $SD = 1.43$ ),  $F(1, 93) = 7.60$ ,  $p = 0.007$ ,  $\eta^2 = 0.08$ . Funding recommendations were marginally higher in the linking anxiety to passion ( $M = 2.81$ ,  $SD = 1.06$ ) than distraction condition ( $M = 2.42$ ,  $SD = 0.97$ ),  $F(1, 93) = 3.43$ ,  $p = 0.07$ ,  $\eta^2 = 0.04$ .

Hypothesis 4a predicts that the effect of linking anxiety to passion on persuasiveness and funding recommendation should be mediated by the speakers' anxiety. Bootstrap mediation analyses with 5000 iterations using Model 4 in the PROCESS macro (Hayes, 2013) found that neither experienced anxiety nor displayed anxiety mediated the effect of linking anxiety to passion on persuasiveness or funding recommendation, *indirect effects*  $< 0.06$ , 95% CIs include zero. Therefore, Hypothesis 4a was not supported. This was not surprising given that the experimental condition did not significantly influence experienced or displayed anxiety, as indicated in the tests of Hypothesis 2a above.

Hypothesis 4b predicts that the effect of linking anxiety to passion on persuasiveness and funding recommendation should be mediated by the speakers' passion. Bootstrap mediation analyses with 5000 iterations using Model 4 in the PROCESS macro (Hayes, 2013) found that experienced passion mediated the effect of experimental condition on persuasiveness, *indirect effect*  $= 0.22$ , *Boot SE*  $= 0.11$ , 95% CI [0.03, 0.46], and funding recommendation, *indirect effect*  $= 0.13$ , *Boot SE*  $= 0.07$ , 95% CI [0.01, 0.28]. In addition, I tested the mediating role of displayed passion. Displayed passion was not a significant mediator of the effect of experimental condition on either persuasiveness, *indirect effect*  $= 0.38$ , *Boot SE*  $= 0.24$ , 95% CI [-0.09, 0.85], or funding recommendation, *indirect effect*  $= 0.26$ , *Boot SE*  $= 0.17$ , 95% CI [-0.04, 0.61]. Therefore, the results provided mixed support for Hypothesis 4b. I will revisit these hypotheses in the post hoc analyses section.

The results remained the same when controlling for the covariates (i.e., the amount of pitch preparation prior to the lab session and the speaker's trait speech anxiety) in the analyses.

**Post hoc analyses.** The two batches of data (Fall 2019,  $N = 54$ , and Winter 2020,  $N = 41$ ) may warrant separate examination because the manipulation appeared to be stronger in the second batch of data. A manipulation check of the first batch yielded no significant effect of condition,  $F(1, 52) = 2.26$ ,  $p = 0.14$ ,  $\eta^2 = 0.04$ , although the means were in the expected direction ( $M_{linking} = 2.57$ ,  $SD_{linking} = 1.18$ ;  $M_{distraction} = 2.06$ ,  $SD_{distraction} = 1.30$ ). Although the nonsignificant manipulation check may be a result of low statistical power, I sought to ensure participants' understanding of the manipulation instructions during the second batch of data collection by verbally asking them to confirm that they have completely read and fully understood the instructions before starting the pitch.

The manipulation check was significant in the second batch of data. Specifically, a one-way ANOVA with experimental condition as the independent variable and the use of the focal reappraisal strategy as the dependent variable found a significant effect of condition,  $F(1, 39) = 15.01$ ,  $p < 0.001$ ,  $\eta^2 = 0.28$ . Participants were more likely to mentally reframe anxiety as being linked to passion in the linking anxiety to passion ( $M = 3.14$ ,  $SD = 1.34$ ) than distraction condition ( $M = 1.78$ ,  $SD = 0.85$ ).

Therefore, I repeated the hypotheses tests with the second batch of data. Tests of Hypotheses 2a and 4a remained nonsignificant, indicating that anxiety was not a function of the experimental condition and did not mediate the effect of experimental condition on pitch performance. However, Hypotheses 2b, 3, and 3b were all supported, even though statistical power was not optimal (the average statistical power across these hypotheses tests was 0.67). Specifically, Hypothesis 2b was supported regardless of whether experienced passion or



displayed passion was used as the dependent variable. A one-way ANOVA with experimental condition as the independent variable and experienced passion as the dependent variable found that experienced passion was marginally higher in the linking anxiety to passion ( $M = 3.29$ ,  $SD = 1.19$ ) than distraction condition ( $M = 2.60$ ,  $SD = 1.10$ ),  $F(1, 39) = 3.68$ ,  $p = 0.06$ ,  $\eta^2 = 0.09$ . More importantly, displayed passion was also higher in the linking anxiety to passion ( $M = 4.36$ ,  $SD = 1.46$ ) than distraction condition ( $M = 3.26$ ,  $SD = 0.98$ ),  $F(1, 39) = 7.80$ ,  $p = 0.008$ ,  $\eta^2 = 0.17$ .

In support of Hypothesis 3, linking anxiety to passion ( $M = 4.98$ ,  $SD = 1.16$ ) enhanced independent judges' rating of persuasiveness, compared to distraction ( $M = 3.60$ ,  $SD = 1.45$ ),  $F(1, 39) = 11.37$ ,  $p = 0.002$ ,  $\eta^2 = 0.23$ . In addition, raters also indicated greater funding recommendation in the linking anxiety to passion ( $M = 2.76$ ,  $SD = 1.12$ ) than distraction condition ( $M = 2.08$ ,  $SD = 0.78$ ),  $F(1, 39) = 5.10$ ,  $p = 0.03$ ,  $\eta^2 = 0.12$ .

Hypothesis 4b was supported using the second sample alone regardless of whether experienced passion or displayed passion was included as a mediator. Specifically, experienced passion mediated the effect of experimental condition on persuasiveness, *indirect effect* = 0.23, *Boot SE* = 0.13, 90% CI [0.02, 0.44], and funding recommendation, *indirect effect* = 0.23, *Boot SE* = 0.15, 90% CI [0.01, 0.48]. Note that while the 95% confidence intervals did not exclude zero, the 90% confidence intervals did, indicating that the mediating effects were marginally significant by conventional standards. More importantly, displayed passion mediated the effect of experimental condition on persuasiveness, *indirect effect* = 0.62, *Boot SE* = 0.28, 95% CI [0.18, 1.29], and funding recommendation, *indirect effect* = 0.54, *Boot SE* = 0.23, 95% CI [0.15, 1.04].

To assess the robustness of the results, I included the amount of pitch preparation prior to the lab session and the speaker's trait speech anxiety as covariates in the hypotheses tests. The

results were unchanged.

## **Discussion**

Study 3 experimentally validated the findings from Study 2 that linking anxiety to passion enhanced persuasiveness and funding recommendation through increased passion. At the same time, linking anxiety to passion did not reduce anxiety relative to distraction, which is consistent with findings from Study 2 and will be further discussed in Chapter 7. Taken together, the findings are consistent with previous research showing the importance of displayed passion in entrepreneurial pitches (e.g., Huang & Pearce, 2015; Murnieks et al., 2016).

Two aspects of Study 3 are especially noteworthy. First, I compared linking anxiety to passion versus distraction, the strategy that entrepreneurs reported using most often in the pilot study. The findings indicated that linking anxiety to passion is more effective than how entrepreneurs are naturally inclined to cope with anxiety. This result illustrates the value of improving entrepreneurs' emotion regulation skills. Second, because participants in the experiment received emotion regulation instructions after their pitch preparation time was over, the manipulation could only have influenced delivery, not the content or structure of the pitch. Therefore, the current study provided a conservative test of the hypotheses and indicated that taking a few moments to connect anxiety to passion influences emotional display and others' perceptions of their pitch.

## Chapter 7: General Discussion

Intense emotions are inevitable in the entrepreneurial journey, especially in moments before consequential pitches. The primary goal of my dissertation is to investigate coping mechanisms for entrepreneurs' pitch anxiety and uncover a strategy for entrepreneurs to manage pitch anxiety and enhance pitch performance. Prior research on entrepreneurial pitches has yielded many insights about investors' perspectives, including the value of entrepreneurial passion in boosting funding outcomes (e.g., Huang, 2018; Huang & Pearce, 2015; Sudek, 2006). However, little is known about entrepreneurs' own experience pitching their ideas and how they can manage their emotions in these stressful moments. I propose that entrepreneurs can cope with their pitch anxiety by recognizing that their anxiety reflects their entrepreneurial passion and devotion to the venture, which can evoke the feeling of passion and boost pitch performance.

Consistent with the theory, a field survey (Chapter 5) found that the extent to which entrepreneurs linked anxiety to their entrepreneurial passion positively predicted judges' perceptions of their passion, which in turn enhanced evaluations of ventures' funding potential. I further validated the finding using a randomized lab experiment (Chapter 6) that compared linking anxiety to passion with distraction, the strategy entrepreneurs are most likely to use spontaneously (see Chapter 3). The linking anxiety to passion intervention helped participants mentally reframe their anxiety, improved displayed passion during their pitches, and enhanced judges' funding recommendations. While surveying entrepreneurs during venture competitions provide external validity of the effects of linking anxiety to passion on emotions and pitch evaluation, experiments provide stronger tests of causality (Singleton & Straits, 2009). Moreover, in contrast to research that aims at helping people to calm down during stressful events (e.g., He et al., 2018; Hofmann et al., 2009; Jackson et al., 2017), an experiment (Chapter

4) revealed that it is easier to link anxiety to passion than to calm down in the moments before pitches, perhaps especially when the pitch is highly important for the venture.

The finding that linking anxiety to passion enhanced pitch performance through increased passion—but not reduced anxiety—warrants further discussion. Linking anxiety to passion did not mitigate anxiety levels maybe because it involves acknowledging the anxiety rather than eliminating it. Furthermore, none of the emotion regulation strategies significantly reduced anxiety in the field survey. Collectively, the finding that anxiety is resilient in the face of emotion regulation attempts and evidence from Study 1 that calming down is difficult prior to pitches highlight the challenge in reducing pitch anxiety. After all, entrepreneurial pitches are generally high-stake moments for venture survival and growth, which understandably generate anxiety. I will further discuss this point in the theoretical implications for emotion research.

### **Theoretical Implications for Entrepreneurship Research**

**Differentiating specific coping mechanisms.** This dissertation sheds new light on how entrepreneurs reappraise negative emotions during intense moments in the entrepreneurial journey. Research to date offered valuable insights on entrepreneurial emotion regulation in general, examining constructs such as problem-focused coping and emotion-focused coping (Patzelt & Shepherd, 2011), loss and restoration orientations (Shepherd, Patzelt, & Wolfe, 2011), as well as the ability to manage one's emotions as a dimension of emotional intelligence (He et al., 2018). However, each of these constructs involves multiple emotion regulation strategies, leaving ambiguous the relative effectiveness of each strategy. For example, emotion regulation ability reflects one's ability to use a combination of unknown strategies (He et al., 2018); emotion-focused coping involves a combination of distraction, reappraisal, and physiological response modulation strategies (Patzelt & Shepherd, 2011); restoration orientation incorporates

both suppression and distraction (Shepherd, 2003).

More recent research has begun to differentiate among specific emotion regulation strategies that entrepreneurs use, such as whether reappraisal and suppression explain differences in venture survival (De Cock et al., 2020). Although the authors in this recent research expected that reappraisal facilitates venture survival, they found instead that reappraisal decreased the likelihood of venture survival. Although speculative, one reason might be that different types of reappraisals could either facilitate or debilitate venture success. Consistent with this idea, Study 2 indicated that linking anxiety to passion enhanced pitch performance, reappraising the event as unimportant did not. Therefore, identifying the specific coping mechanisms entrepreneurs use may be important for generating an accurate understanding of whether emotion regulation helps or hurts entrepreneurial performance. In short, while extant research provides valuable insights on aggregated emotion regulation behaviors over time, the current research takes a more focused approach and brings additional insights to understand how entrepreneurs can handle specific emotional events to facilitate success.

**Addressing negative emotions in pitches.** Although prior research on entrepreneurial pitches has focused on the value of positive emotions, recent research examines the influence of negative emotions in entrepreneurial pitches (Warnick et al., 2021). The current research contributes to our understanding of entrepreneurial emotions in pitches by highlighting the fluid nature of emotional experience and the potential to leverage intense negative emotions for positive outcomes. I find that linking anxiety to passion is more conducive to pitch success than attempting to calm down via distraction. Because negative emotions are an inevitable part of entrepreneurs' experience, it is important to understand how to cope with the experience using mindsets that are conducive to success.

## **Theoretical Implications for Emotion Research**

**Contextualizing reappraisals.** The study demonstrates the value of considering situational characteristics in understanding the effectiveness of emotion regulation strategies. In particular, it was noteworthy that detachment did not lower anxiety in the field survey, although detachment is the most frequently studied form of reappraisal and is largely effective in mitigating undesirable emotions in psychological studies (e.g., Gross, 1998; Heilman, Crisan, Houser, Miclea, & Miu, 2010; Richards & Gross, 2000). While surprising, the current finding can be explained by understanding two contextual characteristics of entrepreneurial pitches.

First, because detachment involves mentally undermining the importance of the situation, it may have limited applicability to situations that are undeniably important for the person. In particular, entrepreneurs' psychological attachment to their venture and the tendency to see their venture as an extension of themselves (Cardon et al., 2005) may make detachment difficult. Consistent with this idea, studies document that entrepreneurs often have a difficult time detaching from their ventures even when they are aware of the physical, mental, and even economic benefits of such detachment (Boyd & Gumpert, 1983; Kollmann, Stöckmann, & Kensbock, 2019; Rouse, 2016). In contrast, studies on detachment are often conducted in lab settings on emotions induced using photos, films, or vignettes describing hypothetical scenarios that have little direct personal relevance to the participants (e.g., Heilman et al., 2010; Richards & Gross, 2000; Wirth et al., 2017).

Second, detachment may have limited applicability to events that are currently unfolding and require a person's continued attention and dedication. Detachment has been applied to address recalled emotional episodes that occurred in the past (e.g., Feinberg, Ford, & Flynn, 2020; Ray, Wilhelm, & Gross, 2008). Emotional memories are different from upcoming,

anxiety-provoking events because the latter requires continued effort and involvement in the situation and may render detachment less adaptive (see also Troy et al., 2013). The current studies find that during intense and ongoing emotion-inducing situations, a reappraisal strategy involving acknowledging and interpreting the emotions may be more feasible than detachment.

In sum, an important theoretical implication of the findings is that the effectiveness of emotion regulation strategies is not universal, but instead depends in part on characteristics of the situation.

### **Acknowledging and making sense of the emotion as a new way of reappraising.**

Despite the growing scholarly work on the value of mindfulness in coping with stress (Hill & Updegraff, 2012; Pogrebtsova, Craig, Chris, O'Shea, Gonzalez-Morales, 2018) and the role of sensemaking in response to emotional events (Maitlis, Vogus, & Lawrence, 2013), little research has applied insights from mindfulness and sensemaking to enrich our understanding of reappraisals. Instead, extant research on specific ways of reappraising typically relies on overriding or denying at least some aspects of the emotions and the associated appraisals. For example, some use positive self-talk such as “I can do this” in the hope that it can override the negative appraisals associated with anxiety (Meichenbaum, 1977; Neck & Manz, 1992).

However, enforcing a positive statement and suppressing existing thoughts is not only cognitively depleting but can also lead to psychological reactance and paradoxically exaggerate the thoughts that are being suppressed (Muraven, Tice, & Baumeister, 1998; Richards & Banas, 2015; Wegner, Schneider, Carter, & White, 1987; Wood, Perunovic, & Lee, 2009). Others proposed that one may attempt to mislabel and misinterpret their anxiety as excitement, essentially “tricking” oneself into believing that they are experiencing a different emotion (Brooks, 2014). However, this strategy may be less applicable to situations where individuals are

cognizant of their anxiety-inducing thoughts, such as doubts about their ability to deliver the pitch smoothly, or worries about negative evaluations by the audience. Simply telling themselves that they are “just feeling excited” does not address that reality and is unlikely to fully eliminate these thoughts.

Rather than seeking to deny anxiety and override its associated appraisals, the current strategy copes with anxiety by making sense of the emotion and understanding its underlying appraisals as congruent with passion (i.e., the significance of the event to the person). The findings demonstrate that acknowledging the felt emotion or its associated appraisals—rather than denying them—can help to achieve desirable emotions and facilitate performance. In this way, the current research also suggests that although multiple areas of emotional intelligent behaviors—involving perceiving, understanding, utilizing, and managing emotions—are conceptually distinct from one another (Mayer, Caruso, & Salovey, 2016; Salovey & Mayer, 1990), they can be intricately connected because understanding emotions can ultimately contribute to emotion management.

### **Practical Implications**

The current findings suggest that entrepreneurs should be aware of how they manage their emotions. Pitch training programs tend to focus on the content and style of delivery (Clingsmith & Shane, 2018). Too often, entrepreneurs are left on their own to handle the emotional rollercoaster in the funding process, and it would be unfortunate if entrepreneurs and investors all missed a great opportunity because of mismanaged anxiety. Making pitches is cognitively demanding, leaving little capacity for entrepreneurs to constantly monitor how they are handling their emotions in the moment. Instead, entrepreneurs could learn tactics about how to manage intense emotions in advance and deploy them in moments of need.



Linking anxiety to passion represents a technique that can enrich entrepreneurs' toolkits to improve their pitch performance. Before entrepreneurs step into a pitch meeting, they could tell themselves that the anxiety they are feeling is driven by how much they care about and are passionate about their idea. By viewing anxiety as a natural product of passion, they could harness the emotional energy, learn to enjoy the emotional rollercoaster, and deliver more successful pitches. The current findings suggest that learning how to effectively manage anxiety and reconnect with one's passion increases chances of success and therefore is worth being included in entrepreneurial education programs.

Beyond entrepreneurial pitches, linking anxiety to passion may be applicable to other anxiety-provoking settings in which display of passion is valued. When people try to garner support, resources, and opportunities—such as advertising pitches, product design pitches, or job interviews—it is natural to feel nervous, and conveyed passion is often evaluated favorably (Elsbach, 2003). The current strategy may prove to be useful in those settings.

### **Limitations and Future Research**

This work points to the linkage between anxiety and passion, both of which are common among entrepreneurs. Although these two emotions are often discussed separately in the entrepreneurship literature, they share similar cognitive and physiological underpinnings, such as appraisals of high event significance and bodily activation (Cardon et al., 2009; Lazarus & Folkman, 1984; Vallerand et al., 2003). I find that this congruence between anxiety and passion renders it possible—and even relatively easy—for entrepreneurs to interpret the source of anxiety as being linked to passion. While the current research demonstrated the effectiveness of linking anxiety to passion as a coping mechanism, it remains agnostic about the naturally occurring association between anxiety and passion. It may be that entrepreneurs who are more

passionate about their ventures experience more anxiety before critical events, because they care about their venture so much that they do not want to see it fail. However, anxiety over a pitch may stem from other factors, such as a person's trait speech apprehension and level of preparedness. While the causal relationship between these two emotions is beyond the scope of the current research, it is worth exploring in future research.

Future research could also explore other consequences of linking anxiety to passion relative to alternative strategies, such as emotional exhaustion and perceived authenticity. For example, linking anxiety to passion may reduce emotional exhaustion compared to suppression, because the latter requires constant effort to modify one's emotional expressions as long as the emotional stimuli are present (Richards & Gross, 2000; Wegner et al., 1987). Also, because passion is deeply rooted in one's personal value and past experiences (Gielnik et al., 2015; Murnieks, Mosakowski, & Cardon, 2014), linking anxiety to passion may lead to more authentic emotional display, relative to other strategies that rely on externally imposed statements such as "I am excited" or "I am confident". Authenticity may be relevant for entrepreneurial pitches because inauthentic emotional expression can lead to less liking (Frank et al. 1993), reduced trustworthiness and cooperation (Krumhuber et al., 2007), and smaller donations in fundraising campaign (Hideg & van Kleef, 2017). Therefore, future research could test the idea that linking anxiety to passion may engender positive emotional states that are more authentic than alternative strategies.

I only compared the effect of linking anxiety to passion with a set of the most relevant strategies. Consistent with past research (De Cock et al., 2020), I adopted the process model of emotion regulation and chose the emotion regulation strategies that are mostly well-established and have valid scales in Study 2. I chose to compare linking anxiety to passion against

distraction in Study 3, because distraction is the most common strategy among entrepreneurs, as found in the pilot study. However, there may be other strategies that entrepreneurs can use, such as meditation and deep breathing (Loehr & Schwartz, 2001). These strategies have not been examined in the entrepreneurial pitch setting, presenting opportunities for future research.

## **Conclusion**

Although prior research indicates that investors value entrepreneurial passion in funding decisions, it remains unclear how entrepreneurs should achieve the desired emotional display in stressful moments. The current research indicates that linking anxiety to passion helps entrepreneurs to cope with pitch anxiety and evoke passion in pitches. This work also contributes to emotion regulation research by uncovering a specific reappraisal tactic that reframes debilitating emotional experiences to increase desirable emotions, and in turn improves performance.

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## Appendix A. Tables and Figures

Table 1. Comparison of Alternative Reappraisal Strategies

<b>Strategy</b>	<b>Example</b>	<b>Focus on changing arousal or valence</b>	<b>Reappraise situation or emotion</b>	<b>Key processes related to specific emotion component(s)</b>	<b>Reference</b>
Detachment	“I have other opportunities in the future even if this pitch does not go well.”	Arousal	Situation	Deny appraisal (i.e., the high stake of the situation)	Shiota & Levenson, 2012
Relabel anxiety as excitement	“I am not anxious; I am just excited.”	Valence	Emotion	Accept arousal, implicitly deny appraisal (i.e., the stake of the situation and potential threat associated with negative outcomes)	Brooks, 2014
Reappraise anxiety as beneficial	“Arousal might not be harmful and might be even beneficial for my performance in some cases.”	Valence	Emotion	Accept arousal, does not directly address appraisal (i.e., the stake of the situation and potential threat associated with negative outcomes)	Beltzer et al., 2014
Linking anxiety to passion (the focal strategy)	“I am anxious partly because I care about my venture so much.”	Valence	Emotion	Accept arousal and appraisal (i.e., the stake of the situation and potential threat associated with negative outcomes)	-

Table 2. Emotion Regulation Strategies in Open-Ended Responses (Pilot Study)

<b>Strategies</b>	<b>Definition</b>	<b>Examples</b>	<b>Percentage</b>
Distraction	Direct attention away from the emotion and focus on positive or neutral stimuli	Focus on the pitch materials	49.0%
Physiological response modulation	Mitigate physiological consequences of the emotional experience	Breathe deeply	40.8%
Detachment	Detach oneself from the emotional event by thinking that it is unimportant	Remind oneself that there are other opportunities in the future even if this pitch does not go well	14.3%

Positive reappraisal	Think about the emotional stimuli from a positive perspective	Remind oneself that they are well-prepared and the idea is great	12.2%
Situation modification	Alter the situation to modify its emotional impact	Check over information to ensure they can answer all the questions	6.1%
Suppression	Inhibit expressions of the emotion	Smile, appear happy and excited	4.1%
Acceptance	Allow the experience of the emotion and not attempt to control or avoid it	Allow oneself to feel anxious	2.0%

*Note.*  $N = 49$ . Because some participants mentioned multiple categories of emotion regulation strategies, the percentages do not add up to exactly 100%.

Table 3. Means, standard deviations, and correlations (Study 1)

Variable	Mean	s.d.	1	2	3
1. Pitch importance condition	0.50	0.50	1		
2. Perceived pitch importance	4.66	0.49	0.54**	1	
3. Cognitive effort to evoke passion	2.88	1.50	-0.09	-0.05	1
4. Cognitive effort to calm down	5.26	1.38	0.14	0.09	0.20*

*Note.*  $N = 107$ . For pitch importance condition, 0 = "moderate importance," 1 = "high importance." Perceived pitch importance was the manipulation check for the pitch importance condition.

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).



Table 4. Rotated pattern matrix for the items in the linking anxiety to passion, distraction, suppression, and detachment scales (Study 2)

		Factors			
		1	2	3	4
Distraction	Try to ignore my anxiety.	<b>0.89</b>	-0.11	-0.005	0.04
	Direct my attention away from my feelings.	<b>0.84</b>	0.17	-0.05	-0.01
Linking anxiety to passion	Tell myself that I am anxious partly because I care about my venture so much.	0.09	<b>0.77</b>	-0.07	-0.15
	Tell myself that anxiety may reflect that I am a passionate entrepreneur.	-0.07	<b>0.75</b>	0.08	0.16
Detachment	Tell myself that there are other opportunities in the future even if this pitch does not go well.	-0.04	-0.02	<b>1.00</b>	-0.03
	Tell myself that this pitch is not as important as it seems.	0.00	0.36	<b>0.48</b>	0.01
Suppression	Keep my anxiety to myself.	-0.10	0.06	-0.14	<b>0.88</b>
	Control my anxiety by not expressing it.	0.23	-0.10	0.16	<b>0.59</b>

*Note.* Extraction Method: Maximum Likelihood. Rotation Method: Promax (A method for oblique rotation).

Table 5. Means, standard deviations, and correlations (Study 2)

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	26.17	5.40	1											
2. Gender	0.33	0.43	0.05	1										
3. Education	2.29	0.72	0.53**	0.00	1									
4. Pitch experience	9.29	23.63	-0.02	-0.12	-0.001	1								
5. Preparation	44.48	61.58	-0.04	-0.17	-0.07	0.03	1							
6. Trait speech anxiety	4.39	1.42	-0.04	0.29*	-0.18	-0.04	-0.11	1						
7. Distraction	2.84	0.92	-0.10	0.01	-0.15	0.002	0.17	0.19	1					
8. Suppression	2.56	0.96	-0.25*	-0.05	-0.06	0.10	-0.16	-0.08	0.41**	1				
9. Detachment	2.91	1.13	0.06	0.06	-0.06	0.06	-0.03	-0.05	-0.02	0.00	1			
10. Linking anxiety to passion	2.92	1.22	0.05	0.17	0.009	-0.24*	0.36**	0.01	0.18	-0.22	0.25*	1		
11. Perceived anxiety	3.34	1.59	0.03	0.01	-0.06	-0.01	0.06	-0.03	0.06	0.02	-0.02	-0.04	1	
12. Perceived Passion	4.48	1.72	0.14	0.29*	0.12	-0.08	0.06	0.08	-0.01	-0.12	-0.10	0.24*	-0.13	1
13. Funding potential (standardized)	0.02	0.93	0.13	0.21	0.14	0.18	0.06	0.27*	0.05	-0.02	-0.008	0.28*	-0.13	0.42**

*Note.*  $N = 75$ . For gender, 0 = “male,” 1 = “female.” For the highest degree of education completed, 1 = High school, 2 = Bachelor’s degree, 3 = Master’s degree, 4 = Doctoral degree. Funding potential was rated on different scales across competitions. I standardized the funding potential scores within each competition for the analyses.

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

Table 6. OLS Regression Results for Study 2

Models	Perceived anxiety			Perceived passion			Funding potential		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
<b>Independent variables</b>									
<i>Control variables</i>									
Age	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.02 (0.02)	0.01 (0.03)	0.02 (0.03)	0.01 (0.02)	0.02 (0.02)	0.02 (0.02)
Gender	0.07 (0.29)	0.08 (0.30)	0.10 (0.31)	0.67* (0.26)	0.65* (0.28)	0.58* (0.28)	0.34 (0.25)	0.34 (0.25)	0.24 (0.25)
Education	-0.20 (0.21)	-0.20 (0.21)	-0.18 (0.22)	0.17 (0.20)	0.16 (0.21)	0.07 (0.21)	0.34† (0.18)	0.33† (0.18)	0.25 (0.18)
Pitch experience	-0.001 (0.005)	-0.001 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	0.0001 (0.005)	0.01* (0.004)	0.01* (0.005)	0.01** (0.004)
Preparation	0.26 (0.26)	0.24 (0.28)	0.27 (0.29)	0.34 (0.26)	0.31 (0.28)	0.21 (0.27)	0.24 (0.22)	0.29 (0.24)	0.18 (0.23)
Trait speech anxiety	-0.06 (0.09)	-0.07 (0.1)	-0.07 (0.10)	0.09 (0.09)	0.08 (0.10)	0.06 (0.10)	0.24** (0.08)	0.26** (0.09)	0.25** (0.08)
Competition site	0.34 (0.41)	0.35 (0.42)	0.31 (0.44)	-0.03 (0.41)	-0.03 (0.42)	0.18 (0.42)	-0.52 (0.35)	-0.54 (0.36)	-0.32 (0.36)
Competition year	-0.09 (0.27)	-0.08 (0.28)	-0.08 (0.28)	-0.16 (0.27)	-0.17 (0.27)	-0.17 (0.27)	-0.02 (0.23)	-0.02 (0.24)	-0.02 (0.23)
<i>Alt. regulation strategies</i>									
Distraction		0.05 (0.15)	0.07 (0.16)		-0.01 (0.15)	-0.09 (0.15)		-0.06 (0.13)	-0.14 (0.13)
Suppression		0.02 (0.15)	-0.002 (0.16)		-0.05 (0.15)	0.02 (0.15)		0.10 (0.13)	0.18 (0.13)
Detachment		-0.02 (0.11)	-0.006 (0.11)		-0.06 (0.11)	-0.14 (0.11)		0.009 (0.09)	-0.07 (0.09)
<i>Focal strategy</i>									
Linking anxiety to passion			-0.06 (0.13)			0.23† (0.12)			0.25* (0.10)
$\Delta R^2$		0.004	0.003		0.01	0.03		0.01	0.06
$R^2$	0.033	0.037	0.04	0.14	0.15	0.18	0.25	0.26	0.32

Note.  $N = 75$ . Because the distribution of the number of hours spent in preparation was positively skewed, I used a log transformation to adjust for outliers. Standard errors are in parentheses. \*  $p < 0.05$ , †  $p < 0.1$ .

Table 7. Means, standard deviations, and correlations (Study 3)

Variable	Mean	s.d.	1	2	3	4	5	6	7
1. Experienced Anxiety	3.26	1.16	1						
2. Experienced Passion	2.97	1.05	-0.16	1					
3. Displayed Anxiety	3.84	1.50	0.13	-0.23*	1				
4. Displayed Passion	4.40	1.47	-0.11	0.39**	-0.50**	1			
5. Persuasiveness	4.25	1.47	-0.13	0.37**	-0.64**	0.80**	1		
6. Funding Recommendation	2.63	1.03	-0.21*	0.30**	-0.69**	0.78**	0.84**	1	
7. Trait Speech Anxiety	3.78	0.98	0.45**	-0.08	0.13	-0.23*	-0.22*	-0.27**	1
8. Preparation	2.71	2.21	-0.17	0.19	0.18	-0.09	-0.04	-0.18	0.14

Note.  $N = 95$ . \* Correlation is significant at the 0.05 level (2 tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

Figure 1. Emotions Before Pitching (Pilot Study)

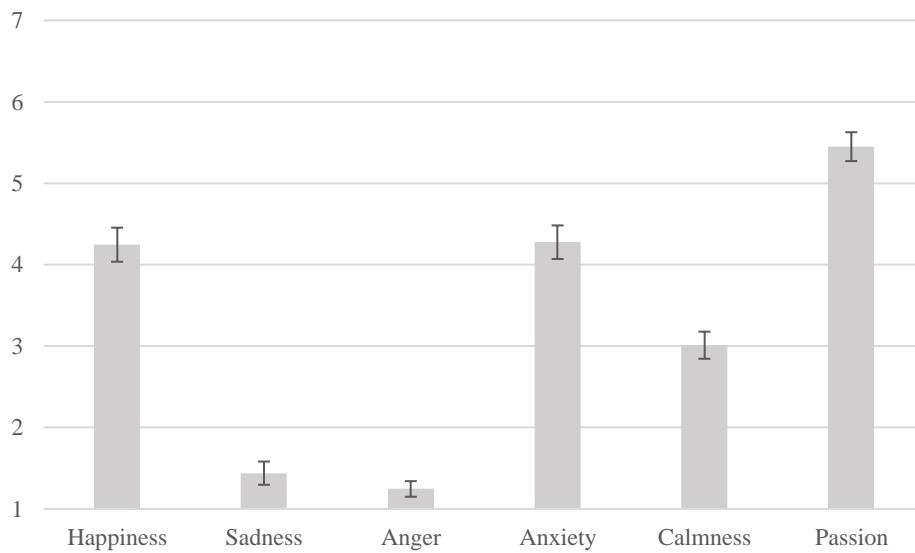
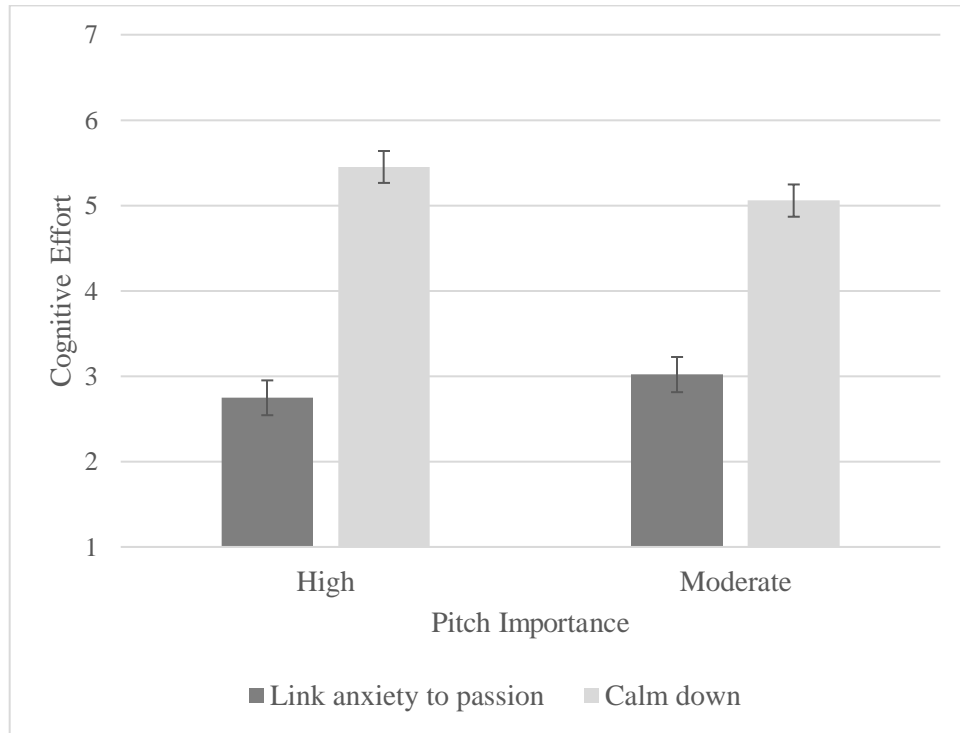


Figure 2. The Interaction of Pitch Importance and Emotion Regulation Strategy on Cognitive Effort (Study 1)



## Appendix B

### Prompts and Measures in the Pilot Survey

Recall the most recent time when you pitched your venture idea to potential investors.<sup>5</sup> Make sure to think about a specific instance rather than pitches in general.

When did the pitch take place? (Year, month, etc.) (Single-line text entry)

Briefly describe the nature of your venture idea (industry, core business, etc.). (Single-line text entry)

In what year did you establish the venture that you pitched? (Single-line text entry)

What round of funding were you seeking? (Single-line text entry)

(The questions above do not assess variables used for analysis; they are used to facilitate recalling and make sure that respondents have a specific pitch in mind.)

Now, please picture the moments preceding the pitch in your mind. Try to remember as vividly as you can what the moments immediately before the pitch felt like. Try to get back into the frame of mind you were in at the time as much as possible.

Using the scales below, please indicate how you felt right before you pitched your venture idea:

(Seven-point scale with scale labels ranging from 1 = *Not at all* to 7 = *An extreme amount*.)

1. Happy

2. Enjoyment

---

<sup>5</sup> For those who did not pitch to investors but to other key stakeholders, the instructions read as “Recall the most recent time when you pitched your venture idea to potential key stakeholders”.

3. Grief
4. Sad
5. Angry
6. Mad
7. Anxious
8. Worried
9. Calm
10. Relaxed
11. Passionate

(Items 1-2 assessed happiness [ $\alpha = 0.91$ ]. Items 3-4 assessed sadness [ $\alpha = 0.86$ ]. Items 5-6 assessed anger [ $\alpha = 0.88$ ]. Items 7-8 assessed anxiety [ $\alpha = 0.77$ ]. Items 9-10 assessed calmness [ $\alpha = 0.82$ ]. Item 11 assessed passion.)

It is normal for people to experience a variety of emotions, particularly anxiety, before pitching in front of an audience. One of the goals of the current research is to understand how people experience and deal with pre-pitch anxiety.

How did you attempt to manage the anxiety prior to the pitch recalled above? What did you do or think about to try to calm your anxiety? Describe in detail below.

Please discuss what you did in that moment, not what you think you should have done.

(Multiple-line text entry)

## Appendix C

### Survey for Entrepreneurs in Study 2

It is common for people to experience some degree of anxiety before important events. To what extent were you attempting to manage your anxiety about the pitch with the following tactics?

Note: we are interested in what you *are* doing, not what you think *should* be done.

(Five-point scale with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*.)

1. Tell myself that I am anxious partly because I care about my venture so much.
2. Tell myself that anxiety may reflect that I am a passionate entrepreneur.
3. Tell myself that this pitch is not as important as it seems.
4. Tell myself that there are other opportunities in the future even if this pitch does not go well.
5. Control my anxiety by not expressing it.
6. Keep my anxiety to myself.
7. Try to ignore my anxiety.
8. Direct my attention away from my feelings.

(Items 1-2 assess the use of the focal strategy: linking anxiety to passion. Items 3-4 assess the use of detachment. Items 5-6 assess the use of suppression. Items 7-8 assess the use of distraction.

The order of the items was randomized.)

How you are feeling? (Five-point scale with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*.)

1. Anxious



2. Tense
3. Nervous
4. Passionate
5. Enthusiastic
6. Excited

How many times (roughly) have you pitched in front of 1) investors and 2) other professionals in the entrepreneurial community in the past? If you have never done so in the past, please enter "0".

How many hours (roughly) have you spent on preparing for the semi-final pitch (i.e., just the today's pitch, not other parts of the competition such as the concept paper or videos)? Please provide your best estimate as a number, not a range.

How do you feel about giving public speeches in general?

(Seven-point scale with scale point labels ranging from 1= *Strongly disagree*, 7 = *Strongly agree*).

1. Giving a speech makes me anxious.
2. I have no fear of giving a speech

Please indicate the name of your venture in the venture competition.

Which of the following describes your role in the pitch today?

1. I will be delivering the main presentation.
2. I will not be part of the main presentation, but will be available for the Q&A.
3. Other (please specify)

(Only those who delivered the main presentation were included in the analysis.)

How old are you?

What is your highest degree earned? Please use the "other" box if necessary.

(Options include: BA, BS, MS, MBA, JD, RN, MD, PhD, Other)

To which gender do you most identify? (Options include Female, Male, Genderqueer/non-binary/other)

## **Appendix D**

### **Prompts and Measures in Study 3**

#### **Introduction to the Speech Task**

Communication skills are important to success in business. The goal of the study is to examine people while they deliver speeches and to help them to improve their delivery.

You have 3 minutes to prepare a 3 to 5-minute speech. The goal of your speech is to convince your audience why they should donate to a charity or non-profit organization of your choice. We would like you to choose an organization that is personally meaningful to you and you feel passionate about. This is what you will do in the final presentation for your Business Communication class. You can choose the same organization to talk about today, and you can use any preparation you have already done for the class project in your speech today as well.

We will be recording your speech today, but we will keep this recording completely confidential and never used for anything beyond this research project. Also, we will not attach your name to the recording; it will be only associated with a number that is randomly assigned to you by the experimenter.

As part of this research, your speech will later be evaluated on several dimensions including persuasiveness and the audience's intention to donate. The evaluation committee may include one of the deans and several other students. For the pitch that is picked as the best, we will donate \$75 to your charity or non-profit organization in your name.

We have set a timer on the page. When the time is up, you will receive some final tips before going to one of the breakout rooms to deliver your speech.

Feel free to use the pen and paper on the desk to prepare your speech.

## **Anxiety Regulation Manipulation**

**Reappraisal condition.** Now it is time to deliver the speech. However, before you deliver the speech, here are some important instructions. Please read them carefully and make sure you fully understand them before you notify the experimenter that you are ready to deliver the speech.

If you feel nervous about the speech, remember that the anxious feeling can be a sign that you are deeply passionate about and committed to your topic. Some of the anxiety you are experiencing may be due to your desire to win the prize for your charity. When people personally care about their idea, they tend to feel anxious pitching it to others, because the idea being evaluated is deeply meaningful to them. Therefore, while recognizing any anxious feelings, remember that these come up because you care so much about your charity, which is a good attribute for speakers, because people are more likely to be persuaded by someone passionate rather than indifferent about their topic.

In sum, when feeling anxious, try to remember that anxiety is a proof that you are passionate about your topic.

Take a moment to adopt this frame of mind. When ready, go to one of the breakout rooms to deliver your speech, following the experimenter's instructions.

**Distraction condition.** Now it is time to deliver the speech. However, before you go to the breakout room, here are some important instructions. Please read them carefully and make sure you fully understand them before you notify the experimenter that you are ready to deliver the speech.

If you feel nervous about the speech, please try to ignore your feelings. Feeling anxious is not helpful for your speech delivery. The best way to improve performance during stressful

situations is to ignore the source of anxiety. Whenever any thoughts come up and make you feel anxious or doubtful about yourself, simply ignore them and direct your attention away. As a way to calm down, try to focus on other things (such as the words in the speech, how to deliver a better speech, etc.). Your goal is to focus on the task itself and ignore any anxious feelings or self-doubt you might have.

In sum, when feeling anxious, try to ignore your feelings and negative thoughts.

Take a moment to adopt this frame of mind. When ready, go to one of the breakout rooms to deliver your speech, following the experimenter's instructions.

### **Post-Speech Measures**

Now, please take a moment to reflect on your experience delivering the speech. How did you feel during the moments right before delivering the speech? (Five-point scale with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*.)

1. Anxious
2. Tense
3. Nervous
4. Passionate
5. Enthusiastic
6. Excited

(Items 1-3 assessed anxiety. Items 4-6 assessed passion.)

Before delivering the speech, to what extent did you attempt to manage your anxiety with the following tactics? (Five-point scale with scale point labels ranging from 1 = *Not at all* to 5 = *Very much*.)

1. Told myself that I am anxious partly because I care about my charity so much.

2. Told myself that anxiety is proof that I am passionate about the topic.

We are aware that you are asked to deliver a similar speech in your Business Communication class. Therefore, we would like to know more information about how much you have prepared for it before this lab session.

How many hours have you put into preparing the final presentation on charity, before the lab session today? (Choices: “< 1 hour” “1-2 hours” “2-3 hours” “3-4 hours” “4-5 hours” “5-6 hours” “6-7 hours” “7-8 hours” “more than 8 hours”.)

Please answer the following question based on your past experiences in general rather than the speech delivery in the lab today.

How much do you agree or disagree with the statements below? (Five-point scale with scale point labels ranging from 1 = *Strongly disagree* to 5 = *Strongly agree*)

1. I have no fear of giving a speech.
2. Giving a speech makes me anxious.

## Appendix E

### Rating Scheme in Study 3

#### Displayed Anxiety

Raters were asked to rate speakers' anxiety on a seven-point scale based on the following avoidant nonverbal signals (Beltzer et al., 2014):

1. Eye contact (More eye contact indicates lower anxiety)
2. Smiling (More smiling indicates lower anxiety)
3. Fluent gestures (More fluent gestures indicate lower anxiety)
4. Fidgeting
5. Tense body language (vs. loose)
6. Closed body language (vs. open)

#### Displayed Passion

Raters were asked to rate speakers' passion based on the following behavioral indicators of passion (Chen et al. 2009):

1. Energetic body movements
2. Rich body language
3. Animated facial expression
4. A lot of gestures
5. Face lighting up while talking
6. Varied tone and pitch

#### Persuasiveness

How much do you agree or disagree with the following statements? (Seven-point scale with scale labels ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*; Brooks, 2014)

The speaker appears persuasive.

**Funding recommendation**

Would you like to recommend this speaker for the \$75 prize to donate to their social cause? (1 =

Definitely no; 2 = No; 3 = Indifferent; 4 = Yes; 5 = Definitely yes)