

Distress tolerance as a mediator of the relation between stress mindset and anxiety

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23th June 2019

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Abstract

The current study investigated the effect of distress tolerance on the relation between stress mindset and anxiety. It was hypothesised that a stress-is-enhancing mindset is associated with lower levels of anxiety because individuals with this mindset are more prone to tolerate distress, while a stress-is-debilitating mindset is associated with higher levels of anxiety because individuals with this mindset are less prone to tolerate distress. The study design was cross-sectional and descriptive (N=104). A Preacher and Hayes mediation analysis was conducted to test the hypotheses. The bootstrap sample was elevated to 5,000 to reach sufficient power for the statistical analyses. In sum, the findings of the current study supported both hypotheses. The effect of both a stress-is-debilitating mindset and a stress-is-enhancing mindset on anxiety was mediated by distress tolerance. Correspondingly, the current study indicated that distress tolerance can explain varying levels of anxiety and is a major indicator in determining the influence of stress mindset on anxiety.

Keywords: Distress tolerance, Stress mindset, Anxiety

Introduction

Stress has been designated as the “Health Epidemic of the 21st Century” (Brule & Morgan, 2018) and poses a critical risk to health and life (Hammen, 2005; McEwen & Seeman, 1999; Sapolsky, 1996; Schneiderman, Ironson, & Siegel, 2005; Schwabe & Wolf, 2010; Wang, 2005). Furthermore, stress has been associated with the six major causes of death, such as heart disease, liver disease, cancer, lung ailments, accidents and suicide (Crum, Salovey, & Achor, 2013) and has been associated with the development of mental disorders (Crum et al., 2013; Hammen, 2005; McEwen & Seeman, 1999; Schwabe & Wolf, 2010; Wang, 2005). The consequences of stress signify the relevance to investigate the factors influencing the development and emergency of stress. Crum et al. (2013) point out that not stress itself, but rather the stress mindset, the extent to which an individual holds either a positive or negative attitude towards stress, is significant in determining the consequences of stress. It was shown that stress can lead to positive outcomes if a positive mindset (“a stress-is-enhancing mindset”) compared to a negative mindset towards stress (“a stress-is debilitating mindset”) is exposed by an individual (Crum et al., 2013; Crum, Akinola, Martin, & Fath, 2017). A negative mindset towards stress, in contrast, can lead to anxiety and panic if the anticipatory action process is not channelled correctly (Crum et al., 2013). The current study assumed that individuals endorsing a more positive mindset exhibit less anxiety compared to individuals with a negative stress mindset. Furthermore, the current study presumed that this association was mediated by an individual’s ability to experience, endure and withstand negative emotional states.

Stress mindset

An individual’s mindset towards stress can be defined as the degree to which it holds the belief that stress has enhancing consequences for various stress-related outcomes regarding productivity and performance, wellbeing and health, growth and learning (“referred to as a “stress-is-enhancing mindset”) or holds the belief of stress as having more detrimental effects (referred to as a “stress-is-debilitating mindset”) for the same outcomes (Crum et al., 2013). The stress mindset theory (Crum et al., 2013; Crum et al., 2017) assumes that the stress mindset an individual adopts is related to overall life satisfaction and shapes the overall stress responses. Crum et al. (2013) found that individuals who express a stress-is-enhancing mindset display more approach-oriented behaviour responses and more adaptive physiological responses when confronted with stress. Individuals endorsing a stress-is-enhancing mindset exposed to immediately stressful situations are more receptive towards feedback and exhibit moderate cortisol reactivity, making them more likely to display optimal arousal levels to meet goals and

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demands but not so much as to compromise actions to meet their goals (Crum et al, 2013). Reversely, individuals adopting a stress-is-debilitating mindset exhibit hypo- or hyperactivated arousal levels, making them prone towards avoidance, denial or other counteractive strategies such as medications or substance use in the face of immediate stress (Crum et al., 2013). In sum, a stress-is-enhancing mindset leads to more positive adaptations, which, in contrast to a stress-is-debilitating mindset, allow the endorser to deal successfully with stress.

Recently, stress mindset has been linked to an array of bodily reactions that increase resilience which leads to more positive outcomes and consequences of an individual confronted with stress. Crum, Akinola, Martin and Fath (2017) revealed that a stress-is-enhancing mindset produces sharper increases in anabolic (“growth”) hormones compared to a stress-is-debilitating mindset under both threat and challenge evaluations. It was shown that individuals with a stress-is-enhancing mindset experience greater increases in dehydroepiandrosterone (DHEAS) and greater increases in positive emotions compared to those endorsing a stress-is-debilitating mindset (Crum et al., 2017). The anabolic and antiglucocorticoid effects of DHEAS (Morgan et al., 2004), especially in combination with its promoting effects on positive mood (Frye & Lacey, 1999) and physiological resilience (Charney, 2004), can improve resilience under stress and one’s capability in dealing with future stressors (Crum et al., 2017). In sum, the anabolic and antiglucocorticoid effects of DHEAS, with its effects on positive mood and physiological resilience, can enhance resilience which was associated with the capacity to experience and to deal with future stressors (Crum et al., 2017), that is, distress tolerance.

Distress tolerance

Dysregulated behaviour, in combination with low distress tolerance, is common in disorders related to anxiety. Distress tolerance (DT), which has been defined in different ways, such as the capacity to experience and withstand negative emotional psychological states (Simons & Gaher, 2005), or (1) the perceived capacity to withstand negative emotional and/or other aversive states, and (2) the behavioural act of withstanding distressing internal states evoked by some type of stressor (Leyro, Zvolensky, & Bernstein, 2010), has received little empirical exploration (Riccardi, Timpano, & Schmidt, 2010). DT is assumed to affect the evaluation and consequences of experiencing negative emotional states and those who are low in DT are more prone to be overly reactive to stress and distress (Riccardi et al., 2010). Riccardi et al. (2010) suggest that individuals low in DT engage in maladaptive coping strategies to avoid inconvenient situations associated with negative emotional states. Correspondingly, individuals avoiding inconvenient situations associated with negative emotional states by

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using ineffective coping strategies such as ritualizing behaviours, avoidance and safety aids maintain those problems (Riccardi et al., 2010). In line with this reasoning, DT has been associated with borderline personality disorder, self-injurious behaviour, gambling and substance use disorder (Anestis, Selby, Fink, & Joiner, 2007; Buckner, Keough, & Schmidt, 2007; Daughters et al., 2005; Daughters, Sargeant, Bornovalova, Gratz, & Lejuez, 2008; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Nock & Mendes, 2008)

Previous research showed an association between DT and anxiety (Riccardi et al., 2010). It was shown that individuals low in DT are more prone or sensitive towards anxiety related problems, such as panic disorder, agoraphobia, anxiety sensitivity (Daughters et al., 2009; Marshall et al., 2008; Telch et al., 2013), post-traumatic stress disorder (Fetzner, Peluso, & Asmundson, 2014) and suicidal behaviour (Marin, Bauer, Ramsey, Green, Anestis, 2018). Perspectives on DT suggest that individuals low in DT may be more prone to avoid distress and its detrimental consequences (Leyro et al., 2010). Those consistently unable to withstand anxiety-related situations may not become habituated to feared sensations and miss the opportunity to develop self-efficacy to manage those situations (Leyro et al., 2010). Low DT thus not only maintains, but potentiates anxiety problems (Riccardi et al., 2010). Correspondingly, low DT was associated with high levels of anxiety (Keough et al., 2010).

The association between stress mindset and DT has not been examined before. Previous research did show an association between stress mindset and resilience (Crum et al., 2017), a related concept of DT (Leyro, Zvolensky, & Bernstein, 2010). Resilience, defined as “dynamic process encompassing positive adaption within the context of significant adversity” (Luther, Cicchetti & Becker, 2000, p.1), acts as a protective factor which can “modify, ameliorate, or alter a person’s response to some environmental hazard that predisposes a maladaptive outcome” (Rutter, 1985, p.3). Although specific conceptualisations of DT vary in their degree and overlap with putatively related constructs, it primarily focuses, similarly to resilience, which highlights the capacity to resist stress and adversity (Rutter, 1993), on the actual or perceived behavioural capacity to withstand exposure to threatening or aversive states (Brown et al., 2005; Simons & Gaher, 2005; Zvolensky, Vujanovic, Bernstein, & Leyro; 2010). Resilience and DT may share therefore not only a conceptual link, but similar underlying processes (Leyro et al., 2010), making both to protective factors against a multitude of psychopathologies such as traumata (Nila, Holt, Ditzen, & Aguilar-Raab, 2016). The effects found for a stress-is-enhancing mindset and resilience (Crum et al., 2017) might therefore be similar for DT. DT is, however, more suitable for interventions aimed at reducing

anxiety because it is not a stable personality characteristic (Oshio, Taku, & Saeed, 2016), making it more amenable to interventions.

Anxiety

The ubiquitous and pervasive relevance of anxiety in contemporary life has been already recognised during the 1960s (Spielberger, 1966; Spielberger, 1913). According to Spielberger (1996), anxiety seems to be a fact of modern life. Bandelow (2015) suggests that up to 33.7% of the population is affected by an anxiety disorder at least one time during their lifetime. Anxiety disorders are highly comorbid with other anxiety and mental health disorders, and substantial low detection rate and undertreatment of these disorders have been demonstrated (Bandelow, 2015). The Learning Theory of Anxiety (Mowrer, 1960) suggests that anxiety is a conditionable part of fear serving as a secondary drive (Klein, 1987) in which an unconditioned stimulus, such as a shock, can cause unconditioned response, such as fear a pain. Subsequently, the conditioned response, in this case fear, is reinforced by escape behaviour that reduces the fear. Fear-conditioning is central to a many etiological accounts of anxiety disorders (Lissek, Kaczurkin, Rabin, Geraci, Pine, & Grillon, 2015), including its contention of overgeneralisations, which is the conditioned fear to stimuli resembling the conditioned danger cue (Lissek et al., 2015), and illustrates one of the most robust abnormalities in anxiety disorders (Lissek, Powers, McClure, Phelps, Woldehawariat, Grillon, & Pine, 2005), such as Generalised Anxiety Disorder (GAD). The findings indicate a single underlying process in the etiology of anxiety, extending to a generalised form of anxiety as measured in this study.

Crum et al. (2013) linked the stress mindset endorsed by an individual to reported levels of anxiety. Experiments showed that individuals endorsing a stress-is-enhancing mindset report fewer symptoms of anxiety and depression while at the same time reporting higher levels of energy (Crum et al., 2013). In contrast, individuals endorsing a stress-is-debilitating mindset reported more symptoms of anxiety compared to individuals exhibiting a stress-is-enhancing mindset. Crum et al. (2013) proposed that the mindset an individual adopts determines the attitude and the manner with which an individual engages with stressful events. Individuals adopting a stress-is-enhancing mindset are more likely to engage in activities that help to achieve their aims, which at the same time reduces the underlying distress (Crum et al., 2013). In contrast, individuals adopting a stress-is-debilitating mindset show rather behaviour patterns aimed to avoid distress and its detrimental consequences. Avoidance behaviour results thus in greater inability to tolerate stress (Leyro et al., 2010); therefore, it can be assumed that avoidance behaviour towards anxiety-eliciting contexts leads to poorer ability to withstand

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those instances, or lower levels of DT, and higher levels of anxiety. Those who avoid feared sensations may become less habituated and develop thus no self-efficacy mechanisms to deal with anxiety-related situations (Leyro et al., 2010). Contrary, a positive stress mindset should reduce avoidance behaviour, increasing thus levels of DT and reduce general anxiety levels.

Present research

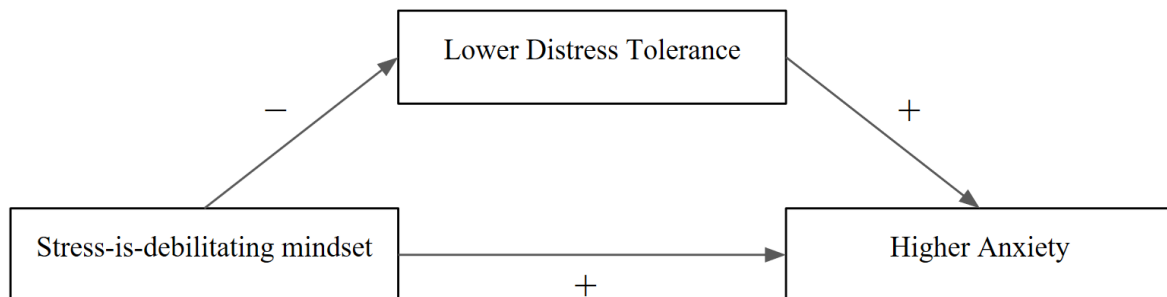
Based on the literature review, several assumptions can be made regarding the relationship between stress mindset, DT and anxiety, as illustrated in *Figure 1* and *Figure 2*. The corresponding research question of this study is: *What is the relationship between stress mindset, distress tolerance and anxiety?*

Crum et al. (2013) suggest that the stress mindset an individual endorses leads to approach or avoidance behaviour within stress-related contexts. Individuals endorsing a stress-is-debilitating mindset are prone to avoid anxiety-related contexts (Crum et al., 2013), become thus less habituated and less able to withstand feared sensations, which may lead to lower DT and heightened baseline levels of anxiety (Leary et al., 2010). A stress-is-enhancing mindset, in contrast, should increase DT and reduce anxiety levels since those who confront themselves with emotional stressful situations should become better to deal with corresponding situations.

Following hypotheses have been proposed in the current study:

H1: A stress-is-debilitating mindset is associated with higher levels of anxiety, which is mediated by lower levels of distress tolerance (*Figure 1*).

H2: A stress-is-enhancing mindset is associated with low levels of anxiety, which is mediated by higher levels of distress tolerance (*Figure 2*).



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Figure 1. Conceptual model of the mediation effect of distress tolerance on a stress-is-debilitating mindset and anxiety.

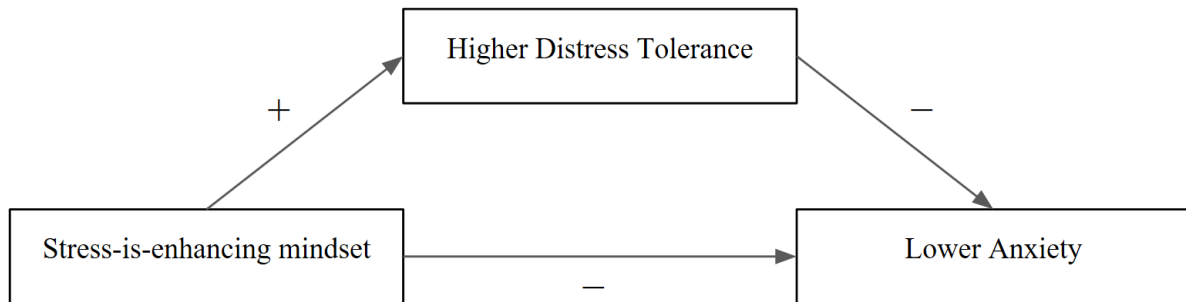


Figure 2. Conceptual model of the mediation effect of distress tolerance on a stress-is-enhancing mindset and anxiety.

Method

Participants

From the initial 117 participants, 13 (11.1%) were excluded due to non-completion of the questionnaires. The resulting 104 participants encompassed 32 (30.8%) male and 72 (69.2%) female participants. The age ranged between 18 and 51 years ($M = 21.27$; $SD = 3.62$) and most the participants (98%) were at maximum 26 years old. The highest educational qualification ranged from high school degree, possessed by 86 (82.7%) of the participants, to an associate degree, obtained by 3 (2.9%) of the participants. The Bachelor's and Master's degree was completed by 13 (12.5%) and 2 (1.9%) of the participants, respectively. Most of the participants indicated German nationality with 80 (76.9%) responses, followed by Dutch or another nationality, as represented by 9 (8.7%) and 15 (14.4%) participants, respectively. English was the Mother tongue of 5 (4.8%) participants. Furthermore, 86 (82.7%) participants indicated a proficient English level, while 13 (12.5%) reported an intermediate English level.

Materials

Demographics and general information. Participants had to indicate their gender (male, female), age (in years), nationality, primary occupation and their currently highest completed educational level. Additionally, participants were asked to indicate their English proficiency to evaluate whether they understood the items and the questionnaires adequately.

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State-Trait Anxiety Inventory. The State-Trait Anxiety Inventory (STAI) is a 20-item self-administered questionnaire measuring state and trait anxiety exhibiting an excellent internal consistency, good test-retest reliability and concurrent, discriminant, construct and convergent validity for the trait scale (Gunning, Denison, Stockley, Ho, Sandhu, & Reynolds, 2010, Grös, Antony, Simms, & McCabe, 2007, Spielberger, 1983). The STAI trait scale exhibited an excellent internal consistency of $\alpha=0.94$ for the current study. An example of the STAI trait scale would be “I worry too much over something that really doesn’t matter”. Items are rated on a 4-point Likert scale (1=*not at all* to 4=*very much*).

Distress Tolerance Scale. The Distress Tolerance Scale (DTS) is a 14-item self-administered questionnaire measuring emotional distress tolerance. The DTS exhibits convergent, construct, discriminant and criterion validity and adequate test-retest reliability as well as good to excellent internal consistency (Simons & Gaher, 2005). The DTS exhibited in the current study an excellent internal consistency of $\alpha=0.91$. An example of the DTS would be “Feeling distressed or upset is unbearable to me.” Items are rated on a 5-point Likert scale (5=*Strongly disagree* to 1=*Strongly agree*).

Stress Mindset Measure (SMM). The Stress Mindset Measure (SMM) is an 8-item self-administered questionnaire evaluating an individual’s stress mindset. The SMM exhibits good internal consistency, discriminant and criterion validity (Crum et al., 2013). Participants had to indicate how much they agree to statements such as “Experiencing stress enhances my performance and productivity” on a 5-point-Likert-scale (0 = *Strongly Disagree*; 4 = *Strongly Agree*). The SMM was divided into two subscales for the purposes of the current study. The stress-is-enhancing subscale had a poor ($\alpha=0.69$) and the stress-is-debilitating an acceptable ($\alpha=0.72$) internal consistency. An example of the stress-is-enhancing subscale would be “Experiencing stress facilitates my learning and growth”. The stress-is-debilitating subscale included items such as “The effects of stress are negative and should be avoided.” A factor-analysis was conducted to test whether the division of the SMM into two subscales was adequate for the purpose of the current research. A Goodness-of-fit test indicated two factors as the most appropriate number of factors to extract from the data ($\chi^2(13) = 39.80, p < .001$). The positive formulated items loaded on the one factor and the negative on the other factor.

Procedure

The current study was approved by the ethics committee of the behavioural management and social sciences (BMS) of the University of Twente. Students must obtain a certain number of Sona-credits at the University of Twente in order to pass successfully their psychology bachelor's degree. Furthermore, Sona-systems provide a platform for researchers at the University of Twente to collect participants for their studies. Sona-systems was used in the current study to gather participants, a sample pool largely based on students in need of Sona-credits to pass their course successfully. The data collection period started at the third and ended on the 26th of April. The questionnaires were transformed using the online platform Qualtrics. After the recruitment, participants were debriefed about the research content and that the study will take approximately 30 minutes. Subsequently, participants were asked to give their informed consent before taking any further step. After completion of the study, participants were thanked for their participation, rewarded with Sona credits and were invited to contact one of the researchers in case of any questions. Eligibility requirements, as stated in the beginning of the research, included proficiency in English and a minimum age of 18 years.

Design analysis plan

SPSS 22.0 was used to implement all analyses, including the testing of the in this research included hypotheses and the calculation of the descriptive statistics. The design of the current study was descriptive and cross-sectional. Several steps in the data analysis were executed to be able to answer the research questions and to either accept or reject the hypotheses that were formulated. All cases that potentially could distort the results of the study, such as non-completion of the questionnaires, were considered for exclusion.

The two hypotheses were tested using the *MEDIATE* file developed by Hayes and Preacher (2014). Two mediation analyses were implemented to answer the hypotheses. The first included a stress-is-debilitating mindset and the second a stress-is-enhancing mindset as an independent variable. Both analyses incorporated DT as a mediator, anxiety as a dependent variable and gender as a covariate. The dataset of the current study included a small sample (N=104), which is not a sufficient sample size to achieve a statistical high power (Fritz and MacKinnon (2007). The problems of the small sample size to achieve enough statistical power could be circumvented because the Hayes and Preacher (2014) method a bootstrapping method that increases power (Efron & Tibshirani, 1993; Mooney & Duval, 1993). Furthermore, there has been substantial evidence that there is a significant difference in distress tolerance between males and females. Simons and Gaher (2005) showed that females scored significantly lower

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on the distress tolerance scale compared to females. Therefore, the current study controlled for gender. Only significant differences regarding the included variables were mentioned.

The *MEDIATE* file by Hayes and Preacher (2014) incorporated the completely standardised indirect effect of x on y , including a bootstrapped interval that indicated whether an indirect effect was significant or not. Non-standardised indirect effects were calculated for each of 5,000 bootstrapped samples and a 95% confidence interval was calculated by determining indirect effects at the 2.5th and 95.5th percentiles. The effect size set at 0.1 (small), 0.3 (medium) and 0.5 (large) to determine the magnitude of the observed effect. An indirect effect of DT on the relation between the respective stress mindset and anxiety could be confirmed if the confidence interval of the completely standardised indirect effect did not include the number zero (Preacher & Hayes, 2004).

Results

Descriptive Statistics

The descriptive statistics, including the mean, standard deviation (SD) and Pearson correlations are illustrated in Table 1. All correlations were in the expected direction.

Table 1

Descriptive Statistics and Correlations (R=Range on Likert-Scale)

	N	M	R	SD	1.	2.	3.	4.
1. Stress-is-enhancing-mindset	104	2.69	1-5	0.73	-			
2. Stress-is-debilitating-mindset	104	2.62	1-5	0.76	-0.60**	-		
3. Distress Tolerance	104	2.95	1-5	0.81	0.19	-0.37**	-	
4. Anxiety	104	2.26	1-4	0.63	0.08	0.21*	-0.63**	-

Note. Mean, Standard deviation and Person's r correlation between all variables. * $p < 0.05$, ** $p < 0.01$.

Stress-is-debilitating mindset

The total variance exhibited by the model reached significance ($R^2 = 0.21$, $F(2, 101) = 13.28$, $p < .001$). Gender was a significant covariate in the current model ($\beta = -.28$, $t(104) = 2.22$, $p < .01$). The association between a stress-is-debilitating mindset and anxiety was insignificant ($\beta = -.01$, $t(104) = -.15$, $p = .88$), and the association between a stress-is-debilitating mindset and DT was significant and negative ($\beta = -.30$, $t(104) = -3.32$, $p < .001$). Furthermore, DT was

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negatively associated with anxiety ($\beta = -.65$, $t(104) = -7.43$, $p < .001$). In sum, a stress-is-debilitating mindset was associated with lower levels of DT but not with heightened levels of anxiety, and lower levels of DT were associated with heightened levels of anxiety. The bootstrapped standardised indirect effect did not include zero ($\beta = .20$; [.10, .31]). The indirect effect of DT was thus statistically significant. In line with the hypothesis, a stress-is-debilitating mindset was associated with higher levels of anxiety, which was mediated by low levels of DT.

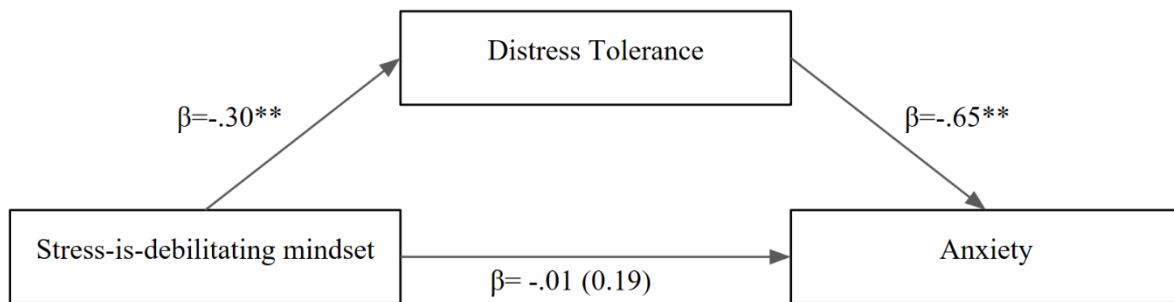


Figure 1. Standardised regression coefficients for the relation between the stress-is-debilitating mindset and anxiety, as mediated by DT. The standardised regression coefficient between stress mindset and anxiety, controlling for DT, is in parentheses. * $p < .05$, ** $p < .001$

Stress-is-enhancing mindset

The total variance exhibited by the model reached marginal significance ($R^2 = 0.40$, $F(2, 101) = 32.96$, $p < .06$). Gender was no significant covariate in the current model ($\beta = -.04$, $t(104) = -.44$, $p = .66$). In contrast to the second hypothesis, a stress-is-enhancing mindset was not associated with higher levels of anxiety ($\beta = -.08$, $t(104) = -.08$, $p = .43$). The association between a stress-is-enhancing mindset and DT was marginally significant ($\beta = .19$, $t(104) = 1.94$, $p = .06$). Moreover, DT was negatively associated with anxiety ($\beta = -.64$, $t(104) = -8.16$, $p < .001$). In sum, as stress-is-enhancing mindset was not associated with lower levels of anxiety but marginally related to heightened levels of DT. Furthermore, higher levels of DT were associated with lower levels of anxiety. The bootstrapped standardised indirect effect did not include zero ($\beta = -.12$; [-.24, -.01]). The findings thus supported hypothesis 2. Although a stress-is-enhancing mindset was not associated with lower levels of anxiety, a mediational effect of DT on the relation between a stress-is-enhancing mindset and anxiety was observed.

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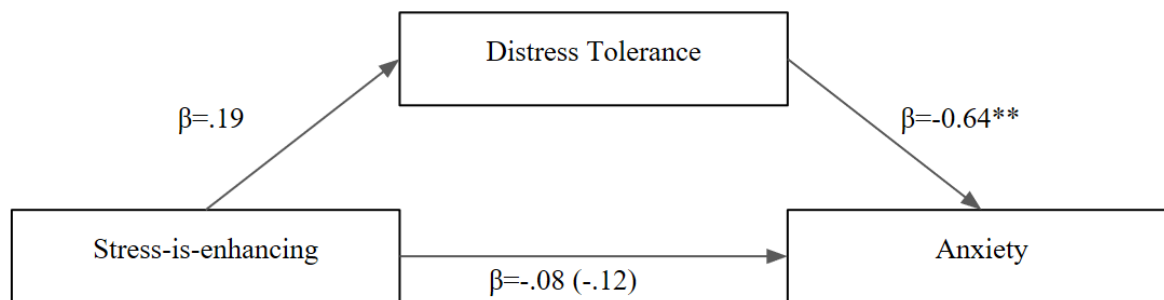


Figure 2. Standardised regression coefficients for the relation between the stress-is-enhancing mindset and anxiety, as mediated by DT. The standardised regression coefficient between stress mindset and anxiety, controlling for DT, is in parentheses. $*p < .05$, $**p < .001$.

Discussion

The purpose of the current research was to investigate the relation between mindset towards stress, DT and anxiety. It was assumed that the relation between stress mindset and anxiety is mediated by DT. For the first hypothesis, it was predicted that a stress-is-debilitating mindset is associated with higher levels of anxiety, which is mediated by lower levels of DT. For the second hypothesis, it was predicted that a stress-is-enhancing mindset is associated with lower levels of anxiety, which is mediated by higher levels of DT. Both mediational hypotheses were supported. Gender as a covariate in the stress-is-debilitating model yielded significance. A factor analysis yielded support for the division of the SMM into two different subscales.

Crum et al. (2013) and Crum et al. (2017) suggested two different stress mindsets, as manifested in a stress-is-debilitating and a stress-is-enhancing mindset, to measure the mindset towards stress. The in the current study stress mindset measure was not developed to measure two different mindsets (Crum et al., 2013). Nevertheless, the SMM was divided into two subscales to measure both the stress-is-debilitating and the stress-is-enhancing mindset. The current study found a correlation of $r = -0.60$ between both stress mindset measures, indicating that both stress mindset measures are two related, but separate constructs. Furthermore, a factor analysis conducted in the current study supported a two-factorial solution for the SMM, legitimating the division of the stress mindset scale into two subscales. Keyes, Wissing, Potgieter, Temane, Kruger and van Rooy (2008) found that mental health and mental illness reflect two separate continua. A stress-is-enhancing mindset might be more related to mental health than to mental illness due to its promoting effects on mood (Frye & Lacey, 1999) and physiological resilience (Charney, 2004). The opposite would be true for a stress-is-debilitating mindset, which might be, due to its negative effects on DT and anxiety (Crum et al., 2013), in that it decreases DT and increases anxiety, more related to mental illness than mental health.

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Crum et al. (2013) suggested that the mindset towards stress an individual endorses determines the attitude and the manner with which an individual deals with stress. It was shown that individuals adopting a stress-is-debilitating mindset exhibit behavioural patterns aimed to avoid distress and its detrimental consequences (Leyro et al., 2010). Subsequently, those individuals who avoid or escape anxiety-related contexts miss opportunities to develop self-efficacy to withstand those emotional states, may become thus less habituated to feared sensations and more prone to experience increased levels of anxiety (Leyro et al., 2010). In line with this array of research, the current research established a strong link between a stress-is-debilitating mindset and heightened anxiety. The relation between a stress-is-debilitating mindset and anxiety was assumed to be mediated by DT, since those who are unable to confront themselves with emotional stressful situations become less habituated towards fear and should therefore be less able to withstand corresponding situations (Leyro et al., 2010). In line with this reasoning, the present study established a mediation effect of DT on the relation between a stress-is-debilitating mindset and levels of anxiety.

The findings of the current study are in line with scientific findings. Crum (2014) states that attempts to reduce arousal often have negative effects of their own. Trying to relax or avoid the arousal experienced while stressed can lead to experiential avoidance, which has been defined as the avoidance or suppression of a wide array of psychological experiences such as sensations, emotions, thoughts and urges (Crum, 2014). Paradoxically, experiential avoidance can increase negative thoughts and anxiety and prevent us from taking any necessary action to deal with the arousal (Crum et al., 2014; Carver et al., 2010; Wegner, 1994). Wegner (1994) argues that trying not to be anxious yields an (1) operating process aimed at increasing relaxing and neutral thoughts and (2) a monitoring process aimed to monitor and reduce anxiety-related thoughts. The operating process requires, however, greater cognitive capacities (Wegner, 1994). Under conditions that reduce capacity, the monitoring process may supersede the operating processes and enhances an individual's sensitivity towards mental content which are an ironic opposite of those that were intended (Wegner, 1994). If the monitor is then freed so that thoughts regarding anxiety are not monitored anymore, the product will be an ironic barrage of anxiety-related thoughts (Wegner, 1994). Avoiding emotions such as anxiety can thus, conversely to the attempt to reduce anxiety, elevate levels of anxiety (Crum et al., 2014).

Furthermore, the second hypothesis was supported. Crum et al. (2013) contention is that a stress-is-enhancing mindset, compared to a stress-is-debilitating mindset, leads to more positive adaptations, such as moderate cortisol reactivity that allow to deal successfully with stress. Correspondingly, individuals endorsing a stress-is-enhancing mindset exhibit more

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approach-oriented behaviour patterns when confronted with stress (Crum et al., 2013). Those who approach anxiety-related contexts receive opportunities to develop strategies to withstand those emotional states and as a result may display lower anxiety levels (Leyro et al., 2010). In line with this reasoning, the present study established a mediation effect of DT on the relation between a stress-is-enhancing mindset and levels of anxiety. Crum et al. (2014) view a move towards stress as essential. Moving towards stress makes stress less menacing (Crum, 2014). Strategies such as rumination, in contrast, may interfere with problem solving, alienate social support or even increase further additional cognitive distortions (Lyubomirsky & Tkach, 2004; Nolen-Hoekesma et al., 2008). Therefore, the act of welcoming stress into an individual's life and mind can increase sense of control and decrease anxiety levels (Crum et al., 2014).

Limitations

Several limitations emerged during the researcher process. Firstly, the sample was homogenous in that most participants were of German nationality and twice as young as the normal population (Statista.com, 2015; Statista.com, 2016). Younger individuals e.g. may exhibit different levels of anxiety compared to older individuals (Bandelow & Michealis, 2015). Secondly, several students did not complete all questionnaires. Similar to non-response rates, non-completion of questionnaires may entail that certain population characteristics are misrepresented, because parts of a population with certain characteristics might be less inclined to complete questionnaires (Boynton, 2004; Brøgger, Bakke, Eide, & Gulsvik, 2003; Dallosso, Matthews, McGrother, Clarke, Perry, Shaw, & Jagger, 2003; Meadows, Gardiner, Greeme, Rogers, Russel, & Smoljanovic, 1998). Johnes and Taylor (1989) e.g. treat non-completion itself as an aspect of university attainment in a university sample population (p.220), implying that that non-completion is related low academic success. Thirdly, the design of the current study was descriptive and therefore no causations were tested. Causations cannot be established from a descriptive design (Grimes & Schulz, 2016).

Strengths

The current research employed a mediation analysis developed by Hayes and Preacher (2014) to test both hypotheses. This approach does not require a normal distribution of the sample population since it uses a bootstrapping method, nor does it require the Baron and Kenny criteria such as a significance of coefficients a and b in order to confirm a mediational effect of m on the relation between x and y (Preacher and Hayes, 2004). Further, the Baron and Kenny approach exhibits severe statistical problems such as frequent low statistical power

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and leads further to frequent incorrect statistical conclusions and interpretations (Preacher and Hayes, 2004). E.g., the conclusion that a mediation effect is present necessitates, according to Baron and Kenny (1986), that the total effect of x to y was initially present (which was e.g. not the case in the mediation models of the current study). There is, however, no such assumption in the assessment of indirect effects (Preacher & Hayes, 2004). It is possible to find significant indirect or mediational effects even if there is no evidence for a total effect (Preacher & Hayes, 2004). Finally, the current study incorporated two stress mindsets which might be related either to mental health and mental illness. Teng et al. (2015) argue that an exclusive focus on identification of mental illness or mental health runs the risk of missing to detect those who exhibit low or high levels of the other. Correspondingly, the current study divided the SMM into two subscales, offering thus more insights about how individuals score both on a stress-enhancing mindset and a stress-is-debilitating mindset.

Future research

The results of the current study raise some questions to be investigated in further studies. Firstly, Gender was a significant covariate in the mediation of DT on the relation between a stress-is-debilitating mindset and anxiety. In line with this finding, Barnett et al. (1987) suggest that gender determines whether a situation will be perceived as stressful; women e.g. find themselves in more stressful situations (e.g. Almeida & Kessler, 1998; McDonough & Walters, 2001) and appraise threatening events as more stressful than men do (Matud, 2003; Miller & Kirsch, 1987; Ptacek, Smith, & Zanas, 1992). Also, the literature may account for gender differences in how individuals perceive stress: Matud (2003) suggests that the traditional female gender role prescribes dependence, affiliation, emotional expressiveness and a lack of assertiveness. The traditional male role, in contrast, prescribes attributes such as autonomy, assertiveness, self-confidence, instrumentality and being goal-oriented, making it difficult for men to accept and express feelings of weakness and incompetence, while for women it would make it more difficult to endorse a proactive problem-solving attitude (Matud, 2003). The literature indicates that men are prone to identify with male attributes and thus may evaluate stress more positive or express their attitude towards stress more positively due to their socialising (Matud, 2003; Ptacek et al., 1992; Rosario, Shinn, Morch, & Huckabee, 1988). Further research may investigate the link between stress-mindset, DT and anxiety. Finally, further may investigate whether a stress-is-enhancing- and a stress-is-debilitating mindset reflect two different continua, as mental health and mental illness (Keyes et al., 2008), and whether the former relates more to mental health and the latter more to mental illness.

Conclusion

The current study established a mediational effect of DT on the relation between a stress-is-debilitating mindset and anxiety and of DT on the relation between a stress-is-debilitating mindset and anxiety. Whether stress mindset results in greater or lower levels of anxiety depends largely on an individual's ability to withstand or tolerate distress. DT can explain varying levels of anxiety and is a major indicator in determining the influence of stress mindset on anxiety.

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