A Study on the mediating Effect of Coping Style on the Relationship between Personality traits and Public-speaking Anxiety among University Students

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Abstract

Background

  Oral presentations are leading to high physical as well as cognitive arousals. In an academic context, presentations are not a rarity. However, many students experience these as a challenge as they often lack specific presentation skills as the focus lies mainly on writing skills. Gaining more understanding of public-speaking anxiety can be beneficial in decreasing its occurrence. This research paper aims to analyse the relationship between personality and public-speaking anxiety while controlling for a possible mediation effect of coping style among students. Particularly, a focus lies on the personality traits of extraversion and neuroticism of the big five model and an avoidance or an approach coping style.

Methods

  The target group of this study are students as they are often confronted with presentations and lack presentation skills. An online survey was conducted and distributed via social media and the subject pool software SONA across the Netherlands and Germany. The collected data of 122 participants were analysed in the statistical software SPSS. Specifically, descriptive statistics, Pearson correlations, and general linear regressions were conducted. Additionally, the Sobel test was used to perform the mediation analysis.

Results

  The results indicated that there is a significant positive relationship between extraversion and public-speaking anxiety ($p < .001$) as well as a significant positive relationship between neuroticism and public-speaking anxiety ($p < .001$). No mediation effects of approach coping on extraversion and public-speaking anxiety ($p < .357$) nor on neuroticism and public-speaking anxiety ($p < .285$) were found, as both mediation models were insignificant. Additionally, no mediation effects of avoidance coping on the relationship between extraversion and on public-speaking anxiety ($p < .322$) and neuroticism and public-speaking anxiety ($p < .309$) was found, as both mediation models were insignificant.

Conclusion

  Concludingly, this study serves as a starting point for further research on possible factors influencing public-speaking anxiety among students. By doing so, students can benefit from more support when more knowledge about potential factors is available. For instance, the teachers can use the knowledge when evaluating the students or adapting to their needs in order to decrease public-speaking anxiety. This could be achieved by implementing other possible third variables and conducting experiments next to surveys to increase reliability and validity.

Contents

A Study on the mediating effect of Coping Style on the Relationship between Personality traits and Public-speaking Anxiety among University Students

This paper investigates the relationship between students' specific personality traits on public-speaking anxiety while considering their coping style. As presentations often take place in an academic context, students are going to be the target group of the present study. Furthermore, a focus lies on neuroticism and extraversion for personality as well as approach coping and avoidance coping for coping style. The data will be collected through an online survey. Three different scales are going to be used to assess the participants' level of neuroticism and extraversion, their public-speaking anxiety level, and their coping style. The quantitative data will be analysed and discussed to answer the research question.

Public-speaking Anxiety

In the course of our lives, almost every individual encounters the situation of giving a presentation. A definition of oral presentation was given by De Grez (2009), and he describes it as: "*the combination of knowledge, skills, and attitudes needed to speak in public in order to inform, self-express, to relate and to persuade*". Oral presentations are most often prevalent in school or university settings but can also continue to appear in work settings or one's private life as a form of a speech. Specifically, in today's highly interconnected world, public speaking is critical for success as skills concerning public speaking are one of the most preferred skills within a workplace (Kyllonen, 2012). In addition, as the global population is steadily increasing, the need for communication is a significant component (Lyons, 2017).

Oral presentation anxiety can be identified in various ways. According to the *Diagnostic and Statistical Manual of Mental Disorders V* (2013), presentation anxiety can be linked to the specific sub-form of social anxiety disorder, namely performance only type. In particular, this focus relates to fear of public speaking which can manifest in academic settings. Furthermore, it was found that public-speaking anxiety affects about one in five individuals (Leary & Kowalski, 1997). Individuals who suffer from performance fears do not necessarily suffer from social anxiety disorder (American Psychiatric Association, 2013). This means, those individuals do not circumvent any social interaction but tend to specifically avoid public speaking or endure it with anxious responses. Literature provides insight into different terminologies for presentation anxiety. Next to the term 'presentation anxiety', research refers most often to presentation anxiety with the term *public-speaking anxiety* (Pull, 2012). Hence, this research paper will refer to the anxiety to present with the term public-speaking anxiety, as both terms refer to the anxiety while thinking about, approaching, and holding a presentation.

Typical symptoms of public-speaking anxiety can reach from internal, cognitive responses to external, physical reactions. In specific, internal symptoms can appear as negative thoughts about oneself or the presentation situation (Bodie, 2010). These cognitive processes can already start when thinking about the upcoming presentation and it may delay until the onset of the event. Next to that, external responses can be bodily symptoms, such as trembling while approaching or during a presentation, or language restrictions, such as stuttering and not finding the right words (Bodie, 2010). Experiencing these various responses can lead to complete avoidance of presentations (Beatty & Behnke, 1980). Concludingly, the symptoms and responses of public-speaking anxiety can vary from mild to severe.

In the existing literature, there are various theories about anxiety in general, however, not every theory can be related to the occurrence of public-speaking anxiety as well. One theory that can explain public-speaking anxiety was developed by Schachter and Singer in 1962, namely the *two-factor theory of emotion*. This theory claims, that whether a person experiences public-speaking anxiety depends on how they label the physical arousal when being exposed to a stimulus. Beatty (1988) discovered in his research that all individuals feel the same physical arousal when approaching and giving a presentation. Hence, the two-factor theory of emotion could provide insight that it depends on how the students perceive the physical arousal and how this arousal is labelled. More precisely, if a student approaches a presentation, the stimulus, the individual could feel some forms of physical arousal, for example, rapid heart beating and signs of trembling. The student recognizes the physical arousals and labels them, either as nervousness and anxiety or as excitement, which leads him or her to feel the related emotions.

Besides the two-factor theory of emotions which mainly focuses on the individual, there are also theories about external factors. Robert Zajonc (1965) established the theory of the effects of social arousal. In specific, Zajonc (1965) theorizes that the presence of other people can influence the performance of an individual. Furthermore, it depends on how difficult the individual perceives the task and whether the individual performs better or worse in presence of others (Zajonc, 1965). Consequently, if a student thinks giving a presentation is easy and doable, the presence of other people will either increase the performance or not affect the student while giving the presentation. However, if a student thinks that a presentation is difficult, the presence of other people could decrease the performance of the student. Concludingly, some theories explain internal factors of public-speaking anxiety and other theories focus on external aspects when experiencing public-speaking anxiety.

Even though the theory of Schachter and Singer (1962) focuses on internal factors and the theory of Zajonc (1965) takes external factors into account, both theories have in common that the main reason for experiencing public-speaking anxiety is the cognitive appraisal of an individual. Nevertheless, it can still not be explained why some individuals label or perceive a presentation as something negative or difficult and others do not. Both approaches do not take personality traits into account which could explain if there is a specific personality trait or a pattern that leads to public-speaking anxiety among students. As it was found that individuals experience the same physical arousals during a presentation, it could be worthwhile to investigate whether personality has an influence on the way individuals label the arousal. Therefore, there is a gap in the existing literature on whether personality traits can predict public-speaking anxiety.

Personality and Public-speaking Anxiety

Personality can be used to explain and describe certain behaviour patterns. Furthermore, it was found that personality traits can predict important life outcomes in advance (Roberts et al., 2007). Focusing on anxiety in general, it was discovered that specific traits influenced oral performances of speaking a foreign language (Oya et al., 2004). Based on these findings, it becomes apparent that the relationship between personality and public-speaking anxiety can be important in defining individuals in stressful situations.

One prominent way to discover and explain specific personality traits is the *Big Five model*. The big five model was developed from 1980 onward based on various researchers and their findings (McCrae & John, 1992). The model focuses on five different personality traits, specifically *extraversion, openness to experiences, conscientiousness, neuroticism*, and *agreeableness*. Individuals can either score higher or lower on certain traits, depending on the outcomes of questionnaires designed for the big five model. Especially when focusing on academic settings or students, the assessment of the big five model is most often used for the investigation of academic outcomes (O'Connell & Sheikh, 2011). Hence, among various ways of explaining and defining personality traits, the big five model is currently the most widely accepted theory and questionnaire.

Focusing on the five traits and their influence on anxiety in general, distinctions can be made about their impact on individuals. The traits of openness to experiences, conscientiousness, and agreeableness were found to not have a valuable impact on the development of anxiety disorders (Kotov et al., 2010). On the contrary, the personality traits of extraversion and neuroticism can have an influence on developing anxiety disorders (Kotov et al., 2010). In specific, it was found that low levels of extraversion and high levels of

neuroticism are predictors of anxiety. As public-speaking anxiety is a subcategory of social anxiety disorder, it can be assumed that especially the traits of extraversion and neuroticism can have an influence on the onset of public-speaking anxiety when focusing on personality. Concludingly, the present study will only focus on these two personality traits.

Coping and Public-speaking Anxiety

Nevertheless, personality is not the only way to explain certain thoughts and behaviours. Next to personality, coping styles can also influence the development of psychological distress (van Berkel, 2009). Coping can be defined as being able to respond to a certain stressor (Lazarus, 1966). Specifically, Individuals first encounter a stressful situation, which is referred to as *appraisal* by Lazarus (1966) and need to decide how to react to that stressor, which is labelled as *coping*. Furthermore, different coping styles exist, namely problem-focused coping, emotion-focused coping, and avoidant coping. Lazarus (1966) specified that problem-focused and emotion-focused coping can be considered as adaptive coping whereas avoidant coping refers to maladaptive coping. According to Lazarus and Folkman (1984), problem-focused coping deals with planning how to solve the problem which causes the stressor, emotion-focused coping involves trying to eliminate the negative emotions arising from the stressor, while avoidant coping entails ignoring and avoiding the presence of the stressor in general. Additionally, it was found that avoidant coping has a strong link with developing psychological distress (Crockett et al., 2007). Therefore, this research will lay great focus on the differences between an adaptive and maladaptive coping style.

Reviewing the literature, there is also evidence for a link between coping styles and anxiety in general. A recent study by Mahmoud et al. (2012) revealed that displaying a maladaptive coping style is the main predictor of developing anxiety. Additionally, it can be said that the usage of maladaptive coping styles can mediate the relationship between an anxious personality and increasing psychological distress (Ireland et al., 2006). Furthermore, especially avoidance coping was found to be a cause of increasing anxiety in women perceiving stressful situations (Blalock & Joiner, 2000). Hence, it can be assumed that maladaptive coping also increases the possibility of experiencing public-speaking anxiety, as maladaptive coping can be seen as a predictor for developing anxiety. Concludingly, as there is a relationship between anxiety and maladaptive coping in general, it is worthwhile to investigate the influence of an avoidant coping style on public-speaking anxiety specifically.

Personality and Coping

Focusing on the relationship between personality traits and coping style, it can be said that there is an interrelation between both concepts. In particular, Lazarus (1966) established the cognitive-phenomenological theory of psychological distress in which he states that personality has an influence on which coping style an individual chooses. Another study, which focused on the personality traits of the big five model and coping styles, revealed that high levels of neuroticism are positively correlated with maladaptive coping styles whereas high levels of extraversion are negatively correlated with maladaptive coping styles (Afshar et al., 2015). However, it is important to consider low levels of extraversion, as it was discovered that individuals with introverted personalities tend to cope differently in comparison with extroverted individuals (Gallagher, 1996). In specific, the study of Mairet et al. (2014) revealed that introverted individuals are more likely to engage in avoidant coping when controlling for coping styles. Therefore, it is necessary to evaluate coping styles of personality traits as well when investigating the relationship between personality and public-speaking anxiety.

Present Study

Because of the increasing need for communication, public speaking is not a rarity anymore. Due to the growing emergence, it was found that one in five people experience some form of anxiety when approaching the situation of giving a presentation (Bartholomay & Houlihan, 2016). Especially for students, giving a presentation is a major component of their studies (Taylor, 1992). Nevertheless, it can be perceived as stressful for students, as they may lack experience and skills for giving a presentation since they are more trained in writing skills than in oral forms of communication (Taylor, 1992). Therefore, students could be more at risk of experiencing anxiety to present. Consequently, students currently studying at a university are the target group of this research. It can be beneficial to study the relationship to successfully support students in handling public-speaking anxiety when approaching or while giving a presentation since students are at-risk of perceiving public-speaking anxiety due to missing skills and experiences.

Based on the review of literature, it can be concluded that all three variables, namely anxiety, personality, and coping style are mutually related to and influence each other. Nevertheless, literature provides no insights into the relationship between personality and coping style on public-speaking anxiety. Specifically considering that the present research takes place in a post-COVID-19 study context, there is also no research available yet related to this extraordinary context as well. Therefore, the aim of the present study is to explore if

the personality traits extraversion and neuroticism of the big five model have an influence on public-speaking anxiety among students while controlling for a mediation effect of coping style. By doing so, the gap in the literature on whether personality traits and coping styles in combination can predict public-speaking anxiety can be filled. It can be beneficial to study the relationship to successfully support students in handling public-speaking anxiety when approaching or while giving a presentation since students are at-risk of perceiving public-speaking anxiety due to missing skills and experiences. To be able to answer the research question, "is the relation between students' personality traits and public-speaking anxiety mediated by their coping style?", a questionnaire will be developed which is going to assess students' general public-speaking anxiety, the two personality traits of the big five model, and their coping style. To this end, several hypotheses are derived from this:

> H1: Students who score low on extraversion will score high on public-speaking anxiety.
>
> H2: Students' coping style mediates the relation between their extraversion and public-speaking anxiety.
>
> H3: Students who score high on neuroticism will score high on public-speaking anxiety.
>
> H4: Students' coping style mediates the relation between their neuroticism and public-speaking anxiety.

Methods

Design

For this study, quantitative data was collected to assess the relation between students' personality traits and public speaking anxiety mediated by their coping style. A correlational survey design was employed to analyse the data. There was one independent variable (personality) with four levels (low neuroticism, high neuroticism, low extraversion, and high extraversion). Next to the independent variable, there was one dependent variable (public-speaking anxiety) with two levels (high level and low level). Lastly, as the study was checking for a mediation effect, the last variable was a mediator with two levels (adaptive coping and maladaptive coping).

Participants

Participants were gathered in exchange for 0.25 study credits by using the SONA system of the University of Twente. Additionally, to gather students from other universities as well, convenience sampling was used by spreading the survey on online social media

platforms (e.g Instagram, WhatsApp). In this study, 155 participants took part in the survey from which 122 fulfilled the criteria of being a student and completed the questionnaires. Of the remaining participants, 88 (72.1%) were female and 34 (27.9%) were male. Their age ranged from 17 to 31 with 21.52 being the mean (SD=2.098). All participants are currently studying in the Netherlands or Germany. Focusing on nationalities, 35 were Dutch, 71 were German, and 16 were from other European countries (e.g. 3 participants were Polish and 1 was Korean).

Materials

Questionnaires

Public-speaking Anxiety. To assess students' scores on public-speaking anxiety, the Public Speaking anxiety scale (PSAS) developed by Bartholomay and Houlihan (2016) was used. The scale consists of 17 items from which 10 items were reformulated since the term "speech" was exchanged with the term "presentation". For example, item 4 "If I make a mistake in my speech, I am unable to re-focus" was reformulated to "If I make a mistake in my presentation, I am unable to re-focus". This was necessary to ensure that the participants related the question to a presentation within an educational context. The response categories were provided in a 5-point Likert scale ranging from strongly disagree to strongly agree. Next to that, a cut-off score of 73 is suggested for impairing and significant anxiety and a cut-off score of 64 for higher levels of anxiety (Bartholomay & Houlihan, 2016). In general, the scale provides good concurrent validity (r = .84–.85) as it was highly correlated with other existing speech anxiety scales (Bartholomay & Houlihan, 2016). Furthermore, in this study, the scale has a high internal consistency with Cronbach's alpha of 0.94.

Personality. For determining the students' personality traits and their levels, the 50-item IPIP representation of the markers for the Big-Five structure by Goldberg (1992) was administered. The scale is provided by the international personality item pool (IPIP) developed by Goldberg (1992). The scale includes 50 items, however, as this study focuses on neuroticism and extraversion, the items assessing the other traits (openness to experiences, conscientiousness, and agreeableness) were left out. Hence, the modified scale consisted of 20 items, 10 items focusing on neuroticism and the other 10 items on extraversion. The response categories were provided in a 5-point Likert scale ranging from strongly disagree to strongly agree. The scale does not provide specific cut-off scores, but it can be said that higher scores indicate a higher level of the trait, and lower scores represent lower levels of the trait. The scale provides a good validity as it was highly correlated with other personality scales when

focusing on extraversion and neuroticism ($r = 0.85$ for extraversion, $r = 0.84$ for neuroticism) (Gow et al., 2005). Focusing on the psychometric qualities in this study, the items for neuroticism are highly reliable with Cronbach's alpha of 0.86. Additionally, the items for extraversion are also highly reliable with Cronbach's alpha of 0.91.

Coping Style. To investigate students' coping style, the Brief Approach/Avoidance Coping Questionnaire (BACQ) developed by Finset et al. (2002) was used. The scale consists of 12 items and the response categories were provided in a 5-point Likert scale ranging from disagree completely to agree completely. The items are divided into 6 items focusing on approach coping style and the other 6 items on avoidance coping style. The score can range from 12, which refers to a low approach and high avoidance coping style, to 60, which demonstrates a high approach and low avoidance coping style. According to Finset et a. (2002), the scale provides a satisfactory concurrent validity. The scale shows a satisfactory internal consistency in this study with Cronbach's alpha of 0.66. In specific, the items focusing on approach coping style are satisfactory with Cronbach's alpha of 0.67 and the items measuring avoidance coping are satisfactory with Cronbach's alpha of 0.52.

Procedure

The survey of the study was created with Qualtrics. The survey began with an informed consent (Appendix A) which needed to be read and agreed to by the participants before the questionnaire started. As the survey was created together with other researchers, the survey included 7 blocks. The first block of the survey was about the demographics of the participant (Appendix B). The next block contained the questions of the public-speaking anxiety scale (PSAS) (Appendix C). The blocks 2,3,5, and 6 involved the scales of other researchers concerning other factors. Block 4 consisted of the other scales relevant for this research, namely the 50-item IPIP representation of the markers for the Big-Five structure and the Brief Approach/Avoidance Coping Questionnaire (BACQ) (Appendix D, Appendix E). A detailed overview of the scales for this study is provided in the Appendices.

Data Analysis

After collecting data via SONA systems and online platforms, the data was imported from Qualtrics to the statistical software IBM SPSS statistics for further analysis. Before starting the analysis, 33 responses in total of participants who did not fulfil the inclusion criteria of being a student or did not complete the questionnaires were deleted. Next to that, the data were screened for outliers and no outliers were found. Therefore, the final sample size consisted of 122 participants.

Before analysing, items that were written in reversed polarity were recoded for every scale. In specific, 5 items of the scale measuring extraversion, 9 items of the scale measuring neuroticism, 6 items of the BACQ, and 12 items of the PSAS were recoded to positive polarized items to adjust the scales equally. Next, the items that represent one personality trait and items that represent one coping style were grouped. For every scale, Cronbach's Alpha was calculated to determine the internal consistency of every scale. After that, the analysis had begun with the descriptive analysis and correlations.

Specifically, descriptive statistics were performed in order to get an overview of the sample characteristics (e.g. age, gender, nationality, years of being a student). For scale variables (age), the mean and standard deviation were calculated and frequencies and percentages for nominal variables (gender, nationality, years of being a student). Additionally, descriptive statistics of all variables (public-speaking anxiety, extraversion, neuroticism, coping style) were performed to get a general overview of the responses. For that, minimum, maximum, mean, and standard deviation were calculated. This was done to check for misleading data, for example, a floor or ceiling effect. To check the statistical assumption of normality, the P-P plot of normality test was performed for all variables (public-speaking anxiety, extraversion, neuroticism, approach coping, and avoidance coping) and it can be concluded that every variable was normally distributed. Furthermore, the assumption of linearity was checked by computing a linear regression. Based on the outcomes of the assumption checks, Pearson correlation coefficients were computed to assess the relationship between all variables.

Subsequently, the hypotheses were gradually tested and analysed. For answering hypothesis 1 "Students who score low on extraversion will score high on public speaking anxiety", a general linear model was used to test if a low level of extraversion significantly predicts a high level of public-speaking anxiety. A general linear model was used as this test is able to demonstrate a linear relationship between two variables. Before starting the mediation analyses, the assumptions of homoscedasticity and multicollinearity were checked. In specific, a scatterplot of the residuals was generated, and it was found that the data is homoscedastic. To check for absence of multicollinearity, VIF values were investigated and since each value was below 10, the assumption is also met. To answer hypothesis 2 "Students' coping style mediates the relation between their extraversion and public-speaking anxiety", the Sobel test was performed to check whether a student's coping style mediates the relationship between their extraversion and public-speaking anxiety. The Sobel test was used for the meditation analyses as it is able to establish whether a variable mediates the effect of a

given independent and dependent variable. For the third hypothesis, "Students who score high on neuroticism will score high on public-speaking anxiety", a general linear model was used to test if a high level of neuroticism significantly predicts a high level of public-speaking anxiety. Lastly, for answering hypothesis 4 "Students' coping style mediates the relation between their neuroticism and public-speaking anxiety", the Sobel test was used to check whether a student's coping style mediates the relationship between their neuroticism and public-speaking anxiety.

Results

Preliminary Analysis

After performing descriptive statistics of all variables, it was found that the variables display a Gaussian function as the mean of every variable is normally distributed and is close to the middle of the scale. Therefore, no floor or ceiling effect was found. Focusing on descriptive statistics, table 1 provides an overview of the sample characteristics. Next, table 2 demonstrates the descriptive statistics of the independent variable, the dependent variable, and the mediator variable. Focusing on Pearson correlations, there was a positive significant positive correlation between public-speaking anxiety and extraversion ($r(120) = .51$, $p < .000$). Next, there was a significant positive correlation between public-speaking anxiety and neuroticism ($r(120) = .45$, $p < .000$). A significant negative correlation was found between public-speaking anxiety and approach coping ($r(120) = -.26$, $p < .005$). A significant negative correlation was also found between public-speaking anxiety and avoidance coping ($r(120) = -.23$, $p < .010$). Focusing on extraversion and coping style, there was a significant negative correlation between extraversion and approach coping ($r(120) = -.22$, $p < .017$), but no significant correlation between extraversion and avoidance coping ($r(120) = -.17$, $p < .056$). Looking at neuroticism and coping style, there was a significant negative correlation between neuroticism and approach coping ($r(120) = -.18$, $p < .045$) and also a significant negative correlation between neuroticism and avoidance coping ($r(120) = -.36$, $p < .000$).

Table 1

Sample Characteristics

Variable	N (%)	Mean	Std. Deviation	Range
Age		21.5	2.1	17-31
Gender				
Female	88 (72.1)			
Male	34 (27.9)			
Nationality				
Dutch	35 (28.7)			
German	71 (58.2)			
Other	16 (13.1)			
Years enrolled as a student				
Less than 1 year	23 (18.9)			
Between 1 and 2 years	32 (26.2)			
Between 2 and 3 years	33 (27)			
Between 3 and 4 years	22 (18)			
Between 4 and 5 years	4 (3.3)			
More than 5 years	8 (6.6)			

Table 2

Descriptive Statistics of all Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Public_Speaking_Anxiety	122	1.47	4.59	3.11	.82
Extraversion	122	1.20	5.00	3.24	.95
Neuroticism	122	1.10	4.90	3	.78
Coping_Style	122	1.50	3.83	2.63	.49

Extraversion on Public-speaking Anxiety

To be able to test whether students who score low on extraversion scored high on public-speaking anxiety, a general linear model was conducted with extraversion as the independent variable and public-speaking anxiety as the dependent variable. The overall regression was statistically significant ($R^2 = .26$, $F(1,120) = 41.9$, $p < .000$). Furthermore, a positive correlation between the independent variable, extraversion, and the dependent variable, public-speaking anxiety was found ($\beta = .437$, $p < .001$). In other words, the higher

the level of extraversion the higher, the level of public-speaking anxiety. Therefore, hypothesis 1 needs to be rejected.

Mediation of Coping Style on Extraversion and Public-speaking Anxiety

In order to check whether coping style mediates the relationship between extraversion and public-speaking anxiety, the Sobel test was performed. Particularly, two mediation models were conducted in which extraversion was the independent variable, public-speaking anxiety was the dependent variable, and the mediator variable was firstly approach coping and secondly avoidance coping style. First, a linear regression analysis was conducted of extraversion and approach coping ($R^2 = .01$, $F(1,120) = 1.3$, $p <.259$). Even though the linear regression was insignificant the mediation analysis was continued as this does not completely rule out a mediation effect. Then, a multiple linear regression of extraversion on public-speaking anxiety ($ß = .315$, $t = 2.17$, $p <.032$) and approach coping on public-speaking anxiety ($ß = .119$, $t = 1.58$, $p <.116$) was run ($R^2 = .06$, $F(2,119) = 4.0$, $p <.021$). Lastly, the Sobel test was used to check the significance of the mediation. It can be concluded that there is no mediation of approach coping style on the relationship between extraversion and public-speaking anxiety as the analysis was statistically insignificant ($Z =0.921$, $p <.357$). Additionally, a linear regression analysis was conducted of extraversion and avoidance coping ($R^2 = .01$, $F(1,120) = 1.3$, $p <.255$). Even though the linear regression was insignificant the mediation analysis was continued as this does not completely rule out a mediation effect. Next, the multiple linear regression of extraversion on public-speaking anxiety ($ß = .309$, $t =2.15$, $p <.034$) and avoidance coping on public-speaking anxiety ($ß = -.163$, $t = -1.97$, $p <.052$) was run ($R^2= .07$, $F(2,119) = 4.7$, $p <.011$). The results of the Sobel test conclude that there is no mediation of avoidance coping style on the relationship between extraversion and public-speaking anxiety as the analysis was statistically insignificant ($Z =0.990$, $p <.322$). Hence, hypothesis 2 needs to be rejected.
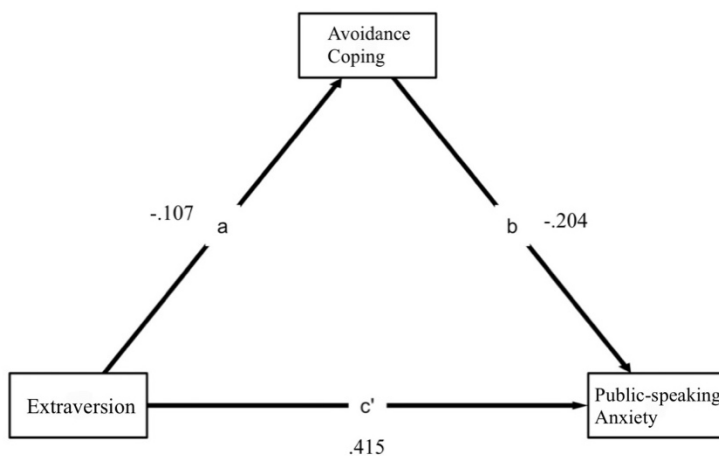
Figure 1

Mediation analysis extraversion, public-speaking anxiety, and approach coping
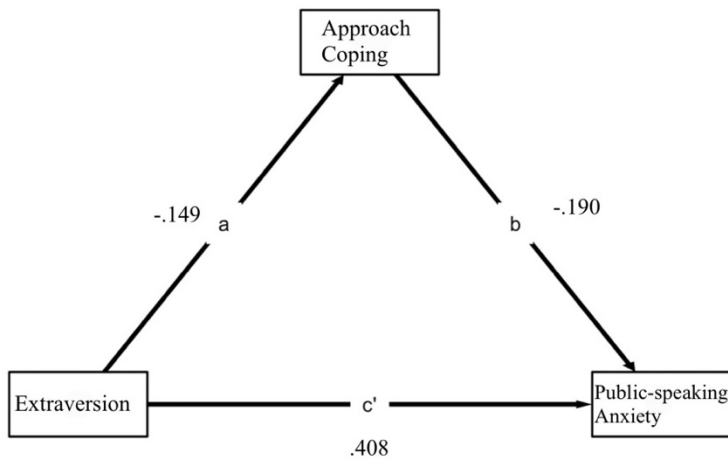
Note. The standardized regression coefficients are found on the arrows (the unstandardized regression coefficient for c' is .315)

Figure 2

Mediation analysis extraversion, public-speaking anxiety, and avoidance coping

Note. The standardized regression coefficients are found on the arrows (the unstandardized regression coefficient for c' is .309)

Neuroticism on Public-speaking Anxiety

For testing whether students who score high on neuroticism will score high on public-speaking anxiety, a general linear model was conducted with neuroticism as the independent variable and public-speaking anxiety as the dependent variable. The overall regression was statistically significant ($R^2 = .07$, $F(1,120) = 11.2$, $p < .001$). Additionally, a positive correlation between the independent variable, neuroticism, and the dependent variable, public-speaking anxiety was found ($\beta = .293$, $p < .001$). In other words, the higher the level of

neuroticism, the higher the level of public-speaking anxiety. Concludingly, hypothesis 3 can be accepted.

Mediation of Coping Style on Neuroticism and Public-speaking Anxiety

To be able to check whether coping style mediates the relationship between neuroticism and public-speaking anxiety, the Sobel test was performed. Neuroticism was the independent variable, public-speaking anxiety was the dependent variable, and the mediator variable was firstly approach coping and secondly avoidance coping style. First, a linear regression analysis was conducted of neuroticism and approach coping ($R^2 = .03$, $F(1,120) = 3.3$, $p < .073$). Even though the linear regression was insignificant the mediation analysis was continued as this does not completely rule out a mediation effect. Especially when keeping in mind that the p-value is close to the cut-off score of 0.05. Then, a multiple linear regression of neuroticism on public-speaking anxiety ($\beta = .274$, $t = 3.10$, $p < .002$) and approach coping on public-speaking anxiety ($\beta = .098$, $t = 1.32$, $p < .189$) was run ($R^2 = .10$, $F(2,119) = 6.5$, $p < .002$). Lastly, the Sobel test was used to check the significance of the mediation. In specific, there is no mediation of approach coping style on the relationship between neuroticism and public-speaking anxiety as the analysis was statistically insignificant ($Z = 1.069$, $p < .285$). Next, a linear regression analysis was conducted of neuroticism and avoidance coping ($R^2 = .14$, $F(1,120) = 19.5$, $p < .000$). After that, the multiple linear regression of neuroticism on public-speaking anxiety ($\beta = .256$, $t = 2.72$, $p < .007$) and avoidance coping on public-speaking anxiety ($\beta = -.092$, $t = -1.05$, $p < .298$) was run ($R^2 = .09$, $F(2,119) = 6.2$, $p < .003$). In conclusion, the results of the Sobel test conclude that there is no mediation of avoidance coping style on the relationship between neuroticism and public-speaking anxiety as the analysis was statistically insignificant ($Z = 1.018$, $p < .309$). Consequently, hypothesis 4 needs to be rejected.
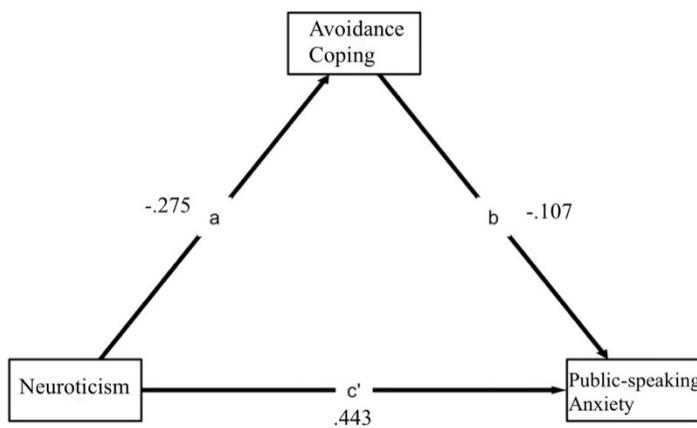
Figure 3

Mediation analysis of neuroticism, public-speaking anxiety, and approach coping
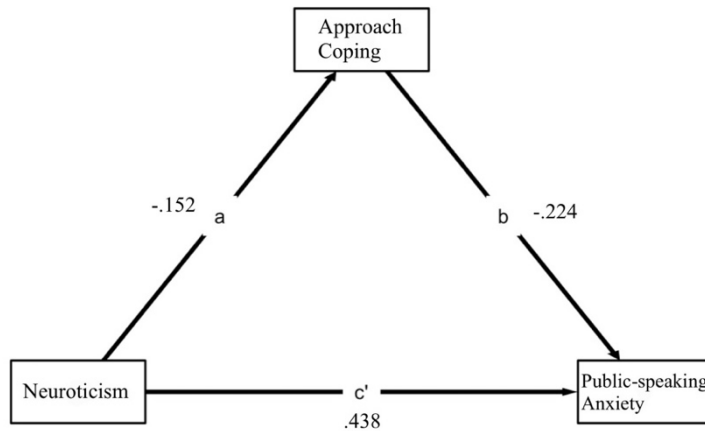
Note. The standardized regression coefficients are found on the arrows (the unstandardized regression coefficient for c' is .274)

Figure 4

Mediation analysis of neuroticism, public-speaking anxiety, and avoidance coping

Note. The standardized regression coefficients are found on the arrows (the unstandardized regression coefficient for c' is .256)

Discussion

The research paper aimed to investigate if coping style mediates the relationship between personality and public-speaking anxiety. Four hypotheses were formulated to answer the research question. It can be concluded that no significant mediation effect was found, but significant relationships were found between personality and public-speaking anxiety. Specifically, it was established that low levels of neuroticism have a positive relationship with public-speaking anxiety. Additionally, it was discovered that high levels of extraversion have

a positive relationship with public-speaking anxiety. Lastly, all four mediation models were insignificant and, therefore, no mediation effect of approach or avoidant coping on personality and public-speaking anxiety was found.

Principal Findings

The first hypothesis that focused on the general relationship between the personality trait extraversion and public-speaking anxiety was rejected, as high levels of extraversion had a positive relationship with high levels of public-speaking anxiety. This outcome is not in line with the literature, as the literature provides evidence that extroverted individuals do suffer less from anxiety disorders (Kotov et al., 2010). On the one hand, as public-speaking anxiety refers to a subcategory of social anxiety, it could be assumed that previous research did not include subcategories in research. On the other hand, an explanation for the unexpected finding could be that according to D'Souza (2003), individuals can be publicly outgoing but tend to experience negative self-evaluations and anxiety, these are referred to as "shy extroverts". The study also revealed that a higher level of shyness leads to higher levels of anxiety in an academic context (D'Souza, 2003). Therefore, it could be argued that extraversion does not directly imply fewer experiences of anxiety. Additionally, another explanation could be that according to the findings of Monson et al. (1982), personality traits are most useful to predict behaviour in situations that entail weak pressure compared to situations with strong pressure. As a presentation leads to high cognitive and physical arousals, the situation could involve strong pressure and thus it could be more difficult to predict the situation based on personality types.

Focusing on neuroticism, the third hypothesis considered the general relationship between neuroticism and public-speaking anxiety and was accepted. It was found that high levels of neuroticism are positively correlated with high levels of public-speaking anxiety. These findings align with the literature as it was already found that high levels of neuroticism are predictors of anxiety disorders (Kotov et al., 2010). Consequently, high levels of neuroticism can also be seen as a predictor for the subcategory of social anxiety disorder, public-speaking anxiety. Therefore, it can be assumed that individuals who score high on neuroticism experience more anxiety and difficulties when facing a situation like a presentation.

The second and fourth hypotheses focused on the questions if coping style mediates the relationship between extraversion and public-speaking anxiety as well as neuroticism and public-speaking anxiety. Both hypotheses were rejected, as the results of the mediation analyses were not significant. It can be concluded that based on the results of this study,

coping style does not mediate the relationship between personality and public-speaking anxiety. An explanation for these findings could be that even though coping style and personality can predict anxiety and anxiety disorders, it does not directly imply that this goes with every anxiety disorder or subcategory of anxiety. As public-speaking anxiety is a subcategory of social anxiety disorder, it could be the case that no mediation between these variables can be found as coping style is not a possible third variable influencing this form of anxiety compared to other forms of anxiety.

Implications

The obtained results of this study are important to consider within an academic context. The insights can be beneficial, for example, for teachers to support students. In general, many past researchers concluded that the Big Five personality traits can predict behaviour and academic outcomes (Paunonen & Ashton, 2001). Moreover, investigating personality traits is supportive in establishing and understanding individual differences and behavioural patterns (Carver & Connor-Smith, 2010). Consequently, if more knowledge about individuals' personalities is available, prediction on how the individual will behave and what makes them different is possible. This can lead to improved recognition and understanding of certain behavioural patterns which could also be useful for teachers to understand the students' behaviours effectively. Hence, personality can be insightful when researching in an academic context, but it still should not be seen as a causation of academic outcomes, since teachers could be biased by that when evaluating students. Biases in grading students can lead to assumptions about how a specific student is expected to perform while not considering the real performance, this is also known as the Pygmalion effect (Rosenthal & Jacobson, 1968). In specific, the Pygmalion effect describes the phenomenon that individuals score higher just because they are expected to do so. However, it was found that especially in academic contexts, the five personality traits cannot predict academic success (Paunonen & Ashton, 2001). The present study predicted that low levels of extraversion will lead to high levels of public-speaking anxiety based on literature (Kotov et al., 2010). However, it was found that high levels of extraversion lead to high levels of public-speaking anxiety. Therefore, teachers need to take into account that students who seem to be more extroverted are not directly performing better in academic challenges than introverted or emotional unstable students. These insights could prevent biases when evaluating the students after giving a presentation.

Next to that, as the results indicate that there is no mediation effect of coping style on the relationship between personality and public-speaking anxiety, teachers need to consider

other factors in supporting students when experiencing anxiety because of a presentation. A potential third variable that could be investigated is self-efficacy. For example, teachers could practice presentations in class and let students evaluate each other to decrease negative self-evaluation and, therefore, increase self-efficacy and confidence in presenting. It was found that students who suffer from social phobia tend to evaluate their performances lower than their audience (Rapee & Lim, 1992). By doing so, cognitive arousals before and during presentations can be limited or redirected to positive ones.

Additionally, as coping styles provide no insights into high or low levels of public-speaking anxiety, teachers could try to implement other techniques in improving negative cognitive as well as physical arousals. It was found that mind-body-related techniques can decrease mental and physical distress (Brown & Gerbarg, 2005). Hence, teachers could practice specific breathing techniques with their students before giving a presentation in advance to provide students with a skill to improve their arousal regulation when experiencing anxiety because of a presentation. Students could benefit from the positive effects and use the techniques frequently in the future. Particularly, breathing skills are a successful skill to balance distress while also reducing anxiety. As the results of the present study did not reveal a difference in the personality traits of extraversion and neuroticism in experiencing anxiety, more students can benefit from these implications.

Limitations and Strengths

However, as with any study, this research consists of limitations and strengths. One limitation that could have influenced the results is the sample size. As only 155 participants took part in the survey from which missing data needed to be removed, solely the data of 122 students could be analyzed. Hence, the possibility of finding more differences and effects was restricted. Consequently, the reliability and validity of this study are decreased which can be problematic when formulating generalisations for a population. Next to that, the small sample size could also have influenced the fact that no mediation was found. Because the smaller the sample size, the greater the chance that extreme negative or positive answers will influence the results to a high extent.

A second limitation of this study is that only self-reports were used in order to collect and analyse data. As it is proven that the credibility of self-reports is problematic (Paulhus & Vazire, 2007), additional types of measurement are needed to verify the accuracy of the insights. Specifically, experiments, longitudinal setups, or observations can be supportive in gaining more reliable data for the analysis and eventually insights that cannot be achieved by solely focusing on self-reports. Next to that, individuals tend to fill out self-reports in favour

of their self-presentation (Paulhus & Vazire, 2007), which could have a negative influence on the reliability of the results. Consequently, entirely relying on the outcomes of self-reports can influence the accuracy of the outcomes.

Another limitation of this study is that only two traits of the big five model were taken into account based on literature. For this research, only extraversion and neuroticism were in focus as the other traits are not related to anxiety disorders in general according to literature (Kotov et al., 2010). However, combinations of personality traits and the fact that public-speaking anxiety is a subcategory of social anxiety disorder were not considered. According to Terracciano and Costa (2004), investigating personality trait combinations can be beneficial in understanding multiple dimensions and how the traits mutually weaken or strengthen each other in their influence. Hence, focusing on combinations of personality traits could be insightful as it provides more dimensions to one trait. Especially for the mediation analysis, it could have provided more insights when considering personality trait combinations.

Nevertheless, despite the limitations of the study, there are also strong points. For example, using an online survey to collect data is a beneficial way to collect high numbers of data within a short timeframe. Online surveys are available to everyone and everywhere and, therefore, easy to access for the participants. Next, as some universities provide the SONA system, it is ensured that more and solely students will take part in an online survey to collect needed credits. The online survey was also published on social media platforms to increase the reach of participants even further. Even though the present study had only the data of 122 participants to work with, the method of data collection is still advantageous when a specific criterion is needed of a target group.

The second strength of this study is the context of the study. This research took place during the recovery phase of COVID-19. As a pandemic is an exceptional situation, research is limited during such an extraordinary time. Being able to study during a pandemic can provide insights into particular topics that are usually not given. Especially when focusing on students, who switched between online education and physical education, the effects of a pandemic could have a great influence on their thoughts and behaviour regarding specific situations. Therefore, studying public-speaking anxiety and possible, related factors shortly after a pandemic cannot only provide a general understanding of the topic but also knowledge in relation to the effects of the pandemic.

Additionally, another advantage of the study is that factors related to public-speaking anxiety were investigated in an academic context with students as the target group. In

specific, as literature provides insights that students are not well trained in oral presentations and are, therefore, more at risk for experiencing anxiety because of presentations, the choice for the target group was valuable. Not only do the insights provide guidance on how to support students, but they also help to investigate which factors can influence public-speaking anxiety. When analysing potential factors which could lead to public-speaking anxiety it makes the most sense to conduct the study with participants who frequently experience the situation and are at risk for experiencing anxiety. As presentations often take place in an academic context, students might relate more to public-speaking anxiety than non-students. Hence, the choice of the target group is beneficial for both, research purposes and supporting students.

Future Research

Based on the outcomes and limitations of the study, recommendations can be made for future research. As the results revealed that high levels of extraversion are positively related to high levels of public-speaking anxiety, future research could investigate the relationship more in-depth to discover possible explanations. Additionally, combinations of personality traits could be analyzed to examine if other personality traits or specific co-influences can influence experiencing anxiety before or during a presentation. By doing so, it can be concluded whether personality traits affect the subcategory of social anxiety disorder, public-speaking anxiety. This is important as it can reveal more insights and understanding of public-speaking anxiety in general.

Besides the effects of personality, future research could try to enlarge the sample size to verify the results and check for a third variable again, as literature provides insights that coping styles are indeed influenced by personality traits. Thereby, the outcomes of this study can be checked and further investigated. This can be supportive in finding out factors that could influence the development of public-speaking anxiety. Other possible factors or third variables should also be taken into account to gain more understanding of the fear and how to successfully decrease public-speaking anxiety among at-risk groups. For instance, as practising public speaking can improve fluency and accuracy of speaking (Hanifa, 2018), future research could conduct an experiment on how rehearsals influence the level of public-speaking anxiety. Additionally, physical arousals, for example, the heartbeat during a presentation, could be measured as well to increase reliability. Thereby, the limitation of only using self-report measures could be prevented and more insights into other possible determinants can be achieved.

Next to that, future research could try to include inspections of possible effects which are related to the environment while giving a presentation to check for potential environmental factors (Hanifa, 2018). For instance, in an environment where negative relationships between the audience or possible teachers and the individual are existent, public-speaking anxiety can increase (Hanifa, 2018). By considering the environmental context, researchers could gain more knowledge about possible environmental influences next to individual factors. This could be beneficial when thinking of supporting students or people at risk, as more information about specific determinants is known. Hence, support could be provided not only on an individual level but also on an environmental level to limit public-speaking anxiety. Furthermore, by understanding individual as well as environmental factors, research could be conducted on their mutual influences in experiencing public-speaking anxiety.

Conclusion

Concludingly, the study investigated possible internal factors leading to public-speaking anxiety among students. The results provided insights into the effects of the personality traits neuroticism and extraversion and the effects of the third variable coping style. It was found that high levels of extraversion are positively correlated with high levels of public-speaking anxiety. Next, high levels of neuroticism also have a positive relationship with public-speaking anxiety. Nevertheless, no mediation effect of coping style on both personality traits and public-speaking anxiety was found. This research can be treated as a starting point for further research on this topic to analyse personality traits and coping styles more in-depth. Additionally, future research should replicate the study while considering personality trait combinations. Furthermore, third variable analyses should be conducted to find more explanations and effects. Moreover, environmental factors should be checked to be able to adapt to specific needs or rule out the possibility of environmental determinants. Consequently, more knowledge can be achieved on this topic to limit certain risk factors and decrease public-speaking anxiety among students.

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Appendix A

Informed Consent

Project title and Investigators

You are being invited to participate in a research study titled "**Presentation anxiety among students".** This study is being done by **Jenny Diephaus, Thomas Lange, Renske van den brink, and Boutaina Chami** from the Faculty of Behavioural, Management and Social Sciences at the University of Twente.

Purpose
This study investigates students' presentation anxiety, personality, coping, self-esteem, experience, self-efficacy, locus of control and achievement goals. The data will be used for the bachelor thesis of each researcher.

Procedure
When participating in our study, you will first ask to fill in your demographic information and then continue to answer some questions relating to presentation anxiety. Please answer as honest as possible. The study will take you approximately **15-20** minutes to complete.

Participant rights
Your participation in this study is entirely voluntary and you can withdraw at any time.

Risk and benefits
We believe there are no known risks associated with this research study; however, as with any online related activity, the risk of a breach is always possible. To the best of our ability, your answers in this study will remain confidential. We will minimize any risks by treating any responses anonymously, as it is not possible to trace back the answers to you. Therefore, your identity will stay hidden throughout the whole research process.

Consent and authorization provisions
To continue with this study, you need to indicate that you understood and agree with the aforementioned information and give informed consent for participation. Clicking 'I agree and consent to participating in this study' implies that you have been informed sufficiently about the nature and method of this research and that you agree to participate in it

Study contact details for further information:

Student-researchers:

Jenny Diephaus

Thomas Lange

Boutaina Chami

Renske van den Brink

Supervisor:

Martha Kreuzberg

Appendix B

Demographic Questions

Please fill in the following information regarding: gender, student enrolment, type of education and its geographical location, year of studying, age, and nationality.

What do you identify as?

   a. Female
   b. Male
   c. Non-binary / third gender
   d. Prefer not to say

Are you currently a student?

   a. Yes
   b. No

Are you currently studying at a university?

   a. Yes
   b. No, I study at another type of institution

Is the educational institution that you are studying at located in the Netherlands or Germany?

   a. Yes
   b. No, elsewhere

How many years have you been a student for as of now? (This is not limited to your current study, please fill in the total amount of years you have been enrolled in a higher educational study)

   a. Less than 1 year
   b. Between 1 and 2 years
   c. Between 2 and 3 years
   d. Between 3 and 4 years
   e. Between 4 and 5 years
   f. More than 5 years

How old are you?

—

What is your nationality?

    a. Dutch

    b. German

    c. Other, namely:

Appendix C

Public-speaking Anxiety Scale (PSAS)

1. Giving a speech* is terrifying

2. I am afraid that I will be at a loss for words while speaking

3. I am nervous that I will embarrass myself in front of the audience

4. If I make a mistake in my speech*, I am unable to re-focus

5. I am worried that my audience will think I am a bad speaker

6. I am focused on what I am saying during my speech*

7. I am confident when I give a speech*

8. I feel satisfied after giving a speech*

9. My hands shake when I give a speech*

10. I feel sick before speaking in front of a group

11. I feel tense before giving a speech*

12. I fidget before speaking

13. My heart pounds when I give a speech*

14. I sweat during my speech*

15. My voice trembles when I give a speech*

16. I feel relaxed while giving a speech*

17. I do not have problems making eye contact with my audience

* Modified words

Appendix D

50-item IPIP representation of the markers for the Big-Five structure

Items extraversion

1. Am the life of the party.

2. Don't talk a lot.

3. Feel comfortable around people.

4. Keep in the background.

5. Start conversations.

6. Have little to say.

7. Talk to a lot of different people at parties.

8. Don't like to draw attention to myself.

9. Don't mind being the center of attention.

10. Am quiet around strangers.

Items neuroticism

1. Get stressed out easily.

2. Am relaxed most of the time

3. Worry about things.

4. Seldom feel blue.

5. Am easily disturbed.

6. Get upset easily.

7. Change my mood a lot.

8. Have frequent mood swings

9. Get irritated easily

10. Often feel blue.

Appendix E

Brief Approach/Avoidance Coping Questionnaire (BACQ)

1. I say so if I am angry or sad.

2. I like to talk with a few chosen people when things get too much for me.

3. I make an active effort to find a solution to my problems.

4. Physical exercise is important to me.

5. I think something positive could come out of my complaints/problems.

6. I firmly believe that my problems will decrease (and my situation improve).

7. I try to forget my problems.

8. I put my problems behind me by concentrating on something else.

9. I bury myself in work to keep my problems at a distance.

10. I often find it difficult to do something new.

11. I am well on the way towards feeling I have given up.

12. I withdraw from other people when things get difficult.