

UNIVERSITEIT TWENTE.

# Bachelor Thesis

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The Eustress Concept: The influence of resilience, problem-focused coping and positive reappraisal on the stress experience

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### **Abstract**

To enhance the experience of eustress in individuals can have positive effects for the health of the individual and the society in general. Still, the factors behind it are not fully examined. This study aims to examine to what extent resilience, problem-focused coping, and positive reappraisal influence eustress. Indirect effects of problem-focused coping and positive reappraisal on the association between resilience and eustress are proposed. The influence of those three concepts on eustress were measured by a questionnaire consisting of different scales.. The data of 101 respondents have been analyzed in form of correlational and mediational analyses. Overall, a positive relationship between all four constructs has been found. The expected indirect effect of the coping mechanisms on the association between resilience and eustress, could only be marginally found for problem-focused coping. Positive reappraisal also was no significant predictor of eustress. Still, those results proved that the concepts are related, and may help in the development of interventions aimed at stress. Future research could examine this relation further.

**Keywords.** Stress, eustress, resilience, coping mechanism, problem-focused coping, positive reappraisal

## Introduction

In today's society people have to endure high levels of stress, be it in their daily lives or at the workplace. The World Health Organization reports constantly rising demands within the workplace for employees (Stavroula, Griffiths, & Cox, 2004). The heightened levels of stress can have negative physical and mental consequences (Zhang et al., 2012) and reduces the overall productivity. Besides the consequences for the people, companies have to endure losses due to diseases and lesser productivity of their workers. Therefore, many interventions are developed, focusing on the reduction of distress, whether in the daily lives or at the workplace. Goal of those intervention is, to make people better able to cope with stress, focusing on the reduction of distress (Stavroula, Griffiths, & Cox, 2004). But instead of putting emphasis on the reduction of distress, it may be useful to implement another approach: similarly to the thought of school behind positive psychology, interventions could focus on facilitating positive responses during stressful times instead of only reducing negative responses to stress. Instead of focusing on distress, eustress would play a more important role.

Furthermore, the concept of *resilience* will be discussed, which is meant to influence the experience of positive emotions during stressful events, and make people in general better able to cope with stress (Fletcher & Sarkar, 2013). The latter, namely coping, is also part of this study. *Problem-focused coping* and *positive reappraisal* have both been found to either reduce distress and/or influence the occurrence of positive emotions (see (Helgeson, Reynolds, & Tomich, 2006; Matud, 2004). This study will examine whether resilience increases eustress because of the use of said coping styles.

## ***Stress***

Lazarus introduced the term psychological stress (Lazarus,1993), taking more interest into the perception of stress, in contrast to Selye(1976) who viewed it more on its physiological properties. Psychological stress is described as strain or threat arousing either negative or positive affect (Lazarus,1993). It becomes apparent that Lazarus links stress to a diverse set of emotions; which can for example be an unpleasant state of mind or a strong arousal in form of panic.

The difference in people's reactions to stress is meant to be explained by differences in the appraisal towards a stressor. By introducing the term appraisal, Lazarus tried to give more insights into the processes behind the experience of psychological stress (see Figure 1) (Lazarus,1993). Making the experience of stress dependent on the individual's appraisal of the stressor and his or her ability to deal with it, the importance of the individual characteristic is proven (Lazarus, 1993). In more depth, in different studies the experience of stress has been found to be influenced by a set of variables, such as personality (e.g. Carver & Connor-Smith, 2010), gender (e.g. Matud, 2004), motivation (e.g. Weinstein & Ryan, 2004), and coping styles (e.g. Carver & Connor-Smith, 2010 & Lazarus ). Again, why those variables influences the stress experience can differ: for instance, concerning gender, there are different assumptions that women are faced with more and different stressors than men, are more emotional, and/or engage in different coping styles than men (Matud, 2004). Mutual is, that the circumstances of the stressor and the appraisal of it influences the stress outcomes. The appraisal of a stressor, therefore influences the stress outcomes, namely distress or eustress ( see Figure 1.)

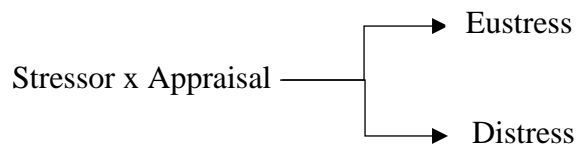


Figure 1. Stress Experience.

Selye (1976) introduced a differentiation between forms of stress, namely *distress* and *eustress*. Distress can be described as the non-adaptive reaction to stress (Kupriyanov & Zhdanov, 2014) or severe stress resulting in physical impairments or negative affect (Lazarus, 1993). On the contrary, eustress can be described as a positive cognitive feeling after the experience of a stressful event (Kupriyanov & Zhdanov, 2014). This research focusses on the second possible stress outcome, eustress, which will be explained in the following.

### ***Eustress***

Selye & Lazarus have made two of the most famous perspectives on eustress. Selye (1976) describes eustress as “healthy, positive, constructive results of stressful events and stress response” (Kupriyanov, & Zhdanov, 2014). If the body reacts in an adaptive manner, the person should experience eustress instead of distress. Lazarus describes eustress as a positive cognitive response and a healthy physical state. People therefore experience a set of positive emotions after the experience of a stressful situation. In contrast to the approach of Selye, does the distinction between distress and eustress happen on a cognitive level, whereas Selye perceives it more on a physical level (Kupriyanov & Zhdanov, 2014).

How eustress instead of distress may arise have been explained as follows: Lazarus (1974) proposed a general tolerance for stress, whereas if the tolerance level is exceeded

people experience distress and if an optimum level is met, eustress results. Edwards and Cooper (1988) found the occurrence to be more with sight on coping: one aspect might be the first appraisal of situation, when it meets the expectations and values of the person, it is considered as positive. Secondly, the coping behavior itself is considered as positive and not the stressor self. Lastly, eustress results out of the satisfactory feeling of accomplishing a task, which in return arose due to an effective coping behavior. Besides those different definitions and explanations, the consensus is, that the experience of stress is subjective due to differences in the appraisal, influenced by different variables like personality, the perceptions, and attitudes of the individual (also see Simmons, & Nelson (2007)).

Lastly, the positive consequences that follow the experience of eustress have to be mentioned. Edwards and Cooper (1988) proposed that eustress has a positive direct and indirect effect on health. Accordingly, since distress has a negative effect on health on the long run, the absence of distress and especially the presence of eustress might counterpart the negative effects of distress on health. Hormonal processes that are activated by the experience of a positive physical state explain those effects. Indirectly, the experience of eustress influences the coping behavior of a person. After the experience of eustress, the person might engage more frequently in the coping behavior that led to the successful managing of the situation. Besides the possible positive influence of the health of the person, economic benefits might result when worker experience eustress: Bakker & Schaufeli (2008) found that a positive state of an employee results in more satisfaction of their customers, Lyubomirsky, King and Diener (2005) found that that a positive affect reduced work withdrawal and more engagement within work communities.

In summary, eustress is a concept that is supposed to have benefits for the health of a person, and on the work-life. The appraisal of the situation influenced broadly by personality, perception, coping and others, explains the occurrence of eustress. In the following different factors within those categories will be further explained on how they might play a role in the experience of eustress.

### ***Resilience***

The ability to resist the strains of a stressful situation is called resilience. In his work about coping Lazarus (1974) already took interest in the difference of ability of people to endure different amounts of stress. Resilience has been found to influence the experience of stress and the arousal of positive emotions simultaneously.

The concept of resilience is not clearly defined: it is either seen a trait or as process. When seen as a trait, resilient people are meant to be in possession of different characteristics that make people more adaptive to new and/or stressful situations (Fletcher & Sarkar, 2013). Those characteristics can also been seen as protective factors, to make people less prone towards the experience of distress.

On the other hand, can resilience been seen as a process. In contrast to it being a trait, resilience, in this case, is not a fixed property an individual possesses. Instead, being resilient may change temporally and contextually. Whereas in the trait perspective resilient people always react more positively to stressful events, within the process perspective, people are not always able to adapt to the stressor adequately. The within resilience as a trait perspective mentioned protective factors are supposed to not serve successfully in every given situation and develop over time. Going back to the general model of stress, resilience is supposed to



take place at the appraisal level: influencing the stress experience by altering the appraisal of the situation and therefore influencing the emotional response to the stressor. In its core, resilience leads to positive emotions during the stress experience, and therefore may be an influencing factor for the emergence of eustress (Fletcher & Sarkar, 2013).

### ***Coping with Stress***

Lazarus (1993) described coping as the manner on how a person reacts to and deals with stress, as illustrated in this quote “A person’s ongoing efforts in thought and action to manage specific demands appraised as taxing or overwhelming”. Whether the experience of a stressor is positive or negative, can be influenced by the person self. Since the relationship between eustress and different coping mechanisms has not been examined properly, coping mechanisms that are linked to the reduction of distress and/or positive affect during stressful events will be examined. Folkman & Moskowitz (2000) identified different coping styles that are correlated to the experience of positive affect, two of those are problem-focusing and positive reappraisal.

By problem focused coping, tries a person actively to change the stress-arousing situation by solving or reducing it. If a person for example feels distressed, because he is in a noisy environment, using headphones to cancel the noise would be a problem focused coping approach. Problem-focused coping styles have been found to be effective in reducing distress (Matud, 2004), and maintaining positive affect during stressful experiences (Tugade & Fredrickson, 2006).

The second coping style of interest is positive reappraisal: here, people shed a different light on the stressor. This can be giving the happened situation a meaning, e.g.

having an illness resulting in a positive change in lifestyle, or seeing it as beneficial, e.g. not having to move away when getting a job cancellation, or generally allowing the person to grow at the situation (Garland, Gaylord, & Fredrickson, 2011). This coping style is associated with reduced distress, physical benefits (Helgeson, Reynolds, & Tomich, 2006) and the continuous use of this coping style has been found to lead to more frequent positive emotions (Garland, Gaylord, & Fredrickson, 2011).

In earlier studies, problem-focused coping and positive reappraisal have been found to either reduce distress or result in a positive cognitive response during a stressful experience. The use of the above mentioned above-mentioned coping styles, might therefore be correlated to the experience of eustress.

### ***Current research***

Besides the early distinction between different types of stress within the field of stress research made by Selye (1976), little is known about eustress. The following shall give more insights into the formation of eustress. Resilience is supposed to make people more prone to positive emotions during stressful events (Fletcher & Sarkar, 2013). Eustress being defined as a positive emotional response during/after a stressful event might therefore be linked to resilience. Earlier studies found correlations between the use of problem-focused coping and positive reappraisal and the reduction of feelings of distress and/or a positive emotional response during stress (e.g. Helgeson, Reynolds, & Tomich, 2006; Matud, 2004). Since eustress has been defined as a positive cognitive response to stress, a relation between both coping styles and eustress is expected. Besides the possible associations between those four concepts, there might also be a mediational effect between resilience, both coping styles, and

eustress. Fletcher & Sarkar (2013) found that being able to positively reappraise a stressful event is linked to resilience and mediates the experience of a hassle. Furthermore, resilient people are supposed to have a set of coping styles that are linked to be inductive of positive emotions, e.g. positive reappraisal (Ong, Bergeman, Bisconti, & Wallace, 2006). The positive association between resilience and eustress might therefore be result of a higher likelihood to engage in effective coping behavior within resilient people. Out of these conclusions the following hypotheses are formulated:

H1: Resilience is positively associated with the experience of eustress.

H2: Problem-focused coping is positively associated with the experience of eustress.

H3: Positive reappraisal is positively associated with the experience of eustress.

H4.: Problem-focused coping is a mediator in the association between resilience and eustress.

H5: Positive reappraisal is a mediation in the association between resilience and eustress.

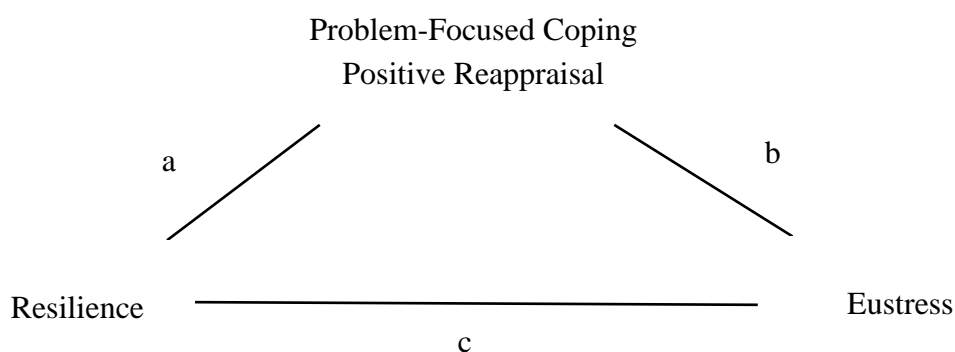


Figure 2. Proposed Model

## **Methods**

### ***Design***

A descriptive cross-sectional electronic survey based research design has been employed. To test the hypothesis the following independent variables are measured by different questionnaires: resilience, problem-focused coping, and positive reappraisal. The dependent variable is eustress. Both coping styles also function as mediators between resilience and eustress.

### ***Participants***

Participants have been reached via social media (e.g. Facebook and WhatsApp). A total of 149 people participated in the study, 101 completed the survey. Only the data of people who completed the full questionnaire and fulfilled the inclusion criteria will be used. Out of those 101 respondents a slight majority were women (56.4% female, 43.6% male), and in a relationship (47.5%). The vast majority has a higher secondary education (63.4%) and are currently students (63.4%) or employed for wages (29.7%). The mean age is 26.05 ( $SD=9.49$ ) years. For further information, see table 1 below.

Table 1. *Demographics of respondents (N=101).*

<b><i>Age, M (SD)</i></b>	26.05 (9.49)
<b><i>Gender, n (%)</i></b>	
Male	44 (43.6)
Female	57 (56.4)
<b><i>Marital status</i></b>	
Single	44 (43.6)
In a relationship	48 (47.5)
Married	9 (8.9)
<b><i>Highest Educational Status</i></b>	
Vocational Education	3 (3.0)
Secondary Education	1 (1.0)
Higher Secondary Education	64 (63.4)
Bachelor's Degree	20 (19.8)
Master's Degree	13 (12.9)
<b><i>Current Occupational Status</i></b>	
Student	64 (63.4)
Employed for wages	30 (29.7)
Self-employed	1 (1.0)
Unemployed	3 (3.0)
Other	3 (3.0)
<b><i>Support by faith</i></b>	
No	73 (72.3)
Yes	28 (27.7)

### ***Measurement Instruments***

The following will describe the materials used to answer the research question of this particular study, which was part of a bigger study concerning eustress and factors behind it.

*Resilience.* To measure the ability of individuals to adapt successfully to tasks in their daily lives, the ER89 (Ego-Resiliency scale) has been used, which was developed by Block and Kremen (1996). The scale consists of 14 items, each responded to a 4 continuum, ranging from 1 (*does not apply at all*) to 4 (*applies very strongly*). Sample items include for example: “I am generous with my friends”. The reliability is acceptable with a Cronbach's Alpha of .76, the same reported Block and Kremen in their study (George & Mallery, 2003).

*Coping.* To measure both coping styles, the COPE Inventory, developed by Carver (1989) has been used. The questionnaire contains in total 60 items. For this study, items from two different subscales of the questionnaire has been used, namely *active coping*, and for the measurement of the variable *positive reappraisal* the scale *positive reinterpretation*. Each subscale contains 4 items, responded to a 4-point Likert Scale, ranging from 1 (*I usually don't do that at all.*) to 4 (*I usually do this a lot*). Sample items include for active coping “I do what has to be done, one step at a time. I take direct action to get around the problem.”. The reliability of the scale is good with Cronbach's alpha of .73 (George & Mallery, 2003), Carver reported a Cronbach's alpha of .62. The subscale *positive reinterpretation* includes for example statements like “I try to see it in a different light, to make it seem more positive.”. The scales reliability is good with a Cronbach's alpha of .72 (George & Mallery, 2003), Carver reported a Cronbach's alpha of .68.

*Eustress.* To measure eustress a new questionnaire was developed.

Participants rated on a 6-point Likert scale (1 = *Never*; 6 = *Always*) how many times during the past month they experienced eustress. Fifty items measured eustress. To reduce number of items, a principal component analysis with orthogonal rotation (varimax) and one fixed factors was conducted. The 10 items on the factor eustress with the highest factor loading were selected for the questionnaire. An example item of eustress is: “Have you felt that things were going well?”. The scale had a good internal stability (Cronbach’s  $\alpha = .92$ ) (George & Mallery, 2003).

### ***Procedure***

Before making the questionnaire accessible, ethical content has been received by the Ethics Committee (EC) from the faculty of Behavioural, Management and Social sciences (BMS) of the University of Twente. The survey was accessible during April 2017.

The participants of the study were reached via the private network of the researchers with help of social media and were asked to fill out the questionnaire on a voluntary basis. A convenience sample has therefore been employed. Furthermore, a snowball sampling took place as some of the participants within their peer group have shared the questionnaire.

Excluding criteria have been employed within the questionnaire by asking the participants for their English skills, people with an English rating below average have been excluded. Before answering the questions, participants got an informed consent about the anonymity of their data and the freedom to participate and stop at any time with the study, which they agreed on by proceeding with the questionnaire. Furthermore where they taught that the questionnaire will take approximately 35 to 45 minutes. Within the questionnaire participants got different

instructions for each scale, usually based on the original instructions if accessible. After filling out all questions, participants got the opportunity to receive the results of the study by stating their E-Mail address. At the end of the questionnaire respondents were informed that they finished the questionnaire.

### *Analysis*

The analysis within this research is conducted with help of the program Statistical Package for the Social Sciences (SPSS 22.0). Before the statistical analysis have been conducted five people were excluded based on their English level being under 3 (“*average*”), the data of 101 respondents were therefore used.

### *Descriptives and Correlations*

First, means, standard deviations, and Cronbach’s alpha has been computed to determine if the instruments were reliable. Furthermore, skewness and kurtosis have been computed to determine the normality of the data. The variables were checked for normality, based on their skewness. A skewness under .5 implied normality (Bulmer, 1979). To check hypotheses 1 to 3 a correlational analysis has been conducted. Beforehand the variables were checked for normality, based on their skewness. A skewness under .5 implied normality (Bulmer, 1979). Since all variables are normally distributed Pearson correlations were employee. Effect sizes were set at 0.3 (medium) and 0.5 (large effect). Statistical significance was set at  $p < .01$ .

### *Mediation*

To test hypothesis four and five s a mediational analysis has been conducted. With use of the PROCESS by Preacher and Hayes (2008) a mediational effect of problem focused coping and positive reappraisal on the association between resilience, as an independent variable, and



eustress, as the dependent variable, has been examined. After not finding an indirect effect of both mediators within a 95% confidence interval, the same analysis has been employed within a 90% interval.

## Results

### *Descriptive statistic and correlations*

All variables were checked for normality: eustress was normally distributed, with a fairly symmetrical skewness of  $-.26$  ( $SE=.24$ ) and kurtosis of  $-.35$  ( $SE=.48$ ). Resilience was normally distributed with a fairly symmetrical skewness of  $-.47$  ( $SE=.24$ ) and kurtosis of  $.22$  ( $SE=.48$ ). Problem focused coping and positive reappraisal were also normally distributed with a fairly symmetrical skewness of  $-.21$  ( $SE=.24$ ) and kurtosis of  $.56$  ( $SE=.48$ ) for the former, and a fairly symmetrical skewness of  $-.39$  ( $SE=.24$ ) and kurtosis of  $-.15$  ( $SE=.48$ ) for the latter.

According to a correlational analysis, there is a positive relationship between eustress and resilience ( $r=.48$  ;  $p<.01$ ; medium effect), problem-focused coping ( $r=.38$ ;  $p<.01$ ; medium effect), and positive reappraisal ( $r=.34$ ;  $p<.01$ ; medium effect). This confirms the hypothesis one to three: Being resilient, and/ or engaging in one of both coping styles, makes it more likely to experience eustress. The results showed a positive relationship between resilience and problem-focused coping ( $r=.50$ ;  $p<.01$ ; large effect), and between resilience and positive reappraisal ( $r=.52$ ;  $p<.01$ ; large effect.). People who score high on resilience are therefore more likely to use one of both coping styles.

Table 2. *Correlations*

	Total	M(SD)	1	2	3	4
<b>1 Eustress (1-6)</b>		4.08 (.77)	-			
<b>2 Resilience (1-4)</b>		2.94 (.36)	.48**	-		
<b>Coping</b>						
<b>3 Problem-Focused (1-4)</b>		2.80 (.53)	.38**	.50**	-	
<b>4 Positive Reappraisal (1-4)</b>		3.07 (.60)	.34**	.52**	.43**	-

Note: \*\*. Correlation is significant at the 0.01 level (2-tailed).

### ***Mediation***

To test H4, whether problem-focused mediates the effect of resilience on eustress, a mediation analysis has been conducted. Findings indicated that resilience was a significant predictor of problem-focused coping,  $\beta=.74$ ,  $SE=.13$ ,  $t(99)=5.77$ ,  $p<.01$ , and a significant predictor of eustress,  $\beta = .85$ ,  $SE=.22$ ,  $t(98)=3.89$ ,  $p<0.01$ . Problem-focused coping was not a significant predictor of eustress,  $\beta =.27$ ,  $SE= .15$ ,  $t(98)=1.82$   $p=.07$ . The indirect effect was tested using a bootstrap estimation approach with 5000 samples (Preacher & Hayes, 2008). These results indicated that the indirect coefficient was not significant,  $\beta = .20$ ,  $SE = .13$ , 95%  $CI [- .01, .51]$ . These results did not support H4. The same analysis with a 90% confidence interval revealed an indirect effect of problem-focused coping,  $\beta =.20$ ,  $SE=.13$ ,  $CI [.02, .43]$ .

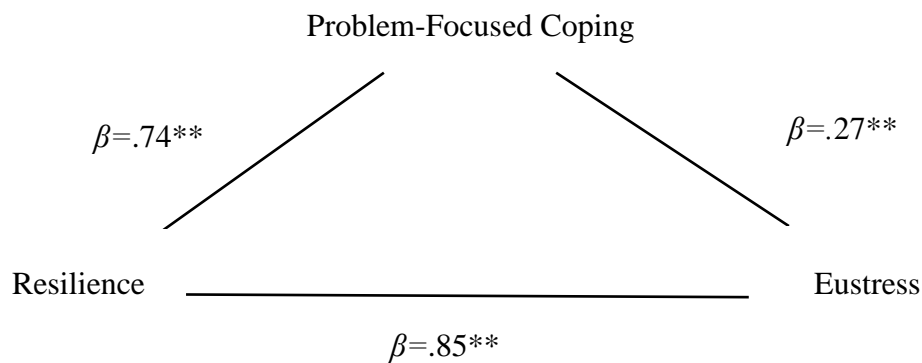


Figure 3. Mediation Model 1

To test H5, whether positive reappraisal mediates the effect of resilience on eustress, a mediation analysis has been conducted. Findings indicated that resilience was a significant predictor of positive reappraisal,  $\beta = .87$ ,  $SE = .14$ ,  $t(99) = 6.07$ ,  $p < .01$ , and for eustress,  $\beta = .91$ ,  $SE = .22$ ,  $t(98) = 4.10$ ,  $p < 0.01$ . Positive reappraisal was not a significant predictor of eustress,  $\beta = .15$ ,  $SE = .13$ ,  $t(98) = 1.13$ ,  $p = .26$ . No indirect effect of positive reappraisal in association between resilience and eustress has been found,  $\beta = .13$ ,  $SE = .15$ , 95%  $CI[-.13, .47]$ . The same analysis with a 90% confidence interval also did not find an indirect of positive reappraisal in association between resilience and eustress,  $\beta = .13$ ,  $SE = .15$ , 90%  $CI[-.09, .41]$ . Hypothesis 5 is therefore not supported.

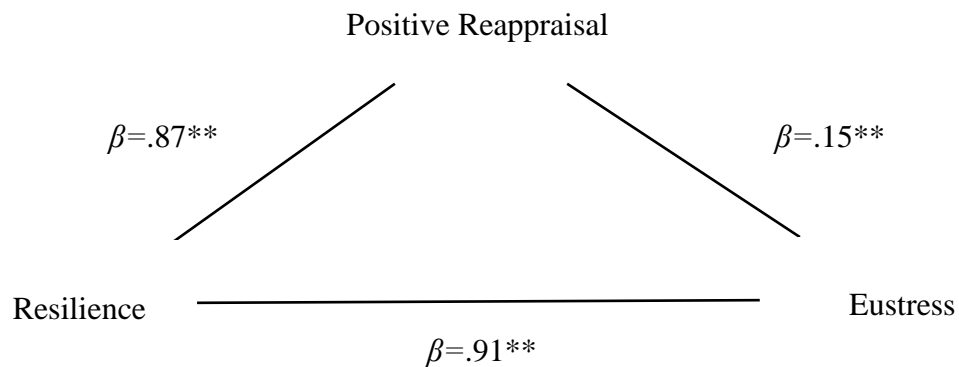


Figure 4. Mediation Model 3

## Discussion

The purpose of this paper was to investigate the relationship between resilience, coping styles and eustress. Specifically, the aim was to investigate the extent towards which coping styles indirectly affects the relationship between resilience and eustress.

A positive relationship between all four constructs was expected: the results showed that there is a positive relationship between resilience, problem-focused coping, and positive reappraisal and eustress ( see Fletcher & Sarkar, 2013; Matud, 2004; Tugade & Fredrickson, 2006; Helgeson, Reynolds, & Tomich, 2006; Garland, Gaylord, & Fredrickson, 2011). Becoming more resilient and/or engaging in one of the coping styles more often, can therefore heighten the experience of eustress.

On the other hand an indirect effect of problem-focused coping on the relationship between resilience and eustress was expected (Matud, 2004; Tugade & Fredrickson, 2006; Ong, Bergeman, Bisconti, & Wallace, 2006); here only a marginal effect has been found. Still, the expected effect was present at some extent. Possible reason for the only small effect might be found concerning the use of the measurement instrument. The COPE measures precisely *active coping* and not problem-focused coping. Carver, Scheier, & Weintraub (1989) state that active coping is similar to the concept of problem-focused coping, but also includes additional distinctions. The added distinctions might therefore explain the marginal effect. Still, to make resilient people engage in this coping behavior might enhance their proneness to experience eustress during stressful times.

Furthermore, could have been expected positive reappraisal mediates the association between resilience and eustress (Helgeson, Reynolds, & Tomich, 2006; Garland, Gaylord, & Fredrickson, 2011; Ong, Bergeman, Bisconti, & Wallace, 2006). The findings showed that resilience does indeed predict the use of positive reappraisal. Still, positive reappraisal had no mediational effect on the association between resilience and eustress. It can therefore not explain why resilient people experience more eustress. The marginal mediational effect of problem-focused coping and the missing effect of positive reappraisal could be explained by their working mechanisms. The efficiency of positive reappraisal is often found in connection with mindfulness and with regards to long term stress or in general stressful life experiences (e.g. diagnosis of a serious disease), its working mechanism is linked to meaning giving (Garland, Gaylord, & Park, 2009). Positive reappraisal is therefore a coping strategy that people use after a stressful event to reduce the distress and negative emotions. Even though it

is linked to positive affect, it might not evoke eustress. A possible explanation might be found by examining the working mechanism of problem-focused coping. This strategy is linked to the perceived controllability (Folkman & Moskowitz, 2000). Perceived control has been recognized as an important factor on the stress experience (Salvador, 2005; Le Fevre, Matheny, & Kolt, 2003) and the used coping styles (Salvador, 2005). Based on this, whether eustress can be predicted might not be explained by the coping styles but their working mechanisms. Perceived control might therefore be the reason behind the association between problem-focused coping and eustress, and the lack of it between positive reappraisal and eustress.

### ***Limitations & Recommendations***

This study had a few possible limitations. Majorly, all items of the four used scales consisted only of positive keyed items. Therefore it cannot be accounted for that the answers are free of a possible response bias to agree with statements, the acquiescence bias. Whether to also use negatively keyed items in future research is questionable though: some studies found that changing the keying merely for the purpose of having both positive and negative keyed ones can impair response accuracy (Schriesheim & Hill, 1981).

Furthermore, cannot be excluded that the common method bias did not take place within this study. Since both the independent variables, resilience and both coping styles, and the dependent variable, eustress, are measured by self-reports taking place at one moment, a common method bias might be present. For future research a different measure, for example a physical stress measure, for eustress might be a solution.

Additionally, can this study not account for causality: it cannot be concluded that resilience with its direct effect on eustress nor through the indirect effect of problem-focused coping, is the cause of eustress (Aalen, Røysland, Gran, & Ledergerber, 2012). Other cofounding variables cannot be ruled out. For example, the role of the stressor was not examined. Positive reappraisal might have a mediating effect in connection with chronic stress (Garland, Gaylord, & Park, 2009). Future stress research could therefore take the different kinds of stressors into account, since this study focussed on the appraisal of a stressor in general. It is also from interest to examine whether perceived controllability of the stressor is a factor influencing the occurrence of eustress.

### ***Conclusion***

This research examined possible factors underlying the experience of eustress. Goal of this study was to examine whether resilience, problem-focused coping, and positive reappraisal have a positive relationship with eustress. For all three concepts a positive relationship has been found. This can give new insights within the stress research: in future studies the causality of those concepts could be examined.

Getting more insight into the occurrence of eustress could have important implications for making people better cope with the high demands of today's world. Developing interventions, possibly based on strengthening resilience and/or problem-focused coping, could help people to experience eustress instead of distress more often.

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## Appendix

### A. Questionnaire

Q1 Welcome,

Thank you for taking part in our study. Before filling out the questionnaire, please read the following information carefully. The goal of this study is to gain insight into the effects of stress. Completing the questionnaire will take about 35 minutes. Participation is completely voluntary and you can discontinue the study at any point in time. All data will be handled confidentially and will be stored anonymously. Therefore, it will not be possible to inspect the own data after finishing the questionnaire. If you want further information about the research, please do not hesitate to contact the researcher at [e.bosse@student.utwente.nl](mailto:e.bosse@student.utwente.nl). By clicking on 'next' you declare your consent to participate in this study and the online survey will begin.

Q27 What is your gender?

- ☐ Male
- ☐ Female

Q28 How old are you?

Q33 What is your marital status?

- ☐ Single
- ☐ In a relationship
- ☐ Married
- ☐ Divorced
- ☐ Widowed

Q34 What is your highest educational qualification?

- ☐ Primary School (Grundschule, Basisschool)
- ☐ Vocational Education (e.g. Hauptschule, LBO, VMBO)
- ☐ Secondary Education (e.g. Realschule, MAVO)
- ☐ Higher Secondary Education (e.g. Abitur, Fachhochschulreife, HAVO, VWO)
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctorate Degree

Q32 What is your current occupational status?

- ☐ Student
- ☐ Employed for wages
- ☐ Self-employed
- ☐ Unemployed
- ☐ Homemaker
- ☐ Incapacitated
- ☐ Retired
- ☐ Other, namely \_\_\_\_\_

Q35 Do you feel supported by faith or religion in your daily life?

- ☐ Yes
- ☐ No

Q31 How would you rate your English skills?

- ☐ Terrible
- ☐ Poor
- ☐ Average
- ☐ Good
- ☐ Excellent

Q35 Please choose the option that you feel fits the best with you. Try not to let your response to one statement influence your responses to other statements. There are no "right" or "wrong" answers. Please pay attention to the changing answer options.

Q5 I feel tense or 'wound up'.

- ☐ Most of the time
- ☐ A lot of the time
- ☐ From time to time, occasionally
- ☐ Not at all

Q6 I still enjoy the things I used to enjoy.

- ☐ Definitely as much
- ☐ Not quite so much
- ☐ Only a little
- ☐ Hardly at all

Q7 I get a sort of frightened feeling as if something awful is about to happen.

- ☐ Very definitely and quite badly
- ☐ Yes, but not too badly
- ☐ A little, but it doesn't worry me
- ☐ Not at all

Q8 I can laugh and see the funny side of things.

- ☐ As much as I always could
- ☐ Not quite so much now
- ☐ Definitely not so much now
- ☐ Not at all

Q9 Worrying thoughts go through my mind.

- ☐ A great deal of the time
- ☐ A lot of the time
- ☐ From time to time, but not too often
- ☐ Only occasionally

Q10 I feel cheerful.

- ☐ Not at all
- ☐ Not often
- ☐ Sometimes
- ☐ Most of the time

Q11 I can sit at ease and feel relaxed.

- ☐ Definitely
- ☐ Usually
- ☐ Not often
- ☐ Not at all

Q12 I feel as if I am slowed down.

- ☐ Nearly all the time
- ☐ Very often
- ☐ Sometimes
- ☐ Not at all

Q13 I get a sort of frightened feeling like 'butterflies' in the stomach.

- ☐ Not at all
- ☐ Occasionally
- ☐ Quite often
- ☐ Very often

Q14 I have lost interest in my appearance.

- ☐ Definitely
- ☐ I don't take as much care as I should
- ☐ I may not take quite as much care
- ☐ I take just as much care as ever

Q15 I feel restless as I have to be on the move.

- ☐ Very much indeed
- ☐ Quite a lot
- ☐ Not very much
- ☐ Not at all

Q16 I look forward with enjoyment to things.

- ☐ As much as I ever did
- ☐ Rather less than I used to
- ☐ Definitely less than I used to
- ☐ Hardly at all

Q17 I get sudden feelings of panic.

- ☐ Very often indeed
- ☐ Quite often
- ☐ Not very often
- ☐ Not at all

Q18 I can enjoy a good book or radio or TV program.

- ☐ Often
- ☐ Sometimes
- ☐ Not often
- ☐ Very seldom

Q24 For each of the following statements, indicate the extent to which you agree or disagree by choosing the option that fits you the best. Please be as honest and accurate as you can. Try not to let your response to one statement influence your responses to other statements. There are no "right" or "wrong" answers.

[illegible]









few friends or many friends.						
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... that you had warm and trusting relationships with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... that you had experiences that challenged you to grow and become a better person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... confident to think or express your own ideas and opinions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... that your life has a sense of direction or meaning to it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q31 For each of the following statements, indicate the extent to which you think they are true for you. Please be as honest and accurate as you can. Try not to let your response to one statement influence your responses to other statements. There are no "right" or "wrong" answers.

	Not at all true	Hardly true	Moderately true	Exactly true
I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone opposes me, I can find the means and ways to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am in trouble, I can usually think of a solution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can usually handle whatever comes my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 For each of the following statements, indicate the extent to which they apply to you. Please be as honest and accurate as you can. Try not to let your response to one statement influence your responses to other statements. There are no "right" or "wrong" answers.

	Does not apply at all	Applies slightly	Applies somewhat	Applies very strongly
I am generous with my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I quickly get over and recover from being startled.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy dealing with new and unusual situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually succeed in making a favorable impression on people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy trying new foods I have never tasted before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am regarded as a very energetic person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to take different paths to familiar places.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more curious than most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the people I meet are likeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually think carefully about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

something before acting.				
I like to do new and different things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My daily life is full of things that keep me interested.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be willing to describe myself as a pretty "strong" personality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true for you as you can. Please answer every statement. There are no "right" or "wrong" answers, so choose the most accurate answer for you - not what you think "most people" would say or do. Indicate what you usually do when you experience a stressful event.

	I usually don't do this at all	I usually do this a little bit	I usually do this a medium amount	I usually do this a lot
I get used to the idea that it happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I concentrate my efforts on doing something about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I learn something from the experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I accept that this has happened and that it can't be changed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to grow as a person as a result of the experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take direct action to get around the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I learn to live with it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look for something good in what is happening.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take additional action to try to get rid of the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do what has to be done, one step at a time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I accept the reality of the fact that it happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to see it in a different light, to make it seem more positive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 Please be as honest and accurate as you can. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

	I agree a lot	I agree a little	I neither agree nor disagree	I disagree a little	I disagree a lot
In uncertain times, I usually expect the best.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's easy for me to relax.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If something can go wrong for me, it will.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm always optimistic about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy my friends a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's important for me to keep busy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hardly ever expect things to go my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't get upset too easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely count on good things happening to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I expect more good things to happen to me than bad.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

























you perform worse? ... have you felt that stress had a negative effect on your performance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Q37 If you are interested in the results of the study, please leave your email address in the text field below.