The Effect of Showing Ability-Related Vulnerability and Emotional Vulnerability on Well-Being, Support and Self-Esteem Among University Students

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Abstract

University students are exposed to psychological distress. Showing vulnerability would be expected to enhance university students' mental health positively. Showing vulnerability is defined as voluntary emotional exposure despite fears and risks of doing that. Although showing vulnerability includes various types and behaviours of it, the distinction within the behaviours has not been made yet. Therefore, categorisation of ability-related vulnerability and emotional vulnerability is created for this study. Hence, the aim of this research is to investigate *"How are ability-related vulnerability and emotional vulnerability related to students' psychological well-being, self-esteem, and support?"* The method of this study is a one-time questionnaire. It consists of a vignette study, questions for both types of vulnerabilities, scales for well-being, support and self-esteem. The sample of this study was 65 University of Twente students recruited by voluntary and snowballing sampling methods. Overall, this study confirms the significant relation between both types of vulnerability and well-being, support and self-esteem. By comparing the strengths of both vulnerabilities towards dependent variables, ability-related vulnerability relates more to well-being and self-esteem, and both types of vulnerability relate to support. The gender differences between males and females, which were expected, are not confirmed in either vulnerability. This research demonstrates the relation between 'showing vulnerability' and various psychological aspects of university students' lives. It suggests the potential benefits of intervention in inducing the behaviours of showing each type of vulnerability for university students to enhance their mental health and quality of life.

Keywords: Showing Vulnerability, Ability-Related Vulnerability, Emotional Vulnerability, Well-being, Support, Self-Esteem, University Students

The Effect of Showing Ability-related Vulnerability and Emotional Vulnerability on Well-being, Support and Self-Esteem Among University Students

University students not only study and enjoy their student life, but also face their academic-related problems, which unarguably affect their well-being negatively. Williams et al. (2017) describe how university student life could be challenging because of long studying hours, the anxiety of failing, high expectations from society and limited social support. As a result, university students tend to have depression, anxiety and stress at higher rates (Bayram & Bilgel, 2008). Hence, it is essential to tackle how university students can lessen the burdens on their well-being during their hectic university life. This paper expands on the impact of showing vulnerability as one of the methods to work on improving their life.

Showing vulnerability can have more benefits and positive effects than individuals expect, whereas individual differences exist in how easily and frequently they show vulnerability, as well as how they perceive the behaviour. Showing vulnerability is defined as an "authentic and intentional willingness to be open to uncertainty, risk, and emotional exposure in social situations despite fear" (Bruk et al., 2018, p. 192). In both the short term and long term, it is a positive influence on people's well-being to uncover individuals' weaknesses, to disclose their honest feelings and to rely on someone else. For example, Bruk et al. (2018) list romantic feelings as an example of disclosing emotions. Its behaviour is linked to building up a future relationship and enjoyment because of it.

Individuals often hesitate to ask others for help because they recognise help-seeking behaviours as disclosing their ineptitude or unfavourable of depending on other people, and fear of affecting their future work opportunities negatively (Liu et al., 2021). However, showing vulnerability brings benefits; in the short term, disclosing about themselves enhances interacting socially with more enjoyment (Sprecher et al., 2013). For long-term benefits, showing vulnerability makes a satisfactory foundation for the human need of belonging (Brown, 2012, as cited in Bruk et al., 2018).

Despite the benefits of showing vulnerability, the differences in how easy to disclose an individual's feelings are confirmed depending on gender and age. For example, females tend to disclose their distress more than males, and younger people express their distress more than older people (Ward et al., 2007). Diamond & Munz (1967) explain that many studies support the gender differences in self-disclosure, which is that females tend to disclose themselves more than

males. On the other hand, some articles argue for no gender differences in self-disclosure (Paul, 1973).

Showing vulnerability can be predicted to enhance various aspects of people's lives mentally. However, this paper only focuses on the relation between showing vulnerability and well-being, perceived social support, and self-esteem. This is because prior research investigates somewhat similar topics, whereas the study of 'showing vulnerability' on these variables has been limited in the field. The following paragraphs expand the definitions of well-being, support, and self-esteem to prevent misunderstanding these variables.

As aforementioned, university students are exposed to stressful lives, which sometimes impede their psychological well-being. Well-being refers to "a person's cognitive and affective evaluations of his or her life" (Diener et al., 2002, p. 63). Ko & Kuo (2009) prove that self-disclosure, which is a moderate parallel behaviour of showing vulnerability, has a significant positive impact on subjective well-being. Hence, it is expected that showing vulnerability also influences well-being positively.

The definition of social support is whether an individual has people who are available to care, love, and support them (Sarason et al., 1983). Moreover, Singstad et al. (2020) state that not only the availability of social support but also the individual's satisfaction with it are important reflective measurements. Regarding the impacts of showing vulnerability on support, it enhances relationships and interaction (Brown, 2015, as cited in Christodoulidi, 2024).

While self-esteem has been defined in various ways in the literature, this paper uses the definition of self-esteem as "the individual's perception of his or her competence, value and worthiness of respect" (Anne Modrcin-Talbott et al., 1998) to proceed with the study. Gonzales (2014) describes that self-disclosure behaviours can enhance self-esteem because they can induce genuine emotions and utterances. Thus, self-esteem can be considered the appropriate variable that relates to showing vulnerability.

Vulnerability has a broad definition with many examples. For this reason, there are potentially different categories of vulnerability in any of the articles the author of this paper found in previous studies. Léoné (personal communication, February 13, 2025) describes that there is the possibility that multiple types of vulnerability exist, based on prior exploratory work with university students.

Hence, this study distinguishes two categories of vulnerability, and it expects that the different types of vulnerability to play a role differently in well-being, support and self-esteem. To further investigate the effects of different types of vulnerability, this paper divided vulnerability into two categories, namely ability-related vulnerability and emotional vulnerability.

This paper defines ability-related vulnerability as showing vulnerable issues or concerns related to tasks, knowledge or ability towards others. An example situation of ability-related vulnerability within the university setting is asking questions about study content to professors for exam preparation and confessing the difficulties of using statistical tools for group project members.

On the other hand, this paper defines emotional vulnerability as behaviours of disclosing personal emotions, such as depressive and anxious feelings, to others. Concrete examples of emotion-related vulnerability are confessing romantic feelings (Bruk et al., 2018), talking about an individual's anxiety for the upcoming exams to friends or asking for mental support from family members regarding university student life or their mental health. Similarly, regarding the individual effects of showing ability-related and emotional vulnerability, this paper tests the interaction effects of both vulnerabilities. Rahman (2018) explains that the interaction effect means that multiple independent variables influence the result simultaneously, and the interaction effect is more complicated, and its effect is not as same as the main effects of individual variables. If an individual scores high on one type of vulnerability, it is positively more related to dependent variables, for instance, well-being. However, once well-being is induced by one type of vulnerability, the additional effects of the other vulnerability are less and limited. Whereas, even if the individual scores low on one type of vulnerability, the other vulnerability will strongly contribute to well-being. Therefore, this study also investigated the individual effects of ability-related vulnerability and emotional vulnerability as well as the interaction effects of both vulnerabilities on well-being, support and self-esteem.

Although the effects of two different types of vulnerability, i.e., ability-related vulnerability and emotional vulnerability, have not yet been investigated differently in previous studies, the benefit of showing vulnerability is confirmed in multiple contexts. Consequently, showing vulnerability leads to an increase in social interaction and the satisfaction of human belonging.

Furthermore, showing vulnerability has benefits for university students' academic life. As benefits for academic and workplace situations, help-seeking behaviours, a specific example of showing vulnerability, increase learning, acquiring skills and performing better, and also lead individuals to have positive job satisfaction (Brooks et al., 2015). Thus, showing vulnerability is effective in both private and academic life settings. Therefore, this study is conducted to measure how and to what extent ability-related vulnerability and emotion-related vulnerability influence university students' well-being, support and self-esteem in the setting of university study life.

Based on the evidence of benefits of showing vulnerability among students this research hypothesises two types of vulnerability and aims to fill in the current gap of knowledge. Therefore, this research aims to answer: *"How are ability-related vulnerability and emotional vulnerability related to students' psychological well-being, self-esteem, and support?"*. This research predicts that both types of vulnerability are related to well-being, support, and self-esteem and have both independent and interaction effects. As indicated previously, these three dependent variables are expected to relate to showing vulnerability.

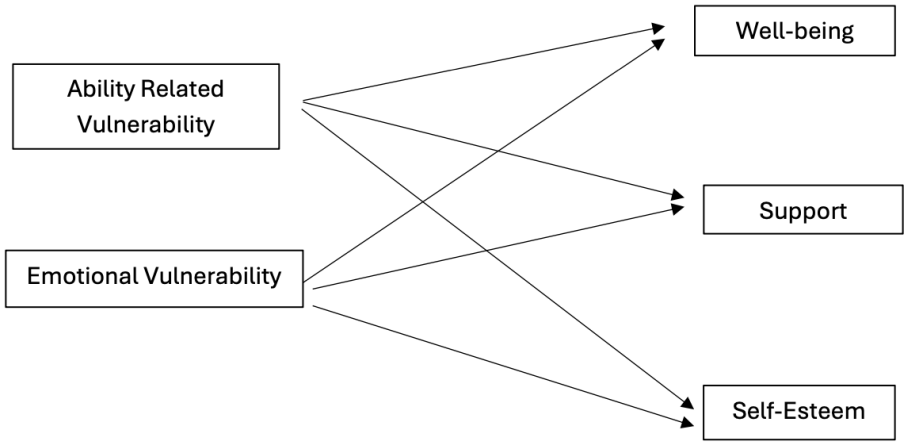
This paper expects that emotional vulnerability relates relatively more to well-being, ability-related vulnerability relates more to self-esteem, and both comparably relate to support. As well-being is inherently related to one's general emotional experience of life, well-being is predicted to relate more to emotional vulnerability. That relates to the individual's life emotionally, rather than ability-related vulnerability, which literally connects to the aspects of the individual's ability. On the other hand, self-esteem has the possibility to be influenced by individual competence and ability itself, so ability-related vulnerability is expected to be directly associated with self-esteem. Unlike well-being and self-esteem, perceiving support can be required and happen in both academic and private life. Hence, support is predicted to relate to both types of vulnerabilities.

Moreover, a prediction of the effect of gender on both types of vulnerability will be tested. As discussed above, the gender difference can be expected in the context of showing vulnerability. It is expected that females score higher than males on both ability-related and emotional vulnerability.

To test these, this study will conduct quantitative survey research that combines formulated and situation-given questionnaires among university students at the University of Twente to measure their extent of showing vulnerability, well-being, support and self-esteem.

Figure 1

The Conceptual Framework of Variables of This Study



Note. Although the conceptual framework does not include readability and simplicity, the interaction effect between ability-related vulnerability and emotional vulnerability is also tested.

Methods

Design

To test the expectations, this between-participant design study was conducted using a quantitative research design. Specifically, it includes two independent variables of ability-related vulnerability and emotional vulnerability. The dependent variables were well-being, support, and self-esteem.

Participants

This study employed 76 participants, of whom 11 were excluded from the study data because they failed to complete the questionnaire. Thus, the final sample was 65 participants. The participation criteria were the University of Twente students who are proficient in English, aged between 18 and 30. The participants gave informed consent to participate in this study.

About the gender distribution of the sample, 18 participants were male (27.70 %), 45 were female (69.20 %), and two participants were of other genders (3.10 %). The average age of participants was 22.25, the standard deviation was 2.60, and the median was 22.00. Participants were of different nationalities: 12 Dutch (18.80%), 25 German (39.10%) and 28 other nationalities (43.10%), distributed over 16 countries. 56 participants were bachelor's students

(86.20%) and nine were master's students (13.80%). In terms of study programmes, 33 were psychology students (50.80%), eight communication science students (12.30%), four business administration students (6.20%), four creative technology students (6.20%) and 16 were from other study programmes (24.30%).

Materials

The survey provided for the participants was created using Quartics, which is software for creating online surveys. The survey consisted of an informed consent form including this study and survey information (see Appendix C), four vignette cases and a questionnaire related to ability-related vulnerability (see Appendix D), four vignette cases and a questionnaire related to emotional vulnerability (see Appendix E), Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (see Appendix F), Multidimensional Scale of Perceived Social Support (MSPSS) (see Appendix G), Rosenberg Self-Esteem Scale (RSES) (Appendix H) and demographic questions (Appendix I).

Vignette Cases

To measure the attitudes and perceptions towards showing vulnerability, a vignette study approach was adopted. Vignette study aims to obtain participants' judgements about select scenarios. Short descriptions of situations or individuals (vignettes) are shown during the survey (Atzmüller & Steiner, 2010). Scenarios were created based on Bruk et al. (2018), and the scenarios include detailed descriptions, risks and benefits of taking action in the scenario.

Four scenarios were created for each ability-related vulnerability and emotional vulnerability that were tailored to the University of Twente student life. The scenarios of ability-related vulnerability were plagiarism in a group project, asking a question in a lecture, asking for help in a data analysis assignment, and singing in front of people (see Appendix D). The scenarios of emotional vulnerability were asking for help while being sick, starting a conversation in the first tutorial of the course, confessing romantic feelings, and asking for support for depression (see Appendix E). To avoid the order of the scenarios influencing responses, the order of the scenarios was counterbalanced for each participant, whether the facet of ability-related vulnerability or the facet of emotional vulnerability was first. Moreover, the order of the four cases was randomised within each vulnerability.

After each case, the participants were asked to answer two questions about the recognition of showing vulnerability as a strength and as an inadequacy. After completing the

full set of the entire flow of ability-related vulnerability scenarios and the full sets of emotional vulnerability scenarios, four general questions about each vulnerability were asked of the participants (see Appendix D; Appendix E). All the questions, as well as the 7-point Likert scale, were adopted to measure the showing vulnerability based on Bruk et al. (2018).

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

In order to measure well-being, the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) is adopted. Tennant et al. (2007) state that WEMWBS is a 14-item questionnaire measuring several aspects of positive well-being. It is a 5-point Likert Scale (none of the time, rarely, some of the time, often, all of the time) (Tennant et al., 2007). The WEMWBS is a widely used and validated scale for well-being.

Multidimensional Scale of Perceived Social Support (MSPSS)

To measure the dependent variable of support, the Multidimensional Scale of Perceived Social Support (MSPSS) was employed. Bruwer et al. (2008) explained that MSPSS is a 12-item inventory measuring the adequacy of social support by family, friends and a special person for the participants. The 7-point Likert scale was used in the original MSPSS. However, this study used a 5-point Likert scale to adjust to the other questionnaires of the study to avoid the participants noticing they answered three different questionnaires.

Rosenberg Self-Esteem Scale (RSES)

For the measurement of self-esteem, the Rosenberg Self-Esteem Scale (RSES) was chosen. The RSES is one of the historical and widespread measurements, including positive and negative self-esteem. The original version was 10 items with a 4-point Likert scale (McKay et al., 2014). For the aforementioned reasons, this study used a 5-point Likert scale to unify the scale with those of the other two questionnaires.

Demographic information questions

For the demographic information questions, questions about gender, age, nationality, current level of education and study programme were included. The purpose of these questions was to account for the potential effects of these factors in the later data analysis sections.

Procedure

The recruitment methods of participants were non-probability sampling, specifically snowballing sampling and voluntary response sampling via social media such as WhatsApp, Instagram and LinkedIn. Psychology and communication science students who used the SONA

system, the participant recruitment platform, to participate in this study could earn 0.25 SONA credits.

The questionnaire of this study was able to be completed in a fully online environment. Hence, the participants could access and join the survey link at any time on their own digital devices such as smartphones, laptops and tablets during the data collection period. Once the participants opened the questionnaire link, they read and agreed to the informed consent form, which also explained the study set-up and the definition of 'showing vulnerability' (see Appendix C). Then, the participants answered the questionnaire in the following order: the vignette cases with questions per case, questions about general vulnerability, WEMWBS, MSPSS, RSES and demographic information questions. The entire process of answering the questionnaire took approximately 15 minutes.

Data Analysis

In order to analyse the collected data, R Studio (version 2924.12.1+563) was used. As a consequence of the questions in the questionnaire being reverse questions, the Likert scale scores were inverted. Specifically, the scores in scenario question one and general question two of the vignette studies for both vulnerabilities (see Appendix D; Appendix E) were flipped. For example, if the original score was one, it flipped to five or seven, depending on the scale. Additionally, the scales of the questions numbered two, five, six, eight and nine of RSES (see Appendix H) were also flipped by the instruction of Rosenberg (1979). Then, the mean score was calculated for each variable namely, ability-related vulnerability, emotional vulnerability, well-being, support and self-esteem.

Next, the reliability of each variable, such as ability-related vulnerability, was calculated. This is because the vignette study cases were created originally for this study, and the number of points for the Likert Scale in the dependent variable questionnaire was adjusted. Tavakol & Dennick (2011) state that Cronbach's alpha measures the internal consistency by the range from zero to one, which shows how much the questions on a questionnaire are intercorrelated. If the score is between .75 to .95, it would be considered an acceptable value. Then, the t-test and correlation test were run to examine the relationship between ability-related vulnerability and emotional vulnerability. After that, the correlation matrix was calculated to reveal the correlation between all the variables. The t-test is conducted to confirm the gap between each gender and each vulnerability, and the correlation test is run to examine how the variables of this study are

correlated with each other. Lastly, linear regressions and analysis of variance to test the effects of ability-related vulnerability and emotional vulnerability for each dependent variable were run. In addition, the interaction effect of ability-related vulnerability and emotional vulnerability on each dependent variable was visualised to reveal the result clearly.

Results

Reliability Analysis of Each Variable

The reliability results were as follows. Ability-related vulnerability consisted of two questions per each of the four cases as well as four general questions related to ability-related vulnerabilities ($\alpha = .85$), emotional vulnerability consisted of two questions per each of the four cases and four general questions related to emotional vulnerabilities ($\alpha = .87$), WEMWBS consisted of 14 items ($\alpha = .89$), MSPSS consisted of 12 items ($\alpha = .91$), and RSES consisted of 10 items ($\alpha = .91$). Since all the scores of this study's variables are within the acceptable range, these questionnaires are considered to measure the underlying constructs acceptably.

Descriptive Statistics of Independent and Dependent Variables

The central tendency was examined by the descriptive statistics (Table 1). The result was $t(63) = 8.085$, $p < .001$, which means emotional vulnerability ($M = 5.40$, $SD = 0.95$) showed significantly higher than ability-related vulnerability ($M = 5.07$, $SD = 0.91$). The further result of the exploratory analysis is in Table 1. Based on the result of the correlation test, which was $r = .71$, $p < .001$, there was a strong correlation between ability-related vulnerability and emotional vulnerability (Schober & Schwarte, 2018) (Figure 2). In this study, the outlier was not removed because of the difficulty in identifying the exact one, although Figure 2 visualised a sample as an outlier.

As well as the correlation between both types of vulnerability, a correlation matrix of all variables was computed to test how each variable correlated with each other (Table 2). This is because the tendency of correlation might have been seen in other results, and revealing the correlation tendency would be helpful to interpret the results of this study. Compared to the correlation between both types of vulnerability, the strength of the correlation between dependent variables was relatively low. However, there were still some correlated tendencies between dependent variables. Well-being and self-esteem are strongly positively correlated

(Schober & Schwarte, 2018). On the other hand, the variable of support is positively moderately correlated with well-being and self-esteem (Schober & Schwarte, 2018)

Table 1

Summary of Descriptive Statistics about Independent Variables and Dependent Variables

	M	SD	Median	Min	Max
Ability-related Vulnerability	5.07	0.91	5.17	1.0	6.83
Emotional Vulnerability	5.40	0.95	5.42	1.0	6.92
Well-being	3.28	0.59	3.36	1.50	4.64
Support	4.01	0.73	4.08	1.50	5.00
Self-Esteem	3.40	0.75	3.40	1.40	4.90

Note. M means mean (average), SD means standard deviation, Min means the minimum score, and Max means the maximum score. The sample size is 65.

Figure 2

Correlation Between Ability-Related Vulnerability & Emotional Vulnerability

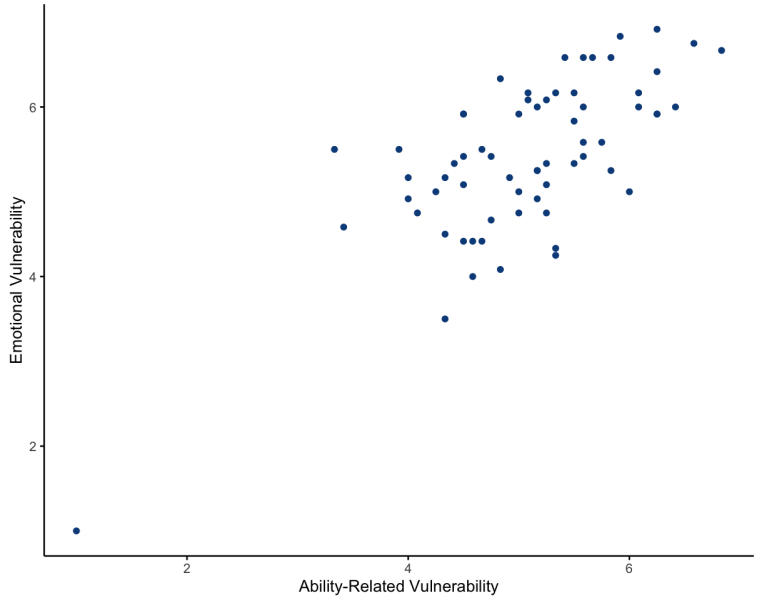


Table 2

Correlation Matrix Table Between Each Variable

Variables	1	2	3	4	5
1. Ability-related Vulnerability	-	.71	.26	.30	.21
2. Emotional Vulnerability	.71	-	.22	.35	.17
3. Well-being	.26	.22	-	.56	.74
4. Support	.30	.35	.56	-	.43
5. Self-Esteem	.21	.17	.74	.43	-

Gender Differences in Both Ability-Related Vulnerability and Emotional Vulnerability

In terms of ability-related vulnerability, male (M = 5.28, SD = 1.26) and female (M = 4.95, SD = 0.72) were not significantly different, t (21.60) = - 1.043, p = .309. For emotional vulnerability, male (M = 5.47, SD = 1.37) and female (M = 5.35, SD = 0.76), so it was also not significantly different, t (21.39) = - 0.369, p = .716.

The Effects of Two Types of Vulnerability and the Interaction Effects

The Showing Vulnerability Effects on Well-being

The results of the regression of the interaction effect of ability-related vulnerability and emotional vulnerability on well-being were statistically significant (R^2 =0.16, F (3,61) = 3.98, p = .012). The effect of only ability-related vulnerability was F (1, 61) = 8.41, b = 0.59, *p* = .005, so a positive effect on well-being. The effect of only emotional vulnerability was F (1, 61) = 5.54, b = 0.43, *p* = .022, so also a positive effect on well-being. It indicated that ability-related vulnerability was given more weight for the well-being variable. The interaction effects between ability-related vulnerability and emotional vulnerability were F (1, 61) = 6.71, b = -0.09, *p* = .012. Hence, the interaction effect is negative. The visualisation of the interaction effects on well-being is illustrated in Figure 3. It showed that if the emotional vulnerability score was average or lower, the ability-related vulnerability was more related to well-being. The individual effects of independent variables are listed in Table 3.

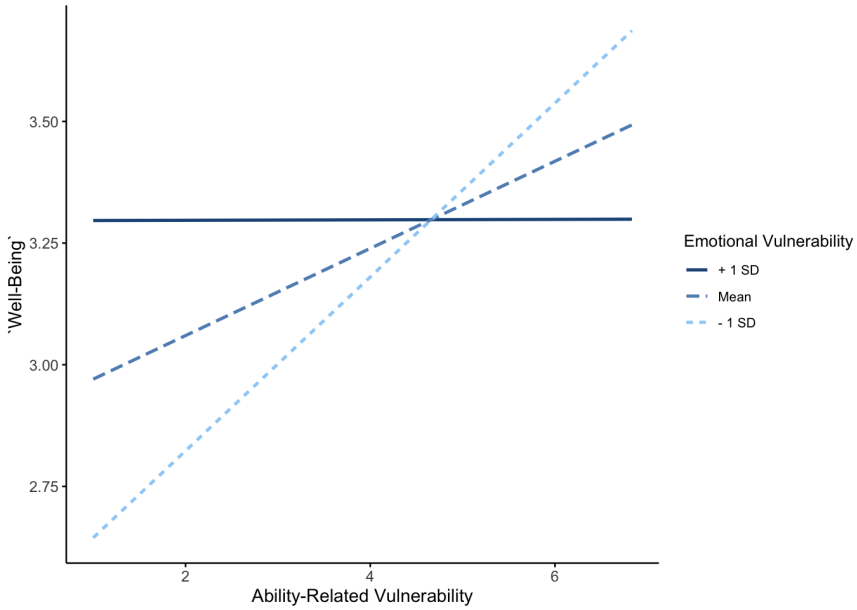
Table 3

T*able of Multiple Linear Regression Analysis for Well-Being*

	b	*SE*	*p*
Intercept	0.53	0.82	.519
Ability-related Vulnerability	0.59	0.20	.005
Emotional Vulnerability	0.43	0.18	.002
Ability-related Vulnerability* Emotional Vulnerability	-0.09	0.04	.011

Figure 3

Linear Plot of the Interaction Effects of Ability-Related and Emotional Vulnerability on Well-being



The Showing Vulnerability Effects on Support

The results of the regression indicated the interaction effect of ability-related vulnerability and emotional vulnerability on support ($R^2 = 0.19$, $F(3,61) = 4.83$, $p = .004$). Moreover, the variance over the effects of ability-related vulnerability and emotional vulnerability on support was as follows. The effect of only ability-related vulnerability was F (1,

61) = 4.99, b = 0.56, p = .029, a positive effect on support. The effect of only emotional vulnerability was F (1, 61) = 7.86, b = 0.63, *p* = .006, so it is also a positive effect on support. Hence, emotional vulnerability was given more weight for the support variable. As the interaction effects between ability-related vulnerability and emotional vulnerability, F (1, 61) = 5.07, b = -0.10, *p* = .003. Table 4 reported the details of the regression analysis for support, and Figure 4 visualized the interaction effects for support, and it displayed that if the score of emotional vulnerability was higher, the ability-related vulnerability was more related negatively to support.

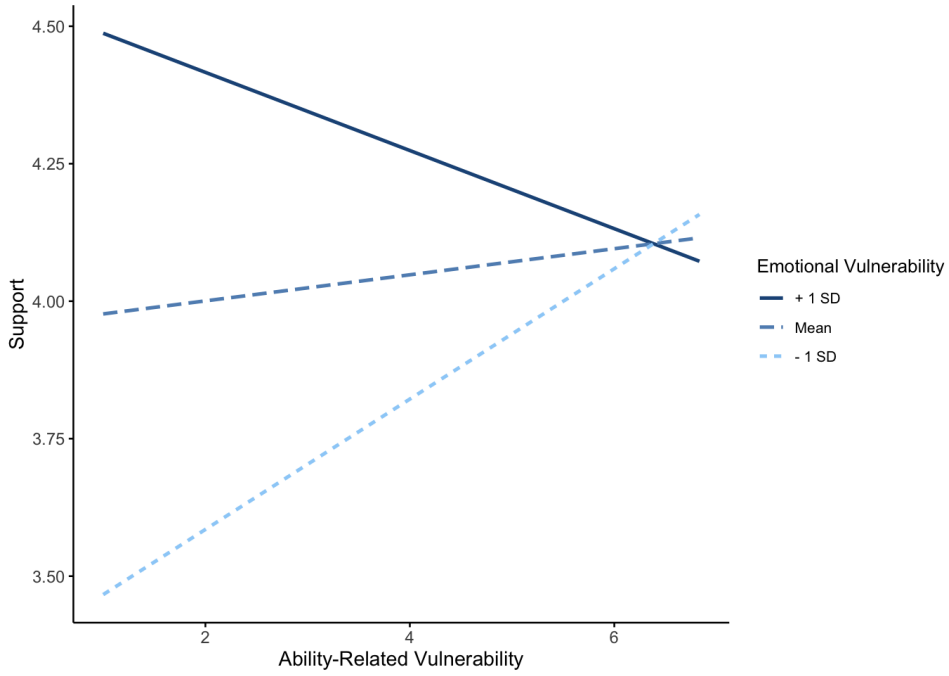
Table 4

T*able of Multiple Linear Regression Analysis for Support*

	b	*SE*	*p*
Intercept	0.53	1.00	.600
Ability-related Vulnerability	0.56	0.25	.029
Emotional Vulnerability	0.63	0.23	.006
Ability-related Vulnerability* Emotional Vulnerability	-0.10	0.04	.028

Figure 4

Linear Plot of the Interaction Effects of Ability-Related and Emotional Vulnerability on Support



The Showing Vulnerability Effects on Self-Esteem

The regression analysis of self-esteem by the interaction effect of ability-related vulnerability and emotional vulnerability was a statistically significant result ($R^2 = 0.12$, F (3,61) =2.88, p =.043). The effect of only ability-related vulnerability was F (1, 61) = 6.54, $p = .013$, the effect of only emotional vulnerability was F (1, 61) = 4.24, $p = .044$, thus ability-related vulnerability was given more weight for the self-esteem variable. The interaction effect between ability-related vulnerability and emotional vulnerability was F (1, 61) = 5.44, $p = .023$. The further details of the regression analysis for self-esteem were explained in Table 5. The visualised interaction effect of two vulnerabilities on self-esteem is in Figure 5. It shows that if it was scored average or lower on emotional vulnerability, the ability-related vulnerability had more positive relation to self-esteem.

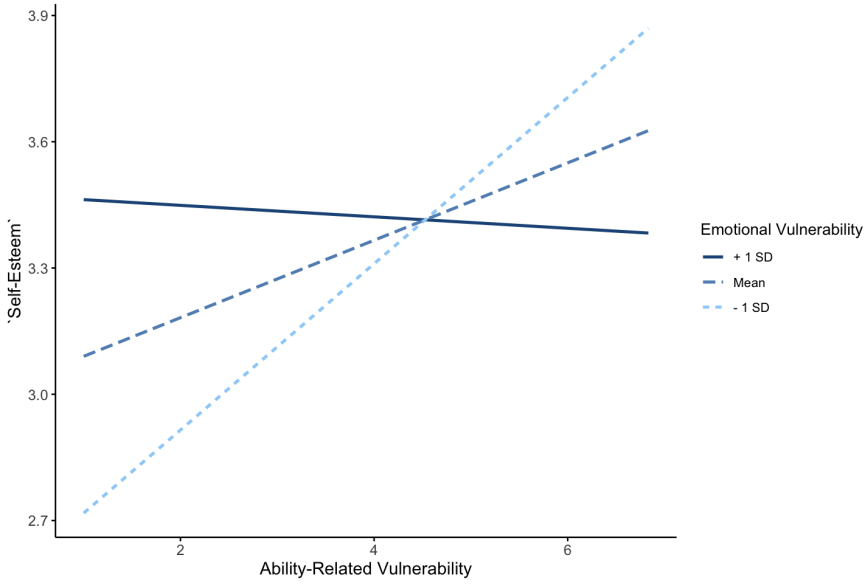
Table 5

T*able of Multiple Linear Regression Analysis for Self-Esteem*

	b	*SE*	*p*
Intercept	0.29	1.08	.787
Ability-related Vulnerability	0.69	0.27	.013
Emotional Vulnerability	0.50	0.24	.044
Ability-related Vulnerability* Emotional Vulnerability	-0.11	0.05	.023

Figure 5

Linear Plot of the Interaction Effect of Ability-Related and Emotional Vulnerability on Self-Esteem



Discussion

This study aimed to investigate how and to what extent showing two types of ability-related vulnerability and emotional vulnerability related to well-being, support and self-esteem among university students. The result of this study demonstrates that showing both ability-related vulnerability and emotional vulnerability relates positively to students' well-being, perceiving social support and self-esteem positively. Therefore, this result shows that the individuals who are more comfortable with and perceive showing vulnerability positively tend to

have higher well-being, more perceived social support and higher self-esteem, and it meets the initial expectation of this paper. Additionally, this research also partially confirmed the relationship between each vulnerability and each dependent variable, however, some results are against the initial expectation. These findings are now discussed in detail below.

Different Effects of Different Types of Vulnerability

Compared with both ability-related vulnerability and emotional vulnerability, ability-related vulnerability is found to be more positively related towards well-being rather than emotional vulnerability (see Table 2). This may be explained by the well-being of university students strongly relates to their academic life and performance. This finding aligns with the study of Williams et al. (2017), describing a number of challenges for university students. Therefore, being able to show vulnerability, such as asking questions or seeking help for their academic work, could contribute to resolving issues experienced by university students by enhancing their well-being. This effect may also be reinforced by the fact that the study was conducted in a university context.

Moreover, the result of this study supports the expectation of self-esteem, indicating that ability-related vulnerability has a more positive relation to self-esteem than emotional vulnerability does to self-esteem (see Table 4). Brooks et al. (2015) state that showing vulnerability leads to demonstrating enhanced performance and increases satisfaction with their jobs, and Anne Modrcin-Talbott et al. (1998) define self-esteem as how they perceive their competence and value. Thus, showing ability-related vulnerability has the possibility to influence increasing competence and satisfaction, and it leads to higher self-esteem.

Both ability-related vulnerability and emotional vulnerability were found to positively relate to support. Although the differences in regression coefficients between the two vulnerabilities on support are the smallest among the three dependent variables, the gap in the strength of regression coefficients still exists in support (see Table 3). Therefore, the findings provide partial support for the anticipated effects of support as proposed in this study. This result reflects that the individuals have higher scores on vulnerability scales, and they tend to have higher scores on support. It corresponds to Sprecher et al. (2013) explanation of self-disclosing inducing enjoyable social interaction. Additionally, this is aligned with the study of Brown (2012, as cited in Bruk et al., 2018), which further illustrates that showing vulnerability builds

satisfactory human belonging, as the study demonstrates a positive relationship between vulnerability and support.

Interaction Effects of Two Types of Vulnerability in Well-being, Support and Self-Esteem

As indicated previously about the correlation tendency of the dependent variables, this tendency is also confirmed in the results of the interaction effect. The interaction effects of ability-related vulnerability and emotional vulnerability show similar effects on well-being and support. However, the interaction effect of the two vulnerabilities towards support is different compared with the other two dependent variables.

In detail, for well-being and self-esteem, if the score of emotional vulnerability is low, the effect of ability-related vulnerability has a stronger positive relation to well-being and self-esteem. It might imply that the effects of ability-related vulnerability would influence well-being and self-esteem sufficiently, so emotional vulnerability does not need to be a higher score to get better well-being and higher self-esteem.

Regarding the interaction effect result for support, the tendency is similar to the other two dependent variables in the case if the score of emotional vulnerability is low. It means that if someone has a higher tendency towards a type of vulnerability, it is not required to have a higher score on the other vulnerability to get higher scores on dependent variables. On the other hand, if the score of emotional vulnerability is high in support, the impact of ability-related vulnerability becomes significantly negative. However, the causality between variables is not tested in this study. Thus, future research is needed to determine the reason why the interaction effect for support works differently from the effect for the other two dependent variables.

Role of Gender in Showing Vulnerability

For the gender differences in vulnerability, the result of the study does not show any significant gender results for both ability-related vulnerability and emotional vulnerability. Rather, the result suggests that, if anything, male scores are higher than female ones on both ability-related vulnerability and emotional vulnerability, and it contradicts the statement of Ward et al. (2007). This may be due to the questionnaires of showing vulnerability (see Appendix D; Appendix E) measure the perception of showing vulnerability rather than asking how frequently the participants actually exhibit such behaviour.

In addition, potentially, males are more likely to present themselves very positively in some vignette cases of this study. Carbone et al. (2024) claim that males tend to perceive self-

disclosure positively when they recognise the self-disclosure as self-enhancement. In this study, some vignette study scenarios, for instance, singing a song in front of people and confessing romantic emotions, might be considered as self-disclosure behaviours that motivate males to enhance themselves. Conversely, there may be no significant gender differences found in this study, which complies with the argument of Paul (1973).

Limitations and Suggestions for Further Study

The study presents certain limitations, with associated suggestions for further research. Firstly, since the recruitment method is voluntary and snowballing, the tendencies and characteristics are likely similar between samples, especially in the male samples. This is because the number of male samples is approximately half of the number of female samples. Hence, the sample might not reflect the population of the male University of Twente students. Thus, the individual response of males greatly reflects in the results. Therefore, the male samples of this study have the possibility to show more vulnerability than the male population at the University of Twente. However, the background reasons were unknown since this study did not inquire further about them, such as their personality and background experiences. Additionally, the outlier of the study affects the result substantially, if the outlier is a male sample.

Moreover, the scenario of the Vignette Studies (see Appendix D; Appendix E) are designed for this study to tailor them to the University of Twente students by using Bruk et al. (2018) paper as a reference, and the quality and applicability of the scenario is not tested and assessed by neither a pilot test nor reflection questions of this study's survey for measuring the quality of scenarios for participants due to the time restriction for finalising this paper.

Consequently, this study is unable to determine the degree to which the participants understand the scenarios. Hence, a recommendation for future research is to check the validity and clarity of the vignette study's scenarios before conducting the actual data collection to enhance the quality of the scenarios. Also, it is suggested to examine whether the categorisation of ability-related vulnerability and emotional vulnerability is distinguished enough by statistical evidence.

Next, the correlation rates between variables are high, so it might be concerning that the variables of this study measure similar and close concepts within the variables. Its assumptions can explain that the reasons why the reliability of all variables is high and acceptable, although

the sample size is not large enough. Hence, more follow-up investigation is required to reveal and distinguish between each variable.

Lastly, during the questionnaire set-up processes, the researcher of this paper unintentionally mixed self-efficacy with self-esteem. In the end, this paper used RSES instead of the initial idea of measuring self-efficacy. As well-being and self-esteem are strongly correlated, the measurement of self-esteem is not independent enough from well-being. Therefore, it is recommended to test the relationships between these two types of vulnerability and self-efficacy to investigate this research's initial plan and to test the effect of the individual independent variable.

Scientific Implications

A remarkable contribution of this study is the proposal of a new categorisation of vulnerability, namely, ability-related vulnerability and emotional vulnerability within the broader concept of showing vulnerability. This potential categorisation will lead to future discussion and research aimed at verifying and refining the distinction.

In addition to that, future research would benefit from exploring the effects and characteristics of other demographic variables, such as nationalities and academic disciplines, on these two types of vulnerability. This study only considers the gender differences due to the small sample size, the skewed characteristics of the sample, and time constraints. However, cultural differences and the tendency of each academic discipline might be expected to influence the results of showing vulnerability. Thus, larger sample sizes and equally diverse samples would be required to conduct future investigations.

Furthermore, it would be insightful to examine how and to what extent the individual differences of the sample's personality and background experiences impact the showing of two types of vulnerabilities. This is because even if the samples share the common demographic information, like gender and nationality, the personality and background experiences are quite diverse and differ between the samples, and it might influence the perceptions and the behaviours of showing vulnerability.

Implications for Practice

Thus far, this paper suggests the potential positive effect of showing vulnerability on well-being, perceiving support, and self-esteem. Some interventions can be invented to enhance the behaviours of showing vulnerability, and they could be meaningful and useful. In order to

conduct the sharing vulnerability activity, creating a safe environment where people feel psychologically safe and have no fears of being judged by other people for sharing their vulnerability is essential (Luthra & Muhr, 2023).

In the case of creating new interventions for showing vulnerability, applying the results of this study could add new and interventional values to existing interventions for showing vulnerability. In detail, the individual approach for each ability-related vulnerability and emotional vulnerability can be considered based on the suggestions from these research results. These interventions can especially support university students because Bayram & Bilgel (2008) state that university students are exposed to the risk of suffering from mental distress, such as depression and anxiety. Hence, inducing the behaviours and attitudes of showing vulnerability effectively would lead to lessening these kinds of psychological distress for university students.

Conclusion

This research shows the significant results of showing vulnerability on three dependent variables, though some of the individual predictions were rejected, which means this paper's predictions are partially correct. Hence, the biggest strength of this research is that this paper suggests a new categorisation of ability-related vulnerability and emotional vulnerability, and it also advocates the potential existence of a difference between these two types of vulnerabilities. Although further investigation is required to reveal and analyse the existence and categorisation of these different types of vulnerabilities, this new suggested categorisation might provide some suggestions and new research towards the study field of 'showing vulnerability'.

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Appendix A

The Use of AI

During the preparation of this work, the author used Mendeley, Grammarly and ChatGPT in order to make the APA 7th in-text citations and reference lists, correcting grammar mistakes and supporting the data analysis procedures. After using these tools/services, the author reviewed and edited the content as needed and took full responsibility for the content of the work.

Appendix B

Flyer and Promotion Text of Participant Recruitment

Appendix C

Consent Form

Dear participant,

Thank you for agreeing to be part of this research project conducted by Moe Ishida, a Bachelor of psychology student at the University of Twente. This project is a part of the Module 12 Psychology Bachelor Thesis, and it aims to investigate how participants' handling of potentially sensitive situations is related to their well-being.

The research will be conducted with an online questionnaire in which you will be asked to read fictional situations and to fill in questions about how you would feel. The cases include behaviours of showing vulnerability, which means “authentic and intentional willingness to be open to uncertainty, risk, and emotional exposure in a social situation in spite of fear” (Bruk et al., 2018, p. 192). Some situations and questions are sensitive and could possibly evoke negative thoughts, feelings or experiences. Please consider carefully whether you feel capable of participating in this study. You can contact the researcher at any time before, during or after the study via the email address below. Additionally, it is fully voluntary to be a participant in this study and you have the right to withdraw from this study at any time without giving a reason.

This questionnaire takes approximately 15 minutes. You will see 8 descriptions of situations, with questions on how you would feel for each, followed by a questionnaire on well-being. Please tick only one answer per question. There are no right or wrong answers since the research solely relies on your feelings and experiences. Therefore, we kindly ask you to consider each situation carefully and answer all questions honestly, as that will give the highest quality data for my research.

When agreeing to participate in this study, you agree to contribute your responses to this research. After submitting the questionnaire, your responses will be anonymized and handled with confidentiality. This ensures that the data cannot be traced back to you as a participant.

The study was approved by the BMS Ethics Committee.

If you have any questions after participating, please feel free to contact the researcher:
Moe Ishida (m.ishida@student.utwente.nl)

And/or the supervisors of this study:
Frank Léoné (frank.leone@utwente.nl)
Mireille D. Post-Hubers (m.d.hubers@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

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

- ☐ Yes
- ☐ No

Appendix D

Vignette Study: Questions Related to Ability-related Vulnerability

Case 1

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente. You have been writing the group project reports with five other students. The report is counted as 100% weight on the grade of the 4ECs project subject. You are assigned the role of writing the introduction section with another member.

One hour before the deadline, you noticed that you had unintentionally forgotten to add quotation marks and in-text citations in the introduction section, and the literal copies from multiple sources will be considered plagiarism. You do not clearly remember which articles you used for the parts, so it takes time to fix it. If you ask for help from other project members, you can still manage to fix it. However, you cannot fix these errors by yourself within an hour. Luckily, no other members noticed the error at this moment. In the end, you decide to disclose the errors and ask for help from other members.

In this case, disclosing the error and asking for help is regarded as showing vulnerability.

Case 2

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente. You are attending a lecture in Waaier lecture hall.

You have a question regarding the lecture presentation contents. Around 100 students are attending this lecture, but nobody has asked questions or spoken up in the lecture so far. You want to know the answer to your question from the professor. However, you also feel too shy to ask questions as the first person in the lecture. You know that the teacher is not responsive by e-mail and often leaves directly after the lecture. In the end, you raise your hand and ask questions

in the lecture.

In this case, asking a question in class is regarded as showing vulnerability.

Case3

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente. You have been working on a data analysis assignment using the statistics software R Studio.

However, you get error messages multiple times when you run the code, and you do not know how to solve the problem. Normally, you can complete your assignment by yourself and with help from online sources, but not this time. Your friends see you as a smart student. Therefore, you hesitate to ask your friends for help with study-related questions, although the error would probably be solved by asking for help from your friends. In the end, you text your friends to help out with the error messages.

In this case, asking for help with an assignment is regarded as showing vulnerability.

Case 4

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente. You are joining a karaoke event organised by your study association.

Around 30 people are participating in the event. Two microphones are prepared to sing. Whoever wants to sing a song, receives the microphone. In general, you like singing, but you do not have much experience with singing in front of people. You do not like to perform anything in front of people. However, the vibe of the event is chilling and warm, so you decide to sing your favourite song at this event.

In this case, singing your favourite song in front of people is regarded as showing vulnerability.

After Each Case, two questions are asked

- 1. By showing my ability-related vulnerability, I am showing my inadequacy
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 2. By showing my ability-related vulnerability, I am showing strengths
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)

After four ability-related cases are answered, the general four questions about ability-related vulnerability are asked.

The next four questions are about ability-related vulnerability.

The definition of ability-related vulnerability is showing vulnerable issues or concerns related to tasks, knowledge or ability towards others.

- 1. Generally, when I show my ability-related vulnerability, other people find it repellent
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4

    - 5
    - 6
    - 7 (Strongly Agree)
- 2. Generally, I should avoid showing my ability-related vulnerability
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 3. Generally, it is good for me to show my ability-related vulnerability
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 3. Generally, when I show my ability-related vulnerability, other people find it desirable
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
    -

Appendix E

Vignette Study: Questions Related to Emotional Vulnerability

Case 1

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente, and you live by yourself.

One day, you feel extremely sick with a high fever and dizziness, and you feel like you cannot get up from bed. However, you do not have any medicines and foods that you can take at home. Therefore, you want to call a close friend to ask them to come over and take care of you. On the other hand, you do not want to bother them because you know they are very busy with their own stuff, and you acknowledge yourself as a grown-up, independent person. In the end, you decide to call them to get some help.

In this case, calling your close friend for help is regarded as showing vulnerability.

Case 2

Read the case description below and subsequently answer the associated questions at the bottom.

You are a first-year student at the University of Twente. Module 1, you have a tutorial session every week, and you check the name list of the tutorial group, and you barely know anyone in the tutorial group.

In the first session, you arrive 5 minutes earlier than the class starts, and some students are already in the classroom. However, the room is silent and nobody talks. You are also nervous about the first class, but also you want to make some friends. You do not have to talk to anyone, and you can also listen to music by wearing earphones. However, you decide to say hi to the students in a room and start the conversation with them.

In this case, saying hi and starting the conversation is regarded as showing vulnerability.

Case 3

Read the case description below and subsequently answer the associated questions at the bottom.

You are a second-year student at the University of Twente. You belong to a sports association. Your sports association has an active and friendly atmosphere, so you know most of the members' names, and you sometimes hang out with the association members for dinner and drinks, for example.

Over time, you start to feel romantic emotions towards one of the members. You find them attractive and are charmed by their character, attitudes, just everything. The other member and you have been good friends for almost two years and belong to the same friend group within the sports association. If you confess your romantic feelings towards the person, you might be able to be in a relationship with the person. However, if the person does not accept your confession, your friendship might be ruined, and the gossip about it will be widespread within the sports association. In the end, you confess your feelings towards the person.

In this case, confessing your romantic feelings is regarded as showing vulnerability.

Case 4

Read the case description below and subsequently answer the associated questions at the bottom.

You are a student at the University of Twente, and you live by yourself.

One day, you feel anxious and depressed, triggered by the upcoming exams. In a normal state, you consider yourself a positive and happy person, and you have never had such a depressed feeling in your life. Therefore, you hesitate to ask for help from your close friends. Also, you do not feel comfortable asking for help from psychologists as well. Although you might be able to get emotional support and comfort by asking for help from either of them. In the end, you call a close friend and make an appointment with a psychologist at the university.

In this case, making an appointment with a psychologist for support is regarded as showing vulnerability.

After Each Case, two questions are asked

- 1. By showing my emotional vulnerability, I am showing my inadequacy
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 2. By showing my emotional vulnerability, I am showing strengths
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)

After four ability-related cases are answered, the general four questions about ability-related vulnerability are asked.

The next four questions are about emotional vulnerability.

The definition of emotional vulnerability is behaviours of disclosing personal emotions such as depressive and anxious feelings to others.

- 1. Generally, when I show my emotional vulnerability, other people find it repellent
    - 1 (Strongly Disagree)
    - 2

    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 2. Generally, I should avoid showing my emotional vulnerability
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 3. Generally, it is good for me to show my emotional vulnerability
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)
- 4. Generally, when I show my emotional vulnerability, other people find it desirable
    - 1 (Strongly Disagree)
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7 (Strongly Agree)

Appendix F

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.

Please click the choice that best describes your experience of each over the last 2 weeks

- 1. I've been feeling optimistic about the future
  - 1 (None of the time)
  - 2 (Rarely)
  - 3 (Some of the time)
  - 4 (Often)
  - 5 (All of the time)

- 2. I've been feeling useful
  - 1 (None of the time)
  - 2 (Rarely)
  - 3 (Some of the time)
  - 4 (Often)
  - 5 (All of the time)

- 3. I've been feeling relaxed
  - 1 (None of the time)
  - 2 (Rarely)
  - 3 (Some of the time)
  - 4 (Often)
  - 5 (All of the time)

- 4. I've been feeling interested in other people
  - 1 (None of the time)
  - 2 (Rarely)

    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 5. I've had energy to spare
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 6. I've been dealing with problems well
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)
- 7. I've been thinking clearly
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 8. I've been feeling good about myself
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 9. I've been feeling close to other people
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 10. I've been feeling confident
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 11. I've been able to make up my own mind about things
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 12. I've been feeling loved
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 13. I've been interested in new things

    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

- 14. I've been feeling cheerful
    - 1 (None of the time)
    - 2 (Rarely)
    - 3 (Some of the time)
    - 4 (Often)
    - 5 (All of the time)

Appendix G

Multidimensional Scale of Perceived Social Support (MSPSS)

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

- 1. There is a special person who is around when I am in need.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 2. There is a special person with whom I can share my joys and sorrows.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 3. My family really tries to help me.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 4. I get the emotional help and support I need from my family.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 5. I have a special person who is a real source of comfort to me.

    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 6. My friends really try to help me.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 7. I can count on my friends when things go wrong.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 8. I can talk about my problems with my family.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 9. I have friends with whom I can share my joys and sorrows.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 10. There is a special person in my life who cares about my feelings.
    - 1 (Strongly Disagree)

  - 2 (Disagree)
  - 3 (Neutral)
  - 4 (Agree)
  - 5 (Strongly Agree)
- 11. My family is willing to help me make decisions.
  - 1 (Strongly Disagree)
  - 2 (Disagree)
  - 3 (Neutral)
  - 4 (Agree)
  - 5 (Strongly Agree)
- 12. I can talk about my problems with my friends.
  - 1 (Strongly Disagree)
  - 2 (Disagree)
  - 3 (Neutral)
  - 4 (Agree)
  - 5 (Strongly Agree)

Appendix H

Rosenberg Self-Esteem Scale (RSES)

Please record the appropriate answer for each item, depending on whether you strongly agree, agree, neutral, disagree, or strongly disagree with it.

- 1. On the whole, I am satisfied with myself.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 2. At times I think I am no good at all.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 3. I feel that I have a number of good qualities.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 4. I am able to do things as well as most people.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 5. I feel I do not have much to be proud of.
    - 1 (Strongly Disagree)

    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 6. I certainly feel useless at times.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 7. I feel that I'm a person of worth.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 8. I wish I could have more respect for myself.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 9. All in all, I am inclined to think that I am failure.
    - 1 (Strongly Disagree)
    - 2 (Disagree)
    - 3 (Neutral)
    - 4 (Agree)
    - 5 (Strongly Agree)
- 10. I take a positive attitude toward myself.
    - 1 (Strongly Disagree)
    - 2 (Disagree)

- 3 (Neutral)
- 4 (Agree)
- 5 (Strongly Agree)

Appendix I

Demographic Information questions

- What gender do you identify as?
    - Male
    - Female
    - Other
    - Prefer not to say
- What is your age?
- How would you describe your nationality?
    - Dutch
    - German
    - Other
- What is your current level of education?
    - Bachelor Student
    - Master Student
    - Other
- What study program are you in? (e.x., Psychology)

Appendix J

Code Used in the R Studio

```
##installing related packages
install.packages("tidyverse")
install.packages("broom")
install.packages("MASS")
install.packages("haven")
install.packages("dplyr")
install.packages("readxl")
install.packages("magrittr")
install.packages("janitor")
install.packages("foreign")
install.packages("utils")
install.packages("psych")
install.packages("DAAG")
install.packages("ggplot2")
install.packages("tidyr")
library(tidyverse)
library(broom)
library(MASS)
library(haven)
library(dplyr)
library(readxl)
library(magrittr)
library(janitor)
library(utils)
library(psych)
library(DAAG)
library(ggplot2)
install.packages("readxl")
library(readxl)


## Import Data
Data0520 <- read_excel("Data0520NewOne.xlsx")
View(Data0520)
Data0428 <- as.data.frame(Data0428)
```

```
#Count The Number of Participants
Data0520 %>%
  summary(Name)
#Omit Data/Participants Who Did Not Finish
Data0520 <- Data0520 %>% filter(!is.na(StudyProgram))
View(Data0520)

Data0520%>%
  summary(StudyProgram)
#Relabel
colnames(Data0520)
Data0520 <- Data0520 %>% rename('VS-Emo1-Q2' = `VS-Emo2-Q2`)
Data0520 <- Data0520 %>% rename('VS-Emo2-Q2' = `VS-Emo2-Q2...21`)
Data0520 <- Data0520 %>% rename('Age' = `Gender_detail`)

#MakeItNumerical
Data0520 <- Data0520 %>%
  mutate(across(c('VS-Cog1-Q1','VS-cog1-Q2','VS-Cog2-Q1','VS-Cog2-Q2','VS-Cog3-Q1','VS-Cog3-
Q2','VS-Cog4-Q1','VS-Cog4-Q2'),
                ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520 <- Data0520 %>%
  mutate(across(c('VS-Cog-Gene1','VS-Cog-Gene2','VS-Cog-Gene3','VS-Cog-Gene4'),
                ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520  <- Data0520  %>%
  mutate(across(c('VS-Emo1-Q1','VS-Emo1-Q2','VS-Emo2-Q1','VS-Emo2-Q2','VS-Emo3-Q1','VS-Emo3-
Q2','VS-Emo4-Q1','VS-Emo4-Q2'),
                ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520 <- Data0520 %>%
  mutate(across(c('VS-Emo-Gene1','VS-Emo-Gene2','VS-Emo-Gene3','VS-Emo-Gene4'),
                ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520 <- Data0520 %>%
```

```
  mutate(across(c('WEMWBS-Q1','WEMWBS-Q2','WEMWBS-Q3','WEMWBS-Q4','WEMWBS-
Q5','WEMWBS-Q6','WEMWBS-Q7','WEMWBS-Q8','WEMWBS-Q9','WEMWBS-Q10','WEMWBS-
Q11','WEMWBS-Q12','WEMWBS-Q13','WEMWBS-Q14'),
            ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520 <- Data0520 %>%
  mutate(across(c('PSS-Q1','PSS-Q2','PSS-Q3','PSS-Q4','PSS-Q5','PSS-Q6','PSS-Q7','PSS-Q8','PSS-
Q9','PSS-Q10','PSS-Q11','PSS-Q12'),
            ~ as.numeric(gsub("[^0-9]", "", .))))

Data0520 <- Data0520 %>%
  mutate(across(c('RSE-Q1','RSE-Q2','RSE-Q3','RSE-Q4','RSE-Q5','RSE-Q6','RSE-Q7','RSE-Q8','RSE-
Q9','RSE-Q10'),
            ~ as.numeric(gsub("[^0-9]", "", .))))

###Reversing Scores
#####Vignette Cases
Data0520 <- Data0520 %>%
  mutate(across(c('VS-Cog1-Q1','VS-Cog2-Q1','VS-Cog3-Q1','VS-Cog4-Q1','VS-Cog-Gene1',
              'VS-Cog-Gene2','VS-Emo1-Q1','VS-Emo2-Q1','VS-Emo3-Q1','VS-Emo4-Q1','VS-Emo-
Gene1','VS-Emo-Gene2'), ~ 8 - as.numeric(.)))

####Self-Esteem
####reverse scores_2,5,6,8,9
Data0520 <- Data0520 %>%
  mutate(across(c('RSE-Q2','RSE-Q5','RSE-Q6','RSE-Q8','RSE-Q9'), ~ 6 - as.numeric(.)))

##Demographic Information

###Age
Data0520 <- Data0520 %>%
  mutate(Age = as.numeric(Age))

age_summary <- Data0520 %>%
  summarise(
    Average = mean(Age, na.rm = TRUE),
```

```
    Median = median(Age, na.rm = TRUE),
    Max = max(Age, na.rm = TRUE),
    Min = min(Age, na.rm = TRUE),
    SD = sd(Age, na.rm = TRUE)
  )
View(age_summary)

###Gender
gender_summary <- Data0520 %>%
  count(Gender) %>%
  mutate(Percentage = round(100 * n / sum(n), 1))

View(gender_summary)

###Nationality
nationality_summary <- Data0520 %>%
  count(Nationality) %>%
  mutate(Percentage = round(100 * n / sum(n), 1))

View(nationality_summary)

Data0520 %>%
  count(Nationality_detail) %>%
  arrange(desc(Nationality_detail))

###Degree
degree_summary <- Data0520 %>%
  count(Degree) %>%
  mutate(Percentage = round(100 * n / sum(n), 1))

View(degree_summary)

###Programme
Data0520 %>%
  count(StudyProgram) %>%
```

```
  arrange(desc(StudyProgram))

Data0520 <- Data0520 %>%
  mutate(StudyProgram = case_when(
    StudyProgram %in% c("psychology", "Psychology", "Positive Clinical Psychology & Technology") ~
"Psychology",
    StudyProgram %in% c("communication science \r\n", "communication" , "communication science",
"Communication science", "Communication Science", "COM", "Bachelor Communication
Science","communication science") ~ "Communication Science",
    StudyProgram %in% c("Creative Technology", "CreaTe") ~ "Creative Technology",
    StudyProgram %in% c("TCS", "Computer Science") ~ "Computer Science",
    StudyProgram %in% c("International Business", "IBA","Business Administration") ~ "Business
Administration",
    StudyProgram %in% c("Educational Sciences", "Education", "Educational Science and Technology") ~
"Educational Sciences",
    TRUE ~ StudyProgram
  ))

program_summary <- Data0520 %>%
  count(StudyProgram) %>%
  mutate(Percentage = round(100 * n / sum(n), 1))

View(program_summary)

###Mean(Average)
####1)Average(mean)
##########AbiOverallSummary,EmoOverallSummary, WEMWBSSummary, MSPSSTotalSummary,
RSESTotalSummary
Data0520$AbiAllMean <- rowMeans(Data0520[, c("VS-Cog1-Q1","VS-Cog2-Q1", "VS-Cog3-Q1", "VS-Cog4-
Q1","VS-cog1-Q2","VS-Cog2-Q2", "VS-Cog3-Q2", "VS-Cog4-Q2","VS-Cog-Gene1","VS-Cog-Gene2", "VS-
Cog-Gene3", "VS-Cog-Gene4")], na.rm = TRUE)
Data0520$EmoAllMean <- rowMeans(Data0520[, c("VS-Emo1-Q1","VS-Emo2-Q1","VS-Emo3-Q1", "VS-
Emo4-Q1","VS-Emo1-Q2", "VS-Emo2-Q2", "VS-Emo3-Q2", "VS-Emo4-Q2","VS-Emo-Gene1","VS-Emo-
Gene2","VS-Emo-Gene3","VS-Emo-Gene4")], na.rm = TRUE)
Data0520$WellBeingAllMean <- rowMeans(Data0520[, c("WEMWBS-Q1","WEMWBS-Q2","WEMWBS-
Q3","WEMWBS-Q4","WEMWBS-Q5","WEMWBS-Q6","WEMWBS-Q7","WEMWBS-Q8","WEMWBS-
```

```
Q9","WEMWBS-Q10","WEMWBS-Q11","WEMWBS-Q12","WEMWBS-Q13","WEMWBS-Q14")], na.rm =
TRUE)
Data0520$SupportAllMean <- rowMeans(Data0520[, c("PSS-Q1","PSS-Q2","PSS-Q3","PSS-Q4","PSS-
Q5","PSS-Q6","PSS-Q7","PSS-Q8","PSS-Q9","PSS-Q10","PSS-Q11","PSS-Q12")], na.rm = TRUE)
Data0520$SelfEsteemAllMean <- rowMeans(Data0520[, c("RSE-Q1","RSE-Q2","RSE-Q4","RSE-Q6","RSE-
Q7","RSE-Q3","RSE-Q5","RSE-Q8","RSE-Q9","RSE-Q10")], na.rm = TRUE)

####Expolatory Analysis
describe(Data0520[, c("AbiAllMean", "EmoAllMean", "WellBeingAllMean", "SupportAllMean",
"SelfEsteemAllMean")])

###Cronbach Alpha
install.packages("ltm")
library(ltm)
install.packages("psych")
library(psych)

list_of_scales <- list(
  AbiVulTotal = Data0520[, c("VS-Cog1-Q1", "VS-Cog2-Q1", "VS-Cog3-Q1", "VS-Cog4-Q1", "VS-cog1-Q2",
"VS-Cog2-Q2", "VS-Cog3-Q2", "VS-Cog4-Q2", "VS-Cog-Gene1", "VS-Cog-Gene2", "VS-Cog-Gene3", "VS-
Cog-Gene4")],
  EmoVulTotal = Data0520[, c("VS-Emo1-Q1", "VS-Emo2-Q1", "VS-Emo3-Q1", "VS-Emo4-Q1", "VS-Emo1-
Q2", "VS-Emo2-Q2", "VS-Emo3-Q2", "VS-Emo4-Q2", "VS-Emo-Gene1", "VS-Emo-Gene2", "VS-Emo-
Gene3", "VS-Emo-Gene4")],
  WellbeingTotal = Data0520[, c("WEMWBS-Q1", "WEMWBS-Q2", "WEMWBS-Q3", "WEMWBS-Q4",
"WEMWBS-Q5", "WEMWBS-Q6", "WEMWBS-Q7", "WEMWBS-Q8", "WEMWBS-Q9", "WEMWBS-Q10",
"WEMWBS-Q11", "WEMWBS-Q12", "WEMWBS-Q13", "WEMWBS-Q14")],
 SupportTotal = Data0520[, c("PSS-Q1", "PSS-Q2", "PSS-Q3", "PSS-Q4", "PSS-Q5", "PSS-Q6", "PSS-Q7",
"PSS-Q8", "PSS-Q9", "PSS-Q10", "PSS-Q11", "PSS-Q12")],
  SelfEsteemTotal = Data0520[, c("RSE-Q1", "RSE-Q2", "RSE-Q4", "RSE-Q6", "RSE-Q7", "RSE-Q3", "RSE-
Q5", "RSE-Q8", "RSE-Q9", "RSE-Q10")]
)

reliability_results <- lapply(list_of_scales, psych::alpha)

cronbach_alpha_values <- sapply(reliability_results, function(x) round(x$total$raw_alpha, 3))
print(cronbach_alpha_values)
```

```
######0613 Rename&Correlation
library(readr)
Data0520N <- read_csv(file.choose())
View(Data0520N)

colnames(Data0520N)
Data0520N <- Data0520N %>% rename('Ability-Related Vulnerability' = AbiAllMean)
Data0520N <- Data0520N %>% rename('Emotional Vulnerability' = EmoAllMean)
Data0520N <- Data0520N %>% rename('Well-Being' = WellBeingAllMean)
Data0520N <- Data0520N %>% rename('Support' = SupportAllMean)
Data0520N <- Data0520N %>% rename('Self-Esteem' = SelfEsteemAllMean)
#####Correlation&T-test
 cor.test(Data0520N$Ability-Related Vulnerability, Data0520N$Emotional Vulnerability, method = "pearson")

install.packages("ggplot2")
ggplot(Data0520N) +
  aes(x = `Ability-Related Vulnerability`, y = `Emotional Vulnerability`) +
  geom_point(colour = "#0c4c8a") +
  theme_minimal() +
  theme(
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.background = element_blank(),
    panel.border = element_blank(),
    axis.line = element_line(color = "black"),
    axis.ticks = element_line(color = "black")
  )

###Correlation Matrix
vars <- Data0520N %>% select(Ability-Related Vulnerability, Emotional Vulnerability, Well-Being, Support,
Self-Esteem)
cor_matrix <- cor(vars, use = "complete.obs", method = "pearson") cor_matrix_fmt <-
format(round(cor_matrix, 2), nsmall = 2) diag(cor_matrix_fmt) <- "-" cor_matrix_fmt

#####Actual Analysis(3 DV)
###Well-being
```

```
####Linear Linear_WellBeing <- lm(Well-Being ~ Ability-Related Vulnerability * Emotional Vulnerability, data = Data0520N) summary(Linear_WellBeing)

####Anova install.packages("car") library(car) AnovaWellBeing <- lm(Well-Being ~ Ability-Related Vulnerability * Emotional Vulnerability, data = Data0520N) Anova(AnovaWellBeing, type = "III")

####Visualisation
 install.packages("interactions")
library(interactions)
interact_plot(
  AnovaWellBeing,
  pred = `Ability-Related Vulnerability`,
  modx = `Emotional Vulnerability`
) +
  theme_minimal() +
  theme(
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.background = element_blank(),
    panel.border = element_blank(),
    axis.line = element_line(color = "black"),
    axis.ticks = element_line(color = "black")
  )

###Support
####Linear
 Linear_Support <- lm(Support ~ Ability-Related Vulnerability * Emotional Vulnerability, data = Data0520N)
summary(Linear_Support)
####Anova
 AnovaSupport <- lm(Support ~ Ability-Related Vulnerability * Emotional Vulnerability, data = Data0520N)
Anova(AnovaSupport, type = "III")

###Visualisation
interact_plot(
  AnovaSupport,
  pred = `Ability-Related Vulnerability`,
  modx = `Emotional Vulnerability`
```

```
) +
  theme_minimal() +
  theme(
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.background = element_blank(),
    panel.border = element_blank(),
    axis.line = element_line(color = "black"),
    axis.ticks = element_line(color = "black"),
    axis.title = element_text(size = 12),
    axis.text = element_text(size = 10)
  )

###Self-Esteem
####Linear
Linear_SelfEsteem <- lm(Self-Esteem ~ Ability-Related Vulnerability * Emotional Vulnerability, data =
Data0520N) summary(Linear_SelfEsteem)

####Anova
 AnovaSelfEsteem <- lm(Self-Esteem ~ Ability-Related Vulnerability * Emotional Vulnerability, data =
Data0520N) Anova(AnovaSelfEsteem, type = "III")

###Visualisation
interact_plot(
  AnovaSelfEsteem,
  pred = `Ability-Related Vulnerability`,
  modx = `Emotional Vulnerability`
) +
  theme_minimal() +
  theme(
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    panel.background = element_blank(),
    panel.border = element_blank(),
    axis.line = element_line(color = "black"),
    axis.ticks = element_line(color = "black"),
    axis.title = element_text(size = 12),
```

```
  axis.text = element_text(size = 10)
 )

####AbilityVulnerability = Gender+nationality
 #####Linear
Linear_DemoAbi <- lm(AbiAllMean ~ Gender + Nationality, data = Data0520 ) summary(Linear_DemoAbi)
#####Anova
 Anova(Linear_DemoAbi, type = "III")

####Linear Regression
###EmotionalVulnerability = Gender+Nationality
#####Linear
Linear_DemoEmo <- lm(EmoAllMean ~ Gender + Nationality, data = Data0520) summary(Linear_DemoEmo)
####Aova
 Anova(Linear_DemoEmo, type = "III")

####T-test for Gender
DataGenderMF <- subset(Data0520, Gender %in% c("Male", "Female"))
t.test(AbiAllMean ~ Gender, data = DataGenderMF)
t.test(EmoAllMean ~ Gender, data = DataGenderMF)
aggregate(AbiAllMean ~ Gender, data = DataGenderMF, FUN = sd)
aggregate(EmoAllMean ~ Gender, data = DataGenderMF, FUN = sd)

###Download The Data0428_Clean File###
write.csv(Data0520, "Data0520Fixed.csv", row.names = FALSE)
getwd()
```