

The Associations between Depression, Eustress, Distress and Stress Mindset

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Abstract

The current study examined the relationship between stress mindset, eustress, distress and depression. A correlational survey design was used and participants ($N = 153$) gave their response to three questionnaires. The aim was to test whether a stress-is-enhancing mindset is negatively associated with depression through the mediator eustress and whether a stress-is-debilitating mindset is positively associated with depression through the mediator distress. The results confirmed that a stress-is-enhancing mindset is negatively associated with depression and that a stress-is-debilitating mindset is positively associated with depression and that both associations are mediated by the experience of eustress and distress. This suggests that having a positive mindset towards stress is a meaningful predictor for a positive stress response and lower depression rates.

Introduction

Today's fast-paced society demands a lot from us by constantly facing stressful situations in the occupational or academic context. For instance, university students are often required to perform at a certain level and to overcome a lot of obstacles in the course of their study-related activities, such as passing exams or holding oral presentations. Often these kinds of activities are associated with *stress* by many students (Ross, Niebling, & Heckert, 1999). The term *stress* is often framed in an adverse way by negative media coverage and our everyday thinking. Crum, Salovey, & Achor, 2013). A great number of people might think that *stress* is something toxic which drains energy and debilitates the physical as well as the mental health. This way of thinking was called the "mindless view of stress" and was contrasted with a "mindful view of stress" which is the belief that stress can have enhancing effects on performance, health and wellbeing (Crum & Lyddy, 2014). Research distinguishes between two mindsets, namely the "*stress-is-enhancing*" mindset and the "*stress-is-debilitating*" mindset. A stress-is-enhancing mindset could be negatively associated with negative outcomes of stress such as depression (Crum, Akinola, Martin & Fath, 2017; Schleider & Weisz, 2016) whereas a stress-is-debilitating mindset could be positively associated with depression. The current research examines whether a stress-is-enhancing mindset is negatively associated with depression and whether a stress-is-debilitating mindset is positively associated with depression through the experience of *eustress*, that is positive stress or *distress*, that is negative stress.

Stress, distress and eustress

One of the first researchers who worked on the concept stress was Selye (1974). According to him, stress was "the nonspecific response to any demand upon it" (Selye, 1974, p. 137). Selye (1974) thought that stress was not only the nervous tension or the result of damage, neither it was something that was necessarily to be avoided. Indeed, Selye (1974) viewed stress as a biological reaction and without its existence it would mean death for humankind. So, stress was a vital resource for surviving. Selye (1974) differentiated between good and bad stress: the good stress which he called *eustress* is associated with positive feelings and healthy states whereas the bad stress which he called *distress* is associated with negative feelings and disturbed bodily states. Researchers viewed eustress and distress as "two different reactions to the stress, which can occur simultaneously" (Kupriyanov & Zhdanov, 2014, p. 180).

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There have been attempts to explain the occurrence of eustress and distress by means of the Yerkes-Dodson model which examines the effect of stress on performance and postulates that individuals need to achieve the optimum of physiological arousal and perceived stress in order to achieve the highest possible performance (Gibbons, Dempster & Moutray, 2008). On the one hand, if the individual viewed the source of stress as negligible or as exceeding one's capacity to cope, distress will result (Gibbons et al., 2008). On the other hand, the optimum of stress arousal has been called eustress (Gibbons et al., 2008). Therefore, the appraisals of stress influence whether the individual experiences either a positive response to a stressor, namely eustress or a negative response to a stressor, namely distress.

Different appraisals influence different stress responses. Lazarus (1966) argued that stress occurs when one perceives that one cannot adequately cope with the demands being made on oneself. Whereas Selye (1974) regarded it as a mere response to demands, Lazarus (1966) tried to explain what the underlying processes of stress are. In the cognitive transaction model of stress, he argued that, when individuals confront a new environment, they engage in appraisal processes which are classified as primary and secondary appraisal processes (Lazarus & Launier, 1978; Lazarus & Folkman, 1984). In primary appraisal processes individuals can identify three possible kinds of stressors, namely harm-stressors, which signal that an event already caused damage to the individual, threat-stressors, which signal that a future event will cause damage, and challenge-stressors, which signal that a future event will cause feelings of mastery and gain. Events that are neither harmful, nor threatening nor challenging are considered as benign/positive events which are ignored and do not require further action. In secondary appraisals individuals assess the resources and abilities to cope with the stressor. According to Lazarus (1966), stress was experienced, when a situation was perceived as threatening/harming and when the coping ability was considered low. Lazarus' research mainly focused on negative appraisals and there has been less focus on appraisals associated with positive emotions and feelings. However, findings suggested that positive appraisals such as seeing benefit and challenge in events are the antecedent of positive emotions (Folkman, 2008). On the one hand, this suggests that positive appraisals of stressors influence the response to stressors and might lead to the experience of eustress. On the other hand, negative appraisals of stressors might cause distress. There have been individual characteristics identified as an important factor in determining the appraisal of stressors (Lazarus, 1984; Lazarus, 1991).

Mindset

Mindsets are “evaluative viewpoints or mental frames that focus attention and organize information in a manner allowing for simplified and automatic functioning in the presence of contradictory or uncertain information” (Crum et al., 2017, p. 7). In other words, mindsets are sets of attitudes or beliefs established by an individual. One of the most known researchers about the mindset trait was Dweck (2006). In her Book “Mindset: The new Psychology of Success”, Dweck first coined the term growth mindset, the belief that personality and intelligence is malleable and has the potential to grow, and contrasted it with a fixed mindset, the belief that personality and intelligence is not changeable and fixed.

After Dweck (2006) mainly researched mindset towards personality and intelligence, research about mindset towards stress followed (Crum et al., 2013). The study found that stress mindset is a meaningful variable for predicting the stress response. A stress mindset was the extent to which one holds the belief that stress has enhancing consequences for various stress-related results such as performance and productivity, health and wellbeing, and learning and growth or holds the belief that stress has debilitating consequences for those results (Crum et al., 2013). People who hold a stress-is-enhancing mindset see stress as a valuable resource which can be utilized in achieving performance, health and wellbeing (Crum et al., 2013). People who have a stress-is-debilitating mindset think that stress debilitates their performance and productivity (Crum et al., 2013). It is argued that a large part of society is of the opinion that stress has debilitating consequences on stress-related outcomes due to the negative media coverage and personal experiences in having trouble dealing with stress (Crum et al., 2013). It was found that a stress-is-enhancing mindset lowered cortisol reactivity among high cortisol responders whereas it increased cortisol reactivity among low cortisol responders (Crum et al., 2013). This finding suggests that a stress-is-enhancing mindset moderates that level of cortisol and this is in line with the Yerkes Dodson Law that performance is highest when a moderate level of arousal is achieved.

There are several reasons why a stress-is-enhancing mindset might be related to the experience of eustress and distress. Previous research has shown that a stress-is-enhancing mindset was associated with challenge appraisals which might cause eustress (Kilby & Sherman, 2016). Moreover, research suggests that enjoying experiencing new things, persistence, internal locus of control, high level of self-control or positive mindsets may belong to the factors that increase the positive response to stressors such as eustress (Venkatesh &

Ram, 2015). A recent study revealed that a positive mindset intervention reduced risk factors for depression/anxiety and that such an intervention might be useful for increasing resilience to youth internalizing distress (Schleider & Weisz, 2016). In this study, participants were subjected to a single-session intervention which taught them that personality can change and grow. As a result, these participants showed a long-lasting decline in depressive symptoms compared to their counterparts in the control intervention after nine months. Other findings have shown that stress-is-enhancing mindsets are associated with sharper increases in positive affect, heightened attentional bias towards positive stimuli, and greater cognitive flexibility (Crum et al., 2017). However, individuals with a stress-is-debilitating mindset were more susceptible to elevated perceived distress due to adverse life events (Park et al., 2018). This suggests that a stress-is-enhancing mindset is associated with increased experience of eustress and a stress-is-debilitating mindset is associated with the experience of distress which might be a cause of depression.

Depression

Depression was defined as “a mood disorder involving emotional, motivational, behavioural, physical and cognitive symptoms” (Davey, 2008, p. 196). Emotional symptoms such as a depressed mood is one of the core symptoms of depression (Radloff, 1977); lack of motivation and less interest in most activities often arise; behavioural symptoms involve psychomotor retardation which entails slowness of speech and behaviour (Buyukdura, McClintock, & Croarkin, 2011); physical symptoms such as sleep disturbances and loss of appetite (Radloff, 1977) but also frequent headaches, indigestion, constipation, dizzy spells and general pain can occur (Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999; Trivedi, 2004); cognitive patterns such as ruminating on felt negative emotions and symptoms of distress have also been found among depressed individuals (Nolen-Hoeksema, 2000).

Depression is a common mental disorder worldwide with approximately 300 million people affected around the globe (WHO, 2018). In worst cases, depression leads to suicide. The World Health Organization (2018) reports that every year almost 800.000 people die due to suicide. Most astonishing is that, among the 15-29-year-old adolescents, suicide is the second leading cause of death and the leading cause of disability and a major contributing factor for the overall burden of disease worldwide (WHO, 2018).

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Research suggested that there is an association between negative mindsets and depression (Dweck, 2012). An online “diary” study has shown that individuals who have a negative mindset, such as a fixed mindset have higher levels of depression. An explanation why these individuals display higher levels of depression might be because they tend to ruminate over problems and setbacks and they think that these setbacks would mean that they are incompetent and unworthy (Dweck, 2012). Another reason why stress mindset might be associated with depression is because they influence the experience of eustress and distress. There is very little known about the relation between eustress and depression. However, Selye (1974) pointed out that eustress is associated with positive feelings and healthy states which contrasts with the disease pattern of depression which is predominantly known for negative feelings and unhealthy states (Davey, 2008; Trivedi, 2004). Therefore, there is good reason to assume that eustress might act as a protective shield against these negative feelings and unhealthy states and, therefore, reduces the depressive symptoms. Thus, a negative influence of eustress on depression can also be assumed. There are studies who show associations between the experience of distress and depression (Dahlin, Joneborg, & Runeson, 2005; Hammen, 2005). Furthermore, research showed that a polymorphism in the promoter region of the serotonin transporter gene 5-HTT moderates the positive influence of stressful life events on depression. (Caspi et al., 2003). So, there is a gene-environment interaction which causes stress to lead to depression. Because both stress mindsets and eustress and distress have a likely influence on depression, it can be assumed that the relationship between the stress mindset by individuals and their depressive symptoms might be mediated by their experience of eustress or distress.

Research question and hypotheses

The following research question has been formulated: How are stress mindsets, eustress, distress and depression related? The aim of the study is to examine whether eustress and/or distress mediate the relationship between stress mindset and depression.

The following hypotheses are postulated:

H1: A stress-is-enhancing mindset is negatively associated with depression and the relationship is mediated by eustress

H2: A stress-is-debilitating mindset is positively associated with depression and the relationship is mediated by distress

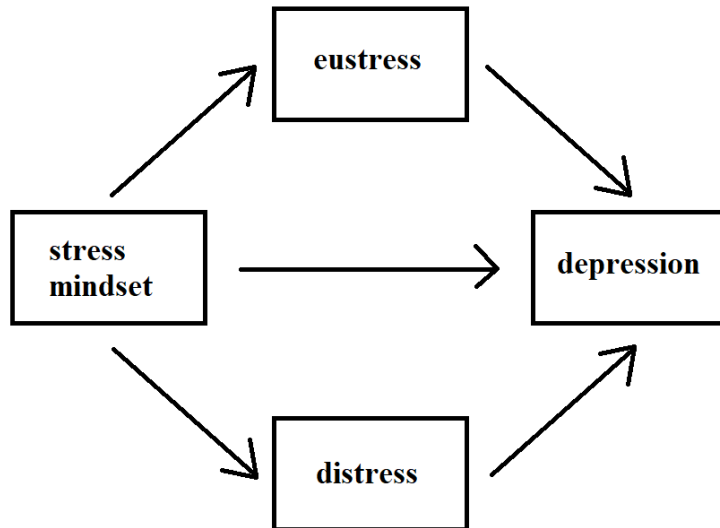


Figure 1. Relation between stress mindset and depression mediated by eustress and distress

Method

Participants

The study used a convenience sample of 153 students of the University of Twente ($MAge = 20.84$, $SDAge = 1.98$). Of those 153 students 128 female (83.7%), and 25 were male (16.3%). Sixteen participants were Dutch (10.5%), 133 were German (86.9%), and four participants belonged to another nationality (2.6%). Sixty-seven participants were single (43.8%), 85 in a relationship (55.6%) and one participant was married (0.7%). Seven participants indicated that their English proficiency is fair (4.6%), 84 indicated that their proficiency is good (54.9%) and 62 stated that their proficiency is very good (40.5%).

Measuring instruments

In the start of the questionnaire participants were asked about demographic variables such as gender, age, nationality, occupation and marital status. Participants also were asked to state how their level of English skills is (1 = Very Poor; 5 = Very Good). Three questionnaires were used for the study.

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First, the Stress Mindset Measure (SMM) of Crum et. al (2013) was administered. This questionnaire was intended to be used for measuring the stress mindset of the participants, namely a stress-is-debilitating mindset and a stress-is-enhancing mindset. In total, the questionnaire entailed eight statements, with four of them being positively formulated and the other four of them being negatively formulated. Four positively formulated items were measuring a stress-is-enhancing mindset whereas four negatively formulated items were measuring a stress-is-debilitating mindset. An example of a stress-is-enhancing item was “Experiencing stress facilitates my learning and growth”. A stress-is-debilitating item was “Stress inhibits my learning and growth”. The participants were asked to state the extent to which they agree on these statements based on a 5-point-Likert scale (0 = Strongly Disagree; 4 = Strongly Agree). A good internal consistency of the SMM with a Cronbach’s Alpha of .86 was found (Crum et. al, 2013). In the current study, the Stress Mindset Measure was split into two scales, namely stress-is-enhancing mindset and stress-is-debilitating mindset. The internal consistency was for both subscales questionable (stress-is-enhancing: $\alpha = .66$, stress-is-debilitating: $\alpha = .60$).

The second questionnaire that was used was the Perceived Stress Scale (PSS-10) by Cohen (1994) which originally was used to measure the experience of stress in general. The questionnaire comprised ten items, of which four were positively formulated and six were negatively formulated. Although the questionnaire was originally intended to measure the general perception of stress, there is research that shows that a two-factor structure of the PSS fits better than a one-factor structure (Hewitt, Flett, & Mosher, 1992). For that reason, it was decided to divide the PPS into two subsets: eustress and distress. The positively formulated items were selected for the variable eustress whereas the negatively formulated items were selected for the variable distress. For instance, a positively formulated item which measured eustress was “In the last month how often have you felt confident about your ability to handle your personal problems?”. One exemplifying negatively formulated item measuring distress was “In the last month how often have you felt that you were unable to control the important things in your life?”. The participants were asked to respond to these questions based on a 5-point-Likert scale (0 = Never; 4 = Very Often). The internal consistency of the PSS distress subscale has been found to be good with a Cronbach’s alpha of .81 and the internal consistency of the PSS eustress subscale has been found to be acceptable with a Cronbach’s alpha of .72 (Hewitt et al., 1992). In the current study, the distress subscale had good internal consistency ($\alpha = .84$). The eustress subscale also showed a good internal consistency ($\alpha = .82$).

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The third questionnaire that was used was the Center for Epidemiologic Studies Depression Scale, also known as CES-D (Radloff, 1977). This questionnaire purported to measure the symptomatology of depressive symptoms among a general population. The questions focused on how often participants felt or behaved in a certain way during the past week. Altogether, there were 20 items used. An example item was: “I was bothered by things that usually don’t bother me.”. The questions were rated on a 4-point-Likert scale (0 = Rarely or none of the time (less than 1 day); 3 = Most or all of the time (5-7 days)). A Cronbach’s Alpha of .85 in a general population was reported by Radloff (1977), suggesting a good internal consistency. The current study has found an excellent internal consistency of the CES-D ($\alpha = .90$).

Procedure

The research was approved by the Behavioural, Management, and Social Sciences Ethics Committee of the University of Twente. The questionnaires were developed in Qualtrics and published later via the online software SONA. Before starting with the study all participants were informed about the nature of the study and asked to give their consent. Furthermore, participants were told that the data will be anonymized and treated confidentially. The participants were able to take part in the study online with their own online devices, like smartphones or laptops. The questionnaire approximately took 20 minutes to complete. After finishing with the questionnaires, participants were thanked for their willingness to take part in the study and were told in case of questions or to discuss the research to send an e-mail to the researchers. In return for their participation in the study, the participants have been awarded 0.5 SONA credits.

Design and Analysis

The study was conducted in a descriptive correlational survey design. SPSS 25.00 was used for statistical analyses. Means and standard deviations were computed for the items in all scales. After that, a Pearson’s r test was computed between all variables in order to show the correlations.

Two mediation analyses were done by means of the PROCESS tool of Hayes (2017). In the PROCESS tool, for the first mediation analysis, the independent variable was stress-is-

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enhancing mindset, the mediators were eustress and distress and the dependent variable was depression. For the second mediation analysis, the independent variable was stress-is-debilitating mindset, the mediators were eustress and distress and the dependent variable was depression. Effect sizes were calculated in order to see the estimates of the indirect effects, direct effects and total effects. A bootstrapping method which was set to a 95% confidence interval and 1000 samples was used.

Results

Table 1 shows the correlation coefficients and descriptive properties of all variables. All correlations were significant and in the expected direction. Stress-is-enhancing mindset and stress-is-debilitating mindset were negatively correlated ($r = -.55$). The participants scored relatively low on the depression scale and scored relatively high on the eustress subscale.

Table 1

Descriptive statistics and correlations of stress-is-enhancing mindset, stress-is-debilitating mindset, eustress, distress and depression

	N	M	SD	1.	2.	3.	4.	5.
1. Enhancing mindset	153	1.85	0.69	-				
2. Debilitating mindset	153	2.31	0.66	-.55**	-			
3. Eustress	153	2.32	0.70	.26**	-.24**	-		
4. Distress	153	2.11	0.78	-.26**	.25**	-.68**	-	
5. Depression	153	0.85	0.50	-.20**	.21**	-.64**	.71**	-

Note. * $p < .05$, two tailed. ** $p < .01$, two tailed

Stress-is-enhancing mindset

A stress-is-enhancing mindset was significantly negatively associated with depression (Total effect: $\beta = -.20$, $t(151) = -2.45$, $p < 0.05$). A stress-is-enhancing mindset was positively associated with higher levels of eustress ($\beta = .26$, $t(151) = 3.29$, $p < 0.01$), and negatively associated with distress ($\beta = -.26$, $t(151) = -3.33$, $p < 0.01$). Distress was significantly positively associated with higher levels of depression ($\beta = .50$, $t(151) = 6.70$, $p < 0.01$) and eustress was significantly negatively associated with depression ($\beta = -.30$, $t(151) = -4.06$, $p < 0.01$). When controlling for both mediators, the association between a stress-is-enhancing mindset and

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depression was non-significant (Direct effect: $\beta = .02$, $t(151) = .27$, $p = 0.79$). There was a significant indirect effect of stress-is-enhancing mindset on depression through eustress, $\beta = -.29$, *BCa CI* [-.58, -.08] and through distress $\beta = -.48$, *BCa CI* [-.81, -.19]. This supports the first hypothesis that a stress-is-enhancing mindset is negatively associated with depression and is mediated by eustress and distress. The standardized coefficients can be seen in Figure 2 below.

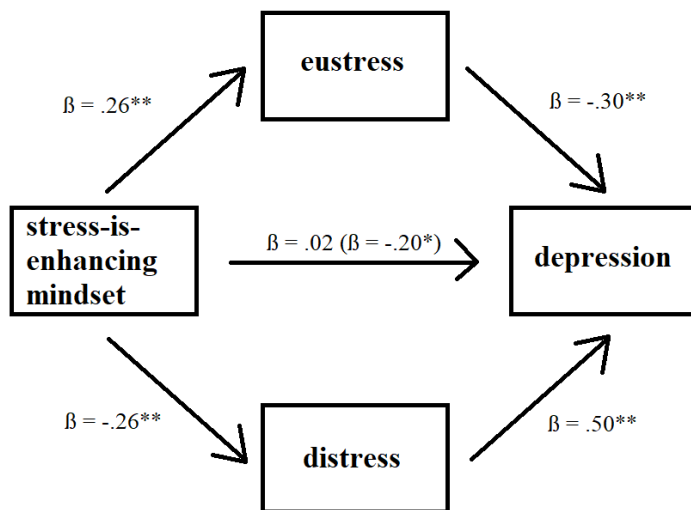


Figure 2. Relation between stress-is-enhancing mindset and depression mediated by eustress and distress with standardized coefficients

Stress-is-debilitating mindset

A stress-is-debilitating mindset was significantly positively associated with depression ($\beta = .21$, $t(151) = 2.65$, $p < 0.01$). A stress-is-debilitating mindset was significantly negatively associated with eustress ($\beta = -.24$, $t(151) = -3.07$, $p < 0.01$), and significantly positively associated with distress ($\beta = .25$, $t(151) = 3.12$, $p < 0.01$). Distress was significantly positively associated with depression ($\beta = .50$, $t(151) = 6.64$, $p < 0.01$) and eustress was significantly negatively associated with depression ($\beta = -.30$, $t(151) = -4.01$, $p < 0.01$). When controlling for both mediators, the association between a stress-is-debilitating mindset and depression was non-significant ($\beta = .01$, $t(151) = .26$, $p = 0.79$). There was a significant indirect effect of stress-is-debilitating mindset on depression through distress, $\beta = .47$, *BCa CI* [.16, .82] and through eustress, $\beta = .28$, *BCa CI* [.09, .53]. Therefore, the second hypothesis, that a stress-is-debilitating mindset is positively associated with depression and is mediated by distress and eustress, is supported. The standardized coefficients can be seen in Figure 3 below.

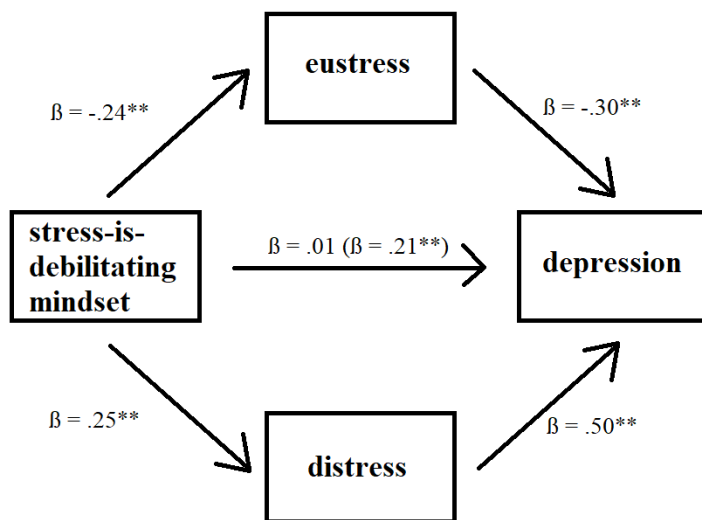


Figure 3. Relation between stress-is-debilitating mindset and depression mediated by eustress and distress with standardized coefficients

Discussion

The aim of the study was to examine whether eustress and distress mediated the relationship between a stress-is-enhancing mindset and a stress-is-debilitating mindset and depression. Stress-is-enhancing mindset was associated with lower levels of depression whereas stress-is-debilitating mindset was associated with higher levels of depression. Both associations were mediated by eustress and distress. Therefore, the two postulated hypotheses are supported. The outcome of the correlation analysis showed that both mindsets are different constructs.

Stress-is-enhancing mindset

A stress-is-enhancing mindset is associated with higher levels of eustress, lower levels of distress and lower levels of depression. This is in line with the outcome of research that positive appraisals are the antecedents of positive emotions (Folkman, 2008). It seems that positive appraisals such as seeing stress as having enhancing consequences results in higher levels of eustress. Previously mentioned research showed that a stress-is-enhancing mindset lowers cortisol reactivity for high cortisol responders and increases cortisol reactivity for low cortisol responders (Crum et al., 2013), suggesting that a balanced and optimal stress arousal is achieved. So, it seems as if a stress-is-enhancing mindset plays a role in achieving this optimal

level of stress arousal which is eustress (Gibbons et. al, 2008). Therefore, an optimum of stress arousal might represent an adaptive response to stressors whereas too much or too little arousal might represent a more maladaptive response. Moreover, the account of Selye (1974) also suggests that eustress is associated with positive feelings and healthy states which contrasts the pattern of depression which is known for negative feelings and unhealthy states (Davey, 2008; Trivedi, 2004). This view is also supported by the current study because eustress is associated with lower levels of depression. It appears that a stress-is-enhancing mindset wards off negative feelings such as distress while it promotes more positive feelings such as eustress. The study also indicates that a stress-is-enhancing mindset might be a good means to experience higher levels of eustress which is also implied by other researchers (Crum, Akinola, Martin & Fath, 2017). Referring to Lazarus and Folkman (1984), challenge appraisals focus on potential for growth and are characterized by pleasurable emotions whereas threat appraisals are characterized by negative emotions. Hence, when a situation is perceived as challenging rather than threatening, the individual might be more likely to experience eustress and feel more positive emotions and experience less distress and negative emotions.

Stress-is-debilitating mindset

A stress-is-debilitating mindset is associated with higher levels of distress, lower levels of eustress and higher levels of depression. These findings are supported by other investigations which point to associations between a stress-is-debilitating mindset and susceptibility to elevated perceived stress due to adverse life events (Park et al., 2018). In this study, participants with a stress-is-debilitating mindset experienced more distress than participants with a stress-is-enhancing mindset. Furthermore, if the individual sees the stress as negligible or as exceeding one's capacity to cope, distress will result (Gibbons et al., 2008). So, it could be that individuals with a stress-is-debilitating mindset are more likely to feel that the source of stress is either negligible or overwhelming. Thus, it is reasonable that a stress-is-debilitating mindset is associated with the inability to cope with stressors. This is in line with Lazarus (1966) definition that stress occurs when an individual cannot adequately cope with the demands made on him/her. Moreover, if the situation is assessed as threatening rather than challenging, it might be more likely that distress instead of eustress might occur. According to Lazarus and Folkman (1984) threat appraisals centre on potential harm and might elicit negative emotions which have an impact on the development of depression. In the current study, there was also an association

found between a stress-is-debilitating mindset and depression which is similar to what was found by Dweck (2012). But the moderation analysis found that distress is a better predictor of depression. However, a stress-is-debilitating mindset seems to be an important reason for why higher levels of depression occur.

Limitations and future research

There were several strengths and limitations of the study found. Because this study used a convenience sample of students it can be questioned whether the results are generalizable to other populations. Therefore, further research with other populations should be conducted in order to check the generalizability of the study. Furthermore, the current study design only shows associations and correlations between the variables but no causality. Thus, further research that carries out experimental study designs to test for the causality is needed.

Regarding the questionnaires, it can be said that the Perceived Stress Scale suited very well for measuring eustress and distress in two different subscales because of its two-factor structure (Hewitt et al., 1992). This was also shown in the reliability analysis which showed a good internal consistency for eustress and distress. However, there is still room to argue that the subscales might be not as valid as assumed because originally the Perceived Stress Scale does not intend to measure eustress and distress but stress in general (Cohen, Kamarck, & Mermelstein, 1994). But currently, there was no questionnaire found that is intended to measure distress and eustress specifically. Therefore, psychometric psychologists are called for inventing new questionnaires which are measuring distress and eustress.

The internal consistency for the stress-is-enhancing and stress-is-debilitating scale was questionable to poor. This might be due to the small number of items because each scale only consisted of four items (Streiner, 2003). Another factor which might have interfered with the internal consistency could be the order of the questionnaires. The whole questionnaire took 20-30 minutes to complete. The Stress Mindset questionnaires were placed at the end of the whole study and because of the long duration of the study, participants could have lost their attention and this might have resulted in the poor internal consistencies. A survey that is too long might be a factor for careless and faked responses (Meade, & Craig, 2012).

Reliability analysis of the CES-D revealed excellent internal consistency. The CES-D was designed for assessing the depressive symptomatology for a general population. However,

it might also be interesting to have a look at associations between depressive symptomatology in a clinical setting and stress mindset. Thus, representative studies in a clinical setting can be carried out with the Beck Depression Inventory, for example. The mean of the CES-D showed that students scored relatively low on depression. Low CES-D rates among students were also found in other research (Goebert et al., 2009). This might be because students have a lot of autonomy at the university. A study shows that autonomy is associated with positive affect and well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Another factor which might have played a role in the low depression scores might be that students experience a lot of challenges which might trigger pleasurable emotions in their study-related activities (Lazarus & Folkman, 1984).

Replication of the results would be a first step to confirm the results of the current study. Then, subjectivity bias could have played a role in the current study because participants were only asked about their thoughts on stress and it was not measured how much stress they actually felt. Objective and physical measures are not prone to the subjectivity bias and reduce the falsification of results. For example, measures for the level of cortisol of participants can be conducted. Then, one could look at the relationship between the optimal cortisol level and depression. After the current study and previously found results, the expected result is that too much and too high amount of cortisol in the body would be associated with higher levels of depression whereas a much more balanced optimal level of cortisol would be associated with lower levels of depression (Burke, Davis, Otte, & Mohr, 2005; Cowen, 2002; Crum et al., 2013; Herbert, 2013).

The current study solely focused on associations between stress, mindsets and depression. However, understanding how a negative mindset can be changed to a positive mindset can be of great value for the practical and therapeutic field as it is proposed by Crum and Zuckerman (2017). Lazarus (1991) mentioned personal characteristics that influence the appraisal. He considered commitment and beliefs as the two important personal characteristics that are determinants of appraisal. Commitment means that individuals attach some meaning and importance to an encounter, which includes personal goals, values or intentions (Lazarus, 1991). Commitments “guide people into and away from situations that can challenge or threaten, benefit or harm them.” (Lazarus, 1984, p. 57). Beliefs include attitudes and expectations about oneself and the world (Lazarus, 1991) and determine how things are in the environment. (Lazarus, 1984). Modifying personal characteristics that are connected to

appraisal such as commitments and beliefs of stressed individuals in therapy could help them to acquire a positive mindset towards stress.

Practical Implication and Conclusion

Practical implications can also be drawn from the study in terms of the treatment of depression. One of the most influential techniques of psychotherapy aimed at depression is cognitive behavioural therapy devised by Beck (1993). The approach mainly focuses on modifying dysfunctional and inaccurate thinking and behaviour (Beck, 2011). Patients treated for depression and struggling with stress could profit from a cognitive approach such as the CBT by teaching them to “to meet stress not as an enemy to be avoided, but as an ally to be embraced” (Crum & Lyddy, 2014, p. 26). The study has shown that a stress-is-enhancing mindset is positively associated with eustress and that this in turn is associated with lower levels of depression. Therefore, giving depressive patients the understanding that stress is no obstacle but can be utilized as a resource for self-fulfilment might play an important role for the treatment of their depression. More positive thinking patterns towards stress could then lower depressive symptoms.

The study aimed to explain the association between stress mindset and depression. It was found that an association between stress-is-enhancing mindset and lower levels of depression was mediated by eustress and distress and that an association between a stress-is-debilitating mindset and higher levels of depression was mediated by eustress and distress. Thus, it should be notable that accepting stress and utilizing it as an important and vital resource can have a positive influence on eustress and a negative effect on distress which is associated with lower levels of depression.

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