

**The Role of Neuroticism on University Students' Perceived Stress, and Whether the
Relationship Is Mediated by Social Support**

Jana Milke

Positive Clinical Psychology and Technology – Bachelor Thesis

University of Twente

Faculty of Behavioural, Management, and Social Science

1st supervisor: Dr. Thomas R. Vaessen

2nd supervisor: Lea Hohendorf

June 28th, 2024

Abstract

Background. Stress is a common experience, particularly prevalent among university students. Individuals exhibiting elevated levels of neuroticism are especially vulnerable to stress due to their negative stress perception. Generally, social support can reduce students' stress perception; however, there is limited understanding if social support operates among neurotic students when experiencing stress. Therefore, this study aimed to investigate whether social support mediates the relationship between neuroticism and perceived stress. **Method.** A quantitative cross-sectional study was conducted, asking students (N = 130) to complete three questionnaires: (I) the Big Five Inventory 44 (BFI 44), which measures personality traits; (II) the Perceived Stress Scale 10 (PSS 10), which identifies the perceived stress level students experienced in the last month; and (III) the Multidimensional Scale of Perceived Social Support (MSPSS), designed to measure perceived social support. Linear regression analyses as well as a mediation analysis were conducted to explore the relationship between neuroticism, perceived stress, and social support. **Results.** The analyses revealed significant correlations between neuroticism and perceived stress, neuroticism and social support, as well as social support and perceived stress. However, the overall total effect of social support in mediating the relationship between neuroticism and perceived stress proved to be insignificant. **Conclusion.** The study's findings suggested that neurotic students do not score low on social support and, as a result, do not experience higher levels of stress. Future research should examine social support as a moderator variable in the relationship between neuroticism and perceived stress.

Keywords: students, neuroticism, perceived stress, social support, mediation analysis

1. Introduction

For students pursuing higher education at the university level, everyday life can be filled with high levels of stress, compared to their age-matched nonstudent population (Logan & Burns, 2023; Niazi et al., 2020). The experience of stress can be explained by a physiological or psychological response to internal or external stressors, leading to alterations that nearly affect every bodily system and shape an individual's emotions and behaviours (American Psychological Association (APA), n.d.). This is most likely to occur when individuals experience an imbalance between the perceived demands of daily stressors and their perceived capacity to adapt to those demands (Drake et al., 2022). Additionally, stress directly contributes to the development of psychological disorders, negatively impacts mental health, and ultimately diminishes the overall quality of life of affected individuals (APA, n.d.). Extended periods of stress can lead to the degradation of bodily resources, making individuals more susceptible to suffering from physical or mental illnesses, such as depression or anxiety disorders (Chen et al., 2022; Liu et al., 2017). Thus, effectively managing stress is essential for sustaining optimal mental health, specifically among university students who are highly susceptible to psychological distress and mental disorders (Logan & Burns, 2023).

1.1 Stress Among University Students

During their academic years, students constantly experience new challenges, leading to high levels of stress due to emotional, academic, and social challenges, such as academic pressure, and establishing new social connections (Baqtayan, 2011; Niazi et al., 2020; ul Haq et al., 2018). Furthermore, as students go through the process of developing their identity during the transition of maturation and autonomy, they become more vulnerable to feelings of sadness and challenging situations. This can lead to a higher incidence of depression and perceived stress (Logan & Burns, 2023; ul Haq et al., 2018). As students advance to higher levels of education, they encounter increasingly demanding situations, for example, complex syllabuses and challenging assignments (Asif et al., 2020). In a study by Schwanzer et al.

(2022), approximately 47% of the German undergraduate students suffered from psychological distress and exhaustion. Examining this phenomenon is an essential research aspect given that the prevalence of stress is constantly increasing, which simultaneously puts students at greater risk of academic failure and dropping out (Baik et al., 2019). It is challenging to ascertain whether there is an actual increase in the number of students experiencing stress or whether it is due to a heightened awareness and destigmatisation of mental health issues (Linden & Stuart, 2020). Nonetheless, elevated levels of stress prevalent in the academic environment pose a potential threat to students' mental health and can persist as a challenge throughout their professional lives if they lack effective strategies for managing stress (Pietruszka, 2017).

However, to fully understand the growing incidence of stress among students, it is fundamental to comprehend the elements that impact an individual's behaviour while dealing with stressful situations. Personality attributes greatly influence this condition. Research has shown that certain personality traits, including neuroticism, can affect how people perceive and respond to stress. Therefore, it is critical to examine how neurotic individuals handle stress, as they have a heightened susceptibility to negative feelings (Schwanzer et al., 2022).

1.2 Neuroticism and Perceived Stress

When having a closer look at stress, the linkage between neuroticism and perceived stress offers insight into variations in cognitive and emotional patterns among individuals (Costa & McCrae, 1992). Neuroticism, one of the Big Five personality traits, can be conceptualised as the tendency to exhibit emotional instability (Costa & McCrae, 1992). This trait plays a significant role in stress perception, leading to less emotional regulation and negative mood experiences among neurotic people. Individuals with higher levels of neuroticism tend to experience unpleasant emotions, such as frustration and self-consciousness, followed by emotional consequences like depression and anxiety (Chen et al., 2022; Costa & McCrae, 1992; DeLongis & Holtzman, 2005). Multiple studies, including a

longitudinal study by Yusoff et al. (2013), have shown that among students, neuroticism emerged as the most influential determinant of perceived stress during periods of increased stress, such as final exams. Therefore, students with higher levels of neuroticism are more prone to encountering psychological distress compared to those with lower levels of neuroticism (Morgan & de Bruin, 2010; Yusoff et al., 2013).

Particularly when experiencing situations with high levels of stress, students often tend to share their emotions with peers, as it can change their subjective evaluation of these in a positive direction (Wagner et al., 2015). Thus, in environments such as the university environment, which involves interaction with others, it is possible that social support plays a role in students' stress perception (Erzen & Ozabaci, 2023).

1.3 Social Support

Neuroticism is a key factor in many domains of life, one of which is social support. Cobb (1976) was among the first to define social support as a sense of care, value, and inclusion within a network of reciprocal relationships. However, according to Abdul Aziz et al. (2023), the absence of social interaction and emotional support, combined with the presence of social loneliness, leads to a decline in students' ability to deal with stress as well as a decline in their psychological well-being. The lack of adequate social support leads to a sense of isolation, potentially intensifying the perception of risks, making them appear more dangerous than they actually are. This elevated negative evaluation leads to increased levels of stress (Szkody et al., 2021).

When focusing on neurotic individuals, there is limited research regarding the role social support plays among neurotic students during periods of stress. Nonetheless, some studies have demonstrated that individuals scoring higher on neuroticism have low levels of social support (Chang et al., 2015; Yu & Hu, 2022). Additionally, Luszczynska and Cieslak (2006) found that individuals with emotional instability, an attribute of neuroticism characterised by reduced emotional endurance and heightened emotional sensitivity, are less

likely to engage in social interactions. This can be explained by their perception that social relations per se can be a source of negative emotion and an additional source of stress, which in turn leads to a reduction of perceived social support (Luszczynska & Cieslak, 2006). Consequently, neurotic individuals feel left alone in times of need and report not having enough social resources they could turn to (Swickert & Owens, 2010). Furthermore, as stated by Yu and Hu (2022), individuals with neurotic tendencies face difficulties in engaging in social activities and interactions, leading to the development of weaker social connections.

Particularly for university students, the belief that others offer support can help their perceived ability to cope with daily stress (Baqtayan, 2011). As McLean et al. (2023) and Metts and Craske (2023) have shown in their research, family and friends serve as important social resources that assist students in overcoming obstacles by helping them reinterpret the circumstances or by altering their perspective of uncomfortable situations. Nevertheless, the absence of social support raises students' stress levels because they have fewer social resources to cope with life's obstacles. Thus, the lack of social support significantly increases the level of perceived stress among students (Baqtayan, 2011; Metts & Craske, 2023). In addition, studies suggest that students who have experienced social support networks are more capable of managing stress, whereas those who lack support from peers, family, and significant others are more susceptible to mental health issues such as depression and stress (Bukhari & Afzal, 2018). Therefore, neurotic students are more vulnerable to stress, and a relative lack of social support may further increase their stress level.

1.4 The Present Study

Given the impact of perceived stress on university students, it is essential to know how neurotic students react to stressful situations. While earlier research has focused on the individual variables, namely neuroticism, stress, and social support, only little is known about how these factors interact. Prior literature has demonstrated that neuroticism leads to increased stress, while social support has the opposite effect. However, the goal of the current

study was to provide further insights into whether social support mediates the association between neuroticism and perceived stress. Specifically, the study aimed to determine if neurotic students tend to have less social support and consequently experience higher levels of perceived stress. This leads to the following hypotheses:

Hypothesis 1 (H1): Neuroticism is positively associated with perceived stress.

Hypothesis 2 (H2): Neuroticism is negatively associated with social support.

Hypothesis 3 (H3): Social support is negatively associated with perceived stress.

Hypothesis 4 (H4): Social support mediates the association between neuroticism and perceived stress.

2. Method

2.1 Participants

This study was approved by the ethics committee of the faculty of Behavioural Management and Social Sciences (BMS) at the University of Twente prior to its execution (date of approval: March 25, 2024; reference number: 240337).

Using a convenience sampling method, potential participants were invited via the researcher's social media platforms to take part in the quantitative online survey using the Qualtrics website. The survey was available to all those who had the survey link, and participants could share the link with other students. Additionally, the survey was distributed using the SONA system, an online platform designed to allocate 0.25 academic credits to students studying behavioural sciences at the University of Twente.

Moreover, the present study incorporated three inclusion criteria for participant selection: (1) individuals must be a minimum of 18 years old; (2) they must be university students; and (3) they must be proficient in either the English or German language. Participants who did not meet these inclusion criteria were excluded from the study.

2.2 Procedure

The survey was distributed via Instagram, WhatsApp, and the SONA system. The data for this study were collected using the survey platform Qualtrics, which enabled participants to take part in the survey using their own electronic devices. Given that the present study was a subset of a larger survey, it consisted of 113 items and took approximately 15 minutes to complete.

Accessing the provided link offered an explanation of the study and its investigative goal. The participants were then informed that their participation was voluntary and that they had the freedom to withdraw at any time. Before proceeding with the survey, participants were required to read the terms and conditions of informed consent (Appendix A). After the participants' assurance of confidentiality and anonymity about the information they provided, they were then redirected to the survey questions. First, questions were presented to collect demographic data, and then included an assessment of content-related inquiries (Appendix B). When completing the survey, gratitude was expressed to the participants for their involvement, and they were reminded to contact the researchers if they had any questions or comments associated with the study.

2.3 Materials and Measures

2.3.1 Neuroticism

Neuroticism was assessed using the neuroticism subscale of the Big Five Inventory 44 (BFI 44; John and Srivastava, 1999). On a 5-point Likert scale, the participants were given the possibility to express their agreement or disagreement, ranging from "strongly disagree" to "strongly agree," according to how well the statement aligned with their personalities. The dimension of neuroticism encompasses eight items, with statements like "*I see myself as someone who gets nervous easily.*" Prior to calculating the scores, multiple items from the BFI 44 dimension of neuroticism needed to be reversed-coded, resulting in three items, namely 9, 24, and 34. The total sum score was calculated with a total possible range of 8 to

40, with higher scores signifying higher levels of neuroticism. Overall, the BFI 44 illustrated satisfactory test-retest reliability. When looking at the dimension of neuroticism, the items of the subscale showed good internal consistency reliability, with a Cronbach's alpha of 0.82 (Arterberry et al., 2014).

2.3.2 Perceived Stress

The Perceived Stress Scale 10 (PSS 10) was employed as a tool to assess the extent to which individuals perceived certain situations in their lives as stressful throughout the preceding month (Cohen et al., 1983). The scale consists of ten items on a 5-point Likert scale. The participants were asked to rate, on a scale from "never" to "very often," their perceived stress level with statements such as "*In the last month, how often have you found that you could not cope with all the things you had to do?*" Prior to computing scores, it was necessary to reverse-code several items from the PSS 10, resulting in four items, specifically 4, 5, 7, and 8. The total score was then derived by summing the scores of all items, which ranged from 0 to 40. Higher scores correspond to increased levels of perceived stress. In Lee's (2012) detailed review, the PSS 10 displayed significant psychometric qualities, such as excellent test-retest reliability and evidence supporting the validity of hypotheses in both adult and student populations. Additionally, the instrument demonstrates acceptable internal consistency reliability ($\alpha > .78$) (Klein et al., 2016).

2.3.3 Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS) was designed to measure perceived social support from three factor groups (Zimet et al., 1988). The scale covers a total of 12 items, distributed equally across three subscales, namely family, friends, and significant others. On a 7-point Likert scale, participants indicated their level of agreement or disagreement with each statement, ranging from "very strongly disagree" to "very strongly agree," with statements such as "*There is a special person in my life who cares about my feelings.*" The total sum score was calculated with a possible range of 1 to 7, with

higher scores indicating a stronger perception of social support. Overall, the scale showed good internal consistency reliability ($\alpha > .85$) (Trejos-Herrera et al., 2018). Furthermore, Zimet et al. (1988) conducted several studies that demonstrated the MSPSS's strong test-retest reliability ($\alpha = .85$).

2.4 Data Analysis

The responses to the questionnaire were first exported into a Microsoft Office 365 Excel file (Excel version 16.85), a widely accessible tool for data cleaning. The data cleaning process included removing incomplete responses from the data, correcting codes for variables, and excluding inconsistencies or missing values within the dataset. The final data sheet was then formatted into a dataset in the statistical software R Studio (R version 4.4).

To begin with, descriptive statistics were coded and calculated to give a summary of all demographic variables, including age, gender, nationality, and educational level. A descriptive analysis was conducted to calculate the means (M), the standard deviations (SD), and the minimum and maximum scores of the four variables.

The next step involved checking for violations of parametric assumptions, specifically the assumptions of linearity, normality, equal variance, and independence. While a linear regression analysis was conducted to assess linearity, the Shapiro-Wilk test was used to test the assumption of normality (Shapiro & Wilk, 1965). The third assumption was equal variance, which was checked through a Breusch-Pagan test (Breusch & Pagan, 1979). Lastly, the assumption of independence was tested using the Durbin-Watson test (Durbin & Watson, 1950).

Once all assumptions were checked, statistical analyses were conducted to address the research question as well as the hypotheses. To test the first three hypotheses, linear regression analyses were used to test and analyse the strength of the relationship between neuroticism, perceived stress, and social support. Focusing on the fourth hypothesis, a causal mediation analysis was used. This analysis provided measures of the results' robustness

through a sensitivity analysis (Chi et al., 2022). Finally, the mediation effect of social support on the association between neuroticism and stress was examined using the *process* R code developed by Hayes (2022).

3. Results

3.1 Descriptive Statistics

Out of the 187 participants who initiated the questionnaire, 52 individuals failed to complete it, resulting in their removal from the sample due to missing data. Additionally, five individuals were excluded from the sample for not providing the required consent, resulting in a final sample size of 130 participants. According to Table 1, in total, 83 females, 44 males, and 3 non-binary individuals participated in the study. The majority of participants were German and in their third year of pursuing a bachelor's degree (see Table 1).

Table 1

Distribution of Age, Gender, Nationality, and Educational Level in the Study

Demographic Variables	n	%
Age		
Mean	22.04	
Standard Deviation	1.96	
Gender		
Male	44	33.85
Female	83	63.85
Non-binary / Third gender	3	2.31
Prefer not to say	0	
Nationality		
German	107	82.31
Dutch	6	4.62
Other	17	13.08
Education Level		
First year bachelor	19	14.62
Second year bachelor	24	18.46
Third year bachelor	67	51.54

Pre-Master	10	7.69
Master	9	6.92
PhD	1	0.77

Note. N=130.

The BFI 44 neuroticism scale's mean in the sample was 25.4, with a standard deviation of 5.9. Yang and Koo (2022) found similar results in a Taiwanese student sample. The current sample displayed a range of values, with the lowest being 13 and the highest being 38.

For the PSS 10, the mean score of 19.6 ($SD = 5.9$) was comparable to a previous study by Denovan et al. (2019) that investigated stress levels in university students. The current sample had scores ranging from 4 to 34.

The MSPSS had a mean value of 5.9 and a standard deviation of 0.9. When comparing these results to a wider sample, the findings align with those of other university students (Zimet et al., 1988). The sample distribution ranged between a minimum value of 2.1 and a maximum value of 7.

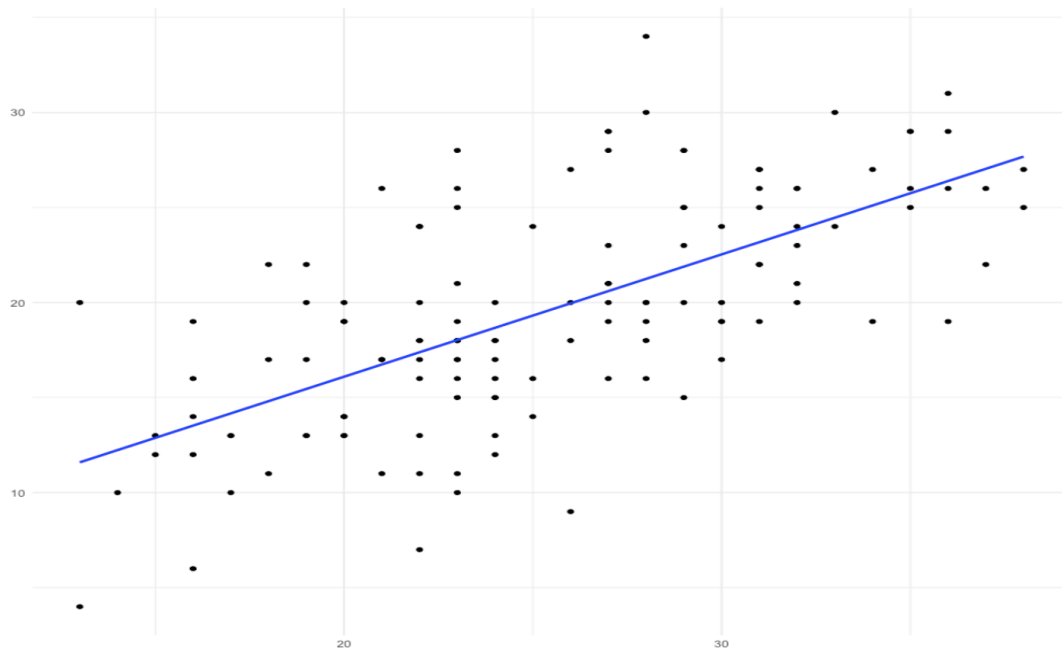
3.2 Hypotheses Testing

3.2.1 Hypothesis 1

All assumptions, namely normality, equal variance, linearity, and independence, were satisfied for H1. In line with H1, the effect of neuroticism on perceived stress was significant ($F(1, 128) = 94.74, p < .01$). Figure 1 shows that for every unit increase in neuroticism, there was a 0.64 rise in perceived stress. The results indicate that there is a positive correlation between neuroticism and perceived stress. This outcome provides evidence in favour of H1. Additionally, neuroticism accounts for approximately 42.49% of the variability of stress, with both the multiple R^2 and adjusted R^2 of 0.42.

Figure 1

Scatterplot of Neuroticism versus Perceived Stress



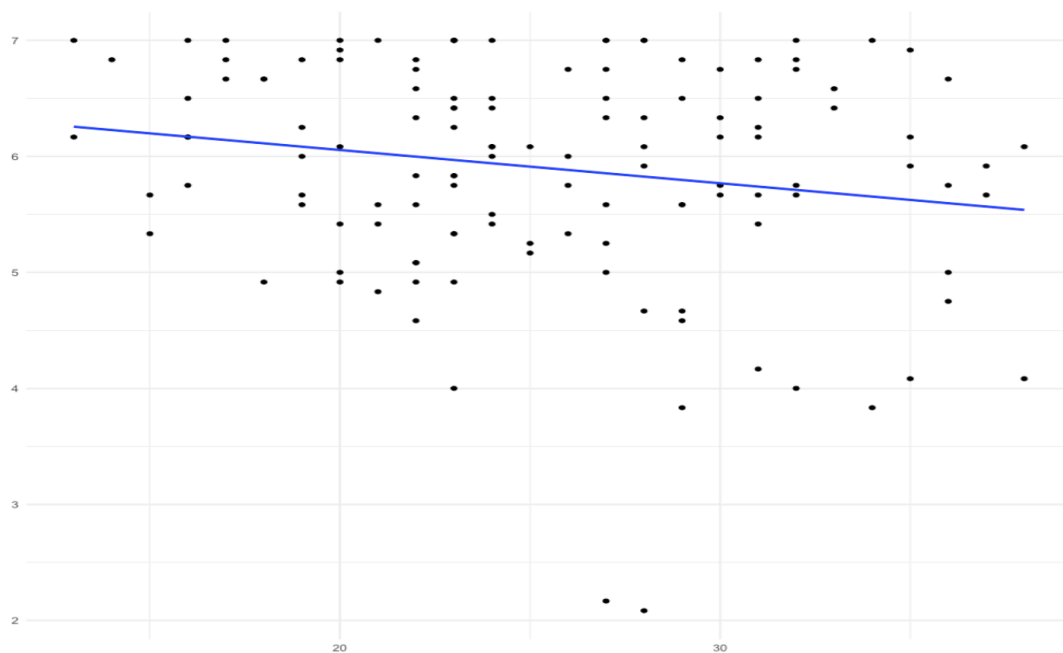
Note. X = Neuroticism; Y = Perceived Stress.

3.2.2 Hypothesis 2

All assumptions, with the exception of normality, were met for H2. Therefore, Spearman's rank correlation coefficient, Spearman's ρ , was employed instead. The Spearman's rank correlation analysis yielded significant results when testing H2, showing a negative correlation between neuroticism and social support ($F(1, 128) = 4.32, p = 0.04$). When neuroticism increases by one unit, social support decreases by -0.03 (see Figure 2). These results are consistent with H2. Additionally, the values of both the multiple R^2 and adjusted R^2 of 0.03 demonstrate that neuroticism can only explain a small variance of social support.

Figure 2

Scatterplot of Neuroticism versus Social Support



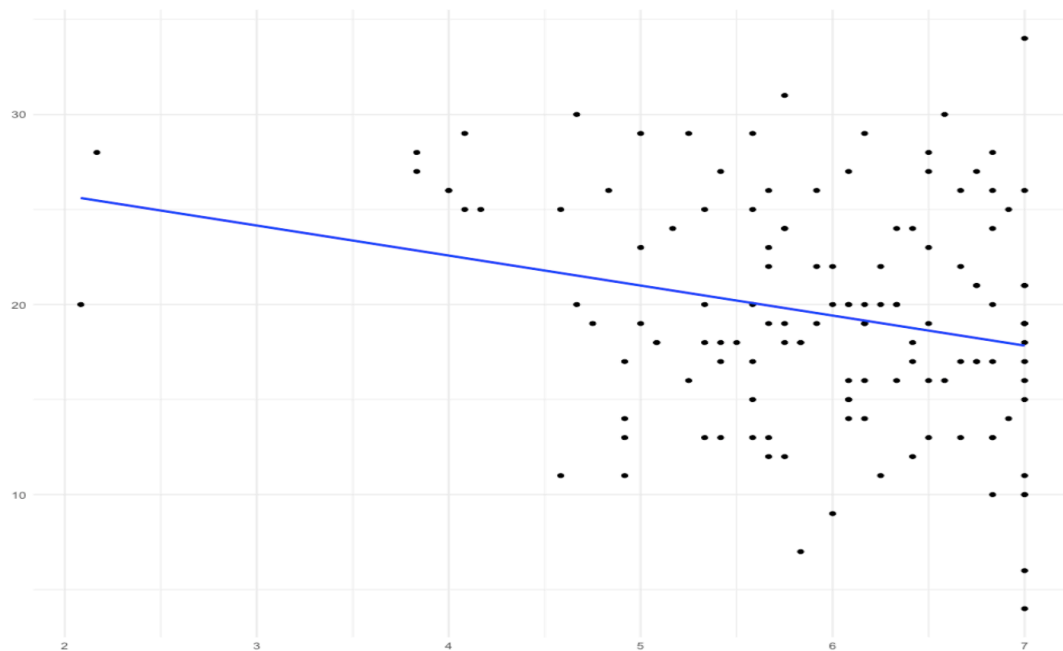
Note. X = Neuroticism; Y = Social Support.

3.2.3 Hypothesis 3

All assumptions for H3 were met. In accordance with H3, there is a significant positive correlation between social support and perceived stress ($F(1, 128) = 8.82, p = 0.004$). For each unit increase in social support, stress reduces by -1.58 (Figure 3). Moreover, the multiple R^2 and adjusted R^2 were both 0.6, indicating that social support accounts for approximately 6% of the variance in stress.

Figure 3

Scatterplot of Social Support versus Perceived Stress



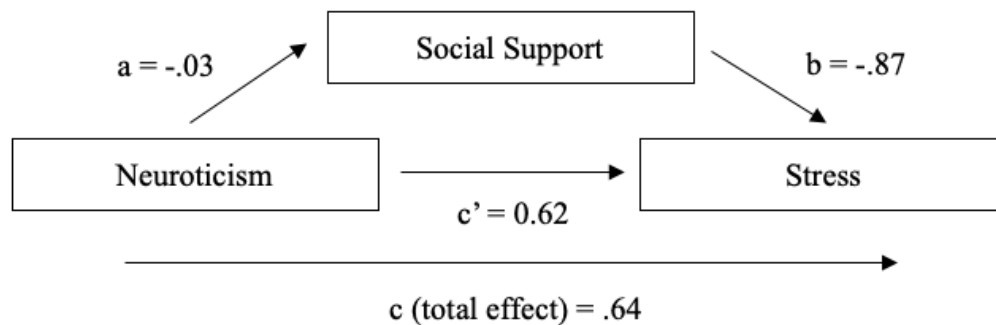
Note. X = Social Support; Y = Perceived Stress.

3.2.4 Hypothesis 4

Testing H4, the causal mediation analysis indicated that neuroticism had a significant direct effect on perceived stress ($p < 0.001$). Neuroticism was also negatively associated with social support, with a p value of 0.036. Additionally, social support had a significant negative effect on perceived stress ($p = 0.034$). Nevertheless, when looking at the indirect effect of neuroticism on perceived stress mediated by social support, this association was not statistically significant, with a p value of 0.137. Considering the total effect of neuroticism on perceived stress, a p value of < 0.001 indicated a significant association.

Figure 4

Causal Mediation Analysis between Neuroticism, Perceived Stress and Social Support

**Table 2**

Mediation Analysis Summary for Social Support as Mediator on Neuroticism and Perceived Stress

Effect	Estimate	SE	t	95% CI		p
				LL	UP	
Constant	9.0263	3.2529	2.7748	2.5893	15.4632	0.0064
Neuroticism	0.6183	0.0663	9.3204	0.0000	0.4870	0.7495
Social Support	-0.8743	0.4182	-2.0908	-1.7017	-0.0468	0.0385

Note. N=130. CI = Confidence Interval; LL = lower limit; UP = upper limit.

4. Discussion

This current study aimed to expand on previous research by examining the role of social support in mediating the relationship between neuroticism and perceived stress. The findings demonstrated a correlation between neuroticism and perceived stress, as well as between neuroticism and social support. Additionally, the study found a link between social support and perceived stress. However, social support did not mediate the relationship between neuroticism and perceived stress.

4.1 Interrelations Between Neuroticism, Perceived Stress, and Social Support

4.1.1 Mediation Effect of Social Support

The result of our study showed that social support did not play a mediating role in the relationship between neuroticism and perceived stress, which contradicts our expectations and previous research. This indicates that a person's neurotic personality trait does not decrease social support and, therefore, a lack of social support does not increase the perception of stress.

Previous research stated that individuals with emotional reactivity are less likely to engage in social interactions because they perceive social relations per se as a source of negative emotions. Consequently, neurotic students use social support less often to reduce their stress level (Luszczynska & Cieslak, 2006). Additionally, Baqutayan (2011) stated that neurotic students, with fewer social resources at their disposal, would experience significantly higher levels of perceived stress due to a lack of social support. However, this study did not observe this finding.

One possible explanation for this outcome is that the quality and satisfaction of social support are most likely to determine the impact of a stressful situation. Multiple studies have shown that the subjective evaluation of the quality of social support better predicts lower levels of stress compared to the quantity of relationships an individual has (Benca-Bachman et al., 2020; Porritt, 1979). Empathetic comprehension and constructive authenticity are essential for effective social interactions and relationships when trying to minimise perceived stress, rather than simply having a large social network (Porritt, 1979). Additionally, people reporting greater satisfaction with their social support needed it less frequently compared to those who are less satisfied and requested social support more often during stressful situations (Benca-Bachman et al., 2020). Consequently, the mere presence of social support does not lead to lower stress levels among neurotic students; rather, high-quality social support, even in low quantities, can effectively reduce stress among neurotic students.

Although our finding did not provide evidence for a mediation effect, it is essential to consider other potential explanations. One possible reason is that social support acts as a moderator rather than a mediator in the relationship between neuroticism and perceived stress. Moderation, often referred to as a buffering effect, takes place when the existence of a third variable, such as social support, affects the relationship between two other variables, neuroticism and perceived stress (APA, n.d.). Cohen and Wills (1985) described the relationship between social support and stress processes, with a focus on the stress-buffering benefits of social support. They suggested that social support can influence how people evaluate the pressures they face in their daily lives, and additionally, they argued that social support can lessen the impact of perceived stress by diminishing the stress response and directly affecting physiological or psychological mechanisms (Cohen & Wills, 1985). This would indicate that higher levels of social support can reduce the perceived stress experienced by individuals scoring higher on neuroticism, while lower levels of social support can increase stress perception.

Particularly for university students, the belief that others offer support can help their perceived ability to cope with daily stress (Baqtayan, 2011). Social support can reduce the impact of stress by helping university students reinterpret the circumstances or by altering their perspective of uncomfortable situations (Metts & Craske, 2023; Swickert et al., 2010). These findings align with the notion of social support as a protective buffer in times of stress, altering a person's perspective and reducing the perceived aversiveness of a situation as well as depressive symptomology.

Therefore, future research should focus on the moderation effect of social support in the relationship between neuroticism and perceived stress. Since social support acts as a protector for stress, it would be helpful to investigate if social support moderates the relationship between neuroticism and perceived stress and see whether these results will be significant.

4.1.2 Neuroticism on Perceived Stress

Although the mediation analysis was insignificant, the study showed a positive correlation between neuroticism and perceived stress. This finding is in line with prior literature suggesting that neurotic students experience greater levels of stress compared to those with lower levels of neuroticism (Schmidt et al., 2015). One possible explanation for this relationship is that neuroticism impacts how individuals perceive and experience stressful situations. More neurotic individuals display an increased susceptibility to consider events as dangerous and exhibit heightened vulnerability to stresses (Chen et al., 2022; Schmidt et al., 2015). Furthermore, Chen et al. (2022) found that individuals with higher levels of neuroticism lack effective coping mechanisms and instead employ maladaptive ones, such as self-blame and interpersonal withdrawal.

For future research, it could be advisable to incorporate an assessment of coping mechanisms, such as problem-focused or emotion-focused coping, to gain a more comprehensive understanding of the correlation between neuroticism and perceived stress (Schmidt et al., 2015). Additionally, by assessing students' coping techniques and trying to prevent maladaptive ones, this could help neurotic students reduce potential stressful situations by developing useful coping strategies such as cognitive restructuring or emotional regulation (Chen et al., 2022).

4.1.3 Neuroticism on Social Support

In line with our expectations, this study showed that there is a significant negative relationship between neuroticism and social support, indicating that if the level of neuroticism increases, the level of social support decreases. Our finding aligns with the view that neuroticism negatively impacts social connections, given that individuals who exhibit high general emotional reactivity tend to be less sociable. Consequently, these people are less willing to seek social support when needing help, as they perceive social interactions themselves as a source of unpleasant emotions (Luszczynska & Cieslak, 2006).

To enhance our expertise in this field of study, future studies should investigate particular types of social support influenced by neuroticism and examine the development of these connections over a period of time. These types may include, for example, instrumental support or informational support (Metts & Craske, 2023). Investigating the impact of neuroticism on the perception and effectiveness of different styles of support could provide valuable insights into which kinds of support are most effective for those with neurotic tendencies.

4.1.3 Social Support on Perceived Stress

Looking at the relationship between social support and perceived stress, our study showed a significant negative relationship between those two variables, suggesting that when students experience less social support, their perception of stress increases. A plausible explanation for this correlation is that students who lack adequate support from their immediate environment reported less emotional support, which impairs their capacity to effectively cope with everyday challenges. This may be due to the absence of a friend who could provide a different interpretation of a negative experience and offer new perspectives (Metts & Craske, 2023). Therefore, the feeling of social isolation can result in a maladaptive response to perceived stress (Adbul Aziz et al., 2023).

Future research can conduct investigations focusing on students' feelings of loneliness and examine if this factor contributes to the interplay of social support and perceived stress (Szkody et al., 2021). In addition, it would be beneficial to help students enhance their ability to cope with stress, particularly in the absence of sufficient social support. For instance, providing individual or group therapy could enhance social skills and train an individual's ability to provide and receive social support (Benca-Bachman et al., 2020). Gaining this knowledge may help prevent an increase in stress levels among university students.

Furthermore, future researchers should consider conducting longitudinal studies to monitor changes in social support and perceived stress over a longer period of time, as it

would offer valuable insights into the characteristics of these connections. It could be helpful to investigate, for example, how social networks develop during the academic years or to track changes in the quantity and quality of social support. Longitudinal research can then provide new insights into the constantly evolving nature of social support among students with neurotic tendencies.

4.2 Strengths and Limitations

Despite this study's finding, limitations must be considered when assessing the results. It should be mentioned that the study's sample was a convenience sample, which may limit the applicability of the results that were obtained due to the homogeneous sample. Consequently, the study's conclusion may not apply to larger populations or diverse demographic groups, considering the sample may not fully reflect their traits or experiences (Shen et al., 2011).

Additionally, a mediation analysis shows many constraints. Considering social support as a mediator can result in a lower correlation between the independent variable, neuroticism, and the dependent variable, stress; however, this does not establish causality. Alternative mediators may provide more accurate explanations. Given that multiple factors influence behavioural phenomena, situational testing cannot conclusively identify social support as the actual mediator (Fiedler et al., 2011).

Lastly, this study revealed a ceiling effect for social support, indicating that a significant number of participants express the highest possible level of social support. This limitation lessens the sensitivity and the variability of the used measurements, potentially misrepresenting the actual correlation between neuroticism, perceived stress, and social support (Cramer & Howitt, 2004). Therefore, the presence of a ceiling effect may have affected the non-significant mediation result, making it harder to fully understand the role of social support in this case.

Nevertheless, the study's strengths illustrate the high reliability of the scales used to measure neuroticism, perceived stress, and social support. A satisfactory level of reliability indicates that the scales assess the intended instruments, with many items contributing to the analyses. A dependable scale increases the credibility and precision of the study's outcomes, allowing for trust regarding variable measurements.

Moreover, this study has developed a guideline that could enhance students' stress perception and mental health. While the current study found that social support did not significantly influence the association between neuroticism and perceived stress, it offered an extensive analysis of the individual relationships between neuroticism, perceived stress, and social support among university students. In addition, the study reveals valuable insights for the development of targeted interventions that align with the needs of neurotic students, such as promoting healthier social interactions and stress management techniques.

4.3 Conclusion

This study examined the relationship between neuroticism, perceived stress, and social support among university students. Using linear regression analyses, significant correlations between neuroticism and perceived stress, neuroticism and social support, as well as social support and perceived stress were found within this study. Nevertheless, the overall total effect of social support in mediating the relationship between neuroticism and perceived stress was determined to be insignificant, indicating that neurotic students do not have less social support and therefore do not experience increased levels of perceived stress. Given these outcomes, future research should focus on conducting a moderation analysis instead of a mediation analysis, as social support acts as a buffer for perceived stress. By comprehending the interrelationship between these variables, educational institutions can develop workshops enhancing the quality of social support and seminars that offer stress management techniques within the educational environment, ultimately fostering students' overall mental health.

5. References

- Abdul Aziz, N. A., Baharudin, N. S., & Alias, N. A. (2023). Association between Stress and Social Support Perceived among Undergraduate Health Sciences Student. *Malaysian Journal of Medical Sciences*, 30(3), 176–183.
<https://doi.org/10.21315/mjms2023.30.3.16>
- American Psychological Association. (n.d.). Moderator. In *APA Dictionary of Psychology*. Retrieved June 15, 2024, from <https://dictionary.apa.org/moderator>
- American Psychological Association. (n.d.). Stress. In *APA Dictionary of Psychology*. Retrieved March 16, 2024, from <https://dictionary.apa.org/stress?amp=1>
- Arterberry, B. J., Martens, M. P., Cadigan, J. M., & Rohrer, D. (2014). Application of Generalizability Theory to the Big Five Inventory. *Personality and Individual Differences*, 69, 98–103. <https://doi.org/10.1016/j.paid.2014.05.015>
- Asif, S., Muddassar, A., Shahzad, T. Z., Raouf, M., & Pervaiz, T. (2020). Frequency of depression, anxiety and stress among university students. *Pakistan Journal of Medical Sciences*, 36(5). <https://doi.org/10.12669/pjms.36.5.1873>
- Baik, C., Larcombe, W., & Brooker, A. (2019). How universities can enhance student mental wellbeing: the student perspective. *Higher Education Research & Development*, 38(4), 674–687. <https://doi.org/10.1080/07294360.2019.1576596>
- Baqutayan, S. (2011). Stress and Social Support. *Indian Journal of Psychological Medicine*, 33(1), 29–34. <https://doi.org/10.4103/0253-7176.85392>
- Benca-Bachman, C. E., Najera, D. D., Whitfield, K. E., Taylor, J. L., Thorpe, R. J., & Palmer, R. H. C. (2020). Quality and Quantity of Social Support Show Differential Associations With Stress and Depression in African Americans. *The American Journal of Geriatric Psychiatry*, 28(6), 597–605.
<https://doi.org/10.1016/j.jagp.2020.02.004>

- Breusch, T. S., & Pagan, A. R. (1979). A Simple Test for Heteroscedasticity and Random Coefficient Variation. *Econometrica*, 47(5), 1287. <https://doi.org/10.2307/1911963>
- Bukhari, S. R., Afzal, F. (2018). Perceived social support predicts psychological problems among university students. *The International Journal of Indian Psychology*, 4(2):18-27.
- Chang, W., Cheng, S., Sun, Z., Lee, I., Lee, C., Chen, K., Tsai, C., Yang, Y., & Yang, Y. (2015). The psychosocial indicators related to neuroticism in both sexes: A study of incoming university students. *The Kaohsiung Journal of Medical Sciences*, 31(4), 208–214. <https://doi.org/10.1016/j.kjms.2014.12.009>
- Chen, L., Qu, L., & Hong, R. Y. (2022). Pathways Linking the Big Five to Psychological Distress: Exploring the Mediating Roles of Stress Mindset and Coping Flexibility. *Journal of Clinical Medicine*, 11(9), 2272. <https://doi.org/10.3390/jcm11092272>
- Chi, W. E., Huang, S., Jeon, M., Park, E. S., Melguizo, T., & Kezar, A. (2022). A Practical Guide to Causal Mediation Analysis: Illustration With a Comprehensive College Transition Program and Nonprogram Peer and Faculty Interactions. *Frontiers in Education*, 7. <https://doi.org/10.3389/educ.2022.886722>
- Cobb, S. (1976). Social Support as a Moderator of Life Stress. *Psychosomatic Medicine*, 38(5), 300–314. <https://doi.org/10.1097/00006842-197609000-00003>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357. <https://doi.org/10.1037/0033-2909.98.2.310>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 24(4), 385. <https://doi.org/10.2307/2136404>
- Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment*, 4(1), 5–13. <https://doi.org/10.1037/1040-3590.4.1.5>

- Cramer, D., & Howitt, D. (2004). *The SAGE Dictionary of Statistics*. SAGE Publications, Ltd.
<https://doi.org/10.4135/9780857020123>
- DeLongis, A., & Holtzman, S. (2005). Coping in Context: The Role of Stress, Social Support, and Personality in Coping. *Journal of Personality*, 73(6), 1633–1656.
<https://doi.org/10.1111/j.1467-6494.2005.00361.x>
- Denovan, A., Dagnall, N., Dhingra, K., & Grogan, S. (2019). Evaluating the Perceived Stress Scale among UK university students: implications for stress measurement and management. *Studies in Higher Education*, 44(1), 120–133.
<https://doi.org/10.1080/03075079.2017.1340445>
- Drake, A., Doré, B. P., Falk, E. B., Zurn, P., Bassett, D. S., & Lydon-Staley, D. M. (2022). Daily Stressor-Related Negative Mood and its Associations with Flourishing and Daily Curiosity. *Journal of Happiness Studies*, 23(2), 423–438.
<https://doi.org/10.1007/s10902-021-00404-2>
- Durbin, J., & Watson, G. S. (1950). Testing for Serial Correlation in Least Squares Regression: I. *Biometrika*, 37(3/4), 409. <https://doi.org/10.2307/2332391>
- Erzen, E., & Ozabaci, N. (2023). Effects of Personality Traits, Social Support and Self-Efficacy on Predicting University Adjustment. *Journal of Education*, 203(2), 353–366.
<https://doi.org/10.1177/00220574211025059>
- Fiedler, K., Schott, M., & Meiser, T. (2011). What mediation analysis can (not) do. *Journal of Experimental Social Psychology*, 47(6), 1231–1236.
<https://doi.org/10.1016/j.jesp.2011.05.007>
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd edition). New York: The Guilford Press.
- John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of personality: Theory and research* (Vol. 2, pp. 102–138). New York: *Guilford Press*.

- Klein, E. M., Brähler, E., Dreier, M., Reinecke, L., Müller, K. W., Schmutzer, G., Wölfling, K., & Beutel, M. E. (2016). The German version of the Perceived Stress Scale – psychometric characteristics in a representative German community sample. *BMC Psychiatry*, 16(1), 159. <https://doi.org/10.1186/s12888-016-0875-9>
- Lee, E.-H. (2012). Review of the Psychometric Evidence of the Perceived Stress Scale. *Asian Nursing Research*, 6(4), 121–127. <https://doi.org/10.1016/j.anr.2012.08.004>
- Linden, B., & Stuart, H. (2020). Post-Secondary Stress and Mental Well-Being: A Scoping Review of the Academic Literature. *Canadian Journal of Community Mental Health*, 39(1), 1–32. <https://doi.org/10.7870/cjcmh-2020-002>
- Liu, J., Vickers, K., Reed, M., Hadad, M. (2017). Re-conceptualizing stress: Shifting views on the consequences of stress and its effects on stress reactivity. *PLoS ONE* 12(3): e0173188. <https://doi.org/10.1371/journal.pone.0173188>
- Logan, B., & Burns, S. (2023). Stressors among young Australian university students: A qualitative study. *Journal of American College Health*, 71(6), 1753–1760. <https://doi.org/10.1080/07448481.2021.1947303>
- Luszczynska, A., & Cieslak, R. (2005). Protective, promotive, and buffering effects of perceived social support in managerial stress: The moderating role of personality. *Anxiety, Stress & Coping*, 18(3), 227–244. <https://doi.org/10.1080/10615800500125587>
- McLean, L., Gaul, D., & Penco, R. (2023). Perceived Social Support and Stress: a Study of 1st Year Students in Ireland. *International Journal of Mental Health and Addiction*, 21(4), 2101–2121. <https://doi.org/10.1007/s11469-021-00710-z>
- Metts, A. v., & Craske, M. G. (2023). Influence of social support on cognitive reappraisal in young adults elevated on neuroticism. *Behaviour Research and Therapy*, 167, 104355. <https://doi.org/10.1016/j.brat.2023.104355>

- Morgan, B., & de Bruin, K. (2010). The Relationship between the Big Five Personality Traits and Burnout in South African University Students. *South African Journal of Psychology, 40*(2), 182–191. <https://doi.org/10.1177/008124631004000208>
- Niazi, S., Adil, A., & Abbas, Q. (2020). Fluid intelligence as predictor of academic performance and flourishing: role of academic stress. *Rawal Medical Journal, 45*(03):599-572. Retrieved from <https://www.researchgate.net/publication/344069622>
- Pietruszka, A. (2017). Resiliency and Well-Being as Moderator of Stress. [Senior Honours Thesis, Liberty University]. Retrieved from <https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1705&context=honor>
- Porritt, D. (1979). Social support in crisis: Quantity or quality? *Social Science & Medicine. Part A: Medical Psychology & Medical Sociology, 13*, 715–721. [https://doi.org/10.1016/0271-7123\(79\)90117-2](https://doi.org/10.1016/0271-7123(79)90117-2)
- Schmidt, L. I., Sieverding, M., Scheiter, F., & Obergfell, J. (2015). Predicting and explaining students' stress with the Demand–Control Model: does neuroticism also matter? *Educational Psychology, 35*(4), 449–465. <https://doi.org/10.1080/01443410.2013.857010>
- Schwanzer, A. D., Ullrich, A., Lambert, R. G., Moore, C. M., & Krüger, C. (2022). The influence of personality and preventive resources on perceived stress in German social work students. *Social Work Education, 41*(5), 837–855. <https://doi.org/10.1080/02615479.2021.1893684>
- Shapiro S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika, 52*(3–4), 591–611. <https://doi.org/10.1093/biomet/52.3-4.591>
- Shen, W., Kiger, T. B., Davies, S. E., Rasch, R. L., Simon, K. M., & Ones, D. S. (2011). Samples in applied psychology: Over a decade of research in review. *Journal of Applied Psychology, 96*(5), 1055–1064. <https://doi.org/10.1037/a0023322>

- Swickert, R., & Owens, T. (2010). The interaction between neuroticism and gender influences the perceived availability of social support. *Personality and Individual Differences, 48*(4), 385–390. <https://doi.org/10.1016/j.paid.2009.10.033>
- Szkody, E., Stearns, M., Stanhope, L., & McKinney, C. (2021). Stress-Buffering Role of Social Support during COVID-19. *Family Process, 60*(3), 1002–1015. <https://doi.org/10.1111/famp.12618>
- Trejos-Herrera, A. M., Bahamón, M. J., Alarcón-Vásquez, Y., Vélez, J. I., & Vinaccia, S. (2018). Validity and Reliability of the Multidimensional Scale of Perceived Social Support in Colombian Adolescents. *Psychosocial Intervention, 27*(1), 56–63. <https://doi.org/10.5093/pi2018a1>
- ul Haq, M. A., Dar, I. S., Aslam, M., & Mahmood, Q. K. (2018). Psychometric study of depression, anxiety and stress among university students. *Journal of Public Health, 26*(2), 211–217. <https://doi.org/10.1007/s10389-017-0856-6>
- Wagner, U., Galli, L., Schott, B. H., Wold, A., van der Schalk, J., Manstead, A. S., Scherer, K., & Walter, H. (2015). Beautiful friendship: Social sharing of emotions improves subjective feelings and activates the neural reward circuitry. *Social Cognitive and Affective Neuroscience, 10*(6), 801-808. <https://doi.org/10.1093/scan/nsu121>
- Yang, S.-W., & Koo, M. (2022). The Big Five Personality Traits as Predictors of Negative Emotional States in University Students in Taiwan. *International Journal of Environmental Research and Public Health, 19*(24), 16468. <https://doi.org/10.3390/ijerph192416468>
- Yu, T., & Hu, J. (2022). Extraversion and Neuroticism on College Freshmen's Depressive Symptoms During the COVID-19 Pandemic: The Mediating Role of Social Support. *Frontiers in Psychiatry, 13*. <https://doi.org/10.3389/fpsy.2022.822699>
- Yusoff, M. B., Esa, A., Mat Pa, M., Mey, S., Aziz, R., & Abdul Rahim, A. (2013). A longitudinal study of relationships between previous academic achievement, emotional

intelligence and personality traits with psychological health of medical students during stressful periods. *Education for Health*, 26(1), 39. <https://doi.org/10.4103/1357-6283.112800>

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52(1), 30–41. https://doi.org/10.1207/s15327752jpa5201_2

6. Appendix

Appendix A

Informed Consent

Please tick the appropriate boxes

Yes **No**

Taking part in the study

I have read and understood the study information dated 23.03.2024 until 31.05.2024, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves answering the questions and that the response of those questions will be saved and used for an academic report.

Use of the information in the study

I understand that information I provide will be used for an academic report.

I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.

Future use and reuse of the information by others

I give permission for the [*specify the data*] that I provide to be archived in the researcher's database for two years, so it can be used for future research and learning.

Signatures

Name of participant [printed]

Signature

Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Researcher name [printed]

Signature

Date

Study contact details for further information: Jana Milke [j.milke@student.utwente.nl]

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities & Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-hss@utwente.nl

Appendix B

Survey Questions

Demographics

- What is your age? (in numbers)
- What do you identify as?
- What is your nationality?
- What is your education level?

Big Five Inventory

- Here are a number of characteristics that may or may not apply to you. For each question choose from the following alternatives and indicate the extent to which you agree or disagree with that statement:

I see Myself as Someone Who...

- Is talkative.
- Tend to find fault with others.
- Does a thorough job.
- Is depressed, blue.
- Is original, comes up with new ideas.
- Is reserved.
- Is helpful and unselfish with others.
- Can be somewhat careless.
- Is relaxed, handles stress well.
- Is curious about many different things.
- Is full of energy.
- Starts quarrels with others.
- Is a reliable worker.
- Can be tense.
- Is ingenious, a deep thinker.
- Generates a lot of enthusiasm.
- Has a forgiving nature.
- Tends to be disorganized.
- Worries a lot.
- Has an active imagination.
- Tend to be quiet.
- Is generally trusting.
- Tends to be lazy.
- Is emotionally stable, not easily upset.
- Is inventive.
- Has an assertive personality.
- Can be cold and aloof.
- Perseveres until the task is finished.
- Can be moody.
- Values artistic, aesthetic experiences.
- Is sometimes shy, inhibited.
- Is considerate and kind to almost everyone.
- Does things efficiently.
- Remains calm in tense situations.
- Prefers work that is routine.
- Is outgoing, sociable.

- Is sometimes rude to others.
- Makes plans and follows through with them.
- Gets nervous easily.
- Likes to reflect, play with ideas.
- Has few artistic interests.
- Likes to cooperate with others.
- Is easily distracted.
- Is sophisticated in art, music, or literature.

Perceived Stress Scale

- These questions ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.
 - How often have you been upset because of something that happened unexpectedly?
 - How often have you felt that you were unable to control the important things in your life?
 - How often have you felt nervous and stressed?
 - How often have you felt confident about your ability to handle your personal problems?
 - How often have you felt that things were going your way?
 - How often have you found that you could not cope with all the things that you had to do?
 - How often have you been able to control irritations in your life?
 - How often have you felt that you were on top of things?
 - How often have you been angered because of things that happened that were outside of your control?
 - How often have you felt difficulties were piling up so high that you could not overcome them?

Multidimensional Scale of Perceived Social Support

- We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
 - There is a special person who is around when I am in need.
 - There is a special person with whom I can share my joys and sorrows.
 - My family really tries to help me.
 - I get the emotional help and support I need from my family.
 - I have a special person who is a real source of comfort to me.
 - My friends really try to help me.
 - I can count on my friends when things go wrong.
 - I can talk about my problems with my family.
 - I have friends with whom I can share my joys and sorrows.
 - There is a special person in my life who cares about my feelings.
 - My family is willing to help me make decisions.
 - I can talk about my problems with my friends.