The connection between self-efficacy, stress-mindset, and anxiety in students

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Abstract

The goal of this study was to look into the connection between self-efficacy, stress-mindset, and anxiety. It was hypothesized that the stress-mindset is mediating the association between self-efficacy and anxiety. This study had 104 participants, mainly from the University of Twente. In order to examine the construct of anxiety, the trait-anxiety scale of the State-Trait Anxiety Inventory was used. To assess the level of self-efficacy, the General Self-Efficacy Scale (GSE) was used. Lastly, to measure the construct of stress-mindsets the scales for stress-is-enhancing and stress-is-debilitating mindset by Crum, Salovey, & Achor (2013) were used. The results showed that the hypotheses were rejected and there was no mediation effect of stress-mindset for the association between self-efficacy and anxiety. But there was a significant association found between self-efficacy and stress-mindset. The results of this study also brought up the question if the stress-mindsets should still be regarded to be on the same continuum. It is suggested that future research should look into this question.

Introduction

In today's society, students encounter several problems. One of the most prevalent and sometimes overlooked problem is anxiety. Anxiety was, in general, defined as an emotion that is characterized by feelings of tension or troubled thoughts (APA, 2019). Anxiety has also been associated with physical changes like raised blood pressure. This feeling of anxiety is normal, and everyone feels that kind of anxiety at some point. But in some cases, these thoughts are recurring, which can result in other physical symptoms like trembling, sweating, dizziness, or a rapid heartbeat, and this state is then defined as an anxiety disorder.

Anxiety is a prevalent issue, that is even more prevalent in students. In a sample of only older adults, 13% encountered anxiety problems (Bryant, Jackson,& Ames, 2008). In another study, assessing only women living in lower middle class, semi-urban communities a prevalence of 30% was found (Ishtiaq, 2017). Compared to those numbers in one study that had only students as participants, 60% of the participants encountered anxiety or depressive problems (Inam, Saqib, Alam, 2003). In other studies, the prevalence of anxiety in students is about 30% or even up to 47% (Bayram and Bilgel, 2008; Nerdrum, Rustøen, & Rønnestad, 2006; Alvi, Assad, Ramzan, Khan, 2010). Also, anxiety was more prevalent in those studies than other mental health problems like, for example, depression. Thus it can be stated that anxiety is one of the most prevalent mental health issues in students and is more prevalent in students than in other populations.

Research has shown that 40% of students that suffer from anxiety or other mental health problems like depression and stress encountered severe difficulties and did not complete their degrees (Pantages and Creedon, 1978). Furthermore, high levels of anxiety have been associated

with an increased risk of premature all-cause and cardiovascular death (Denollet, Maas, Knottnerus, Keyzer, Pop, 2009; Phillips, Batty, Gale, Deary, Osborn, MacIntyre, Carroll, 2009). Thus, it can be stated that anxiety is not only associated with negative academic events but also with negative health events.

Self-efficacy

A construct that is related to anxiety is self-efficacy. Bandura (1986) was one of the first to use the concept of self-efficacy. In one of his later works, he referred to it as the belief in one's ability to perform a task or to execute a specified behavior successfully (Bandura 1997). Simply said, self-efficacy refers to our own beliefs if we can manage to do something or not. But self-efficacy involves more than just telling ourselves that we can perform a task. Self-efficacy is based on several sources of information about our abilities and the demands of a task (Bandura, 1986). Meaning, that it is not only based on our beliefs, but also past experiences, feedback from others about similar situations, general believes and probably more. Furthermore, Self-efficacy is not linked to our actual abilities. If someone has objectively high skills in a particular area, it does not guarantee high self-efficacy.

In his work, Bandura (1997) hypothesized that if a person does not believe that he can deal with potentially threatening events, he will become anxious. This has been studied by a large number of studies that looked into the connection between self-efficacy and anxiety. For example, Pajares & Kranzler (1995) found that self-efficacy had a substantial direct effect on anxiety in his study about mathematical problem-solving. Other studies that did look especially look into this topic had similar findings, for example, Muris (2002) who found out that low levels of self-efficacy were generally accompanied by high levels of trait anxiety and other

negative mental health consequences. Additionally, it was found out that self-efficacy was a better predictor of anxiety than perceived control over a situation (Endler, Speer, Johnson, Flett, 2001). One study went as far as labeling self-efficacy as a cognitive precursor of anxiety (Comunian, 1989). Considering what was stated above, it can be said that levels of self-efficacy can predict levels of anxiety.

Stress-Mindset

Furthermore, anxiety can be due to stress (Kranner, Minibayeva, Beckett,& Seal, 2010). Initially, stress was defined by Hans Selye in 1939 as a state in which a threat or a stressor sets the body into a state of alarm. According to Selye's theory, if the stress is persistent and cannot be coped with, it can cause long term damage. The first to suggest that situation-specific appraisals are essential to understand whether a situation is perceived as stressful or not was Lazarus (1966). He argued that our immediate thoughts about a stressor influence the way people perceive that stressor. Building on this work, more recent researchers have suggested that beyond this situation-specific appraisal, general believes about stress have a similar effect. These general believes were named stress-mindset. Crum, Salovey, & Achor (2013) suggested that there are two mindsets, a stress-is-enhancing mindset, and a stress-is-debilitating mindset. People who generally view stress as a motivator and encouraging have a stress-is-enhancing mindset. People who view stress as destructive or harmful to performance and wellbeing have a stress-is-debilitating mindset.

Research has shown that stress-mindset can predict several outcomes of stress. In their initial study, Crum et al. (2013) showed that the stress-mindset can predict the arousal level by the measuring of cortisol. They also showed that a stress-is-enhancing mindset was associated

with better work performance than a stress-is-debilitating mindset. In later research, a stress-is-enhancing mindset was associated with cognitive flexibility and positive affect (Crum, Akinola, Martin, & Fath, 2017). It was also found that stress-mindset can be associated with general health; a stress-is-enhancing mindset was associated with better health than a stress-is-debilitating mindset (Marten, 2017).

The mechanism behind stress-mindset is that the stress-mindset is associated with the ability of arousal management (indicated by: e.g., cortisol levels). This being said, medium arousal is improving the performance of the mind and body (Martens, 1974; Lambourne,& Tomporowski, 2010). Too much arousal aggravates performance and can lead to anxiety and panic (Landers, 1980; Crum et al., 2013). No arousal keeps the performance at an average level. According to Crum et al. (2013), people with a stress-is-enhancing mindset can manage, due to their mindset, that they stay in an optimal arousal state during stressful situations. Thus, leading to better performances. In contrast to that, people with a stress-is-debilitating mindset will either deny that the situation is stressful, use coping strategies, or will be overwhelmed by the situation, which creates more stress. Meaning, that those people are either in a state of no arousal because they denied or coped with stress or are too aroused because they got overwhelmed. Research has shown that anxiety can be produced by keeping the arousal level very high for a more extended period of time (Malmo, 1957), that arousal can lead to anxiety (Landers, 1980), and also that higher levels of cortisol are associated with anxiety (Takahashi, Ikeda, Ishikawa, Kitamura, Tsukasaki, Nakama,& Kameda, 2005).

In this study, it is expected that a stress-is-enhancing mindset will be associated with low anxiety levels, and a stress-is-debilitating mindset will be associated with high anxiety levels.

Crum et al. (2013) looked into this association in their initial study and found that a stress-is-enhancing mindset was indeed associated with lower levels of anxiety and depression than a stress-is-debilitating mindset. Although there has not been much research done besides Crum et al. (2013) finding this association in their initial study, it is believed that this association will be found, because of the proposed mechanism. Meaning, a stress-is-enhancing predicts optimum arousal levels, and thus, these people should experience low levels of anxiety. Also, because people with a stress-is-debilitating mindset can get overwhelmed by the stress and arousal levels get too high, it is expected that anxiety levels are high in those people. That arousal can lead to anxiety has been proven before (Landers, 1980; Malmo, 1957).

It is also suggested in this study that self-efficacy will be negatively associated with a stress-is-debilitating mindset and positively with a stress-is-enhancing mindset. This view was first suggested by a recent paper by Crum, Akinola, Martin, & Fath (2017). They stated that the stress response is 'determined by the balance of perceived resources (e.g., knowledge, skills) and perceived demands (e.g., danger, uncertainty)' (Crum, Akinola, Martin, & Fath 2017 p. 3). Meaning, that if someone thinks that his knowledge and skills are enough to fulfill the demands of a specific stressful situation, he will believe that it is encouraging. In contrast to that, if someone does not think that his resources, like knowledge and skills, fulfill the needs to handle a situation, the situation will be stressful in a negative way. Although this association was not examined before, research has proven that self-efficacy or the belief that one's resources are enough to master a situation are predictors of the view that the situation is a challenge (Blascovich,& Mendes, 2000; Seery, 2011; Tomaka, Blascovich, Kelsey, & Leitten, 1993; Tomaka, Blascovich, Kibler, & Ernst, 1997) Furthermore, research showed that low levels of

self-efficacy or the view that one has not enough skills or resources were associated with viewing a situation as a threat. Lastly, self-efficacy was also negatively associated with cortisol levels after stressful situations (Gaab, Rohleder, Nater, & Ehlert, 2005). All those researches together give more ground for the assumption that low self-efficacy is associated with a stress-is-debilitating mindset, and high self-efficacy is associated with a stress-is-enhancing mindset.

The proposition

Based on the reviewed literature, the following research question has been formulated.

What is the association between self-efficacy, stress-mindset, and anxiety in students?

The proposition is that the level of self-efficacy is associated with the stress-mindset of a person and through the stress-mindset influences the level of anxiety (Appendix A). Although this association has not been examined before, researchers have suggested that they might be associated (Crum et al., 2013; Crum, Akinola, Martin, & Fath 2017; Landers, 1980;).

This model leads to two hypotheses that will be examined in this study. The first hypothesis (H1) is that high levels of self-efficacy are positively associated with a stress-enhancing mindset and negatively associated with anxiety. Additionally, the second hypothesis (H2) is that low levels of self-efficacy are negatively associated with a stress-is-debilitating mindset and negatively associated with anxiety.

Method

Participants

Overall, 117 participants participated in this study. The participants of the current study were selected by a convenient sampling method. Meaning that students were randomly selected based on their availability. Participants are mostly undergraduate students from the University of Twente. Thirteen responses had to be excluded, because they did not complete the questionnaire making their responses invalid. Leaving this study with 104 participants. Of these participants, 32 (30.7%) were male, and 72 (69.3%) female. The age of the participants varied between 18 and 51, averaging 21,27 (SD: 3.62). Most participants were German (N= 80; 76.9%) some were Dutch (N=9; 8.7%), and 15 (14.4%) from other countries (Appendix B). Also, different variables were measured like the English level. Most of the participants reported having an advanced English level (N= 86; 82.7%). Thirteen (12.5%) reported to have an intermediate English level, and 5 (4.8%) said that English is their mother tongue. 99 (95.2%) participants were single, and only 5 (4.8%) were married. The educational level was mostly a high school degree or equivalent (N= 86; 82.7%). Some already had a bachelor's degree (N= 13; 12.5%). Three (2.8%) had an associate degree, and two (1.9%) had a master's degree.

Materials

The first questionnaire that was used to measure anxiety was the trait-anxiety scale of the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg,& Jacob, 1983). The STAI consists of two separate scales with 20 questions each. One scale is aimed at measuring state anxiety and the other scale measures trait anxiety. The trait anxiety scale is examined on a four-point Likert scale ranging from 1 (almost never) to 4 (almost always) (Seok,

Hamid, Mutang, & Ismail, 2018). Items on the scale target general states of the person, like for example, 'I worry too much over something that really doesn't matter' and 'I am content; I am a steady person'. Considering the psychometrics, the STAI has good internal consistency with Cronbach's α of 0.89 (Bergua, Meillon, Potvin, Bouisson, Goff, Rouaud, Amieva, 2012). Considering, other psychometrics that has been tested, like test-retest reliability and validity measures were found to be good. (Seok, Hamid, Mutang, & Ismail, 2018). Thus, it can be stated that the STAI is a decent two-factor measure. Considering the current study, the alpha of the current sample on the STAI-T scale had an alpha of .94 which were excellent numbers.

The General Self-Efficacy Scale (GSE) measured the general level of self-efficacy (Schwarzer,& Jerusalem, 1995). The GSE is a 10 item self-administered questionnaire with a 4 point Likert scale ranging from 1 (not at all true) to 4 (exactly true). One of the items was: 'I can always manage to solve difficult problems if I try hard enough' (Schwarzer,& Jerusalem, 1995). Looking at the psychometrics of the GSE, a good internal consistency was found, with Cronbach's α of .86 (Scholz, Doña, Sud,& Schwarzer, 2002). The GSE was found to be a unidimensional scale. Test-retest was not very good, but evidence for the validity was also found. In the current study, the alpha of the GSE was .89, which was also a very good alpha value.

The stress-mindset scale by Crum, Salovey, & Achor (2013) was also used in this study. This questionnaire consists of two scales one that measures stress-is-enhancing mindset and one that measures stress-is-debilitating mindset. Each scale consists of 4 items rated on a five-point Likert scale ranging from 0(strongly disagree) to 4(strongly agree).. One item on the stress-is-enhancing scale is 'Experiencing stress facilitates my learning and growth' (Crum et al.,

2013). In contrast to that, an item for the stress-is-debilitating scale is 'The effects of stress are negative and should be avoided (Crum et al., 2013)'. The test-retest reliability was found to be decent. Furthermore, a Cronbach's of .8 was found, which is good (Crum et al., 2013). In the current study, the alpha was .72 for the stress-is-debilitating scale and an alpha .70 of for the stress-is-enhancing scale, which means, that the questionnaire has sufficient internal consistency.

Procedure

Before starting the data collection the study was approved by the ethical committee of the University of Twente. The data collection took place during the month of April 2019. Meaning, that it was about four weeks of time. In the study, three questionnaires were used, that were uploaded to a platform named SONA, which is a platform from the University of Twente that enables researchers to reach a large number of students. Students get points for participating in studies. The online study could be done with a computer and phone, which enabled the participants to fill out the questions whenever and wherever they liked. Due to the research being an online study, the answering process was done without supervision and could be aborted at any time. The time to answer all questions is approximately 30 minutes. The online study is starting with the informed consent (Appendix A). When participants gave informed consent, they began with questions about demographic variables, including age, gender, nationality, and school achievements — followed by the Trait anxiety scale of the State-Trait Anxiety Inventory. After the STAI, the participants had to answer the General Self-Efficacy Scale. Lastly, participants had to fill out the stress-mindset scale. To complete the study and get their points, students had to fill out all the questions. After the stress-mindset questionnaire was completed, the participants were awarded their points.

Data Analysis

To perform all analyses, the program IBM SPSS 22.0 was used. The descriptive statistics were calculated. Also, a preliminary investigation was conducted to check for correlation between the essential variables of the mediation analysis. Meaning, the correlation between self-efficacy, stress-is-enhancing mindset, stress-is-debilitating mindset, and anxiety.Next, the mediation analysis was run. For checking for mediation, the method of Preacher and Hayes (2008) was used. This nonparametric resampling procedure for testing mediation does not assume normality in the sample. This method repeatedly samples the data from the data set and estimates the indirect effect of each resampled dataset. In this study, the indirect effect was derived from the mean of 5,000 bootstraps samples. Mediation is established when the confidence interval of the indirect effect does not include zero (Preacher and Hayes, 2008). As mediator variables stress-is-enhancing and stress-is-debilitating mindset were used. The independent variable was self-efficacy and the dependent variable of the analysis was anxiety.

Results

In Table 1, the descriptive statistics and correlations are displayed. Considering the correlations of those variables, Anxiety, for example, had a significant correlation with the stress-is-debilitating mindset of .214 and self-efficacy of -.669*. The other significant associations were, a .601 correlation of stress-is-enhancing mindset with the stress-is-debilitating mindset. Furthermore, self-efficacy was not only significantly correlated to anxiety as stated before but also to the stress-is-debilitating mindset with a correlation of -.232. The other correlations were in the expected direction but not significant.

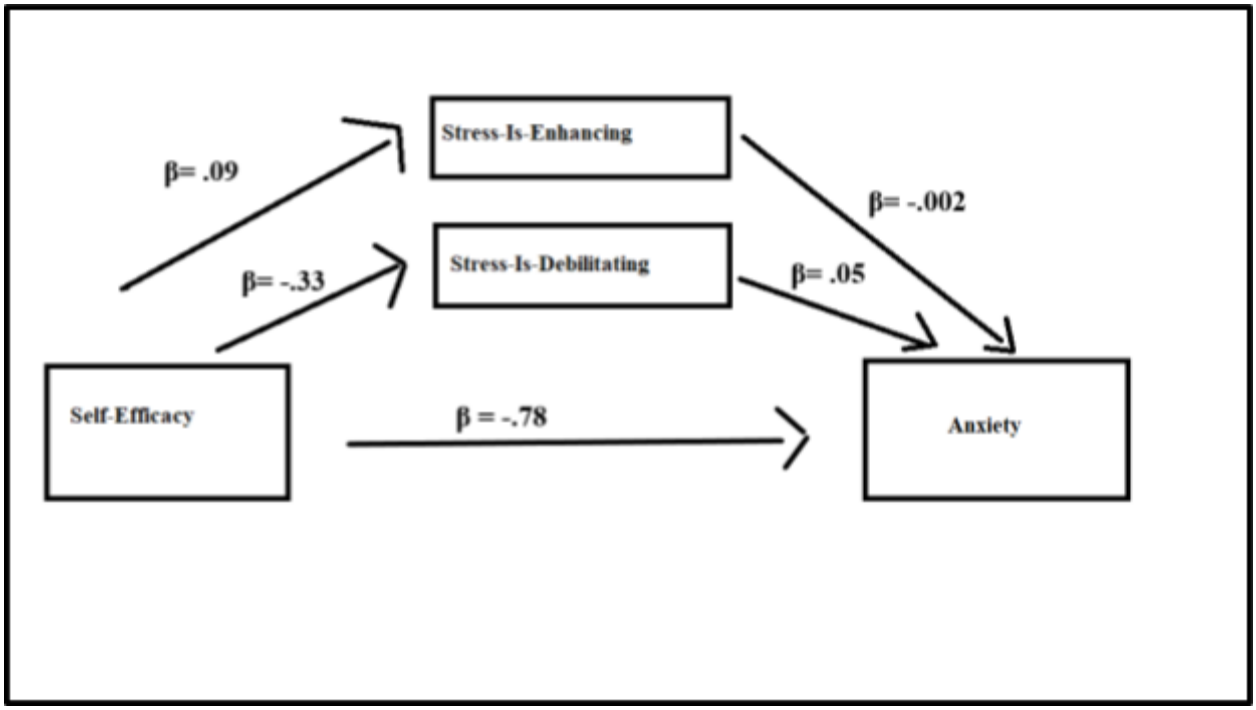
*Table 1: Descriptives and correlations of anxiety, self-efficacy, stress-is-debilitating mindset, and stress-is-enhancing mindset, Significance on a level of .05 is marked with an * after the correlation number*

	M	SD	1.	2.	3.	4.
1. Anxiety	2.26	.63	-	-.669*	.214*	-.08
2.Self-Efficacy	2.98	.53		-	-.232*	.06
3.Stress-is-debilitating	2.38	.76			-	-.601*
4.Stress-is-enhancing	1.69	.73				-

In the mediation analysis (Figure 2), it became prevalent that there is negative association between self-efficacy and Anxiety (Total effect: $\beta = -.78$, $t(102) = -8.55$, $p < .001$), even when controlling for indirect effect, the effect stayed the same (Direct effect: $\beta = -.78$, $t(102) = -8.55$, $p < .001$). Self-efficacy is significantly negatively associated with stress-is-debilitating mindset ($\beta = -.33$, $t(102) = -2.4$, $p = .01$) and not significantly associated with stress-is-enhancing mindset ($\beta = .09$, $t(102) = .65$, $p = .52$). In turn neither stress-is-debilitating- ($\beta = .05$, $t(102) = .67$, $p = .50$) nor stress-is-enhancing mindset ($\beta = -.002$, $t(102) = -.03$, $p = .98$) are significantly associated with Anxiety. The 95% bias-corrected interval for the size of the total indirect effect of stress-is-enhancing mindset included zero [-.03, .03] which rejects *H1* because the stress-is-enhancing mindset is not a significant mediator. Also, the confidence interval of the

stress-is-debilitating mindset did include zero [-08, .05], which indicates that the stress-is-debilitating mindset is not a significant mediator and rejects *H2*.

Figure 2: Model Of Regression Analysis With Coefficients



Discussion

The current study tried to examine the connection between self-efficacy, stress mindset, and anxiety. It was expected that the stress-mindset moderates the association between self-efficacy and anxiety. The outcomes of this study show that there was no mediation effect of stress-is-debilitating or stress-is-enhancing mindset between self-efficacy and anxiety found in this study. This being said, some interesting insights into the constructs can be drawn from the current data.

First, it can be stated that the current data proved that self-efficacy is strongly correlated with anxiety. This is in line with previous studies (Pajares & Kranzler,1995; Muris, 2002;

Endler, Speer, Johnson, Flett, 2001; Comunian, 1989). In those studies, the correlation between anxiety and self-efficacy was found in many different samples, for example, a student sample in the US, a dutch adolescence sample, or a teacher sample in Italy. They found this association not only in different samples but also in different contexts, from a general association to specific situations like solving math problems. In all of those studies, self-efficacy was correlated with anxiety. The same was found in the current study. Furthermore, the correlation is now found to be true in a Dutch student sample as well and a general context. Thus, this finding is in line with past research.

Furthermore, the association of self-efficacy with the construct of a stress mindset was proposed by past research (Crum, Akinola, Martin, & Fath 2017; Blascovich,& Mendes, 2000; Seery, 2011; Tomaka, Blascovich, Kelsey, & Leitten, 1993; Tomaka, Blascovich, Kibler, & Ernst, 1997). This association is only partly supported in the current study. In the data, a significant correlation was found between stress-is-debilitating mindset and self-efficacy but not between self-efficacy and stress-is-enhancing mindset. The association between self-efficacy and stress-is-debilitating mindset is in line with what Akinola, Martin, & Fath (2017) proposed. They stated that if a person does not think his resources are enough to handle or cope with the situation, it will be seen as dangerous or stressful. Meaning, that in general, low perceived resources should lead to stress being perceived as debilitating, thus having a stress-is-debilitating mindset. This is supported by the data of the current study.

Looking at this, one would think that the opposite should be true as well, which means, that high perceived resources should predict the view that stress is a challenge (Akinola, Martin, & Fath, 2017) — thus having a stress-is-enhancing mindset. This was not supported by the data

of this study. It could be the case that if we think our resources are far greater than the challenge, we do not even perceive the situation as stressful, and thus, there is no association to a stress-mindset. The proposition that levels of self-efficacy can be too high was proven in studies of gambling and studies that examined the quitting of smoking (Cooney, Kopel, and McKean, 1982; Langer, 1983). It was found that people with very high self-efficacy are more prone to relapse or gambling addiction because they believe that they control the game or do falsely think that they are able to quit smoking or can just smoke one cigarette. This could also lead to someone believing a test he can answer all questions of a test easily. Maybe this can also translate to a stress-mindset. Meaning, that very high levels of self-efficacy have a different effect on the stress-mindset of a person. Those people would be expected to have a stress-is-enhancing mindset, but due to their very high self-efficacy, it could be that they have different views because they do not get challenged.

In the data of the current study, the stress-mindset was not correlated with anxiety after controlling for self-efficacy. This is not in line with the research of Crum et al. (2013) who found that association. This could be because they put their participants in a stressful situation, and the participants in the present study were not. Maybe being in a stressful situation that made you anxious changes the perception of anxiety or stress. Furthermore, as for a stress-is-enhancing mindset, it could be the case that this mindset can only predict positive outcomes of stress, not negative ones because other factors play a role then. In past research, a stress-is-enhancing mindset was mostly found to be associated with positive outcomes like for example positive affect (Akinola, Martin, & Fath, 2017) or improved performance (Crum et al., 2013) but not so much with negative outcomes.

The fact that a stress-is-debilitating mindset was not correlated with anxiety was surprising. But when looking back at the mechanism, it becomes clear that inside of the stress-is-debilitating mindset are three possibilities (Crum et al., 2013). Namely, that people who have this mindset will either deny that they have stress, cope with their stress, or will get overwhelmed by their stress leading to negative outcomes. Taking a closer look at that, only one of those three will lead to anxiety. Maybe, there were more people that deny or cope with their stress than people that cannot do either and get overwhelmed.

Future Research and Limitations

Considering these findings and the fact that the stress-is-debilitating mindset and stress-is-enhancing mindset are significantly correlated, but 'only' moderately, a case could be made that these are two different constructs and not as proposed two extremes on the opposite sites on one scale of one construct. The same discussion was held with positive and negative affect, and there was also a case being made that these constructs are not on the same continuum but are separated. The growing consensus on this topic is that positive and negative affect are independent dimensions (Barrett,& Russell, 1999). The correlation of positive and negative affect over a month-long period was also only moderate, the same as the correlation between stress-is-enhancing mindset and stress-is-debilitating mindset (Diener,& Emmons, 1984). Maybe, a similar discussion should be held about stress-mindset. Furthermore, looking at the mechanism behind stress-mindset (Crum et al., 2013) it sounds more like different ways to attribute stress and not like good or bad.

Furthermore, future research should look deeper into the stress-is-debilitating mindset specifically. If it is found that stress-is-enhancing and stress-is-debilitating mindset are not on the

same continuum, future researchers should take a more in-depth look into the stress-is-debilitating mindset. When looking at the mechanism of a stress-is-debilitating mindset, it becomes prevalent that inside of this mindset are three different ways of responding to stress, which leads to entirely different outcomes (Crum et al., 2013). Namely, these responses are denying stress, coping with stress, and getting overwhelmed by stress. Thus, future research should take a closer look at the stress-is-debilitating mindset and how these different facets of the mechanism interact, or if other determinants can predict which way of the mechanism a person takes. If there is no explanation found, this mindset could be split into three different ones. One mindset that describes that stress must be coped with. One mindset that describes that a person denies stress, and one mindset that still sees stress as debilitating and cannot be dealt with.

The limitations of this study are clear in terms of the small sample size and the fact that it was only accounted for students. The fact that students are more vulnerable to anxiety than other groups could make it difficult to extrapolate these findings. But the research on self-efficacy and anxiety has shown that the associations between the variables stay the same no matter the sample (Pajares & Kranzler,1995; Muris, 2002; Endler, Speer, Johnson, Flett, 2001; Comunian, 1989). For stress-mindset, this is not known which could make it necessary to see if there is also no association in other samples, but it is generally expected that there is also no association found. Additionally, people in the current study were not put into stressful situations. Thus, all answers are very general and could be different when people are presented with a specific problem. Future research should examine if a similar result is found when looking at a specific stressful situation because in the study Crum et al. (2013) different results were found for the association of stress-mindset and anxiety it could be that this changes the results. Furthermore, it is not

known if all participants are experiencing stress at the moment, which could change their perception based on the current kind of level of stress that they are experiencing. But considering that the participants were students, and the fact that students experience some degree of academic-related stress (Galbraith,& Brown 2011; Cohen,& Khalaila 2014), it can be assumed that they have experienced stress in the past.

Conclusion

Overall it can be stated that there was no significant association found between stress-mindset and anxiety in this study. While that was the case, the proposition that stress-mindset is associated with self-efficacy was partly supported. Self-efficacy was associated with a stress-is-debilitating mindset but not with a stress-is-enhancing mindset. Other than that, some suggestions for future research were developed like, for example, the proposition that a stress-is-debilitating mindset and a stress-is-enhancing mindset are two different constructs and should not be placed on the same continuum. Also, it was suggested that if those are found to be two different constructs, it should be examined if the stress-is-debilitating mindset should be divided into more mindsets.

Literature

Alvi T., Assad F., Ramzan M., Khan F.A., (2010). Depression, anxiety and their associated factors among medical students.. *J Coll Physicians Surg Pak*. 20. 122–126.

APA. (n.d.). Anxiety. Retrieved January 10, 2019, from https://www.apa.org/topics/anxiety/

Bandura, A., & National Inst of Mental Health. (1986). *Prentice-Hall series in social learning theory. Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ, US: Prentice-Hall, Inc.

Bandura, A., (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.

Barrett, L. F., & Russell, J. A. (1999). The Structure of Current Affect. *Current Directions in Psychological Science,8*(1), 10-14. doi:10.1111/1467-8721.00003

Bayram, N., Bilgel, N., (2008). The prevalence and socio-demographic correlations of depression,anxiety, and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology 43,* 667–672.

Bergua, V., Meillon, C., Potvin, O., Bouisson, J., Goff, M. L., Rouaud, O., Amieva, H. (2012). The STAI-Y trait scale: Psychometric properties and normative data from a large population-based Study of elderly people. *International Psychogeriatrics,24*(07), 1163-1171.doi:10.1017/s1041610212000300

Blascovich, J. & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In Forgas, J. (Ed.). *Feeling and thinking: The role of affect in social cognition*, (pp. 59-82). New York, NY: Cambridge University Press.

Bryant, C., Jackson, H., & Ames, D. (2008). The prevalence of anxiety in older adults: Methodological issues and a review of the literature. *Journal of Affective Disorders,109*(3), 233-250. doi:10.1016/j.jad.2007.11.008

Crum, A. J., Salovey, P., & Achor, S. (2013). Rethinking stress: The role of mindsets in determining the stress response. *Journal of Personality and Social Psychology,104*(4), 716-733.doi:10.1037/a0031201

Crum, A. J., Akinola, M., Martin, A., & Fath, S. (2017). The role of stress mindset in shaping cognitive, emotional, and physiological responses to challenging and threatening stress. *Anxiety, Stress, & Coping,30*(4), 379-395. doi:10.1080/10615806.2016.1275585

Cohen M, Khalaila R (2014). Saliva pH as a biomarker of exam stress and a predictor of exam performance. *J Psychosom Res* 77(5):420–425

Comunian, A. L. (1989). Some Characteristics Of Relations Among Depression, Anxiety, And Self-Efficacy. *Perceptual and Motor Skills,69*(3), 755-764. doi:10.2466/pms.1989.69.3.755

Cooney, N. L., Kopel, S. S., & McKean, P., (1982). Controlled relapse training and self-efficacy in ex-smokers. *Paper presented at the annual meeting of the American Psychological Association*, Washington, D.C.

Denollet, J., Maas, K., Knottnerus, A., Keyzer, J.J., Pop, V.J., (2009). Anxiety predicted premature all-cause and cardiovascular death in a 10-year follow-up of middle-aged women. *J. Clin. Epidemiol*. 62, 452–456.

Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology,47*(5), 1105-1117. doi:10.1037/0022-3514.47.5.1105

Endler, N. S., Speer, R. L., Johnson, J. M., & Flett, G. L. (2001). General self-efficacy and control in relation to anxiety and cognitive performance. *Current Psychology,20*(1), 36-52. doi:10.1007/s12144-001-1002-7

Galbraith N, Brown K (2011) *Assessing intervention effectiveness for reducing stress in student nurses: quantitative systematic review.* J Adv Nurs 67(4):709–721. doi:10.1111/j.1365-2648.2010.05549.x

Inam S.N., Saqib A., Alam E., (2003). Prevalence of anxiety and depression among medical students of a private university. *J Pak Med Assoc*. 53,44–47.

Ishtiaq, D. S. (2017). Prevalence Of Depression And Associated Risk Factors Among Women Attending Gynecology & Obstetrics Clinics In Karachi, Pakistan. *World Journal of Pharmaceutical Research,*256-267. doi:10.20959/wjpr20178-9071

Kranner, I., Minibayeva, F. V., Beckett, R. P., & Seal, C. E. (2010). What is stress? Concepts, definitions, and applications in seed science. *New Phytologist,188*(3), 655-673. doi:10.1111/j.1469-8137.2010.03461.x

Landers, D., (1980). The Arousal-Performance Relationship Revisited. *Research quarterly for exercise and sport.* 51. 77-90. 10.1080/02701367.1980.10609276.

Langer, E. J. (1983). *The psychology of control.* Beverly Hills: Sage.

Lambourne, K., & Tomporowski, P. (2010). The effect of exercise-induced arousal on cognitive task performance: A meta-regression analysis. *Brain Research, 1341*, 12-24. doi:10.1016/j.brainres.2010.03.091

Lazarus, R. S., (1966). Psychological stress and the coping process. New York, NY, US:McGraw-Hill.

Marten, F. (2017). The Mediating Effect of Eustress and Distress on the Relation between the Mindset towards Stress and Health.

Martens, R. (1974). Arousal and Motor Performance. *Exercise and Sport Sciences Reviews,2*(1). doi:10.1249/00003677-197400020-00007

Malmo, R. B., (1957). Anxiety and behavioral arousal. *Psychological Review, 64*(5), 276-287. http://dx.doi.org/10.1037/h0043203

Muris, P., (2002). Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences,32*(2), 337-348. doi:10.1016/s0191-8869(01)00027-7

Nerdrum, P., Rustøen, T., & Rønnestad, M. H., (2006). Student Psychological Distress: A psychometric study of 1750 Norwegian 1st‐year undergraduate students. *Scandinavian Journal of Educational Research,50*(1), 95-109. doi:10.1080/00313830500372075

Pajares, F., & Kranzler, J., (1995). Self-Efficacy Beliefs and General Mental Ability in Mathematical Problem-Solving. *Contemporary Educational Psychology,20*(4), 426-443. doi:10.1006/ceps.1995.1029

Pantages, T. J., & Creedon, C. F. (1978). Studies of college attrition: 1950-1975. *Review of Educational Research, 48,* 49-101.

Phillips, A.C., Batty, G.D., Gale, C.R., Deary, I.J., Osborn, D., MacIntyre, K., Carroll, D., (2009). Generalized anxiety disorder, major depressive disorder, and their comorbidity as predictors of all-cause and cardiovascular mortality: the Vietnam experience study. *Psychosom. Med*. 71, 395–403.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40,879-891.

Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is General Self-Efficacy a Universal Construct?1. *European Journal of Psychological Assessment,18*(3), 242-251. doi:10.1027//1015-5759.18.3.242

Schwarzer, R., & Jerusalem, M., (1995). Generalized Self-Efficacy scale. In J. Weinman, S.

Seery, M. D. (2011). Challenge or threat? Cardiovascular indexes of resilience and vulnerability to potential stress in humans. *Neuroscience & Biobehavioral Reviews*, 35(7), 1603-1610.

Selye, H., 1936. A syndrome produced by diverse nocuous agents.*Nature,* 138: 32

Seok, C. B., Hamid, H. A., Mutang, J., & Ismail, R. (2018). Psychometric Properties of the State-Trait Anxiety Inventory (Form Y) among Malaysian University Students. *Sustainability,10*(9), 3311.doi:10.3390/su10093311

Spielberger, C.D.; Gorsuch, R.L.; Lushene, P.R.; Vagg, P.R.; Jacobs, G.A (1983). *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press

Takahashi, T., Ikeda, K., Ishikawa, M., Kitamura, N., Tsukasaki, T., Nakama, D.,& Kameda, T., (2005). Anxiety, reactivity, and social stress-induced cortisol elevation in humans. *Neuroendocrinology letters*. 26. 351-4.

Tomaka, J., Blascovich, J., Kelsey, R. M., & Leitten, C. L. (1993). Subjective, physiological, and behavioral effects of threat and challenge appraisal. *Journal of Personality and Social Psychology*, 65(2), 248-260.

Tomaka, J., Blascovich, J., Kibler, J., & Ernst, J. M. (1997). Cognitive and physiological antecedents of threat and challenge appraisal. *Journal of Personality and Social Psychology*, 73(1), 63-72.

Wright, & M. Johnston, Measures in health psychology: A user's portfolio. Causal and control beliefs (pp. 35-37). Windsor, UK: NFER-NELSON.

Appendix A

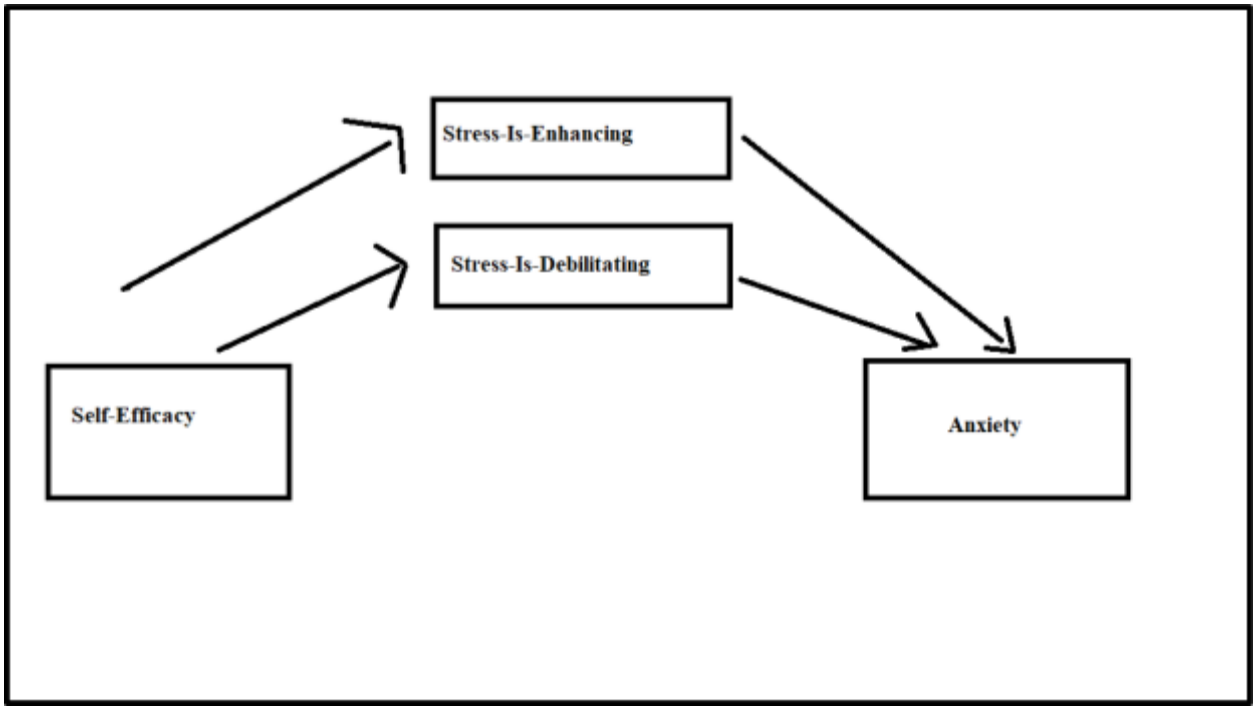


Figure 1: Proposed model of the connection between self-efficacy, stress-mindset, and anxiety

Appendix B

Statistiken

Age

N	Gültig	104
	Fehlend	0
Mittelwert		21,2692
Median		21,0000
Std.-Abweichung		3,62363
Spannweite		33,00
Minimum		18,00
Maximum		51,00

Gender

		Häufigkeit	Prozent	Gültige Prozente	Kumulierte Prozente
Gültig	Male	32	30,8	30,8	30,8
	Female	72	69,2	69,2	100,0
	Gesamt	104	100,0	100,0	

Table1: Descriptive statistics Gender and Age