The relationship between trait anxiety, anxiety mindset and state anxiety

Johannes Stickel

s1838679

University of Twente

THE RELATIONSHIP BETWEEN TRAIT ANXIETY, ANXIETY MINDSET AND STATE ANXIETY

Abstract

Due to the current lack of fitting treatments for anxiety, it is of interest to investigate which anxiety related concepts are best suited for interventions. One concept, the anxiety mindset, which measures whether a person believes that anxiety can be changed or not, has currently been evaluated as a promising predictor for anxiety symptoms. Trait anxiety, the predisposition of a person to experience anxiety, was also established as a predictor for anxiety symptoms. In this study, the anxiety mindset was evaluated in the relationship between trait anxiety and state anxiety. The research question was: What is the relationship between trait anxiety, anxiety mindset and state anxiety? This question was investigated with the use of a mediation analysis, in which trait anxiety was the independent variable, anxiety mindset the mediator variable and state anxiety the dependent variable. An online questionnaire with the belonging measures was filled out by participants acquired with a convenience sample. The outcomes of the study show that trait anxiety was able to significantly predict anxiety mindset and state anxiety. Further, the anxiety mindset was not able to predict state anxiety. Moreover, there was no mediation effect of anxiety mindset on the relationship between trait and state anxiety. It was concluded that a person with high trait anxiety is likely to see anxiety as fixed and that the anxiety mindset can be perceived as being part of the concept of trait anxiety. In the light of this study, trait anxiety was evaluated as the better predictor for anxiety symptoms. Future research might investigate the thought patterns of trait anxiety to foster the development of effective and efficient anxiety treatment.

Introduction

In 2013, around 7,3 percent of the global population suffered from anxiety disorders (Baxter, Scott, Vos, & Whiteford, 2013). According to Baxter et al. (2013), there seems to be no increase in the prevalence of anxiety disorders. However, anxiety is one of the most common mental health issues associated with significant rates of comorbidity and morbidity and has a comparatively low age of onset with an average of 21 years (De Lijster et al., 2017, Stein, Scott, Jonge, & Kessler, 2017). Previous research has shown that anxiety disorders have a high global burden of disease including long duration of time with disease and cause up to seven percent of the global suicide rate. (Baxter, Vos, Scott, Ferrari, & Whiteford, 2014) Among all influences on the development of anxiety disorders, the most common determinants are genetic predisposition, environmental influences and intense stressors (Wiedemann, 2015). Mild forms of anxiety disorders are represented by 56 % of all disorders, thus making up the biggest part of all cases and furthermore, these mild cases do not receive sufficient treatment (Baxter et al., 2014, Demyttenaere et al., 2004). Baxter et al. (2014) conclude that there is a need for accessible and cost effective treatment solutions in order to prevent and decrease anxiety disorders and its negative consequences.

In the domain of anxiety research, it has been suggested to distinguish anxiety in terms of the state and the trait anxiety of an individual. The state anxiety of a person refers to the current feelings of anxiety including physical symptoms such as an increase in heart rate (Endler & Kocovski, 2001). In contrast, trait anxiety refers to the overall predisposition of a person to experience anxiety (Endler & Kocovski, 2001; Wiedemann, 2015). Moreover, trait anxiety has been described as being relatively stable over time and part of the personality domain neuroticism (Gidron, 2013,Wiedemann, 2015). Neuroticism, also referred to as negative affectivity and negative emotionality, relates to the proneness of a person to experience negative emotions in general, unlike trait anxiety it includes emotions like anger and sadness. Similar to trait anxiety a person can be either high or low in this personality trait (Sharma, 2013). Both trait anxiety and neuroticism have been identified as high risk factors for psychopathology (Kotov, Gamez, Schmidt, & Watson, 2010, Weger & Sandi, 2018) For example, trait anxiety was able to predict state anxiety, panic symptoms, mental and physical health symptoms (Kang et al., 2015, Li & Lopez, 2005; Van Esch, Roukema, Van der Steeg, & De Vries, 2011). And was also related to sleep difficulties (Horváth et al., 2016; Weeks, Hayley, & Stough, 2019).

Research also focused on the possible malleability of trait anxiety. In a meta-analysis Jorm (1989) compared different forms of therapies in their ability to decrease the trait anxiety.

He found that among the evaluated therapies (including meditation and anxiety management training), the rational-emotive therapies have proven to be of high value in decreasing trait anxiety. The rational-emotive therapy, formed by Albert Ellis, aims to change the irrational thoughts of individuals by challenging them from a rational standpoint (Fall, Holden, & Marquis, 2018). Similarly, Motevalli et al. (2013) found that a combination of cognitive restructuring and rational emotive therapy was able to decrease trait anxiety. In relation to this, a recent study showed that metacognitive thoughts, positive or negative beliefs about one's own cognition, seem to have an influence on the vulnerability of trait anxiety. For example, negative thoughts about the uncontrollability of one's worry were able to predict trait anxiety (Nordahl, Hjemdal, Hagen, Nordahl, & Wells, 2019). The effectiveness of rational-emotive therapy and cognitive restructuring hint at the seemingly underlying cognitive structure of trait anxiety and thus suggests that cognition plays an important role in explaining trait anxiety. Another field of research that inquires the cognition and thoughts of persons is that of mindsets.

Mindsets

Mindsets, also referred to as implicit theories, determine if an individual thinks whether some attributes of a person are malleable or fixed, an example for this can be the mindset about intelligence. A person with a fixed mindset thinks that intelligence is unchangeable, while a person with a malleable mindset thinks intelligence can be changed (Schroder, Dawood, Yalch, Donnellan, & Moser, 2016). Mindsets have shown to have an influence on person's behavior. Blackwell and Trzesniewski (2007) demonstrated that intelligence mindsets of seventh graders were associated with different outcomes in grades. Children with a malleable mindset of intelligence, believing that intelligence can be changed, showed an increase in grades in subsequent time. In contrast, children with a fixed mindset of intelligence displayed no progress in grades. Similarly, Yeager and Dweck (2012) outlined that students with a change mindset of intellectual capability had higher mathematical achievement and less difficulties in transitioning schools than their peers. Further, Nordin and Broeckelman-Post (2019) have shown that a growth mindset of personality, representing the belief that personal attributes can be changed, was negatively associated with public speaking anxiety and positively related with public speaking achievement. Even though, these results refer mainly to the academic context, they demonstrate the possible value of mindsets as they seem to influence a person's behavior. Similar evidence for the importance of mindsets also exists in the domain of mental health.

In a meta-analysis about the relationship between mindsets and mental health by Schleider, Abel and Weisz (2015), it has been demonstrated that youths with a fixed mindset of personality have more mental health problems than their peers with a change mindset about personality. Another example for the importance of mindsets in mental health is the stress mindset. A person can either believe that stress can have positive effects, referred to as "enhancing" or that it has a negative influence, referred to as "debilitating" (Crum, Salovey, & Achor, 2013). Crum and collegues (2013) showed that the stress mindset relates to the way a person deals with stress. People with a "stress is enhancing" mindset showed improvements in cognitive adaption to the stressful situation while the "stress is debilitating" mindset was related to worse adaptation to the stressor. Furthermore, Crum et al. (2013) tested a video intervention aimed to change the stress mindset. Participants were divided in two groups, the first had to view videos about the advantages of stress, and the second group about the disadvantages. Both groups changed their mindset in accordance with the presented videos. Moreover, the group with the changed "stress is enhancing mindset" showed improvements in well-being and job achievement. Similar effects of mindset change were outlined by Miu and Yeager (2015). In an experiment they divided students in two groups, one experiment and one control group. The experiment group received a reading and writing intervention aimed to change the mindset of personality. Intervention activities included reading information about the change mindset of personality and writing about that presented information. The experiment group showed a 40 % decrease in symptoms of depression after nine months of the intervention. Moreover, participants in the control group that held a fixed mindset of personality showed an increase in depressive symptoms. These promising results clearly indicate the importance and potential of mindsets in the field of mental health.

Previous research by Hughes (2015) has shown that persons distinguish between different types of mindsets towards certain attributes, such as intelligence, emotion, morality and personality. Thus, a person can have different beliefs about the malleability of different self-attributes. In order to improve future mindset interventions, Schroder, Dawood, Yalch, Donnellan, and Moser (2016) explored what kind of mindsets have a better predictive quality for mental health symptoms and therefore might have more possible value for future treatment. They compared the mindsets of anxiety, social anxiety, depression, intelligence, personality, emotions and drinking tendencies. Using factor analyses, they found that these mindsets can be separated from each other. They explained, that the domain specificity of mindsets can be confirmed. Moreover, they evaluated the predictive quality of each mindset for different mental health symptoms. The compared mindsets included anxiety, somatic

anxiety, social anxiety, worry, depression and alcohol abuse. Overall, the symptoms were better predicted by their belonging mindsets, for example, depression mindset correlated highest with depressive symptoms.

Anxiety mindset

The anxiety mindset of a person explains whether she thinks that anxiety can be changed or whether it is fixed. A fixed anxiety mindset can be represented by a phrase like: "No matter how hard you try, you can't really change the level of anxiety that you have" (Schroder, Dawood, Yalch, Donnellan, & Moser, 2015, p. 135). The mindset has been shown to be domain specific and proved to be able to predict anxiety related symptoms such as social anxiety, somatic anxiety and worry (Schroder et al., 2016). Furthermore, the anxiety mindset was better in predicting these symptoms in comparison to their belonging mindsets, like the social anxiety mindset (Schroder et al., 2016). In a recent study by Schroder, Callahan, Gornik, and Moser (2018), the relationship between anxiety mindset and future distress was evaluated. They demonstrated that the fixed anxiety mindset predicted future distress in students one week after the measurement. Furthermore, students witch a change mindset of anxiety showed less psychological distress. Moreover, the anxiety mindset seems to be able to predict the choice for different forms of mental health treatments (Schroder et al., 2015). Schroder and colleagues (2015) outlined that students with a fixed anxiety mindset were more likely to pick medical treatment. In contrast, students with a change mindset preferred individual therapy. Additionally, according to Schroder et al. (2017), the anxiety mindset was also found to have a moderating effect between stressful life events and the adaptation to these events, meaning that persons with a fixed anxiety mindset showed more negative coping responses and symptoms to stressful life events than persons with a change mindset. Schroder et al. (2016) concluded that, due to its domain specificity and its ability to predict a wide range of mental health symptoms, "the anxiety mind-set is a potentially important construct for clinically oriented research" (p. 516).

Recent research

Taking these above mentioned information into consideration, there might be an important relationship between trait anxiety, anxiety mindset and anxiety symptoms. Both trait anxiety and anxiety mindset have been shown to have predictive quality for anxiety symptoms (Kotov et al., 2010; Schroder et al., 2015). Furthermore, both were confirmed to be able to change. However, the interventions designed to change the anxiety mindset needed

less amount of time and cost than the interventions changing trait anxiety. As Baxter et al. (2014) explained, easy administrable, fast and cheap interventions are needed to prevent and treat anxiety. The above outlined interventions for mindsets seem to fit that need. Evaluating the relationship of both trait anxiety and anxiety mindset might indicate which concept has a higher predictive quality for anxiety and which may subsequently be better suited for future interventions. Furthermore, trait anxiety has been shown to have a cognitive substructure, for example thoughts about ones influence on worry (Nordahl et al., 2019). In a similar manner, the anxiety mindset captures the beliefs of about malleability of anxiety. If anxiety mindset relates to trait anxiety, this might hint even more at the cognitive substructure of trait anxiety, thus, helping to understand the concept trait anxiety more. In this context, Schroder and colleagues (2017) assumed that persons with a fixed anxiety mindset ascribe their experiences of anxiety in the moment to their general disposition to be anxious. This possible explanation of the working mechanism of anxiety mindset further hints at a relevant relationship between anxiety mindset and trait anxiety. Lastly, as trait anxiety is explained as a being a stable personality trait (Gidron, 2013) and more global than the anxiety mindset, it is assumed that trait anxiety can predict the anxiety mindset. Moreover, as both were able to predict anxiety, it is assumed that anxiety mindset will mediate the relationship between trait anxiety and state anxiety. In this mediation relationship anxiety mindset is seen as a possibly underlying concept of trait anxiety in the association between trait anxiety and state anxiety. The following research question results from the described assumptions:

What is the relationship between trait anxiety, anxiety mindset and state anxiety?

The research question will be investigated with the following hypotheses:

H1: *Trait anxiety is positively associated with a fixed anxiety mindset.*
H2: *Trait anxiety is positively associated with state anxiety.*
H3: *A fixed anxiety mindset is positively associated with state anxiety.*
H4: *A fixed anxiety mindset mediates the association between trait anxiety and state anxiety.*

Methods

Participants

A convenience sample was used in order to collect a high amount of data. The study was promoted in the social circle to family, friends and relatives. The data was collected from 116 participants. Inclusion criteria was being older than 18 and having sufficient English

language skills. Twelve of the participants were excluded from the study due to incomplete questionnaires, resulting in 104 eligible participants. The sample was relatively young with an average age of 21.27 (*SD* = 3.62). Seventy-two participants (69%) of the sample were female and 32 male (31%). The majority of the participants was recruited at the University of Twente which resulted in a high proportion of students (91%). Most of the participants were either German (76.9%) or Dutch (8.7%). Other nations were represented by 14.4% of the participants. The educational level of the participants ranged from high school degree or equivalent (82%) to master's degree (1%). Participants with a bachelor degree were represented by 12% and those with an associate degree with 2%. Most participants had an English proficiency level of advanced (82.7), while an intermediate level was represented by 12% of the sample and mother tongue 4%.

Materials

The State-Trait Anxiety Inventory (Spielberger, 2010) was used in order to measure the trait anxiety and anxiety symptoms of the participants. The questionnaire consists of two subscales, each having 20 items. The S-scale, measures the current state of anxiety, how a person feels at the moment, e.g. "I feel frightened", "I feel tense" (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 2012, p.72). The T-scale measures the trait anxiety of a person, the proneness perceiving anxiety (e.g. "I lack self-confidence", "I feel like a failure") (Spielberger et al., 2012, p. 73). The questions are answered on a four point Likert-scale, ranging from 1, "Not at all", to 4, "Very much so". The psychometric properties include a high reliability and construct validity (Metzger, 1976; Spielberger, 2010). In the current study the Cronbach's alpha for the state anxiety scale was 0.93 and for the trait anxiety scale 0.94, both indicating excellent reliability.

The Theories of Anxiety Scale (TOA) (Schroder et al., 2015) was used in order to measure the anxiety mindset. Four different fixed anxiety statements need to be rated on a six-point Likert-scale ranging from 1, "Strongly disagree", to 6, "Strongly agree". An example for a fixed anxiety statement is: "Your anxiety is something about you that you cannot change very much" (Schroder et al., 2015, p. 135). The TOA has been show valuable in predicting anxiety symptoms including worry, social anxiety and somatic anxiety (Schroder et al., 2016). In the recent study, the TOA showed excellent reliability properties with a Cronbach's alpha of .91.

Procedure & design

An online questionnaire was used to collect the data. An informed consent form was presented, which clarified the aim of the study and to ensure anonymous treatment of the data. Questions about the demographics of the participants included age, gender, education, marital status, nationality and occupational status. The questionnaire was provided with the online survey software Qualtrics. Participants were able to fill out the questionnaire on their computer or smartphone at any time and place they chose. They started with reading information about the purpose of the study and the anonymization of the provided data. Subsequently they had to agree with the presented conditions in order to proceed with the questionnaire. After answering questions about demographics, they had to fill out the State-Trait Anxiety Inventory, starting with the state scale of that measure and subsequently the trait scale. Afterwards they rated the four anxiety mindset statements. After successfully filling out the questionnaire, the participants were thanked for their effort and provided with e-mail addresses that they could reach if they had further questions. The estimated time to fill out the questionnaire was 30 minutes. The data was collected form the 5th of April 2019 to the 8th of May 2019. The conduction of the study was approved by the ethical committee of the University of Twente.

Data Analysis

In an emphasis to answer the above stated hypotheses, descriptive statistics, correlational analyses and a mediation analysis were conducted. For the mediation, the approach by Hayes & Little (2013) was used. The add-on PROCESS for the statistical analysis software SPSS 24 was installed and used in accordance with the hypothesis. The approach makes use of the bootstrap method, which forms new samples from the complete data set in order to give statistical information about the indirect effect. By repeating this sampling procedure the program computes the confidence interval of the indirect effect. If the confidence interval does not include zero as a value, the mediation can be confirmed. State anxiety was selected as the dependent variable, trait anxiety as the independent variable and anxiety mindset as the mediator. Therefore, the indirect effect in this mediation is the effect trait anxiety over anxiety mindset on state anxiety. The model template four, which represents a mediation analysis with one mediator, was selected for the analysis. Moreover, the chosen amount of bootstrapping samples was 5000.

Results

Table 1 shows the descriptive statistics for the variables state anxiety, trait anxiety and anxiety mindset and their correlations. In order to estimate the strength of trait anxiety and state anxiety, the data of the participants were compared to psychology students of the United States of America (Spielberger et al., 2012). The scores on state anxiety were average (M = 1.99, SD = 0.57). The U.S. students had a score of M = 1.88, SD = 1.09. Similarly, scores on the trait anxiety scale were average compared to their norms (M = 2.26, SD = 0.63). The U.S. students had a score of M = 1.97, SD = 0.97. Lastly, participants had an overall average score on the anxiety mindset (M = 3.16, SD = 1.36).

Table 1.0

Descriptive statistics and correlations

	M	*SD*	State anxiety	Trait anxiety
State anxiety (1-4)	1.99	.57	-	
Trait anxiety (1-4)	2.26	.63	.63**	-
Anxiety mindset (1-6)	3.16	1.36	.33**	.59**

**$p < .001$.

Hypotheses testing

In the following, all above stated hypotheses will be tested. The used statistical data can be found in *Table 1* and *Figure 1*.

H1: Trait anxiety is positively associated with a fixed anxiety mindset.

The mediation analysis showed a significant effect of trait anxiety on anxiety mindset, β = 1.27, $t(102) = .73$, $p < .001$. Further, trait anxiety is significantly positively correlated with fixed anxiety mindset, the correlation is high, $r(102) = .59$, $p < .001$. Therefore, the hypothesis is accepted.

H2: Trait anxiety is positively associated with state anxiety.

The outcome of the mediation analysis showed that trait anxiety significantly predicted state anxiety, with a direct effect of $\beta = .60$, $t(101) = 6.84$, $p < .001$. Further, trait and state anxiety are significantly positively related with a high correlation, $r(102) = .63$, $p < .001$. Therefore, the hypothesis can be accepted.

H3: A fixed anxiety mindset is positively associated with state anxiety.

The fixed anxiety mindset positively correlated to state anxiety, $r(102) = .33$, $p < .001$. The correlation is moderate and significant. However, the mediation analysis showed a nonsignificant low negative effect of anxiety mindset on state anxiety, $\beta = -.02$, $t(101) = -.52$, $p = .60$. Therefore, the hypothesis must be rejected.

H4: A fixed anxiety mindset mediates the association between trait anxiety and state anxiety.

The confidence interval of the indirect effect of trait anxiety on state anxiety through anxiety mindset included zero as a value; $\beta = -.02$, CI [-.122, .068]. Therefore, the hypothesis must be rejected. There is no mediation effect.

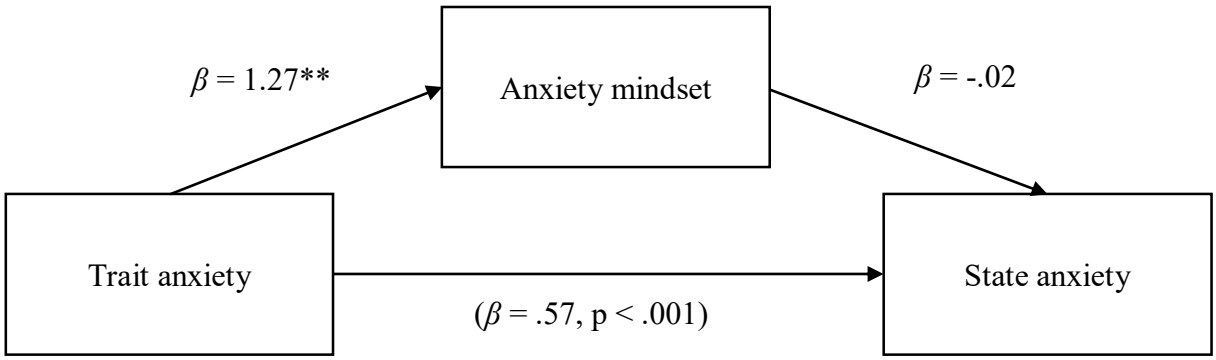

Figure 1. Results of the mediation analysis. Total effect in parentheses. **$p < .001$

Discussion

The purpose of this study was to investigate the relationship between trait anxiety, anxiety mindset and state anxiety. It was expected that anxiety mindset mediates the relationship of trait anxiety and state anxiety. Some of the inherent assumptions of this relationship, like a predictive quality of trait anxiety on anxiety mindset can be confirmed but the mediation effect itself does not seem to exist for this study.

As already shortly indicated, the hypothesis that trait anxiety is positively associated with a fixed anxiety mindset, holds true for the current study. The significant effect of trait anxiety on anxiety mindset was confirmed by the mediation analysis. In the context of this research and these results hint at a strong relationship between trait anxiety and anxiety mindset. The predictive quality of trait anxiety on fixed anxiety mindset in this study indicates that people with high trait anxiety perceive themselves to be unable to change their amount of anxiety. This contrasts the previously assumed relationship by Schroder et al. (2017), which

suggested that persons with a fixed anxiety mindset might view themselves as predisposed to be anxious and not vice versa. Previous research showed that negative meta-cognitive beliefs predict and underlie trait anxiety (Nordahl et al., 2019, Nordahl & Wells, 2017). Moreover, changing these thoughts and cognitions with rational emotive therapy and meta-cognitive therapy, has shown to effectively lower trait anxiety (Jorm, 1989, Motevalli et al., 2013, Wells et al., 2010). An example for such a cognition underlying trait anxiety is: "When I start worrying, I cannot stop" (Cartwright-Hatton & Wells, 1997, p. 284, Nordahl et al., 2019). Similarly, the anxiety mindset deals with the thoughts about one's malleability of anxiety. It can be perceived as a form of meta-cognition, e.g.: "To be honest, you cannot really change how anxious you are" (Schroder et al., 2015, p.135). Therefore, due to the predictive quality of trait anxiety on anxiety mindset and the underlying meta-cognitive structure of trait anxiety, it is assumed that the meta-cognitions of the fixed anxiety mindset are part of the thought patterns that a person with high trait anxiety has.

The hypothesis that trait anxiety is positively associated with state anxiety, was confirmed due to the significant and direct effect of trait anxiety on state anxiety in the mediation analysis and the significant positive correlation of both measures. In the context of this research, this result reflects the previously established connection of trait and state anxiety. Trait anxiety describes the proneness of a person to be anxious, while state anxiety reflects the current feelings of anxiety (Wiedemann, 2015). Thus, a person who is more likely to be anxious will experience more anxiety. This connection between the two concepts, including the predictive quality of trait anxiety on state anxiety, has been confirmed multiple times (Mcnally, 1989, Spielberger, 2010). The current research can further confirm this relationship.

As there was no significant predictive quality of a fixed anxiety mindset on state anxiety, the hypothesis that a fixed anxiety mindset is positively associated with state anxiety was rejected. The positive correlation between anxiety mindset and state anxiety can be explained due to the suggested connection between trait anxiety and state anxiety, which indicates that anxiety mindset is a part of trait anxiety. It can be concluded that trait anxiety is a significantly better predictor for state anxiety than anxiety mindset. The non-predictive quality of anxiety mindset on state anxiety contrasts the findings of Schroder et al. (2016), which showed that anxiety mindset significantly predicted anxiety symptoms. Recent research suggested that trait anxiety should not be perceived as a mere measure for the predisposition to anxiety but moreover, as a concept that deals with the "general vulnerability to emotional disorder and distress" (Nordahl et al., 2019, p. 2). Thus, trait anxiety might capture more

concepts that relate stronger to anxiety. This might explain why anxiety mindset, in the relationship with trait anxiety and state anxiety, was not able to predict state anxiety. The current research was also conducted in the context of investigating which concept, anxiety mindset or trait anxiety might be better suited to be included in future interventions in order to prevent and treat anxiety symptoms and disorders. The given results indicate that focusing on trait anxiety might have more value in future treatments due to its better predictive quality for state anxiety.

Furthermore, the last hypothesis that a fixed anxiety mindset mediates the association between trait anxiety and state anxiety, was also rejected. There was no mediation effect found of anxiety mindset on the relationship between trait and state anxiety. It was assumed that the anxiety mindset might help to explain the relationship between trait and state anxiety. For example, a person with a high score on trait anxiety but a low score on anxiety mindset was believed to eventually experience less anxiety symptoms. As trait anxiety is a stable personality trait and a global concept (Gidron, 2013, Nordahl et al., 2019), the anxiety mindset was picked as a mediator for this study. However, due to the now established connection of trait anxiety and anxiety mindset, it is assumed that trait anxiety captures anxiety mindset. Therefore, the anxiety mindset was not able to mediate the relationship between trait and state anxiety.

Limitations and future research

One limitation of the recent study is that due to the used convenience sample and the online recruitment of mostly psychology students, the sample turned out to be homogenous. Therefore, the results might not be generalized to more diverse samples which might entail more diversity in terms of ethnicity and socio economic status. Furthermore, as the study was conducted in the form of a self-reported online questionnaire, the assessment of the used measures might be flawed by factors such as social desirability. Moreover, as a mindset could work either consciously or unconsciously (Crum et al., 2013), a self-reported measure might not be the preferred way to measure it. A possible option to measure the anxiety mindset implicitly might be the Implicit Association Test (IAT) (Greenwald, Mcghee, & Schwartz, 1998). This test aims to identify implicit beliefs/attitudes by letting a person, categorize words and/or pictures in different combinations as either positive or negative on a computer screen. A fast reaction time for the categorization indicates a strong association (Greenwald et al., 1998). With this test, the anxiety mindset could be implicitly tested. For example, different concepts such as personality, creativity, anxiety and others, might be implicitly judged by a

participant if they are changeable or not. The implicit belief could be compared to the explicit measure of the anxiety mindset. A future study might design the IAT for the anxiety mindset and evaluate if the implicit attitudes about the malleability of anxiety differ from its explicit measure and how big that difference is. Furthermore, the implicit mindset could be compared against the explicit measure in terms of their predictive quality for anxiety symptoms.

As outlined above, the current study suggests that trait anxiety is more suitable for future interventions compared to the anxiety mindset. As trait anxiety has been proven to be changeable (Jorm, 1989, Motevalli et al., 2013, Wells et al., 2010), it is of interest what kind of irrational thoughts/mindsets underlie trait anxiety. Future research might focus on gaining deeper insight into the thought patterns and cognitions of trait anxiety. Moreover, other mindsets might also be part of trait anxiety. For example, the stress mindset has been shown to have an impact on the stress responses and adaptations of individuals (Crum, Akinola, Martin, & Fath, 2017). Adding more knowledge about the thought patterns that trait anxiety entails might help to create interventions that are more effective and efficient compared to previously used treatments to change trait anxiety.

A further recommendation for future research goes in line with one of the limitations of this study. The used measure for the anxiety mindset, the Theories of Anxiety Scale (TOA) (Schroder et al., 2015), entails four items that are all framed one-directional. Meaning every item asks the respondent to agree or to disagree whether she thinks that anxiety cannot be changed. Not whether she agrees that anxiety can be changed. In order to prevent acquiescence bias, which is the tendency for participants to answer yes or agree with statements, it is necessary to create a questionnaire with balanced items (Primi, Hauck-Filho, Valentini, Santos, & Falk, 2019). Therefore, possible items like: “I can change my amount of anxiety”, should be added in future research to the TOA to prevent the possible bias.

Conclusion

For this novel study, the initial research question was: What is the relationship between trait anxiety, anxiety mindset and state anxiety? Taking the above discussed results into consideration it can be said, that trait anxiety and anxiety mindset seem to have a strong positive relationship. A high score on trait anxiety seems to predict a fixed anxiety mindset. Thus, someone who is predisposed to be anxious is also likely to see anxiety as fixed and not changeable. Further, based on the results and previous research, it is assumed that a fixed anxiety mindset and its underlying cognition is part of the concept of trait anxiety. As the anxiety mindset was not able to predict state anxiety, trait anxiety is in this study the

significant predictor for state anxiety. Lastly, the anxiety mindset was not able to mediate the relationship between trait and state anxiety. For these reasons, future research should aim at creating interventions to decrease trait anxiety, also by further deepening the knowledge about its underlying cognitions.

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