The Role of Implicit Mindsets and Adaptive Perfectionism in Reaction to Setbacks in The Workplace

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Abstract

What influences reactions after experiencing setbacks in the workplace? The present study investigates the impact of growth and fixed mindsets as well as the role of adaptive perfectionism on negative affect after experiencing failure in a workplace context. While previous research regarding implicit mindsets has mainly been conducted in an academic setting, this current study puts them into the workplace through the use of professional skills and abilities fixed and growth mindsets.

To investigate differences between the two, we ran an online study in which participants were randomly assigned to either a growth or fixed mindset condition; they received either growth or fixed-oriented vignettes regarding work abilities which were supposed to prime them to either mode of thinking. Afterwards, they were asked to complete tasks, after each of which they received fabricated negative feedback, stating a poor performance. Following that, participants were asked to indicate their negative affect state and adaptive perfectionistic tendencies.

Results show that participants assigned to the fixed mindset condition indicated lower negative affect after receiving negative feedback as opposed to participants assigned to the growth mindset condition. No significance for an interaction effect between mindset and adaptive perfectionism on negative affect was found. These findings seemingly do not align with a large body of established research, which has linked growth mindset to more adaptive behaviour and positive outcomes compared to fixed mindset. Implications of these results as well as the importance of mindset in the workplace will be discussed.

Keywords: mindsets, mindset manipulation, professional skills and abilities mindset, adaptive perfectionism, workplace

The Role of Implicit Mindsets and Adaptive Perfectionism in Reaction to Failure in The Workplace

Failure is a common experience. Especially in the workplace, it is virtually unavoidable, regardless of position or previous success (Newton et al., 2008). Failing to reach a goal or perform a task typically leads to negative emotions and additional negative consequences for the employee, which may manifest themselves in the long run by impacting motivation and future performance (Bohns & Flynn, 2013). And yet, people often attribute their success to having experienced and learned from failure (Newton et al., 2008). However, whether failure and negative feedback lead to proactive learning behaviour or maladaptive avoidance seems to differ across individuals. This current study aims to explain these differences by investigating whether one's personal beliefs about the malleability of their professional skills influence affect after receiving negative feedback in a work environment. We specifically argue that these beliefs about the stability of attributes, also known as implicit mindsets, play a crucial role in the context of self-regulatory processes as a reaction to failure and negative feedback.

Our initial expectations stem from the setting/operating/monitoring/achievement (SOMA) model by Burnette et al. (2013), which integrates implicit mindsets into the self-regulatory process, by explaining self-regulation in terms of incremental beliefs on the malleability of one's abilities. Furthermore, while research on implicit theories has been primarily conducted in academic settings, we focus on the effect of implicit mindsets in the workplace. Our analysis will thus involve the concept of professional skills and abilities mindset, as it puts beliefs about skill malleability into an organisational context (Schmitt & Scheibe, 2022). Additional to the suggestion that people differ in terms of self-regulatory processes depending on the type of mindset, we also investigate whether differences in perfectionistic tendencies, specifically adaptive perfectionism, play a role in this relationship. We therefore examine adaptive perfectionism as a possible moderator between implicit

mindsets and the experience of negative affect after failure.

The SOMA Model

Failure typically implies a disruption and the necessity of altering one's strategies in favour of the self-regulation process towards goal achievement (Burnette et al., 2013). Previous research indicates a significant influence of implicit theories on the self-regulatory process as the SOMA-model combines those two concepts and visualizes the connection between implicit theories and each step of the self-regulatory cycle. While building on Control Theory (Carver, 1998), this current model introduces how incremental (i.e. growth-mindset) vs. entity theorists (i.e. fixed-mindset) behave during the process of goal pursuit. The three main stages of goal pursuit are goal setting, goal operating and goal monitoring (Burnette et al., 2013).

Ordinarily, the self-regulatory process starts with goal setting: Here, the individual sets a goal they want to achieve, the nature of which being seemingly dependent on implicit theories. There is a correlation between entity theorists and the choice of performance-oriented goals, which aim to either prove ability (performance-approach) or avoid failure (performance-avoidance) (Burnette et al., 2013; Vansteenkiste et al., 2010). Incremental theorists on the other hand are associated with learning-oriented goals, which either focus on seeking out opportunities for skill-development (learning-approach) or on not missing out on such a learning opportunity (learning-avoidance) Burnette et al., 2013).

The goal operating stage describes the setting of strategies to reach a goal. Whereas incremental theorists can be linked to more active problem-solving strategies, entity theorists tend to engage in handicapping or avoidant strategies and emotion-focused coping, to subsequently protect self-esteem, as they are more likely to worry about appearing incompetent.

As setbacks can be seen as the discrepancy between where an individual would have planned themselves to be and the current situation (with negative feedback being the outside

input), we will set our focus on the goal monitoring stage. Here, the feedback-loop gives insight into the discrepancy between the present point and the set goal as well as the current state and rate of progress with the help of outside input (e.g. feedback). When perceiving the progress rate as too slow, in entity theorists, negative emotions arise that can act disengaging and lower success expectancies. However, since incremental theorists are more likely to have learning-goals, any form of change from the starting point can be seen as evidence of their development and thus progress towards the goal. Outside input, such as negative feedback is also more likely seen as useful, as it provides further information about their progress, especially since their goals are mainly related to personal development rather than performance (Burnette et al., 2013).

Professional Skills and Abilities Mindset

This current study aims to investigate the described association of implicit theories on self-regulation within the SOMA model but apply it in the workplace. A large body of research (such as Li & Bates, 2019; Mueller & Dweck, 1998; Sisk et al., 2018; Walton & Yeager, 2020; Yeager & Dweck, 2020) mainly investigates implicit theories in the context of intelligence, specifically in academics. However, Schmitt & Scheibe (2022) reveal the relevance of implicit theories at work, as they appear to influence career engagement and predict career adaptability, with a rather novel concept, the Professional Skills and Abilities Mindset (PSaA). It argues that the beliefs one holds about whether, during their career, their work-related skills and abilities are changeable (professional skills and abilities growth mindset) or set (professional skills and abilities fixed mindset) are multi-dimensional and domain-specific, thus dependent on the particular skill in question.

It expands on the implicit theories approach regarding the malleability of attributes and builds upon existing research: While a growth mindset can be associated with a focus on development and more confidence in future success (Burnette et al., 2013), a fixed mindset is linked to low task enjoyment and persistence and, compared to a growth mindset, lower

achievement (Mueller & Dweck, 1998). Research results on whether implicit mindsets directly affect achievement, however, are not straightforward (Li & Bates, 2019) with some meta-analyses being unable to find such a connection (Sisk et al., 2018).

Nevertheless, according to Schmitt and Scheibe (2022), a growth mindset regarding a specific skill seems to lead to positive outcomes in the workplace and may even predicate a change in career behaviour (Schmitt & Scheibe, 2022). As the concept additionally builds on career construction theory, it posits, that when people have the desire to develop their career, the beliefs they hold, such as whether a certain skill can be acquired and improved or not, are influential for their subsequent behaviour and future career steps in the long run. In that context, a PSaA growth mindset, can have impactful implications for overall career development and might lead to individuals being more engaged in change and improvement. The effect a fixed-mindset has in that context, is not as explicit, but as it appears more influential in immediate situations (e.g. by prompting negative emotions), (Schmitt & Scheibe, 2022) we predict that it may play an essential role on a smaller scale, such as when handling setbacks at work.

Negative Affect and Feedback

An initial negative reaction to failure or negative feedback is seemingly unavoidable, such as the experience of negative emotions, e.g. shame, guilt, (Bohns & Flynn, 2013; Smiley et al., 2016) or even loss of self-identity. Specifically, feelings related to perceived lack of control, namely shame and fear, but also anger (Harley et al., 2019) bring more negative consequences, such as avoidance and hindrance of the learning process, even on a cognitive level (Bohns & Flynn, 2013; Hareli et al., 2005).

Thus, affect is tightly linked to how a person interprets and makes sense of a situation. Based on that, we expect implicit mindsets to be especially important in failure reaction, since the belief of whether failure occurred due to insufficient effort or strategy (growth-mindset),

or due to lack of one's own talent and abilities (fixed-mindset) (Smiley et al., 2016), may present a mental framework of how to interpret failure.

Research shows, that implicit theories may influence negative affect and consequent behaviour of whether an individual "acts" (i.e. planning on how to proceed) or "freezes up" (i.e. avoiding current and similar tasks) after failure: Growth-mindset can be linked to learning goals, which can act as a buffer against negative emotions and are positively associated with intentions to plan after failure (Burnette et al., 2013). However, Smiley et al. (2016) did not find such a direct relationship between mindset and intention to plan after failure. Fixed-mindsets however, are less likely to interpret failure as a learning opportunity, which leads to boredom, anxiety and distaste (Smiley et al., 2016) and ultimately to disengagement as well as low desire to retry (Burnette et al., 2013), thus essentially increasing the avoidance effect and the previously listed negative consequences it brings.

Referring back to the SOMA model, such avoidance behaviours appear to have detrimental effects on the self-regulation process, ultimately predict lower achievement and prevent the possible positive outcome failure may have, which is to learn from it and thus improve in the long run (Burnette et al., 2013)

As it seems possible to induce implicit mindsets (Walton & Yeager, 2020), the workplace environment plays another crucial role in failure reaction, since attitudes and behaviours of employees tend to be in line with the norms and values of their organization (Bohns & Flynn, 2013). The workplace itself has thus the ability to shape the cognitive appraisal of failure and provides cues on how to interpret it and consequently gives information about what emotions and attitudes are accepted or even expected (Bohns & Flynn, 2013). Against this background, it seems likely that if a growth mindset can lead to a more adaptive failure response, interventions that induce said mindset may be a valuable and relatively inexpensive tool to be used by organizations to improve motivation, performance and employee well-being. In that regard, we expect a PSaA growth mindset to predict more

adaptive responses to setbacks than a PSaA fixed mindset in terms of lessening the impact of negative affect.

Adaptive Perfectionism

Perfectionism is a concept that is often viewed favourably during goal achievement within the workplace (Ozbilir et al., 2015). Although there are different components mentioned across literature, it is generally defined by the setting of exceedingly high standards for oneself and/or others as well as the tendency to be highly self-critical and linking self-worth to achievements and performance (Lo & Abbott, 2019a, 2019b).

The concept is multidimensional, divided into adaptive and maladaptive perfectionism. Both imply striving for high standards and valuing achievement but differ in whether those standards are based on meeting external demands (maladaptive) or self-chosen (adaptive) (Trumpeter et al., 2006). While maladaptive perfectionism is associated with multiple negative consequences (e.g. inferiority, low self-esteem and increased negative affect) (Lo & Abbott, 2013), adaptive perfectionism can be linked to more positive outcomes including improved well-being, life satisfaction, as well as an internal locus of control, compared to maladaptive- and non-perfectionists (Lo & Abbott, 2013). This may suggest that adaptive perfectionism could buffer against the adverse effects of failure feedback on negative affect.

This is additionally supported by adaptive perfectionism influencing self-regulatory processes as it is linked to more persistent and less self-handicapping strategies (Shih, 2011) high self-efficacy, fewer self-doubts and fewer perceived discrepancies between the highly set standards and actual performance that consequently may buffer against negative outside input, and adaptive perfectionists are tendentially less affectively and cognitively affected by performance feedback (Lo & Abbott, 2013).

The Present Study

In the present study, we focus on the impact of implicit mindsets about work-related skills on reaction to failure. More specifically, we aim to investigate whether temporarily activating a growth vs. fixed professional skills and abilities mindset has an effect on negative affect after experiencing failure on a workplace-related task and we additionally consider adaptive perfectionism as a possible moderator.

We predict firstly, that inducing a PSaA growth mindset will lead to lowered negative affect, compared to a PSaA fixed mindset (H1), seeing as a growth mindset leads to an individual more readily interpreting failure as a result of low effort giving rise to learning and being more open to feedback. The belief that professional skills are fixed traits is linked to focusing on proving competence and attributing failure to lack of ability, which has been previously linked to experiencing negative emotions (Smiley et al., 2016).

Secondly, we hypothesise adaptive perfectionism to act as a buffer in the relationship between professional skills and abilities mindset and negative affect (H2), as it lowers susceptibility to negative emotions and decreases the likelihood of engaging in self-defeating behaviours (Shih, 2011), making the individual less vulnerable to the negative emotions that arise during failure and negative feedback. Since we expect participants to score higher in negative affect after failure in the fixed-mindset condition than in the growth-mindset condition (Schmitt & Scheibe, 2022), we suggest that the buffering effect will be highest in the fixed-mindset condition and participants in the growth-mindset who also rate high on adaptive perfectionism will likely report the lowest negative affect.

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. In

total the study got 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 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	30.1		
	Female	49	67.1		
	Other	2	2.8		
Language	English	27	37.0		
	Dutch	29	39.7		
	German	17	23.3		
Age		73		40.8	14.673
Total		73			

Assessment 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 from Slaney et al. (1996). 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, concerning adaptive perfectionism, assesses high performance expectations, the discrepancy subscale, concerning maladaptive perfectionism, assesses self-critical attitudes associated with performance evaluation. The measure consists of 8 items out of which discrepancy was used to assess maladaptive perfectionism and standards was used to assess adaptive perfectionism. All items are scored on a 7-point Likert scale ranging from 1 = "strongly disagree" to 7 = "strongly agree". Items include "Doing my best never seems to be enough" (discrepancy) and "I expect the best from myself" (standards). The measure offers good psychometric properties with a reliability of $\alpha = .85$ for the subscale standards and $\alpha = .87$ for the subscale discrepancy. In our study, the psychometric properties were satisfactory with a Cronbach's alpha of $\alpha = .88$ for adaptive perfectionism and $\alpha = .89$ for maladaptive perfectionism.

Negative Affect Measure (Betella & Verschure, 2016; Harley et al., 2019; Pekrun et al., 2011)

To assess negative affect after receiving negative feedback, a combination of multiple scales and tools was used. The Achievement Emotion Questionnaire (AEQ) is a self-report measure of achievement emotions in academic settings and contains 24 items, which can be scored on a 5-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". In our study, only four items (anger, shame, relief, pride) were used. The scale offers good psychometric properties with a reliability of $\alpha = .75$ (Pekrun et al., 2011). The integrated model of emotion regulation in achievement situations (ERAS) gives insight into how

emotion regulation strategies are impacted by achievement situations and emotions with varying patterns of appraisal (Harley et al., 2019). Three applicable items were used here, measuring negative emotions typically experienced retrospectively after failure (anger, shame, disappointment). Additionally, three positive emotions typically experienced retrospectively after success (relief, pride, joy) were included as distractors (Harley et al., 2019; Pekrun et al., 2011). Instead of a Likert scale however, affective sliders ranging from 0 to 100 were used as a self-assessment tool to indicate each previously listed item (Betella & Verschure, 2016). In our study, the psychometric properties were satisfactory with a Cronbach's alpha of $\alpha = .81$.

Design and Procedure

In order to test our hypotheses, an experiment was conducted. Thereby, the two experimental conditions represent the two levels of our 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. Prior to conducting the study, 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. In reality however, our aim was to investigate the relationship between professional skills and abilities mindset and reaction to work-related threat of failure, provided through negative feedback. A comprehensive debriefing of the true purpose of the

study as well as a voluntary mood restoration video was offered to all participants after they were finished with all tasks and questions.

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. 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

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 two-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 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. Participants were asked to indicate the emotions they believe have been portrayed in the video clip. To indicate the intensity of each emotion, a questionnaire listing 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, and

unrelated to their actual performance, participants were provided with automated negative feedback indicating a below-average performance, simulating failure. This feedback solely served the purpose of evoking an affective response in our participants in order to investigate our hypothesis.

Afterwards, participants completed the second part of the OPT, assessing fluid intelligence through a pattern-finding task. Here, participants were presented with a picture missing a piece, and had to indicate which of the presented six options would complete the picture. This task had ten different trials; each trial had to be completed within a given time frame of 16 seconds. Once again, performance was not actually being recorded and automated negative feedback indicating below-average performance was given. Subsequently, and under consideration of the negative feedback that has just been provided, participants were asked to indicate their negative affect. Lastly, in order to assess adaptive perfectionism, participants were asked to fill in the Short Almost Perfect Scale.

After providing demographics, such as age, gender, country of residence, level of educational attainment and number of work-hours specified in their contract, participants were asked to indicate their thoughts about the true purpose of our study. 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”. Participants were furthermore provided with an extensive debriefing, which included both the real purpose of our study and an explanation for our deception that was delivered through a bogus explanation at first. It was likewise clarified that the fabricated negative feedback each participant received solely served the function of investigating our hypothesis regarding mindset and reaction to negative feedback

General Statistical Procedure

A one-way ANOVA will be performed in order to determine whether there is a statistically significant difference between growth and fixed professional skills and abilities

mindset on negative affect (H1). Thereby, the two experimental groups the participants were randomly assigned to represent our independent variable mindset, while group differences will be examined in our dependent variable negative affect. Subsequently, a one-way ANCOVA will be carried out to examine whether a hypothesized interaction effect between mindset and adaptive perfectionism exists (H2). Therefore, the product term between mindset and adaptive perfectionism will be analysed. Prior to our analysis, an assumption check will be carried out to determine whether the performance of both an ANOVA and ANCOVA on our data is appropriate. Relevant assumptions, namely normality and homoscedasticity, will be checked.

Results

Descriptives

Table 2

Country of Residence

Country	Frequency	Percent
Australia	2	2.7
Canada	2	2.7
Finland	13	17.8
France	1	1.4
Germany	17	23.3
Netherlands	36	49.3
Slovakia	1	1.4
Suomi	1	1.4
Total	73	100

Table 3

Correlations

Variable 1	Variable 2	Correlation	Count	Lower C.I.	Upper C.I.
Negative Affect	Adaptive Perfectionism	.30	73	.07	.49
	Mindset	.27	73	.04	.47
	Age	.01	71	-.23	.24
	Gender	-.13	72	-.35	.11

Note. C.I. Level: 95.0

Table 4

Descriptive Statistics for Professional Skills and Abilities Mindset on Negative Affect

Mindset	Mean	SD	N
Fixed	32.38	21.90	33
Growth	44.25	21.30	40
Total	38.89	22.24	73

Note: Table presents the two experimental conditions of professional skills and abilities mindset

Assumptions

To test normality, we performed a Shapiro-Wilk test which showed no evidence of non-normality of our distribution ($W(73) = .98$, $p = .228$). Based on this outcome, the assumption of normality is met.

In order to test the assumption of homoscedasticity we ran a Levene's test, which showed equal variances for mindset in the model including adaptive perfectionism as a covariate $F(1,71) = .734$, $p = .394$ as well as in the model without $F(1,72) = .015$, $p = .902$, thus the assumption of homoscedasticity in our sample is met, as we fail to reject the null-hypothesis of equal error variances.

Hypotheses

Regarding our first hypothesis, thus the suggestion that the activation of a professional skills and abilities fixed mindset will lead to increased negative affect compared to a professional skills and abilities growth mindset, a one-way ANOVA (Table 5) was conducted to determine a statistically significant difference between professional skills and abilities growth or fixed mindset on negative affect. While mindset does appear to have a significant influence, results imply that contrary to our hypothesis, growth mindset leads to higher negative affect after failure feedback than fixed mindset: As seen in Table 5, there seems to be a significant main effect of mindset on negative affect with a medium effect size of $F(1, 71) = 5.47$, $p = .022$, $\eta^2 = .72$.

Table 5

ANOVA Results for Professional Skills and Abilities Mindset on Negative Affect

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2546.08	1	2546.08	5.469	.022	.072
Intercept	106192.11	1	106192.11	228.103	<.001	.763
Mindset	2546.08	1	2546.08	5.469	.022	.072
Error	33053.69	71	465.55			
Total	145983.72	73				
Corrected Total	35599.77	72				

Note. R Squared = .072 (Adjusted R Squared = .058)

Pairwise comparisons (Table 6) show that the two experimental conditions (growth and fixed mindset) differ significantly in negative affect, pointing towards mindset having a significant influence on negative affect after receiving failure feedback.

Table 6

Pairwise Comparisons and Mean Differences in Negative Affect by Mindset

					95% Confidence Interval for Difference	
Mindset	Mindset	Mean Difference	Std. Error	Sig.	Lower Bound	Upper Bound
Fixed	Growth	-11.87	5.07	.022	-21.98	-1.749
Growth	Fixed	11.87	5.07	.022	1.75	21.98

However, the means of the experimental conditions show that participants in the growth-mindset condition displayed higher negative affect (M = 44.25) than participants in the fixed-mindset condition (M = 32.28), thus, pointing towards fixed mindset leading to an increased negative affect compared to growth mindset.

Our second hypothesis included adaptive perfectionism as a moderator, as we expected adaptive perfectionism to influence the effect of professional skills and abilities mindset on negative affect, in that it may act as a buffer against negative affect after experiencing negative feedback. To investigate that, a one-way ANCOVA was conducted to determine a statistically significant difference between professional skills and abilities growth or fixed mindset on negative affect controlling for adaptive perfectionism.

Table 7 shows a significant main effect of mindset on negative affect after controlling for adaptive perfectionism: $F(1, 69) = 5.12$, $p = .027$, $\eta^2 = .069$, however the significance level as well as the effect size are lower compared to the previous model which excluded adaptive perfectionism (see Table 5). The effect of adaptive perfectionism itself is significant with $F(1, 69) = 4.07$, $p = .047$, $\eta^2 = .056$, it thus has an influence on negative effect. The interaction effect between mindset and adaptive perfectionism is non-significant with

$F(1, 69) = 3.62$, $p = .061$, $\eta^2 = .050$, suggesting that the effect of mindset on negative affect is not depended on levels of adaptive perfectionism.

Table 7

ANOVA Results for Professional Skills and Abilities Mindset on Negative Affect controlling for Adaptive Perfectionism

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5907.358	3	1969.12	4.58	.006	.166
Intercept	1521.959	1	1521.96	3.54	.064	.049
Mindset	2205.120	1	2205.12	5.12	.027	.069
Mindset * Adaptive Perfectionism	1556.328	1	1556.33	3.62	.061	.050
Adaptive Perfectionism	1753.19	1	1753.19	4.07	.047	.056
Error	29692.41	69	430.33			
Total	145983.72	73				
Corrected Total	35599.77	72				

Note. R Squared = .166 (Adjusted R Squared = .130)

Looking at the pairwise comparison, there is no statistically significant difference between growth and fixed mindset on negative affect when checking for the interaction effect of adaptive perfectionism (see Table 8). Despite there being no statistically significant difference, the mean for negative effect in the growth mindset condition (M = 44.17) is still higher than the mean for negative effect on the fixed mindset condition (M = 35.68), thus again pointing against the first hypothesis of a fixed mindset leading to higher negative affect than growth mindset.

Table 8

Pairwise Comparisons and Mean Differences in Negative Affect by Mindset Controlling for Adaptive Perfectionism

					95% Confidence Interval for Difference	
Mindset	Mindset	Mean Difference	Std. Error	Sig.	Lower Bound	Upper Bound
Fixed	Growth	-8.49	5.12	.10	-18.70	1.71
Growth	Fixed	8.49	5.12	.10	-1.71	18.70

Discussion

While a large body of previous literature on implicit mindsets investigated their effect in an academic context, our study focused on their impact in the workplace: The purpose of this current study was to investigate the effect implicit mindsets (specifically professional skills and abilities mindsets) may have on reaction to setbacks in a workplace context. Additionally, we investigated the possible role of adaptive perfectionism as a moderator.

Contrary to our first hypotheses, which suggested that endorsing a PSaA fixed mindset would lead to higher negative affect after failure compared to a PSaA growth mindset, our study yielded significant results in the opposite direction, meaning that a growth mindset rather than a fixed mindset could be linked to higher negative affect after receiving negative feedback.

Our second hypothesis, thus the suggestion that adaptive perfectionism may moderate the relationship between mindset and negative affect by functioning as a buffer, found no support either, as the results were non-significant.

Implicit Mindsets

Our results rather surprisingly contradict a large body of research regarding implicit mindsets, which initially indicate that a fixed, rather than a growth mindset would lead to more negative outcomes such as lower enjoyment and performance (Mueller & Dweck, 1998) during the whole self-regulatory process, and specifically the goal monitoring stage (Burnette et al., 2020) and that holding a fixed-mindset can lead to longitudinal negative affect in the context of well-being and life satisfaction (King, 2017).

However, as previously mentioned, the research on the impact of mindsets on achievement and productivity is not straightforward: Thus a meta-analysis by Sisk et al. (2018) suggests, that mindsets and mindset interventions do not have an effect on achievement, except for academically high risk or economically disadvantaged students. Other research implicating that growth-mindset could even harm post-failure performance (Li & Bates, 2019) or, that in certain contexts, such as combined with the activation of favourable stereotypes, believing one’s traits are fixed can even lead to more positive outcomes such as improved performance (Mendoza-Denton et al., 2008) seemingly supports these findings.

This might suggest a less arbitrary conceptualization and distinction of implicit mindsets, as growth mindset on the one hand being related to adaptive (learning) behaviour, improved achievement and well-being (Burnette et al., 2020; Mueller & Dweck, 1998) and

fixed mindset on the other hand being related to avoidant behaviour, comparatively lower achievement and subjective well-being (Burnette et al., 2020; King, 2017). Supported by the suggestion that growth- and fixed-mindsets are two separate constructs rather than "two sides of the same coin" (Cutumisu, 2019, p.268), as well as the concept of domain specificity within professional skills and abilities mindset (Schmitt & Scheibe, 2022) it might be valuable to consider, whether there are certain domains and situations in which a fixed mindset might be preferred over a growth mindset, as well as whether the interpretation of mindset might be important in this context: For example, on one hand the understanding that a growth-mindset just means increasing effort is unlikely to yield a positive outcome, as effort alone does not necessarily support the learning process or increase success (Murphy & Reeves, 2019). On the other hand, a fixed-mindset regarding a skill one is said to be good at (e.g. when activating a stereotype such as "men are good at math") can lead to higher confidence when performing said skill (Mendoza-Denton et al., 2008).

Adaptive Perfectionism

Though statistically non-significant, the interaction effect between mindset and adaptive perfectionism showed medium effect sizes. The direction of which pointing against our initial hypothesis, as adaptive perfectionism seemingly increases negative affect, especially for fixed mindset. These tendencies as well as the non-significance may be explained by the importance of "type of goal" during the self-regulation process, specifically when experiencing a setback: A study by Smiley et al. (2016), found that the relationship between mindset and intention to plan after failure was only significant with "type of goal" as a moderator indicating that ability goals (i.e. performance-avoidance goals) lead to maladaptive reactions after failure such as withdrawal and avoidance. Performance goals can be linked to fixed mindset (Burnette et al., 2013) as well as both types of perfectionism. Thus, as people high in adaptive perfectionism tend to have performance approach goals (Vansteenkiste et al., 2010), it is possible that performance goals rather than or in addition to

adaptive perfectionism might influence the relationship between mindset and negative affect, as we did not control for type of goal in our study.

Theoretical and Practical Implications of Feedback

Another possible explanation for the unexpected findings of growth mindset and adaptive perfectionism being linked to an increase in negative affect, could be the use of fabricated negative feedback in our study: Each participant (unknowingly) received the exact same feedback of having performed poorly in the tasks and below average compared to other participants. There was no constructive criticism or individualized information on how the participant could improve or what exactly they did wrong. People with a growth mindset tend to interpret failure as a learning opportunity and when seeking out higher levels of constructive feedback, they are more likely to implement it and improve in the long-run (Cutumisu, 2019). Possibly, just negative feedback without actual constructive insights about the performance is experienced as even more frustrating for someone with a growth-mindset as they are unable to learn or improve from it.

Furthermore, adaptive perfectionists tend to set performance approach goals for autonomous reasons (Vansteenkiste et al., 2010) and are more focused on measuring up to standards set by themselves rather than outside pressure (Trumpeter et al., 2006): Hence, the feedback provided by our study, which only gave information on how well they did in context of previous participants, might not have been useful or applicable to people high in adaptive perfectionism either.

This might suggest, that for PSaA growth mindset and adaptive perfectionism to actually have an impact on reaction to negative feedback, it must be constructive, to help with the learning process and give information on how to improve.

Thus, the way failure is delivered through feedback is crucial. Non-judgmental feedback, that is descriptive rather than evaluative (negative or positive), has been recommended in literature (Nicol, 2010). For the workplace this might mean, that in order to

create responses to failure that are advantageous and adaptive for the individual as well as the organization itself, it is necessary to provide feedback that goes beyond being purely evaluative and is specific and task-focused (Bohns & Flynn, 2013), as to provide information on how to improve, which is ultimately the goal of people high in adaptive perfectionism (Vansteenkiste et al., 2010) and/or with a growth mindset (Burnette et al., 2013).

Limitations & Strengths

Other explanations for our results might be related to the limitations of our study, such as our sample: With 73 usable results it was rather small, raising the question of whether a more robust sample could have led to different or more significant results regarding adaptive perfectionism as a moderator for example, as those results were close to significance.

Additionally, the sample was quite broad as we set few requirements for participation, meaning that workers working for at least 20 hours per week, regardless of profession could take part. It is therefore not apparent whether the tasks were truly representative of the skills participants may use in each of their individual jobs and this could have led to participants being less involved in the task itself and thus the subsequent feedback. With this, the aspect of domain specificity of professional skills and abilities was partly disregarded, as our vignettes rather broadly addressed “the workplace” and the tasks also were not particularly job-specific.

We additionally, for the purpose of focusing on how mindsets may affect the experience of a setback, solely investigated the goal monitoring stage of the SOMA model. However, moderators included in the study by Burnette et al. (2013) were only significant on the other stages (thus only goal setting, operating and achievement). This would partly go in line with our findings, where adaptive perfectionism as a moderator was not significant. This raises the question of whether results regarding adaptive perfectionism as a moderator would differ in significance on another stage of the SOMA model: There seems to be support in previous research pointing towards adaptive perfectionism being impactful during goal setting for example (Vansteenkiste et al., 2010). It could also be asked, what, besides adaptive

perfectionism and type of goal (Smiley et al., 2016) influences the relationship between mindset and negative affect after failure. Possibly low SES (and other risk factors) could come into play here, as these factors seemingly influence the relationship between mindset and post-failure performance (Sisk et al., 2018).

Additionally, there is the question, of whether negative affect is the most effective measure to investigate failure experience in the workplace or if it might be too broad, as not all negative emotions after receiving negative feedback or failure are ultimately maladaptive and leading to worse outcomes afterwards: Feelings such as guilt for example, may lead to someone being more willing in taking responsibility for a mistake and thus in rectifying it, which in an organisational context can be crucial. And even feelings such as shame, that are generally related to avoidance, maladaptive behaviour and a hindrance in a possible learning process, can be expected and even necessary in the workplace, following an ethical transgression for example (Bohns & Flynn, 2013). Thus it is not clear cut, since maladaptive behaviour following negative affect is dependent not only on the intensity of the emotion, but also the type of emotion as well as the situational context (Bohns & Flynn, 2013; Hareli et al., 2005). Furthermore, additional to mindset, the influence the workplace itself has on emotions after failure should be taken into account: So can the organizational climate through strictly perceived procedural justice increasingly elicit fear after making a mistake for example (Hareli et al., 2005)

Nevertheless, there is a scarcity of studies that aim to activate growth and fixed mindsets in a workplace context, making this study an early addition to research in that direction, especially considering our successful manipulation through vignettes: They appear as a rather robust and reliable method and our vignettes were based on previous studies, where manipulation checks supported their reliability (Lee et al., 2021). It should be noted that the manipulation for PSaA growth mindset seemed to be slightly stronger than for PSaA fixed mindset in our study, possibly due to the implicit belief participants were already

holding before reading the intervention.

An additional strength of our study is the successful deception as only few participants seemed to have guessed the actual aim of the study.

Future Directions

Despite our and other studies contradicting findings (Cutumisu, 2019; Li & Bates, 2019; Sisk et al., 2018), there still is a large body of literature that supports the positive effect of growth mindset (Burnette et al., 2013; Derr & Morrow, 2020; Mueller & Dweck, 1998; Schmitt & Scheibe, 2022; Walton & Yeager, 2020). Additionally, shaping mindsets through interventions may be a cheap and simple way to improve motivation or performance. However, there is very few research regarding mindsets in the workplace and more applicable field research in particular is scarce. Especially considering the point of domain specificity of mindset, it might be beneficial to further look into why certain tasks and skills are interpreted through the lens of a different mindset and how these mindsets specifically shape the efficiency and experience of fulfilling these tasks.

Keeping that in mind, it might be valuable to consider whether there are certain contexts in which fixed mindset could be preferred over growth mindset. Future research might benefit from continuing to look at growth and fixed mindset as two separate constructs (Cutumisu, 2019) that differ across domains (Schmitt & Scheibe, 2022) to further investigate whether fixed mindsets might be preferable in certain contexts, e.g. activation of stereotypes (Mendoza-Denton et al., 2008) and what would determine the difference.

We additionally believe, that further research on mindset manipulation, particularly in the workplace would be beneficial, seeing as measuring and manipulating mindsets is not always straightforward (Sisk et al., 2018). It would be beneficial to investigate, how the context of the workplace might affect the effectivity of vignettes and other mindset manipulations, as most mindset-manipulation are created for an academic context.

On a similar note, most mindset interventions, that generally have the intention of

initiating lasting change or improvement (Walton & Yeager, 2020), were also created within and for an academic setting. There is a point to be made that these spaces, in which learning and growth are central aspects, differ substantially from the workplace, in which the aspect of learning may be salient during formal training but not so much during day-today-operations (Noe et al., 2014). This raises the question of whether people in an academic surrounding would be more open to interventions that are aimed at growth and improvement than people in the workplace.

What mindset interventions in the workplace may look like, and how they could be created to be cheap, simple and effective procedures to improve worker self-regulation and thus performance as well as possibly well-being, would need further and more field-specific research. More field-specific research should include creating mindset manipulations as well as tasks that are job-specific and giving individualized negative feedback, that immediately relates back to actual work experience.

Conclusion

The research on the influence of implicit theories is not straightforward, which is reflected in this current study: PSaA growth mindset unexpectedly predicted an increase of negative affect after failure compared to PSaA fixed mindset. Adaptive perfectionism had no significant impact in that relationship, but also seemed to predict an increase in negative affect, contrary to most existing literature. However, that beliefs we hold about our self and our surroundings impact how we interpret all kind of situations, including failure, is not a novel concept (Mueller & Dweck, 1998). As well as the notion, that such beliefs are highly influenced by the workplace environment (Murphy & Reeves, 2019). While further research is still necessary, especially for mindsets in the workplace context, this study, (as well as Schmitt & Scheibe, 2022; Murphy & Reeves 2019; Caniëls et al., 2018; Han & Stieha, 2020) represents a start into that direction.

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