The Role of Mindset on Future Success Expectations After Work-Related Setbacks

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Abstract

The role of implicit theories, or mindsets, after setbacks has been widely researched in many settings, but research in the professional context is scarce. The purpose of this study is to investigate how different mindsets affect people's self-regulatory behavior after negative feedback. More specifically, we aimed to investigate how mindset affects self-regulation in the goal-monitoring phase of goal pursuit (Burnette et al., 2013). We hypothesized that mindset affects individuals' future expectations for success after receiving negative feedback, and that adaptive perfectionism will buffer against the threat of failure. Our results show that individuals with a growth mindset experience more success expectations than individuals with a fixed mindset. Adaptive perfectionism did not have a significant moderating effect, but was found to be highly associated with success expectations when separated from mindset. The research utilized highly generalized tasks and feedback, and future research should focus on providing tasks that are specific to certain fields or jobs.

Keywords: implicit theories, mindset, success expectations, adaptive perfectionism, setbacks.

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Project and individual failures, or threats of failure such as negative feedback, are likely to produce negative emotional responses from employees and employers alike (Shepherd & Cardon, 2009), which in turn can affect performance and increase feelings of pressure in the workplace. According to prior research on the effects of failure, individuals' experiences of failure can lead to drastic consequences, such as negative emotions (Fisher, 2000), decreased learning from failure experiences (Shepherd, 2003; Shepherd et al., 2009), and decreased trust and commitment towards organizations (Kiefer, 2005). Setbacks are common throughout one's professional life (Shepherd et al., 2009), and experiencing them can offer efficient learning opportunities, such as developing resilience. However, many individuals are not able to learn from failure and fail to utilize their gained experience to perform better (Disterer, 2002). Thus, not all people react to setbacks in the same manner – while some become discouraged, others persist. Therefore, investigating the factors that affect people's perceptions of failure and how they react to it is crucial. One of these important factors seems to be people's beliefs about the malleability of their work-related abilities (Schmitt & Scheibe, 2022), also known as the theory of mindsets (Dweck, 1999).

In this study, we aim to investigate how people's implicit theories, or mindsets, affect their reactions to negative feedback. More specifically, we are interested in examining how experiencing the threat of failure affects one's expectations for future success depending on whether they see their work abilities as malleable or fixed. We adopt a self-regulation perspective on goal-directed behavior (Burnette et al., 2013) with an added focus on implicit theories and their respective processes that are embedded in the self-regulation process at each stage of goal achievement. To examine what happens after a confrontation with negative

feedback or experiencing work-related setbacks, we are incorporating the framework introduced by Burnette et al. (2013). Additionally, by using the professional skills and abilities framework introduced by Schmitt and Scheibe (2022), we are investigating mindset in a domain that has been scarcely researched – the workplace. On top of this, we are also interested to see how the construct of adaptive perfectionism affects the relationship between one's belief about the malleability of their abilities and the amount of success expectations one experiences.

Self-Regulation and the SOMA Model

The self-control theory, or self-regulation process towards goal achievement, was first introduced in the study conducted by Carver and Scheier (1998), where the process of goal pursuit was divided into several stages: goal-setting, goal operating, and goal monitoring (Carver & Scheier, 1998). Building on the self-control theory Burnette and colleagues (2013) introduced the setting/operating/monitoring/achievement (SOMA) model, which adds a clear focus on embedding implicit theories at each stage. Thus, the SOMA model conceptualizes the specific self-regulatory processes at each step of goal pursuit, derived from one's belief that their abilities are either malleable (incremental theorists) or fixed (entity theorists; Burnette et al., 2013). In short, while people who see their abilities as malleable are more likely to set learning-focused goals and utilize mastery strategies, those who perceive their abilities as fixed are more likely to focus on performance goals and rely on helpless strategies.

As our study revolves around negative feedback, we will be investigating the link between implicit theories and self-regulatory affective processes at the goal-monitoring stage. More specifically, we are examining how implicit theories are related to the affective processes in the goal-monitoring stage, and how they influence the evolution of success expectations. Goal monitoring can be defined as the consideration of possible demands and accessible resources for

achieving success (Carver & Scheier, 1982), and it has functions akin to a feedback loop. In other words, when people monitor their goals they become aware of the discrepancy between their current and desired state and begin restructuring their strategies. However, being confronted with this discrepancy can cause people to interpret their progress more positively or more negatively, depending on how their beliefs about themselves and the world are structured.

Implicit Theories

Implicit theories can be defined as the way in which individuals integrate their beliefs about the malleability or stability of abilities and characteristics and attribute meaning to experiences (Ross, 1989). Incremental beliefs, or growth-oriented mindsets, are often associated with learning and mastery-oriented goals and strategies (Burnette et al., 2013), and have been shown to allow individuals to self-regulate and control negative emotions, such as anxiety, more effectively (Ommundsen, 2003). Individuals who hold a growth mindset often see their abilities and characteristics as malleable and are more inclined to focus on developing and improving their skills (Dweck, 1999; Dweck & Leggett, 1988). In contrast, entity beliefs or fixed mindsets are related to performance-oriented goals and strategies and have been shown to increase the experience of negative emotions when evaluating past and present performance (Burnette et al., 2013). Individuals who hold fixed mindsets often see their abilities and traits as fixed, and rely on external attributions, or relating consequences to out-of-control factors, in the face of setbacks or failures (Dweck, 2000).

Growth-oriented and fixed-oriented individuals differ in at least two major ways: how they react to and seek out future novel tasks, and how they react and cope with setbacks. Individuals with a growth mindset often see challenges as learning opportunities and are more inclined to choose a difficult task over an easy one (Yeager & Dweck, 2012). They often

attribute setbacks to changeable factors that are perceived to be in their control, which leads to more effective regulatory processes (Hong et al., 1999). In contrast, individuals who hold a fixed mindset are more inclined to avoid challenges as they are perceived as a threat or indication that they lack traits or abilities that are necessary to succeed in the task at hand (Yeager & Dweck, 2012). When faced with setbacks, fixed-oriented individuals tend to attribute failure to stable and external factors, which could potentially lead to a decreased focus on self-regulation (Hong et al., 1999).

Implicit theories can have a strong effect on how people integrate information gained about their progression toward objectives in the goal-monitoring stage. In the study by Dweck (2000), reactions to negative feedback were different depending on the participant's mindset. Individuals with a stronger growth mindset reported that they learned from the initial failure and were now in possession of sufficient resources to complete the task or reach the set goal, and were therefore showing much higher expectations for success in the future. In contrast, individuals with a stronger fixed mindset reported more anxiety and worry, and said that they would be unlikely to try the task again (Dweck, 2000). These findings are in line with the claim that when facing an ego threat, such as negative feedback, growth-oriented individuals are more focused on improving their performance, and fixed-oriented individuals are more focused on proving their skills or avoiding the threat-inducing task altogether (Burnette et al., 2013).

The Professional Skills and Abilities Mindset

Investigating mindset in an area where research is rather scarce, the professional skills and abilities mindset (Schmitt & Scheibe, 2022) conserves the notions discussed above but integrates them in the context of work and careers. The professional skill and abilities mindset revolves around the notion that people's mindsets represent an indicator of adaptability in

professional settings. It is based on the career construction theory, which states that individuals with high levels of career adaptability will more likely engage in career-related learning activities than individuals with lower levels of career adaptability (Savickas, 2005). The professional skills and abilities mindset describes the concepts of skills as "the procedural knowledge required to successfully perform a task" and abilities as "more general capacities of an individual that reflect a more innate potential or develop early in life" (Scheibe & Schmitt, 2022, p. 6). In the context of professional skills and abilities, growth mindset individuals are likely to believe that their career-related skills and abilities can be developed with hard work and motivation, whereas fixed mindset individuals believe that they are unable to control or improve their career-related skills or abilities (Schmitt & Scheibe, 2022).

Previous research on the relationship between implicit theories and professional success shows that growth mindsets are often associated with positive organizational results, such as increased performance, better workplace engagement among both employees and employers, and more effective leadership (Cäniels et al., 2018; Murphy & Reeves, 2019). Similarly, the professional skills and abilities mindset shows that individuals with a growth mindset are more likely to actively seek out challenges, and are therefore more likely to gain adaptive resources critical for dealing with career-related trials. In contrast, individuals with a fixed mindset are less willing to approach challenges and are less likely to gain adaptive resources for coping and learning (Scheibe & Schmitt, 2022). This suggests that when experiencing setbacks in work-related settings, people with growth mindsets will have a higher level of readiness to deal with the consequences and still hold a positive outlook on future tasks. In contrast, people with fixed mindsets might be unable to cope with failure, and might even see difficult tasks as threats rather than challenges, causing them to avoid participating in future activities.

Success Expectations Following Negative Feedback

Failure can be defined in both individual and group contexts. An individual failure could be, for example, not receiving a desired grade at school or not getting the ideal internship. A group failure could be illustrated with an organizational project failure, where low performance would lead to the termination of a project (Shepherd & Cardon, 2009). No matter how and on which level failure is defined, it can lead to new behaviors and cognitions in individuals (Kiefer, 2005), which in turn can lead to drastic consequences. In general, setbacks can lead to negative emotions (Fisher, 2000), decreased trust and commitment (Kiefer, 2005), as well as harm the process of learning (Shepherd et al., 2009), but they can also lead to increased learning opportunities (Disterer, 2002), which in turn can improve resilience and development. We make use of the mindset theory applied to the workplace in order to understand the antecedent of why some people react differently than others when faced with work-related setbacks.

The type of belief one holds regarding the control they have over their abilities and reaction to failure have been shown to be highly correlated (Dweck, 2000). Fixed mindset individuals are often likely to engage in defensive behaviors following feedback, such as focusing on an external locus of control, to protect their self-esteem (Forsythe & Johnson, 2017). They often attribute failure to stable traits and factors (Hong et al., 1999), and are therefore more likely to dismiss received feedback as they perceive improvement to be out of their reach (Forsythe & Johnson, 2017). This can be detrimental to their development as professionals. In contrast, growth mindset individuals attribute failure to internal, controllable factors (Hong et al., 1999), causing them to seek out challenges and take part in developmental actions even after initial failure (Forsythe & Johnson, 2017). This allows them to learn from past experiences and failures and aids in improving and developing old and new skills.

Success expectations can be defined as the perceived confidence or doubt about how likely an individual is to reach their goal, and whether or not they have sufficient resources (Carver & Scheier, 1998). Expectations about future success have been shown to affect the relationship between mindsets and self-regulation (e.g., Burnette, 2010; Nygren et al., 1996). More specifically, individuals with growth- or fixed mindsets respond differently to setbacks because their expectations for future success differ tremendously (Burnette, 2010). High future success expectations can also lead individuals to underestimate the likelihood of negative outcomes and overestimate the likelihood of positive outcomes in future projects, which in turn boosts their confidence (Nygren et al., 1996). However, specific research on the construct of success expectations is rather scarce, and it does not have a validated measurement. This is why we are investigating success expectations as self-efficacy, which in a professional context can be defined as one's confidence in their own abilities to achieve high-quality outcomes in career-related tasks (Fraser et al., 2018). Based on previous research, we expect that individuals with a stronger professional growth mindset will experience more self-efficacy even after ego-threat or failure at work than individuals with a professional fixed mindset.

Hypothesis 1: Negative feedback affects the goal monitoring stage of the goal achievement process, influencing individuals with a growth mindset to experience more success expectations than individuals with a fixed mindset.

Adaptive Perfectionism as a Moderator

Perfectionism can be defined as a characteristic or personality trait that is portrayed as setting exclusively high standards for performance, and individuals who rate high on perfectionistic tendencies are often characterized as being excessively critical when evaluating their own performance (Flett & Hewitt, 2002; Frost et al., 1990). Perfectionistic individuals are

also likely to measure themselves exclusively on success and efficiency (Burns, 1980; Shafran et al., 2002). Previous research shows evidence for the claim that perfectionism is and should be regarded as a multidimensional construct with at least two components: striving, or adaptive perfectionism and self-critical, or maladaptive, perfectionism (Frost et al., 1993). Both components are similar in the way that they are characterized by setting high standards. However, whereas maladaptive perfectionists tend to perceive a high discrepancy between their standards and their actual resources, adaptive perfectionists tend to perceive a low discrepancy between the abilities needed to achieve their goals and the abilities they possess (Frost et al., 1993; Lo & Abbott, 2019).

Adaptive perfectionism is often considered to affect one's self-regulatory processes after both success and failure. Adaptive perfectionists have been shown to possess significantly higher levels of positive beliefs and lower levels of negative beliefs about their internal attributions, and rate much higher on self-efficacy scales in comparison to maladaptive perfectionists (Lo & Abbott, 2019). However, the relationship between adaptive perfectionism and success has inspired much more research than the relationship between adaptive perfectionism and failure (Lo & Abbott, 2019; Besser et al., 2004; Stoeber et al. 2008). Therefore, it is difficult to predict how adaptive perfectionism would affect an individual's reaction to the threat of failure. Despite this obvious lack of research on the subject, Stroeber and colleagues (2008) suggested that experiencing failure could increase the perceived distance between one's possessed abilities and the abilities required to complete a specific task. This effect could potentially present itself as decreased self-efficacy and future expectations in adaptive perfectionists.

The findings on the relationship between self-efficacy and adaptive perfectionism are far from consistent (Stoeber et al., 2008). The early study conducted by Hart et al. (1998) showed

that adaptive perfectionism is associated with low self-efficacy, whereas maladaptive perfectionism is associated with high self-efficacy. In contrast, later studies have offered contradictory findings (Flett & Hewitt, 2006; Dunkley et al., 2003) that support the notation that adaptive perfectionists seem to rate higher on self-efficacy than maladaptive counterparts. It has also been suggested that as long as the overlap with maladaptive perfectionism is controlled for, adaptive perfectionism should show a positive association with self-efficacy (LoCicero & Ashby, 2000). Based on the latest findings, we expect adaptive perfectionism to work as a buffer against the emotional effect after negative feedback. Individuals who rate higher on adaptive perfectionistic tendencies should show more resilience when facing failure, and will not show a significant decrease in self-efficacy or future success expectations after receiving negative feedback. Additionally, we expect to see a difference in the relationship between professional mindset and success expectations on different levels of adaptive perfectionism. More specifically, at a high level of adaptive perfectionism, the relationship between mindset and success expectations is similar for both growth and fixed conditions, whereas at a lower level of adaptive perfectionism, the difference between mindset conditions is significantly larger.

Hypothesis 2: Adaptive perfectionism acts as a buffer against negative emotional reactions, and the relationship between mindset and success expectations will differ for different levels of adaptive perfectionism.

Methods

Participants

By utilizing convenience sampling, we gathered a sample of participants that were referred to by psychology students through word-of-mouth as part of their bachelor thesis

project. The participants did not receive compensation for their participation in the study. The study received a total of 234 responses, of which around 140 were incomplete. The complete sample consisted of 88 employees from various different occupational backgrounds, with the only inclusion criteria being that their current working hours exceed at least 20 hours per week. We also checked that our participants did not guess the purpose of our study. Data from 15 participants were removed because they did not give consent to use the data, did not fill in the complete survey, or exclusively stated that they guessed the true purpose of the study from the get-go. Five Dutch-speaking participants reported that they have a zero-hour work contract, but we decided to keep these cases in the analysis as zero-hour contracts are common in the Netherlands. After all exclusions, the data of the remaining 73 participants were used for the statistical analysis. Table 1 offers specific demographic information of all participants.

Table 1.

Gender, Language, and Age of Participants

Baseline Characteristic		N	%	Mean	Std. Deviation
Gender	Male	22	29.7		
	Female	50	67.6		
	Other	2	2.8		
Language	English	27	36.5		
	Dutch	29	39.2		
	German	18	24.3		
Age		73		40.96	14.629
Total		73			

Assessment and Measures

Short Almost Perfect Scale (Rice, et al., 2014)

The Short Almost Perfect Scale is a shorter and more refined version of the Almost Perfect Scale-Revised by Slaney et al. (2001). We used the shortened scale because it measures perfectionism more efficiently. The scale is a self-report measure that assesses the two core

dimensions of perfectionism, standards and discrepancy. While the subscale of standards concerns high-performance expectations, the discrepancy subscale assesses self-critical attitudes associated with performance evaluation. The measure consists of eight items, out of which discrepancy was used to assess maladaptive perfectionism and standards were used to assess adaptive perfectionism. All items are scored on a 7-point Likert scale ranging from 1 = "strongly disagree" to 7 = "strongly agree", and they consist of statements such as "Doing my best never seems to be enough" (discrepancy) and "I expect the best from myself" (standards). The measure offers good psychometric properties with reliability of $\alpha = .85$ for the subscale standards and $\alpha = .87$ for the subscale discrepancy. In our study, the psychometric properties were satisfactory with Cronbach's alpha of $\alpha = .88$ for adaptive perfectionism.

Developmental Self-Efficacy Scale (Chen et al., 2001)

In order to assess one's success expectations, we draw inspiration from previously published research where success expectations were related to and measured with self-efficacy (Maurer et al., 2002; Tabernero & Wood, 1999). The Developmental Self-Efficacy Scale is a self-report measure that includes two types of self-efficacy for development: relative and absolute. In this study, we only reported on absolute self-efficacy. Absolute self-efficacy was assessed by the scale developed by Maurer et al. (2002), going from 1 = "disagree very strongly" to 7 = "agree very strongly". The scale measures participants' beliefs they can improve their skills without reference to others, and consists of four items such as "When facing difficult tasks, I am certain that I will accomplish them". The Cronbach's alpha was not indicated, however, the scale has been used before in previous research projects, which ensures reliability (Maurer et al., 2003). The reliability of the scale in this study was $\alpha =. 96$.

Design and Procedure

In order to test our hypotheses, we conducted an online experiment. The two experimental conditions represent the two levels, growth and fixed, of the independent variable professional skills and abilities mindset. Each participant was randomly assigned to either the growth mindset (n = 40) or the fixed mindset condition (n = 33). The data was gathered using a single study, which took participants around 25 minutes to complete. Before the study was conducted it was approved by the Ethics committee of the University of Groningen.

Before the study began, all participants were informed that participation was completely voluntary and that they could quit the study at any time. Even after participation, there was an option for the participants to have all their data removed. Once the information about the study was given, participants filled in the informed consent form. In order to mask the true aim of the study, participants received a bogus explanation indicating our interest in examining individual differences and their accounting for differing work-related abilities throughout a recruitment task used in Human Resources departments across different companies. A comprehensive debriefing of the true purpose of the study was offered to all participants after they were finished with all tasks and questions. Participants were also given a voluntary 'mood restoration' video to watch to make sure that the deception in the study would not leave them with any negative feelings.

The study consisted of four parts: mindset manipulation, an emotional-understanding task, a pattern-finding task, and a brief questionnaire. Each task was followed by standardized negative feedback, irrespective of the participant's actual performance. In order to activate either the fixed or the growth professional skills and abilities mindset, participants were asked to read a vignette suggesting that work-related skills and abilities are either developable or relatively

stable and unchangeable. The vignettes were introduced to the participants as a memory task, indicating that they will later be tested on their memory of the main message of the text. In reality, however, there was no testing of memory as the vignettes only served the purpose of activating either growth or fixed mindsets in our participants. Additionally, to further strengthen our mindset manipulation, participants were asked to fill out condition-specific items from the Professional Skills and Abilities Mindset Scale (Schmitt & Scheibe, 2022), a self-report measure that assesses the two core components of professional skills and abilities mindsets.

Following the mindset manipulation, the Occupational-Propensity Task (OPT) was introduced. The OPT, as adapted from Shafir et al. (2017), is a computerized task that is composed of three successive tasks assessing wise reasoning, fluid intelligence, and emotional intelligence. The current study only utilized the two latter mentioned tasks. In particular, the first task assessing emotional intelligence required participants to watch a 2-minute video of a person recounting an emotional experience, thereby being instructed to pay close attention to the protagonist's facial expressions. In order to ensure the complete focus of the participants on the ambiguous situation, there was no sound available and the participants were not allowed to continue until they finished watching the entire video. Subsequently, participants were asked to indicate the emotions they believe have been portrayed in the video clip. In order to indicate the intensity of each emotion, a questionnaire that lists 14 different emotions was provided; each emotion can be rated on a 5-point Likert scale ranging from 1 = "not at all" to 5 = "extremely". Their actual performance was not recorded. After finishing the task, participants were provided with automated negative feedback indicating a below-average performance simulating failure that was unrelated to their actual performance. This feedback solely served the purpose of evoking an affective response in our participants.

The second part of the OTP assesses fluid intelligence through a pattern-finding task. Participants were presented with a picture that was missing a piece and had to indicate which of the presented six options completes the picture. This task was presented in a total of ten different trials, and each trial had to be completed within a given time frame of 16 seconds. Again, the actual performance was not recorded. After completing the task participants once again received standardized negative feedback indicating below-average performance. After these two rounds of tasks followed by bogus negative feedback, participants were asked to answer the brief questionnaire that consisted of all scales used in the study.

After the main parts of the study, participants were asked to provide additional information, such as age, gender, country of residence, level of educational attainment, and the number of work hours specified in their contract. Additionally, participants were asked to briefly write about their thoughts regarding the study and to guess what the purpose of the study was. This question served the function of assessing possible demand characteristics that might have been present within our study. To restore mood, participants were offered the possibility to watch a collection of scenes from Pixar's 2015 film "Inside Out". At this point, participants were provided with an extensive debriefing, which included both the real purpose of our study and an explanation for the deception that was delivered through a bogus explanation at first. It was also clarified that the negative feedback each participant received solely served the function of investigating our hypotheses regarding mindset and reaction to negative feedback, and was not related to their actual performance during the tasks.

General Statistical Procedure

To assess our first hypothesis, concerning the relationship between mindset and success expectations, we will perform a one-way ANOVA to examine whether there is a difference in

success expectations between the two mindset conditions. Subsequently, a one-way ANCOVA will be performed to investigate if the moderator, adaptive perfectionism, has a moderating effect on the relationship between mindsets and success expectations. Adaptive perfectionism will be included in the model as the covariate. Prior to our analysis, an assumption check will be carried out to determine whether the performance of both an ANOVA and ANCOVA on the data is appropriate. Four main assumptions will be checked - normality, homoscedasticity, homogeneity of regression slopes, and linearity between the dependent variable, success expectations, and the moderator, adaptive perfectionism.

Results

Descriptive Statistics

Before beginning the analysis, we decided to exclude some cases due to unanswered items and refusal of consent. Two cases were also removed because the participants exclusively stated that they guessed the true purpose of the study from the get-go. We then performed an analysis of descriptive statistics of the independent variable 'Mindset', dependent variable 'Self-Efficacy', and moderator 'Adaptive Perfectionism'. In addition to analyzing mindset with both growth and fixed conditions combined, we also wanted to include correlations for both conditions separately to see any potential differences.

The correlation between mindset and self-efficacy was moderately positive and significant (see Table 2). In addition, the correlation between growth mindset and self-efficacy was also positive and significant, whereas the correlation between fixed mindset and self-efficacy shows a non-significant negative trend. This suggests that mindset is somewhat related to the level of self-efficacy. Individuals in the growth mindset condition generally showed higher levels of self-efficacy, whereas individuals in the fixed mindset condition showed lower levels of

self-efficacy. Adaptive perfectionism has a positive, significant correlation with mindset and self-efficacy, which shows a potential relationship between the variables. Similarly to self-efficacy, adaptive perfectionism also shows a non-significant negative trend in relation to the fixed mindset condition.

Additionally, the data shows some differences between genders and age groups in the level of self-efficacy. The correlation between self-efficacy and gender ($r = .240$, $p < 0.05$) suggests that self-efficacy has a stronger relationship with males than females. The correlation between self-efficacy and age ($r = -.260$, $p < 0.05$) shows a negative relationship between the variables, suggesting that younger participants might have a stronger level of self-efficacy than their older counterparts. Due to the small sample size, these differences could be influenced by a lack of data and therefore will not be mentioned further in the main analysis, but they could offer interesting research topics in the future.

Table 2.

Descriptive Statistics and Correlations of Study Variables

Variable	N	Mean	Std. Deviation	1.	2.	3.	4.
1. Mindset[a]	73	1.55	.501				
2. Growth Mindset	40	4.09	.724				
3. Fixed Mindset	33	1.74	.785				
4. Self-Efficacy	73	38.68	10.90	.239*	.321*	-.127	
5. Adaptive Perfectionism	73	5.15	1.30	.300**	.182	-.075	.325**

a. Transformed variable, 1=Fixed Mindset, 2=Growth Mindset.
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Assumption Check for Main Analysis

The ANCOVA analysis requires the data to meet several assumptions. These assumptions are normality of residuals, homogeneity of variance, independence of observations, and

homogeneity of regression slopes. In addition, the relationship between the covariate and the

dependent variable should be linear and significant. The data meets all of these assumptions

except the assumption of normality, with the Kolmogorov-Smirnov test showing a significance

of $p = .004$ and the Shapiro-Wilk test showing a significance of $p = .001$. However, Figure 1

shows the normality plot of mindset on self-efficacy, in which we can see that the normality of

the data was very close to being sufficient. Due to this, it is reasonable to assume that with a

bigger sample size the power of the study would be higher, and the assumption of normality

could be met.

Figure 1.

Normal Q-Q Plot of Self-Efficacy
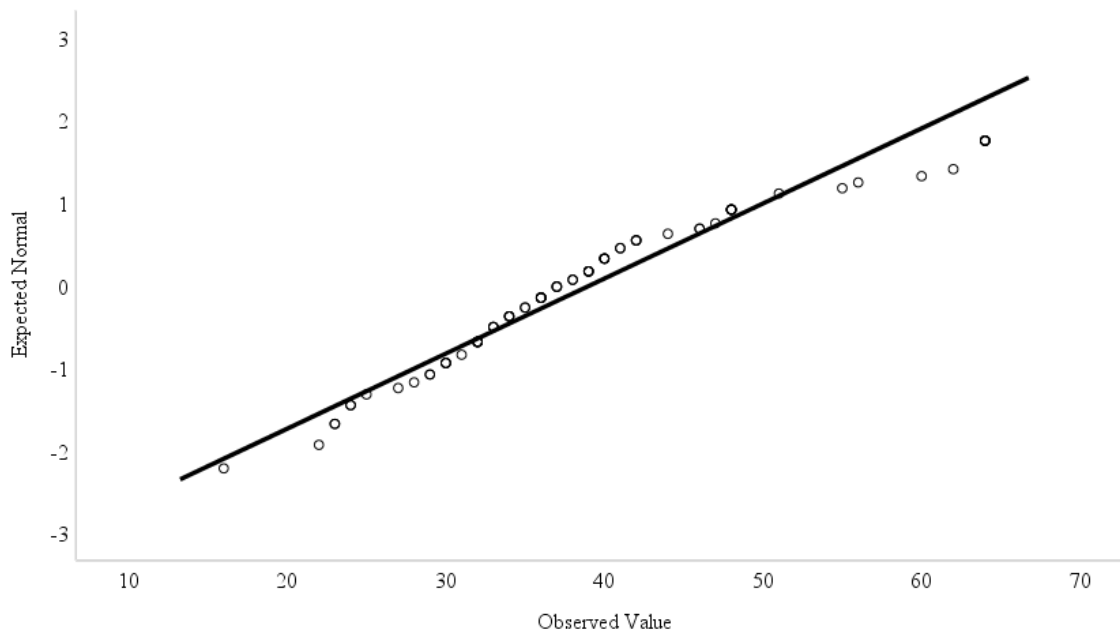
Traditionally all assumptions should be met before proceeding with the ANCOVA

analysis. However, this research was conducted mainly for educational reasons, and therefore we

decided to proceed with the ANCOVA analysis despite the breach in assumptions. Due to this,

we cannot consider the results as significant, which has to be addressed when discussing the outcomes of the analysis.

Hypotheses Testing

The first hypothesis states that negative feedback influences individuals with a growth mindset to experience more future success expectations than individuals with a fixed mindset. We tested the hypothesis with a one-way ANOVA between the independent variable mindset and the dependent variable self-efficacy. The analysis shows that the effect of mindset on self-efficacy is significant, and therefore we can use these results to support our initial hypothesis and conclude that mindset has an effect on one's self-efficacy after negative feedback. However, the pairwise comparison of mindset conditions shows no significant effect on the relationship between self-efficacy and the type of mindset one holds. This could partly be due to the fact that the fixed condition has several influential outliers whereas the growth condition did not. Further research, with a larger sample and thus higher power, should be conducted to see whether or not the effect holds.

Table 3.

Analysis of the Reduced Model

Source	Sum of Squares	df	F	Sig.
Mindset[a]	487.946	1	4.298	.042
Error	8059.945	71		
Corrected Total	8547.890	72		

Dependent Variable: Self-Efficacy.
a. R Squared = .057. (Adjusted R Squared = .044).

The second hypothesis states that adaptive perfectionism acts as a buffer against negative reactions, and therefore individuals with adaptive perfectionistic tendencies, in addition to mindset, will show increased levels of self-efficacy after negative feedback. The interaction

effect of mindset and adaptive perfectionism on self-efficacy is not significant (see Table 4), and therefore our initial hypothesis is not supported. Additionally, the effect of mindset on self-efficacy shows lower significance when adaptive perfectionism is included in the model.

However, adaptive perfectionism alone shows a strong, significant effect on self-efficacy. Due to this, we can assume that an individual's level of self-efficacy and adaptive perfectionistic tendencies are associated, but mindset does not necessarily affect the relationship. Based on the outcomes we conclude that in general individuals with adaptive perfectionism, or adaptive perfectionistic tendencies, experience more self-efficacy and future success expectations no matter what mindset they hold.

Table 4.

Analysis of the Complete Model

Source	Sum of Squares	df	F	Sig.
Corrected Model	1261.784[a]	3	3.983	.011
Mindset	85.432	1	.809	.372
Adaptive Perfectionism	614.026	1	5.815	.019
Mindset * Adaptive Perfectionism	169.584	1	1.606	.209
Error	7286.107	69		
Corrected Total	8547.890	72		

Dependent Variable: Self-Efficacy
a. R Squared = .148. (Adjusted R Squared = .111).

Table 5.

Pairwise Comparisons and Mean Differences in Self-Efficacy by Mindset

(I) Mindset	(J) Mindset	Mean Difference (I-J)	Std. Error	Sig.[a]	95% CI[a]
Fixed	Growth	-3.455	2.534	.177	-8.51, 1.60
Growth	Fixed	3.455	2.534	.177	-1.60, 8.51

Dependent variable: Self-Efficacy.
Based on estimated marginal means.
a. Adjustment for multiple comparisons: Least Significant Difference.

Discussion

In this research study, we aimed to investigate the relationship between mindset and the expectations for future success in a professional context, respectively how the type of belief one holds regarding their own skills and abilities affects their self-regulatory processes after negative feedback. Prior research has shown that people with a growth mindset often perceive challenges as learning opportunities (Yeager & Dweck, 2012) and that their positive view of the malleability of their skills often leads to more effective self-regulation (Hong et al., 1999). In contrast, people with a fixed mindset perceive the challenge as more threatening (Yeager & Dweck, 2012), and often report more negative emotions, such as anxiety and worry (Dweck, 2000). The results of our study offer evidence that supports these previous findings and shows that individuals' beliefs of the malleability of their career-related skills have an effect on their level of self-efficacy. More specifically, individuals in the growth mindset condition showed higher levels of self-efficacy than individuals in the fixed mindset condition. Therefore, we can conclude that employees who perceive their work-related skills and abilities as malleable, in comparison to stable or fixed, are likely to experience stronger future success expectations.

In addition to investigating the relationship between mindset and future success expectations, we hypothesized that adaptive perfectionism could be a moderating factor for the association. In prior research, individuals with adaptive perfectionistic tendencies have been shown to experience higher levels of self-efficacy (Lo & Abbott, 2019). However, the construct of adaptive perfectionism has been studied mostly in the context of success (e.g., Lo & Abbott, 2019; Besser et al., 2004), and research on the effect of adaptive perfectionism on self-efficacy after failure is quite scarce. Additionally, the research conducted on adaptive perfectionism is far from consistent (Stroeber et al., 2008), which is why including adaptive perfectionism as a

moderator is a good addition to our study. The results of our study showed that adaptive perfectionism had no significant moderating effects on the relationship between mindset and self-efficacy. However, adaptive perfectionism alone had a strong, significant effect on participants' level of self-efficacy. Therefore, we can conclude that whereas adaptive perfectionism seems to affect one's level of self-efficacy and future success expectations, it does not show a difference between growth and fixed mindsets. This suggests that no matter what belief one holds of their career-related abilities, adaptive perfectionism is likely associated with higher future success expectations.

Strengths and Limitations

The study had many strengths that add both reliability and generalizability. First, both mindset conditions were sufficiently equal in size. Equal group sizes allow us to effectively compare the groups and add reliability to the outcomes of the study. Second, mindset as a concept is difficult to measure, and even more difficult to manipulate. According to the meta-analysis by Sisk and colleagues (2018), successful interventions for mindset manipulation are difficult to create. Despite this difficulty, the short manipulation check after the initial manipulation via vignettes shows that, for the most part, participants related to the mindset condition they were randomly put in. However, the results also show that the participants in the growth condition were more willing to agree with statements presented in the manipulation check, whereas participants in the fixed condition answered more neutrally. Third, despite the difficulty of measuring and manipulating people's mindsets, mindset interventions can still offer a cheap and practical way to improve performance and productivity in workplaces (Sisk et al., 2018). This, together with the fact that this research study aimed to investigate the newly validated concept of professional skills and abilities mindset (Schmitt & Scheibe, 2022) is why

the outcomes of our study are important and can be beneficial for future research, organizations, and workplaces.

Despite showing lots of potential, the study also had some methodological and theoretical limitations. First, the sample size was very small, which was likely the reason for the low power of the study, as well as the non-normality of the results. Not only does a small sample harm the reliability of the study, but it was also a potential factor for some of the unexpected results. Second, we did not utilize a control group, which would have likely been very beneficial to show stronger support for the outcomes. As mentioned before, mindset manipulation can be tricky to perform (Sisk et al., 2018), and a control condition where the mindset was only measured and not manipulated could have helped in adding reliability to the outcomes. Although we have confidence in our manipulation design, it is possible that some participants had already developed a certain mindset for similar tasks, and therefore the manipulation would not have as large of an effect on them. Not only would a control group add reliability to our design, but it could also be used to investigate people's prior mindsets, which in turn could offer interesting topics for further research.

Third, prior research has suggested that mindset interventions are likely dependent on different contexts (Yeager & Walton, 2011), which in our study could mean the context of different fields of work and specific jobs. We did not control the type of work, or the field of work, of participants. Thus, also the vignettes, occupational tasks, and feedback were very general, and might not have represented what is important to each individual participant. By only including employees from specific jobs or fields, we could have created more career-specific vignettes and tasks, which could have potentially shown even stronger results. Fourth, the feedback participants received after the occupational tasks was inherently negative, not

constructive. It is possible that people, despite their mindsets, would be more likely to look to improve if they got constructive, individual feedback after failure.

Future Research

On the basis of prior research and the results and limitations of our study, we are able to make suggestions for future research directions. First, future research should focus on specific fields, or even specific jobs, and therefore target particular populations. This would allow for field- or job-specific manipulations, tasks, feedback, and measurements, which in turn would potentially offer more reliable results concerning a particular job or field. Second, it could be beneficial to investigate whether individual, constructive feedback with clearly identified weaknesses would show stronger effects than generalized and inherently negative feedback. It is possible that individuals look for points for improvement, and if those are missing from the feedback they received, they could be less motivated to perform better. It is also possible that individuals could even consider their skills and abilities insufficient or experience confusion, as they would receive no information on how and what to improve. Third, future research on mindsets and success expectations could be performed on the other levels of self-regulation in goal pursuit. We only utilized the monitoring stage from the setting/operating/monitoring/achievement (SOMA) Model (Burnette et al., 2013), but it is possible that one's mindset regarding work abilities could be an important factor also in the setting of work-related goals.

In conclusion, mindset can affect how individuals react and self-regulate after negative feedback, which in turn can have both beneficial and malicious consequences. Mindset has been widely studied in the academic context, but the utilization of the concept in the context of workplaces has been scarce. Our results showed that mindset has an effect on how people

perceive their success in the future. We also investigated adaptive perfectionism as a moderating factor but did not find a significant effect. However, research on other moderating factors in the relationship between mindset and success expectations could aid to improve our knowledge of the antecedents of productivity and performance in the workplace. Mindset is potentially a very cheap and easy way to improve productivity in workplaces, and therefore future research on the topic is crucial.

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