The types of stress as mediators between perfectionism and depressive symptoms

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16.06.2019

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Abstract

Students are confronted with various kinds of demands during their time at university, which make them particularly vulnerable to experience different kinds of stress and depressive symptoms. A trait that often evokes feelings of stress in students is maladaptive perfectionism. In order to better understand the development of depressive symptoms among students, the present study examined the association between maladaptive perfectionism, stress and depression. For this purpose, 155 University students were asked to fill in a questionnaire containing the Perceived Stress Scale, Multidimensional Perfectionism Scale and the Center for Epidemiologic Studies Depression Scale. Mediation analysis showed a mediation effect of distress and eustress on the relationship between perfectionism and depression. Results indicate that individuals showing maladaptive perfectionism experience more distress and less eustress, which leads to the development of more depressive symptoms. Therefore, interventions aiming to decrease distress and enhance eustress could help to reduce depressive symptoms in perfectionistic students.

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During their time at university, students find themselves in a unique phase in their lives. They not only need to deal with common demands of daily life, but also with high educational expectations. In addition, they need to adapt to new social and local surroundings, which makes them more vulnerable to experience all kinds of stressors (Liu, et al., 2019). Especially students who suffer from maladaptive perfectionism might experience persistent distress, which can cause various mental health issues, such as depression (Chand, Chibnall, & Slavin, 2018; O'Sullivan, 2010). Due to high stress levels during University, there is a high prevalence rate of depressive symptoms among university students, which seems to increase continuously (Liu, et al., 2019). Despite the negative experiences and consequences of stress, research found that there is another type of stress, called eustress. Eustress is defined as positive stress and is thought to contribute positively to mental well-being and health. When experiencing eustress, the physical and psychological reactions to a stressor are perceived as positive (O'Sullivan, 2010). The trait of maladaptive perfectionism is often perceived as a stressor, predicting the experience of distress in students (Chand, et al., 2018).

Looking at both concepts, distress and eustress, it seems that they have contrasting effects on an individual's well-being (Chand et al., 2018; O'Sullivan, 2010). In order to better understand the association between types of stress and depression, a thorough exploration of the factors contributing to the reporting of different kinds of stress, as well as depressive symptoms is needed. One of these factors is maladaptive perfectionism. Yet, no study has researched the effect of maladaptive perfectionism on eustress. The present study therefore aims to examine the association between eustress, distress, maladaptive perfectionism and depressive symptoms.

Stress

Looking at the construct of stress, it can be defined as a psychological response to any demand in the environment (McGowan, Gardner, & Fletcher, 2006). Research differentiates between eustress and distress (O'Sullivan, 2010). Distress is thought to be experienced when the demands present a threat to the individual and he or she does not feel capable of dealing with it successfully. It is defined by reactions to environmental demands, which are perceived as negative by the individual (McGowan, et al., 2006). In general, this kind of stress is associated with negative influences on mental and physical health, such as depression (O'Sullivan, 2010).

Eustress, on the other hand, describes positive stress and includes psychological reactions to stress that are perceived as positive by an individual. It is thought to implicate the

optimum level of stress needed in order to perform best (O'Sullivan, 2010). McGowan et al. (2006) suggest that eustress is not only a stress process, but can also be the product of stress. For example, in an educational setting, the positive reaction to a stressor could be a student beginning to learn for an exam, whereas the product then would be a good grade on this. Further, eustress is positively associated with factors such as life-satisfaction, self-efficacy and hope, which contribute positively to mental health (O'Sullivan, 2010). It is assumed that eustress is evoked when the demands an individual is facing are perceived as a challenge rather than a threat and the individual feels capable of successfully managing these (McGowan, et al., 2006).

Perfectionism

Perfectionism is a personal characteristic defined by placing extremely high demands and standards on oneself. Own achievements and performances are critically evaluated by the individual itself, as he or she expects very precise and exact outcomes (Frost, Marten, Lahart, & Rosenblate, 1990). Students are especially prone to the experience of perfectionism (Schweitzer, & Hamilton, 2002), in particular maladaptive perfectionism (Chand, et al., 2018). For this reason, most research focuses on students as the sample population (Frost, et al., 1990; Kokkoris, 2019).

Research suggests that perfectionism can be divided in maladaptive and adaptive perfectionism (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). One of the main differences is that individuals showing adaptive perfectionism are able to cope successfully when they do not meet their own standards. They can productively overcome the feeling of failure (Kokkoris, 2019). In contrast, maladaptive perfectionism describes an individual's tendency to be too dependent on evaluating their own performances. Despite negative consequences and circumstances, they try to meet their self-imposed expectations or standards but often fail to do so (Shafran, Cooper, & Fairburn, 2002).

Maladaptive perfectionism is associated with higher levels of perfectionism, which in turn are correlated with depression (Macedo, et al., 2017). Further, Chand et al. (2018) found an association between maladaptive perfectionism, distress and depressive symptoms. Vanstone and Hicks (2019) reported that students high on maladaptive perfectionism make use of an avoidant emotion-focused coping style, which predicts the experience of test anxiety and in turn increases the experience of distress. Individuals showing a maladaptive style of perfectionism often have difficulties finding meaning and satisfaction in their life, because

they are rarely satisfied with their own achievements or performances (Frost, et al., 1990). This can lead to frustration and contribute to depressive symptoms (Park, & Jeong, 2016).

Depressive Symptoms

Depression is a mental illness marked by various somatic and psychological symptoms. It concerns around 300 million people worldwide (Depression, 2018). In order to be diagnosed with depression, several diagnostic criteria need to be fulfilled. These criteria include psychological symptoms, such as rumination, lack of motivation, interest or energy, feelings of guilt or worthlessness and feeling hopeless and helpless. On the other hand, somatic symptoms include loss of appetite, insomnia or hypersomnia and psychomotor retardation (Radloff, 1977; Vahedi, & Zannella, 2019). It is thought that early adolescence plays an important role with regards to the development of depression. During lifetime, the risk to get depressed decreases. With regards to its prevalence, it was found that women have a higher risk of being diagnosed with depression than men do (Galambos, Leadbeater, & Barker, 2004).

Distress is one of the main causes of depressive symptoms, because it is experienced when an individual does not feel capable of dealing with the demands placed on them. Eustress on the other hand, has shown to contribute positively to mental health, as it includes the optimum level of stress an individual needs in order to deal with demands (O'Sullivan, 2010). Whether eustress or distress is experienced depends on the kind of stressor an individual is facing, as well as the individual itself. For instance, one characteristic placing high demands on individuals is perfectionism and therefore, it is often experienced as a threat. Students are particular vulnerable to high perfectionistic concerns and the experience of distress due to this. This was found in a study examining the relationship between perfectionism, distress and mental health in Australian university students, which showed that perfectionism predicts the experience of stress and depressive symptoms (Schweitzer, & Hamilton, 2002). In addition, research by Kung & Chan (2014) extends these findings by demonstrating that perfectionism predicts both, the experience of eustress and distress, among university employees. Their study investigated which part perfectionism covers in explaining positive and negative responses to different stressors.

Current Research

This study aims to explore the association between the level of maladaptive perfectionism and the type of stress, as well as the reporting of depressive symptoms among university students. Research suggests that maladaptive perfectionism predicts the experience of distress and the reporting of depressive symptoms (Chand, et al., 2018). Eustress was found to be influenced by perfectionism in general (Kung, & Chan, 2014). As maladaptive perfectionism describes a stronger manifestation of this character trait, it is conceivable to assume that maladaptive perfectionism influences the experience of eustress as well. Eustress is the positive kind of stress. It is thought to have positive effects on mental health and includes the optimum level of stress an individual needs in order to perform best (O'Sullivan, 2010). Until now, not much research on this concept has been done. Nevertheless, findings suggest that eustress has positive implications for mental health (O'Sullivan, 2010), which is contrary to the experience of distress. Therefore, it is possible to assume that individuals experiencing high levels of eustress report less depressive symptoms. On the other hand, it is possible that a lack of eustress contributes to the development of depression.

Due to their sensitivity to the experience of maladaptive perfectionism and distress (Chand et al., 2018), university students represent the target group of this study. Based on the before described subject matter, a research question was formulated.

RQ: Does the level of maladaptive perfectionism affect the type of stress experienced and the reporting of depressive symptoms among University students?

To examine the research question, the following hypothesis were formulated.

H1: It is expected that there is a positive mediation effect of distress on the relationship between maladaptive perfectionism and depressive symptoms in University students.
H2: It is expected that there is a negative mediation effect of eustress on the relationship between maladaptive perfectionism and depressive symptoms in University students.

Method

Participants

The sample included 155 university students, of which 26 were male (16.8%) and 129 female (83,2%) (*see Table 1)*. Their average age was 21 years (*SD*=2.01). The age ranged from 18 to 27 years. Nationalities were German (87.1%), Dutch (10.3%) or Other (2.6%). Participation in this study was restricted to university students above the age of 18. Two participants (1.3%) indicated that they were married, 86 (55.5%) participants were in a relationship and 67 (43.2%) were single. With regards to their English skills, eight participants (5.2%) indicated fair skills, 85 (54.8%) good, and 62 (40%) very good skills.

Table 1

Demographics of the Sample

Variable		N	Percentage	M±SD
Gender		155		
	Male	26	16.8	
	Female	129	83.2	
Age				21 ±2.01
Nationality				
	German	135	87.1	
	Dutch	16	10.3	
	Other	4	2.6	
Marital status				
	Married	2	1.3	
	Relationship	86	55.5	
	Single	67	43.2	
English skills				
	Fair	8	5.2	
	Good	85	54.8	
	Very good	62	40.0	

Design and Procedure

A descriptive research design was employed with use of an online-questionnaire. Participants were recruited by an announcement on SONA systems UTwente, a specific website for finding research participants at the University, whatsapp and facebook. The participation was voluntary. As a reward for participating, students of a specific undergraduate study program at the UT were rewarded with 0.5 SONA credit point. Other participants did not receive any reward.

The study was part of a bigger study, which was conducted in cooperation with other Bachelor students. Data was collected in a period of five weeks. Before the start of the questionnaire, participants were asked to read and accept an informed consent, including information about the purpose of the study, participant rights and the voluntary participation. The questionnaire began with some short demographical questions. For the demographics, participants had to indicate their age, gender, nationality, marital status and English skills. Afterwards, they had to fill in the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), followed by the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). Thereafter, participants were asked to fill in questions regarding the trait Extraversion of the Big Five Inventory (John, & Srivastava, 1999) and the Pittsburg Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). After completing these, questions of the Multidimensional Perfectionism Scale (Hewitt, & Flett, 1990) needed to be answered. Following this, the Stress Mindset Measure (Crum, Salovey, & Achor, 2013) was the last questionnaire of the survey. For the purpose of this study, the Multidimensional Perfectionism Scale, Perceived Stress Scale and Center for Epidemiologic Studies Depression Scale were used. In the end, after completing the questionnaires, participants were informed about the possibility to contact the researchers in case any questions arose while filling out the questionnaires. Further, they were thanked for their participation and informed about the end of the study.

Materials

  Perceived Stress Scale. The perceived stress scale (PSS; Cohen, et al., 1983) is a 10-item questionnaire developed to assess the degree to which different situations are perceived as stressful by an individual. Yet, a two-factor solution fits better, because some items are designed to measure the ability to cope successfully with stressful situations and positive emotions (Yokokura, et al., 2017), which are characteristics related to eustress. Other items are designed to measure failure in coping, an aspect of distress. For instance, "In the last month, how often have you been upset because of something that happened unexpectedly?" is examining distress. Eustress is assessed with items such as "In the last month, how often have you felt confident about your ability to handle your personal problems?". Respondents have to rate their experience on a 4-point Likert scale ranging from 0 (Never) to 4 (Very often). Its psychometric properties, i.e. construct validity and reliability, have proven to be good (Chiu, et al., 2016; Denovan, Dagnall, Dhingra, & Grogan, 2017). Particularly in this study, Cronbach's alpha was high for the items measuring eustress ($\alpha=.83$) and distress ($\alpha=.84$), indicating a good internal consistency.

  Center for Epidemiologic Studies Depression Scale. The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is a screening device for depressive symptoms in the general population. It is a 20-item questionnaire assessing the extent to which respondents have felt a certain way during the past week. The items are concerned with either positive or negative feelings about oneself and others, including for instance hopelessness, worthlessness and loss of appetite. More specific, items include statements such as "I felt depressed" or "I felt hopeful about the future". The scale is divided in four different subscales, "depressed affect", "(low) positive affect", "somatic complaints" and "interpersonal problems". Respondents have to rate their experience on a 4-point ordinal scale, which ranges from "1=rarely or none of the time (less than 1 day)" to "4=most or all of the time (5-7 days)". The psychometric properties, in particular the reliability of this questionnaire has been proven to be good (Miller, Anton, & Townson, 2008). Its internal consistency in the current study is high ($\alpha=.75$).

Multidimensional Perfectionism Scale. The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1990) is a 45-item scale measuring an individual's perfectionistic attitudes and behaviors. Attitudes and Behaviors are rated on a 7-point Likert-Scale ranging from 1 (Disagree) to 7 (Agree). To assess the level of perfectionism of individuals, the scores are summed up. Higher scores indicate a higher level of maladaptive perfectionism. The MPS consists of three different subscales, i.e. "self-oriented"(SO), "other oriented"(OO) and "socially prescribed"(SP). Items on the subscale "self-oriented" are for example "One of my goals is to be perfect in everything I do", whereas "other oriented" items are e.g. "The better I do, the better I am expected to do" and the "socially prescribed"-subscale includes "I find it difficult to meet others expectations of me". In the present study, internal consistency proved to be high for the questionnaire regardless of the subscales (α=.771).

Data analysis

Data was analyzed using IBM SPSS Statistics 24. First, mean scores and standard deviations were calculated (*see Table 2*). In order to examine whether the variables are related, Pearson correlation was calculated. Afterwards, variables were tested for mediation. Therefore, PROCESS 3.2 macro for SPSS by Hayes (2012) was used in order to assess main and indirect effects by means of bootstrapping. Sample size was set to 5000 and a 95%-confidence interval was used. Perfectionism was chosen as the independent variable, distress and eustress were determined as mediators and depression was set as the dependent variable. In order to speak of a mediation effect, the confidence intervals are not allowed to cross zero.

Results

With regards to means and standard deviations, participants scores ranged on the middle, considering Likert-scales ranging from 1 to 4 for depression, distress and eustress and a 7-point Likert scale for perfectionism.

The Pearson correlation was computed (*see Table 2*) and all correlations were significant and in the expected direction.

Table 2

Descriptive Statistics and Pearson correlation of the variables

	Depression	Distress	Eustress	Perfectionism
M ±SD	2.08 ± .39	3.09 ± .78	3.32 ± .70	4.08 ± .46
Depression	1			
Distress	.63*	1		
Eustress	-.53*	-.67*	1	
Perfectionism	.34*	.33*	-.22*	1

*Note: *α<.01*

Hypotheses testing

Bootstrapping revealed a main effect of perfectionism on eustress of B=-.33, $F(1,153)$=7.94, $t(155)$=-2.81, p<.01. A main effect of perfectionism on distress was shown with B=.56, $F(1,153)$=18.9, $t(155)$=4.34, p<.001. For the effect of eustress on depression a main effect of B=-.10, $F(3,151)$=39.41, $t(155)$=-2.37, p<.01 was found. A main effect of distress on depression was found of B=.21, $F(3,151)$=39.41, $t(155)$=5.19, p<.001. The total effect of perfectionism on depression was B=.28, $F(1,153)$=20.76, $t(155)$=4.55, p<.001. Further, the direct effect of perfectionism on depression was found to be B=.12, $t(155)$=2.38, p<.01. With regards to the hypotheses, distress was found to be a mediator in the relationship between perfectionism and depression, 95%-CI [0.05-0.20]. For the second hypothesis, eustress was a mediator in the relationship between perfectionism and depression, 95%-CI [>0.00-0.09]. Based on these results, both hypotheses were accepted. Figure 1 shows the mediation model displaying both hypotheses, the betas hereby express the strength of the relationships.
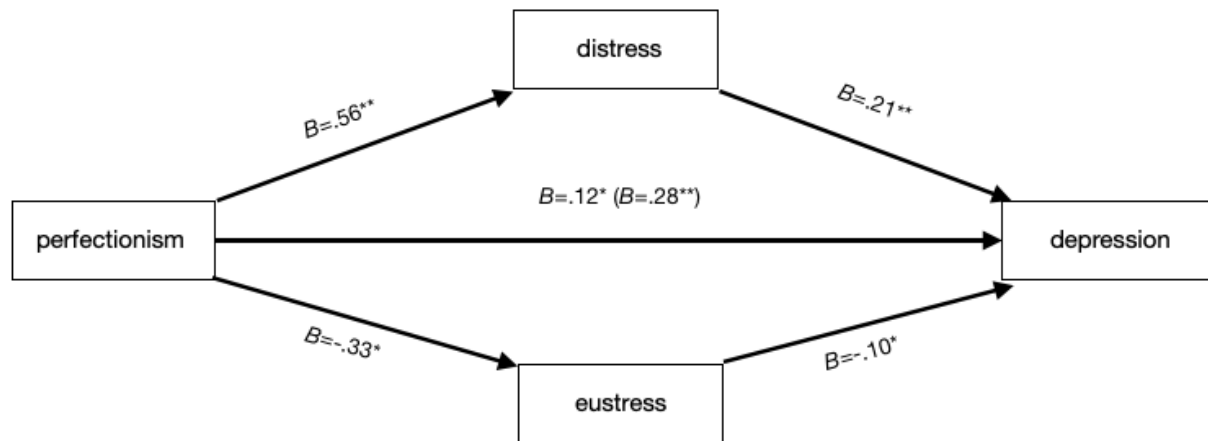
Figure 1. Mediating roles of distress and eustress in the relationship between perfectionism and depression.

Note: *α<.01, **α<.001

Discussion

The present study aimed to explore whether distress and eustress function as mediators in the relationship between maladaptive perfectionism and depression among University students. Results supported both hypotheses and showed that distress and eustress were significant mediators in the association between perfectionism and depression.

Distress

The present research found a significant correlation between distress and depression, as well as between distress and perfectionism. These findings are in line with previous research. For instance, Chand et al. (2018) found a correlation between maladaptive perfectionism, distress and depressive symptoms in a study assessing the effectiveness of CBT-interventions to reduce psychological distress and maladaptive perfectionism in medical students. Outcomes of this study are relevant to the current research, because it was one of the first studies to show that the experience of distress can be reduced by lowering the level of maladaptive perfectionism. Further, studies found that individuals showing maladaptive perfectionism are more prone to the experience of depressive symptoms due to their difficulties to be satisfied

with their own performance (Frost et al., 1990; Park & Jeong, 2016). Park and Jeong (2016) were the first to research the association between meaning in life, maladaptive perfectionism and depression, as well as distress, in college students. Findings of their study are relevant to the present study because they were one of the first to show a significant relation between maladaptive perfectionism and depression, as well as maladaptive perfectionism and distress. Outcomes of this study extended previous studies because it was the first study to explicitly show a mediation effect of distress on the relationship between maladaptive perfectionism and depressive symptoms in University students. For students who are high on maladaptive perfectionism, findings imply that they are more vulnerable to the experience of distress and therefore to the development of depressive symptoms.

Eustress

Results of the present study revealed significant negative correlations of eustress with depression and perfectionism, indicating that the lower an individual scores on perfectionism, the more eustress is experienced, implying less maladaptive perfectionism. Furthermore, findings lead to the assumption that higher levels of eustress are correlated with less depressive symptoms. This study was one of the first to examine eustress in relation to depression. Yet, it adds to research done by O'Sullivan (2010), who found that eustress has positive effects on mental health because it is positively correlated with factors, such as hope, life satisfaction and self-efficacy. O'Sullivan's (2010) study aimed to examine how eustress, life satisfaction, hope and self-efficacy are related in a sample of college students. In addition, Kung & Chan (2014) found an association between perfectionism and eustress, indicating that perfectionism predicts the experience of eustress among university employees. In their study, they investigated the role of positive and negative perfectionism, which is similar to the concept of adaptive and maladaptive perfectionism in this study, in the experience of distress and eustress (Kung & Chan, 2014). The current study was the first to examine eustress in relation to maladaptive perfectionism and depressive symptoms and the first to show a mediation effect of eustress on the relationship between the two concepts. For University students suffering from maladaptive perfectionism means that they experience less eustress, leading to the development of more depressive symptoms. Consequences of depressive symptoms in college students are for example, substance abuse, problems with work, eating or anxiety disorders and problems in social relationships (Galambos, et al., 2004).

Limitations and strengths

Although findings proved to be significant and add new insights to previous research, the study shows to have some limitations, showing opportunities for improvement in future studies of this kind. First, the sample population for the questionnaire mainly included female German students and is therefore not representative of the student population. However, studies showed that gender did not play a role in score differences for perfectionism (Sotardi, & Dubien, 2019). Age, like gender, seems not to play a role in the association between perfectionism and depression, as shown in a study by Schweitzer and Hamilton (2002). Based on these findings, it is arguable that results of the study would not differ in another sample population. The sample of this study represents a young and well-educated part of the population but it is possible that students are more likely to experience eustress. Sisley (2010) found task or job autonomy to positively influence individuals well-being and contribute to their experience of eustress. This is probably due to having a more value-based and autonomous motivation for their tasks (Sisley, 2010). Students presumably have a lot of autonomy with regards to their tasks at university, which is why they represent a good sample population to research eustress in this context. In addition, a unique point of this study is that it is the first to examine eustress in relation to depression and maladaptive perfectionism. Another limitation might be the length of the survey, as several questionnaires for different study purposes were put into one questionnaire in order to ease data collection. The duration might have been tiring for participants, which is why some participants might have not paid attention to answer every question completely accurate.

Suggestions for future research and Conclusion

Outcomes of this study proved that both eustress and distress influence the relationship between perfectionism and the occurrence of depressive symptoms. To help students reduce depressive symptoms, a suggestion for future research might be to examine the effect of coping styles on the association between the concepts in order to develop an intervention targeting students suffering from maladaptive perfectionism. Vanstone and Hicks (2019), for instance, found that students who have a maladaptive style of perfectionism use more avoidant emotion-focused coping styles. The avoidant emotion-focused style, however, predicts the experience of test anxiety and in turn increases distress (Vanstone, & Hicks, 2019) but reorganizing the maladaptive style of perfectionism in a more adaptive and productive way possibly enhances the experience of eustress (Kung, & Chan, 2014).

Another suggestion for future research is to examine the effect of enhancing eustress to reduce depressive symptoms in students showing maladaptive perfectionism. As studies about stress mindset showed, a "stress-is-enhancing" mindset boosts positive emotions not only in situations perceived as a challenge but also in those that present a threat. In general, a "stress-is-enhancing" mindset views stress as having positive and beneficial outcomes for oneself, such as more productivity (Crum, Akinola, Martin, & Fath, 2017). This positive view on stress is strongly related to the idea of eustress. Therefore, enhancing eustress may also work with traits, such as maladaptive perfectionism, which can promote the experience of stress. Compared to individuals thinking negatively about stress, having a "stress-is-debilitating" mindset, individuals with a "stress-is-enhancing" mindset are thought to decide for the better of several options to deal with demands from the environment and therefore have more desirable outcomes. Further, it was shown that it is possible to change stress-is-debilitating mindset to a "stress-is-enhancing" one by means of short interventions (Crum, et al., 2013). As eustress seems to be related to the idea of a "stress-is-enhancing" mindset, a suggestion for future research would be to examine whether it is possible to learn to react with eustress instead of distress. This might be helpful for students suffering from maladaptive perfectionism because the current study showed that experiencing eustress leads to the development of less depressive symptoms.

In conclusion, this research shows that eustress and distress mediate the relationship between maladaptive perfectionism and depressive symptoms among students. This outcome is of particular interest, as students are especially prone to maladaptive perfectionism and the development of depressive symptoms. Due to this, there is need for specific interventions targeting the causes of depression.

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