

**Exploring Gender Differences in Negative Affect and Emotion Regulation**

Mara Hoppe

s4021487

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group 35

Supervisor: dr. Anja Ernst

Second evaluator: dr. Anita Keller

In collaboration with: Christiana Paraschiv, Hendrik Meier, Jan Weinhardt, Paul-S. Ehlers,  
Sarah Moll

January 25, 2023

**Abstract**

Emotion dynamics— a new concept that acknowledges that emotions, which can influence each other, fluctuate across time and situations— is guided by principles, such as emotional inertia and regulation. As it is known that differences in these emotional patterns influence psychological well-being, the study of individual differences in emotion dynamics arises. Which patterns make some individuals' emotional functioning more adaptive than others? In the current study we investigate whether there are gender differences in negative affect and emotion regulation. Based on past literature, we hypothesized that women experience higher levels of negative affect and have less access to emotion regulation strategies compared to men. We used a correlational study (N = 128 ) in which the participants were asked to complete an online survey. Results did not confirm previous findings that women tend to experience more negative emotions than men as the effect was nonsignificant. However, we found significant effects to support our second hypothesis suggesting that women tend to have less access to emotion regulation strategies. Limitations as well as theoretical and practical implications are discussed.

*Keywords:* Emotion dynamics, gender differences, negative affect, emotion regulation

### **Exploring Gender Differences in Negative Affect and Emotion Regulation**

‘Life is like a rollercoaster.’ Just as this metaphor alludes to, we all experience emotional ups and downs in the course of life. In research, emotions were once thought to be relatively stable or brief states. Only recently research began to acknowledge that emotions can fluctuate across time and situations as well as influence each other (Kuppens & Verduyn, 2017). Emotional variability and inertia as well as emotion co-variation are all subjects of a newly established domain called *emotion dynamics*. It comprises the study of the ‘trajectories, patterns, and regularities with which emotions (...) fluctuate across time, their underlying processes, and downstream consequences’ (Kuppens & Verduyn, 2015, p.72). In particular, it focuses on the experimental, physiological and behavioral elements that contribute to the development of an emotion (Kuppens & Verduyn, 2015). In their paper, Kuppens & Verduyn (2017) introduce important principles of emotion dynamics, one of which is emotional inertia. This principle describes the tendency of emotions to carry over from one moment to another, a resistance to change. An example would be a wife getting upset about a message she received at this moment and then proceeding to be upset when she talks to her husband about an unrelated topic. Furthermore, Kuppens & Verduyn (2017) also discussed the principle of regulation, asserting that emotions are regulated continuously to adjust and maintain the desired state. This can be thought of as a child suppressing his or her feelings of being upset about having to behave appropriately in church.

Evidence shows that there is a considerable relationship between psychological well-being and the way individuals experience negative and positive emotions (Houben et al., 2015; Kuppens & Verduyn, 2017). Current research is also shedding light on the notion that different patterns of emotional fluctuation contribute to individual variance in dealing with environmental changes as well as the regulation of emotions (Houben et al., 2015). Emotions and emotion regulation seem to be critical aspects in various forms of psychopathology, in

particular mood disorders (Kuppens & Verduyn, 2017), borderline personality disorder (Jazaieri et al., 2013) anxiety (Mennin et al., 2007) and bipolar disorders (Johnson, 2005). Maladaptive patterns as those found in depression and bipolar disorders, which are characterized by high levels of emotional variability and emotional inertia (Kuppens & Verduyn, 2017), are associated with lower levels of psychological well-being (Houben et al., 2015).

Studying all the different aspects, such as emotional inertia or frequency, for example, enables us to get more insight into the emotional rollercoaster we experience in our lives. It allows us to investigate what generates adaptive and maladaptive functioning. Focusing on individual differences allows us to investigate what makes some people's emotional functioning more adaptive than others. Since negative affect is prevalent in all of our lives, investigating gender differences might allow us to improve the identification of individuals with heightened vulnerabilities for mood disorders. Furthermore, emotion regulation strategies, particularly dysfunctional ones, appear to be associated with various psychopathologies (Aldao et al., 2010; Kuppens & Verduyn, 2017; Nolen-Hoeksema & Aldao, 2011). Hence, research on gender differences might give insight into why one kind of mental disorder is more prevalent in one gender than in the other. Finally, the findings might help improve and tailor interventions to individual needs. As a result, the current study is particularly interested in gender differences in negative affect and emotion regulation.

### **Gender and Negative Affect**

The American Psychology Association (APA Dictionary of Psychology, n.d.) defines *negative affect* as an internal emotional state caused by failures to attain a goal, or failures to avoid potential threats. This state can also occur when the individual senses a general dissatisfaction with the current situation. It refers to negative feelings, such as fear, sadness,

anxiety, and anger, as well as guilt, shame, and other unpleasant emotions. All these emotions can be categorized as feelings of emotional distress (Stringer, 2013).

Previous research found gender differences in two concepts that promote the dynamic approach by suggesting that individuals differ in the number of emotions they feel (frequency) as well as how intense the emotions are perceived (intensity) (Kuppens & Verduyn, 2017). Women tend to experience more frequent and intense negative emotions than men (Brebner, 2003; Fujita et al., 1991). However, Fujita et al. (1991) argued that, even though women scored higher on negative emotions, there was no statistically significant difference in global happiness. Thus, they suggested that the negative and positive emotions balance each other out. Nonetheless, there is a general tendency for women to report more mental health problems than men (Otten et al., 2021). Upon closer inspection of mental health disorders centered around negative emotions, for example depressive disorders (American Psychiatric Association, 2022), it is evident that depression (Otten et al., 2021) or depressive symptoms (Otten et al., 2021) were more frequently reported by women than men. Additionally, looking at the more extreme, Major Depressive Disorder (MDD), we see that more women are affected as well (Otten et al., 2021), in terms of the number of symptoms, symptom severity, and subjective distress (Seney & Sibille, 2014).

It is important to highlight that socialization might play a key role when looking at the differences in emotional expression between men and women (Brebner, 2003; Tamres et al., 2002). Evidence suggests that society teaches women to be more emotional and men to be less emotional through role modeling (Brebner, 2003). Hence, findings have to be interpreted with caution: Even though women report more issues, this does not mean that women experience more or men experience less of these reported issues.

Nolen-Hoeksema (1987) proposed an explanation for the found gender differences in depression which emphasizes the significance of rumination. This explanation was refined

when Nolen-Hoeksema (1991) published 'The response styles theory' (RST), which states that the intensity of distress, in particular in depression, is mediated by rumination through various mechanisms, such as interference with problem-solving and instrumental behavior, reduction of social support and enhancing the influence of depressed mood in thinking (Nolen-Hoeksema, 1991). Rumination is a 'form of preservative cognition that focuses on negative content, generally past and present, and results in emotional distress' (Sansone & Sansone, 2012, p. 29). It is a form of cognitive inflexibility which knowingly contributes to developing and maintaining mood disorders, particularly depression (Nolen-Hoeksema et al., 2008). Koval et al. (2012) not only discovered a link between rumination and the previously mentioned principle of emotional inertia, but also a relation between rumination and negative/sad affect.

Looking at gender differences, the literature suggests that women might have a higher tendency to ruminate which contributes to the amplification of depressive episodes, whereas men tend to use more behavioral responses, such as distraction, that help decrease depressive episodes (Nolen-Hoeksema, 1987; Tamres et al., 2002). Supporting this theory, Thomson et al. (2005) presented results indicating that especially young women scored higher in negative emotions, such as anxiety and sadness, due to their ruminative tendencies. A possible explanation for the increased engagement in rumination was proposed by Nolen-Hoeksema & Jackson (2001), in which a combination of three variables, namely perceived lack of control over emotions, low perceived mastery of events, and feelings of responsibility for the emotional tone of relationships, might mediate the gender differences (Nolen-Hoeksema & Jackson, 2001).

In sum, the literature suggests that women tend to report higher negative affect (Brebner, 2003; Fujita et al., 1991) and generally more mental health problems, in particular

depressive and anxiety symptoms (Otten et al., 2021). Rumination might be an important factor in this relationship (Nolen-Hoeksema, 1991; Nolen-Hoeksema, 1987).

### **Gender and Emotion Regulation**

The ability to be aware of, comprehend, and accept one's own emotions is referred to as *emotion regulation* (Gratz & Roemer, 2004). According to English et al. (2016), the selection of the emotion regulation strategy depends on the goal being pursued, both pro-hedonic and instrumental being equally common, as well as the social context— whether one is alone or with other people. Successful emotion regulation allows for control over behaviors when experiencing negative emotions as well as the modification of strategies for effective emotion management (Gratz & Roemer, 2004). On the opposite end of the spectrum lies the construct of *emotional dysregulation*. It is defined by a variety of problematic ways of managing emotions, such as rumination, avoidance, or suppression (Malesza, 2019). These three strategies have been repeatedly theorized as risk factors for psychopathology (Aldao et al., 2010). In both genders, maladaptive emotion regulation strategies were associated with higher levels of depressive symptoms, whereas adaptive strategies did not have the same effect (Nolen-Hoeksema & Aldao, 2011).

Existing literature suggests that there are clear gender differences in emotion regulation (Malesza, 2019; Nolen-Hoeksema & Aldao, 2011; Tamres et al., 2002), even in adolescents (Hampel & Petermann, 2006). A closer examination of past findings suggests that women seem to engage in both, adaptive and maladaptive strategies, more frequently compared to men (Nolen-Hoeksema & Aldao, 2011; Tamres et al., 2002) This could be supporting evidence for the female tendency of being aware and willing to engage in emotions (Fujita et al., 1991). At first, findings by Malesza (2019) that suggest that women have less access to regulatory strategies—and thus greater difficulties with emotion regulation than men— seem contradictory to the results by Tamres et al. (2002) and Nolen-Hoeksema &

Aldao (2011). However, women may utilize strategies to regulate their emotions more frequently but only use one or two, for example rumination, for most occasions. This example illustrates that the findings can be compatible. Additionally, when experiencing negative emotions, women are less able to engage in goal-directed activities than men (Malesza, 2019). These findings emphasize the individual differences in how emotions are or are not regulated, returning to the dynamic principle of regulation. Emotional dysregulation entails the use of maladaptive coping strategies which is a main feature of emotional dysfunction.

In summary, women have less access to emotion regulation strategies (Malesza, 2019) and show a higher tendency to use maladaptive coping strategies (Hampel & Petermann, 2006), such as rumination (Nolen-Hoeksema, 1987), as well as adaptive strategies, such as seeking social support, emotional reasoning and positive self-talk (Tamres et al., 2002) in comparison to men.

### **Present Study**

The present study explores the dynamic features of ‘frequency of emotion’ and ‘emotional regulation’ using a continuous approach. The first aim is the replication of previous findings regarding gender differences in negative affect. Based on previous findings (e.g. Brebner, 2003; Fujita et al., 1991), we hypothesized that women experience more negative emotions, in particular sadness, than men. The second aim of the study is the exploration of gender differences in emotion regulation. Even though past literature suggests that women seem to engage in emotion regulation strategies more frequently (Nolen-Hoeksema & Aldao, 2011; Tamres et al., 2002), findings also indicate women’s tendency to have less access to regulatory strategies than men. Females might use regulatory strategies more frequently when confronted with emotional experiences but may be restricted in the number of different strategies they can access. That may mean, a woman uses rumination for every instance which might not be effective for every emotional experience



she encounters. This might explain why women have difficulty regulating their emotions (Malesza, 2019). Therefore, the hypothesis that women have less access to emotion regulation will also be further explored.

## Method

### Participants

The sample consisted of 130 participants with ages between 18 and 68 ( $M = 25.85$ ,  $SD = 10.19$ ), specifically 91 females from 18 to 68 years ( $M = 25.21$ ,  $SD = 9.65$ ), 37 males that were 19 to 58 years old ( $M = 27.59$ ,  $SD = 11.57$ ) and one ‘Non-binary/Third gender’ with an age of 25. Finally, one participant who preferred to withhold gender-related information had the age of 20 years. All participants were citizens of the European Union (EU). An a priori power analysis was conducted using G\*Power version 3.1.9.7 (Faul et al., 2007) to detain the minimum sample size to test the study hypotheses. The analysis was based on a correlational test, as it seemed to be the most suitable test for conducting a between-subject comparison within our sample. Results indicated that a sample of 64 participants was required to achieve 80% power for detecting a small effect size ( $d = .30$ ) at a significance criterion of  $\alpha = .05$ .

### Research Design and Procedure

The study was approved by the Ethical Committee Psychology of the University of Groningen (ECP). It was prefaced with an informed consent form and consisted of a cross-sectional questionnaire that was used during one online study. It was also allowed for the participants to quit the study at any given time for no specified reason. Participants were informed about the anonymity of their responses, with no personally identifiable information, such as IP addresses, being collected.

The recruitment procedure was carried out by the students from the ‘Individual Differences in Emotion Dynamics’ bachelor’s thesis group at the University of Groningen, who distributed the study announcement in WhatsApp groups, Instagram and Facebook. No

compensation was offered in exchange for participating. Prior to data collection, participants were provided with information about the study after which they could either choose to give consent or discontinue the study. The other requirements for the participation and data collection were being older than 16 years old, and being a citizen of the European Union. Finally, participants were informed about potentially sensitive topics, for instance risky behavior and parenting styles, before taking part in the study.

### **Stimuli, Material, and/or Apparatus (as appropriate)**

The data for our current study was collected by means of a Qualtrics questionnaire consisting of 32 items taking about five to 10 minutes to complete, developed by the authors (Appendix A). As the items currently lack professional peer review, their reliability and validity are addressed in the following sections of this paper.

In general, the main themes addressed in the questionnaire were parenting style, coping behavior, emotion regulation, risky behavior, personality assessment, negative affect, and emotion augmentation. Most questions used a slider-scale format from zero to 100, with labels added at the middle point, as well as the end points of the scale. This format was adopted to facilitate intuitive and comprehensive answering from participants, as well as for analysis purposes. An attention check was included, and the questionnaire items were spread and grouped over multiple pages to help maintain participants' attention.

### ***Negative Emotions Scale***

Two items were developed to measure negative affect and melancholia. In this case, participants had to state how frequently they experienced the aforementioned emotional state within the past month. This was assessed on a continuous scale where zero represented 'never' and 100 stood for 'always'. For the first hypothesis of the current study, the only item that was of particular importance was 'Q26' assessing the frequency of negative affect 'How often did you experience negative emotions, e.g. sadness?' consequently we only used this

one item in the analysis. For the sake of simplicity, we labeled this variable ‘frequency of negative affect’.

### ***Emotion Regulation Scale***

The questionnaire contained six items assessing emotion regulation. For each item, participants stated to what extent they agree or disagree with the presented statement (e.g., “If I am sad, the feeling passes quickly and I do not feel sad anymore”). The questions were displayed on a slider with zero being ‘strongly disagree’ and 100 indicating strong agreement. Two of the six items assess the accessibility of emotion regulation strategies, ‘When I’m sad, I know exactly what to do to resolve this feeling’ and ‘When I’m sad, I believe there is nothing I can do to make me feel better’. Those were used to investigate hypothesis 2.

### **Variables description**

The ‘frequency of negative affect’ was used for the first hypothesis suggesting that women experience more negative affect than men. For the second hypothesis proposing that women have less accessibility to emotion regulation strategies compared to men, we combined the remaining two variables from the emotion regulation scale. This was done by reverse coding Q17 (into reverseQ17) and then recoding them by computing a new variable with the command ‘100 - Q17\_1’, namely MergeQ17\_Q21, by taking the average between Q21 and reverse Q17. In further analysis, we will refer to the new variable as ‘accessibility to emotion regulation strategies’.

### **Reliability and Validity**

To establish the reliability of the questionnaire items we calculated Cronbach’s alpha using items from other members of the research group in addition to the ones relevant to this study. For accessibility to emotion regulation strategies, we found Cronbach’s alpha of .778 (using Q17(reverse coded), Q18, Q21). We did not include Q18 in our conceptualization of the variable accessibility to emotion regulation strategies, because it taps into a similar but

slightly different aspect of emotion regulation. For negative affect, we found a Cronbach's alpha of .791 (using Q13, Q16 (reverse coded), Q17, Q26, Q27). We only used Q26 to measure the frequency of negative affect, because it exactly measures how much negative emotion the individual felt in the last months whereas the other variables measure other specific aspects, such as emotional inertia. According to Taber (2017), both values can be considered fairly high. Looking at the validity, we found a significant correlation between the two items measuring emotion regulation (Q17 (reverse coded), Q21) ( $r = .58, p = <.001$ ) (see Appendix B, Table 1). Moreover, negative affect shows a significant negative correlation to the combined variable (MergeQ17\_Q21) measuring emotion regulation ( $r = -.5, p = <.001$ ) (see Appendix, Table 1).

### **Data Analysis**

Both of the hypotheses investigated gender differences, thus comparing two means of two independent populations, namely female and male. In order to investigate the primary hypothesis, we analyzed the data using two independent samples *t*-tests.

### **Results**

After checking the data for participants that did not meet the exclusion criteria of living outside the EU, we had a sample of 130 participants. Thus, out of a total of 54 disregarded participants, 10 (18.52%) were brought directly to the end of the questionnaire, and 44 (81.48%) failed the attention check. Furthermore, as we were interested in gender differences, we excluded one participant that preferred to withhold gender-related information. Lastly, one participant selected the option 'Non-binary/Third gender' which also cannot be used as it could not be incorporated into any inferences. In the end, the remaining sample consisted of 128 participants which were used in the data analysis.

### **Post-hoc Power Analysis**

We computed the power for the two independent samples  $t$ -tests which will be used in the analysis. Beginning with ‘Frequency of negative affect’ ( $N(F) = 89$ ;  $N(M) = 34$ ) assuming a true effect size of .72 and  $\alpha = .05$  resulted in a high power of .97. The second variable ‘accessibility to emotion regulation strategies’ had a power of .95 ( $N(F) = 91$ ;  $N(M) = 37$ ) given an effect size of .65 and  $\alpha = .05$ .

### Descriptive Statistics

For both variables, the descriptive statistics (mean, standard deviation, and standard error) are displayed in Table 1.

**Table 1**

*Descriptive Statistics (Mean, Standard Deviation, Standard Error, Sample Size)*

		MergeQ17_Q21: Accessibility of emotion regulation strategies	Q26_1: Frequency of negative affect
N	Valid	128	128
	Missing	0	0
Mean		57.45	42.06
Std. Error of Mean		1.95	2.00
Std. Deviation		22.04	22.67

Striking are the varying sample sizes (Table 2) which can be attributed to the fact that females might have been more willing to fill out the questionnaire. Having a look at Table 2, it is evident that there are large differences between the sample sizes of the two groups for each variable. Upon closer inspection, we see that the sample size of the female group for each variable is more than twice as big as the male sample size. Table 2 displays comparisons between the male and female descriptive statistics ( $N$ ,  $M$ ,  $SD$ ) for each variable. It shows that the difference between the means for ‘frequency of negative affect’ ( $= 3.39$ ) seems to be the

smallest, followed by the difference for ‘accessibility to emotion regulation strategies’ (= -23.236).

**Table 2**

*Descriptive Statistics (Mean, Standard Deviation, Sample Size) for all Variables by Gender*

	Male			Female		
	N	M	SD	N	M	SD
MergeQ17_Q21	37	66.87	18.63	91	53.63	22.25
Q26_1	37	39.65	24.91	91	43.04	21.76

### Inferential Statistics

#### *Assumptions*

The most fitting analysis was the independent samples *t*-test, therefore the assumptions that had to be tested were: Assumptions of independence, level of measurement, normality, and equality of variances of the two relevant variables as well as the absence of outliers. The assumption of independence was met by choosing a cross-sectional study design. Moreover, the assumption of level of measurement was met by the use of a continuous scale ranging from zero to 100. Checking for normality using the Shapiro-Wilk test (Table 3), we found a significant *p*-value for the female sample in MergeQ17\_Q26 ( $W(F) = 0.97, p < .019$ ) and Q26 ( $W(M) = 0.92, p = .010$ ;  $W(F) = 0.97, p = .034$ ) for both groups which indicated non-normality. Nonetheless, the distributions of each variable (Figure 1) and the distributions of each variable when split by the variable gender (Appendix B, Figure 1) did not seem to indicate violations of the assumption of normality.

**Table 3**

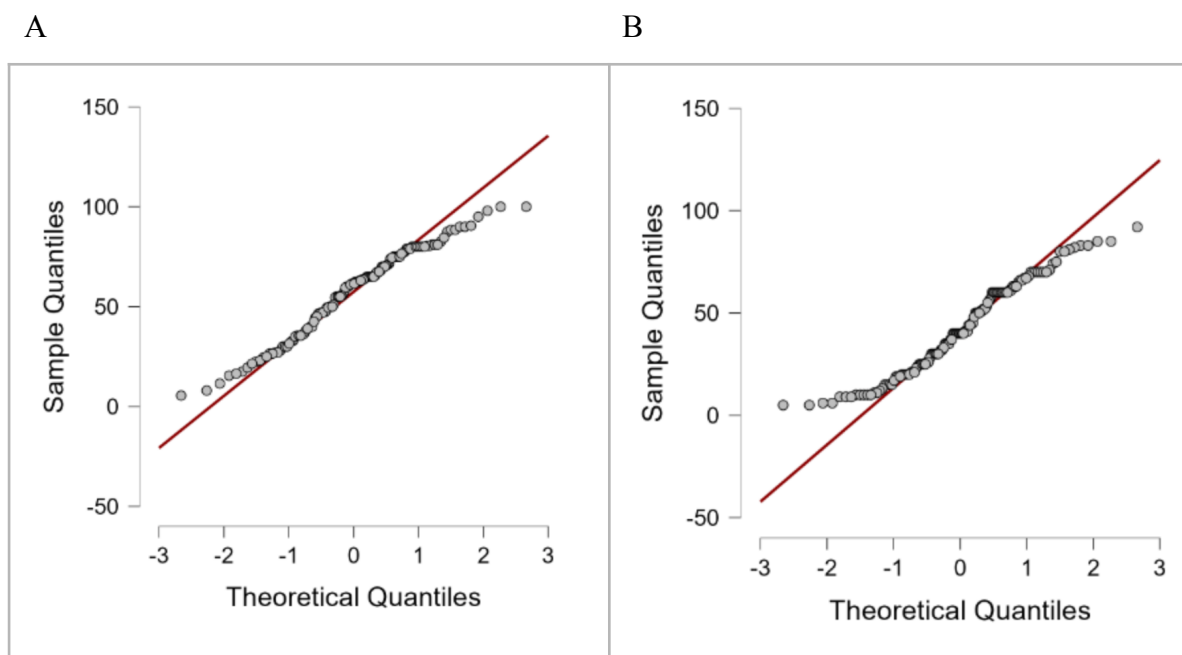
*Test of Normality (Shapiro-Wilk)*

		W	<i>p</i>
MergeQ17_Q21	Male	.97	.465
	Female	.97	.019
Q26_1	Male	.92	.010
	Female	.97	.034

*Note.* Significant results suggest a deviation from normality.

**Figure 1**

*Q-Q plots of Accessibility of Emotion Regulation Strategies and Frequency of Negative Affect*



*Note.* A) Accessibility to emotion regulation strategies

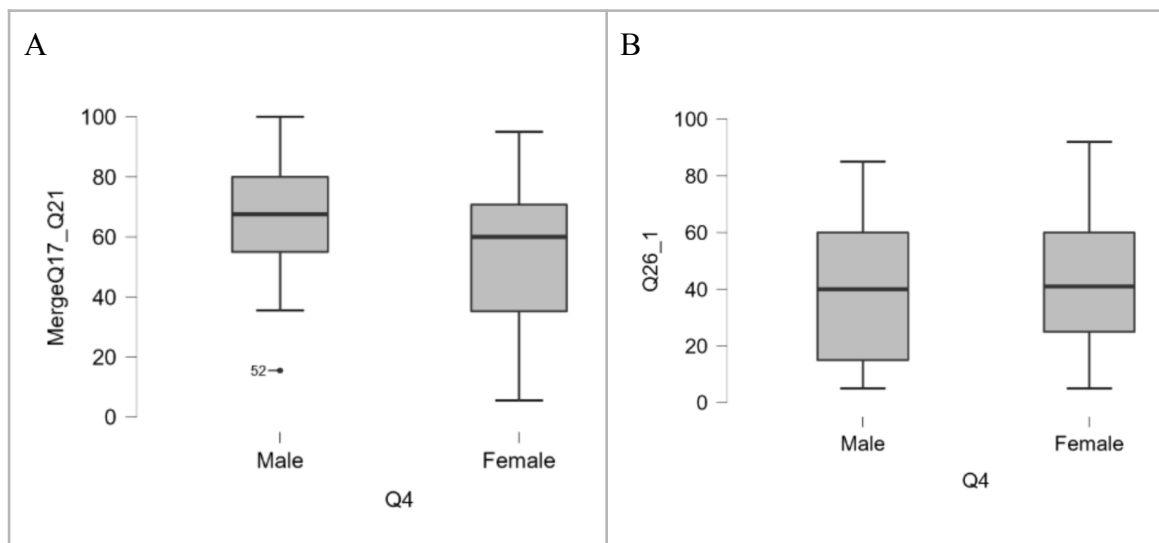
*Note.* B) Frequency of negative affect

Furthermore, in Table 5 the results of Levene’s test for equality of variances indicate that the variances of groups in the variable measuring emotion regulation show a significant difference ( $F(1) = 3.99; p = .048$ ). Hence, to avoid biased results by performing a standard independent samples *t*-test, we instead performed the Welch test for this particular variable.

For the remaining two variables we performed the standard independent samples *t*-test (i.e. student's *t*-test). Lastly, when looking for outliers the box plots in Figure 3 indicate that the male sample of the variable that describes the accessibility of emotion regulation strategies (Figure 3A) contained one outlier, participant 52. To test if the outlier has a significant influence, we performed the analysis with (Table 6) and without the outlier (Appendix, Table 2). When comparing the two tables, we can conclude that participant 52 did influence the effect sizes, however, there are no significant changes in the assumptions, the direction, or the effect itself, such that the initially significant effect becomes non-significant after exclusion, for example. Therefore, the participant was not excluded from the analysis.

**Figure 3**

*Box Plots of Accessibility of Emotion Regulation Strategies and Frequency of Negative Affect by Gender (Outliers Labeled)*



Note. A) Accessibility to emotion regulation strategies

Note. B) Frequency of negative affect



**Table 5***Equality of Variances (Levene's)*

	F	df	p
MergeQ17_Q21	3.99	1	.048
Q26_1	1.62	1	.205

*Note.* Significant results suggest violation of the equality of variances assumption.

*Independent Sample t-Tests*

For both tests, we used the fixed standard significance level of  $\alpha = .05$  for assessing and reporting the significance of the results displayed in Tables 6 and Appendix B, Table 2.

**Table 6***Independent Samples t-Test*

	Test	Statistic	df	p	Cohen's d
MergeQ17_Q21	Student	3.19	126	.002	0.62
	Welch	3.44	79.206	<.001	0.65
Q26_1	Student	-0.77	126	.445	-0.15
	Welch	-0.72	59.52	.472	-0.15

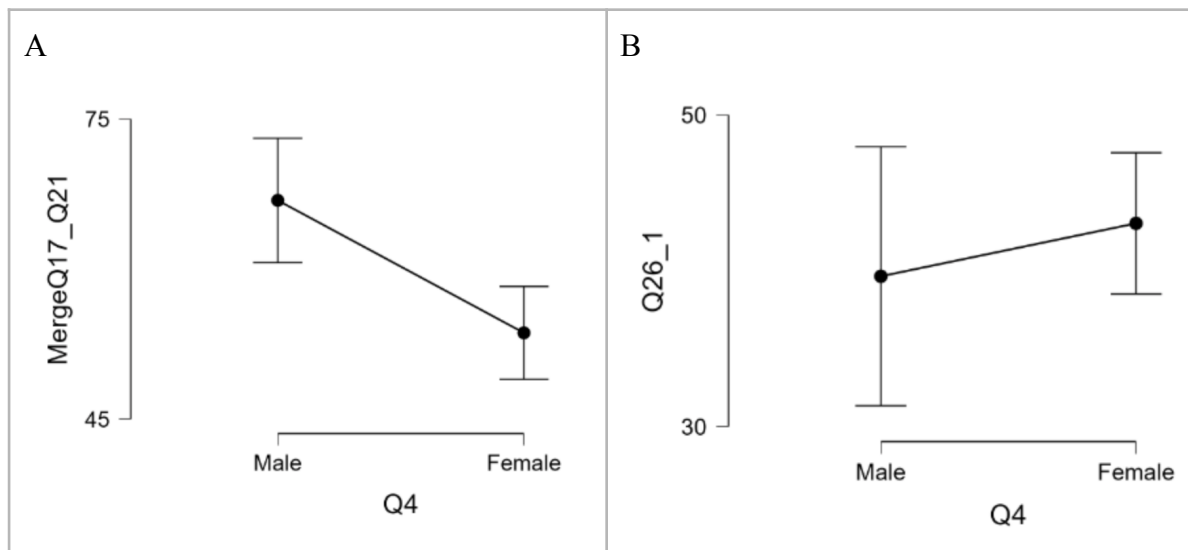
**Hypothesis 1.** For our first hypothesis, namely, women experience more negative affect than men, the independent sample *t*-test (i.e. student test) including the outlier indicated a small, non-significant effect of  $d = -0.15$  ( $t(126) = -0.77$ ;  $p = .445$ ) (Table 6). This was supported by Figure 4B which shows that females scored only slightly higher on the variable measuring the frequency of negative affect. After excluding the outlier the results did not

significantly change as displayed in Appendix B (Table 2), showing a small effect of  $d = -0.174$  ( $t(126) = -0.88$ ;  $p = .378$ ).

**Hypothesis 2.** For the second hypothesis suggesting that women have less access to emotion regulation strategies, we found a significant effect of  $d = 0.65$  ( $t(79.206) = 3.44$ ;  $p < .001$ ) (Table 6) after performing a Welch test including the outlier. This as well is supported by Figure 4A showing a larger difference between the means when measuring accessibility to emotion regulation. We then proceeded to perform the test without the outlier which also indicated a significant effect of  $d = 0.75$  ( $t(84.995) = 4.04$ ;  $p < .001$ ) (Appendix B, Table 2). Consequently, the effect size changes by 0.1 when excluding the outlier. Nonetheless, both results can be considered a medium to large effect size when taking the paper by Cohen (1988) as a reference.

**Figure 4**

*Descriptive Plots Mean Differences: Male vs. Female*



Note. A) Accessibility to emotion regulation strategies

Note. B) Frequency of negative affect

### Discussion

The study aimed to replicate previous findings on gender differences regarding negative affect. Additionally, a second hypothesis was investigated, whether there are gender

differences in emotion regulation, specifically the accessibility of emotion regulation strategies. The sample of 128 participants completed an online questionnaire.

### **Negative affect and gender**

In contrast to previous findings (Fujita et al., 1991; Brebner, 2003), we did not find a significant effect suggesting that women experience more negative affect than men. When reviewing past literature about gender differences in negative affect we introduced ‘The Response styles theory’, which suggested that rumination might play an important role in the experience of negative affect (Nolen-Hoeksema, 1991). Additionally, for the sake of completion, we examined gender differences in rumination with item Q19\_1, namely ‘When I am sad, I extensively analyze my emotions’ causes, manifestations or consequences’. Contradicting to Nolen-Hoeksema (1991) and Nolen-Hoeksema (1987), the results indicated a nonsignificant effect of  $d = 0.09$  ( $t(126) = 0.44$ ,  $p = .663$ ) that means in this sample differences between men and women were not significant (Appendix B, Table 3).

To give some possible explanations for the result, emergent theories in sociology that take a more societal approach to human behavior can be considered. Increased attention to men’s emotions in research critically challenges societal and masculinity-focused approaches, which, for example, suggest that role modeling teaches women to be more and men less emotional (e.g., see Brebner, 2003). Introduced were perspectives, such as ‘softening masculinity’ which acknowledges the increase in expression of emotion by men as a redefinition of masculinity. In contrast, the ‘constructivist’ perspective treats men’s increased tendency to express emotions not as a new masculinity. While denying the role of the typical ‘primary’ emotions, they acknowledge the role of some culturally constructed emotions in the way men express their emotions (de Boise & Hearn, 2017). De Boise & Hearn (2017) indicated that by taking a more material-discursive stance with the help of ‘affective practice’ (Wetherell, 2012), seeing men’s emotions as affective and affected might help broaden the

understanding of men's emotions (see de Boise & Hearn, 2017; Wetherell, 2012). Most importantly, we think this perspective could also enrich the field of psychology as a whole in terms of understanding emotion.

The explanation of the result might also lie in the sample itself. The questionnaire was mostly distributed using WhatsApp groups, specifically mainly groups that were themed around psychology or contained only psychology university students. Consequently, it is possible that psychology students, both male and female, might be more reflective of themselves as this is their subject of study. During the program, students learn about emotions which increases awareness and possibly expression. Moreover, it can be assumed that most participants from this sample are not diagnosed with a clinical disorder and thus, did not show severely maladaptive negative affect tendencies. Consequently, we can expect higher mean scores as well as higher variability. This could allow us to investigate larger, and possibly significant, effects.

### **Emotion regulation and gender**

In line with the past literature (Malesza, 2019), we found a significant effect supporting our hypothesis that women have less access to emotion regulation strategies than men. In general, this supports the notion of gender differences in emotion regulation suggested by past literature (Malesza, 2019; Nolen-Hoeksema & Aldao, 2011; Tamres et al., 2002; Hampel & Petermann, 2006). Coming back to rumination, we mentioned findings by Nolen-Hoeksema & Aldao (2011) that suggested a correlation between maladaptive emotion regulation strategies and levels of depressive symptoms. As we did not measure clinical symptoms per se, we used a fitting alternative, the frequency of negative affect. Supporting this suggestion, we found a relatively small but significant positive correlation between rumination (using Q19\_1) and levels of negative affect ( $r = .22$ ;  $p = .013$ ) (see Appendix B, Table 4). Considering that Cohen's (1988) effect size values are arbitrary, they should be only

seen as an orientation (Lakens, 2013). According to Lakens (2013), even small effect sizes can result in large contributions.

These findings highlight the importance of emotion regulation training in disorders that are characterized by emotional dysregulation. A well-known treatment is Cognitive Behavioral Therapy (CBT) which has been shown to be effective for anxiety disorders and depression. It aims to replace maladaptive thought patterns, emotional responses, and behaviors, for example seen in rumination, with more realistic ones (Fassbinder et al. 2016). A variation of CBT, called Dialectical Behavior Therapy (DBT) which is primarily used in treating Borderline Personality Disorder (BPD), is centered around mindfulness, emotion regulation, interpersonal effectiveness, and distress tolerance. It employs a variety of cognitive and behavioral treatment techniques to assist individuals in developing and improving emotion regulation (Fassbinder et al. 2016). A relatively new approach—Emotion Regulation Therapy (ERT)—aims to target mechanisms involved in motivation and regulation including self-referential processes (i.e., rumination) as well as behavioral responses (i.e., avoidance or reassurance-seeking) in those dealing with GAD and MDD (Renna et al., 2017). The first phase focuses on acquiring emotion regulation skills to promote more flexible responses to emotions, such as sadness, by developing more adaptive cognitive reactions to, for example, worry or rumination. In the second phase, behavioral proactivity is promoted by targeting the cognitive and behavioral characteristics of the behavior (Renna et al., 2017).

Having identified the gender differences in access to emotion regulation emphasizes the role of more individualized intervention in treating psychopathology. More specifically, it might help to tailor CBT and ERT interventions to the personal needs and concerns of the patient to more effectively target the main problems, i.e. emotion regulation.

### **Limitations**

It is important to point out some limitations of the current study. A major limitation lies in the simplicity of the study design. To avoid the possibility of careless responding or a decrease in motivation during the assessment process, the questionnaire had to be short and precise. Consequently, each member had a limited number of items to measure his/her specific research question which, in turn, may not be a reliable representation of the measured constructs. Furthermore, the use of a cross-sectional design might not appropriately capture the dynamic nature of emotions. As we described, the main feature of emotion dynamics is that they fluctuate across time and situations as well as influence each other (Kuppens & Verduyn, 2017). This can not be assessed at only one point in time.

Other important limitations can be ascribed to the assessment method and the type of sample we used. Relying on an online self-report measure makes it impossible to verify that all participants have followed the instructions and answered truthfully. For example, it could be possible that a participant intentionally filled in a higher age to be able to participate in the study. Furthermore, the nature of self-reports lowers the validity and reliability of the questionnaire due to possible biases, such as response bias, which describes the tendency to respond in a certain manner regardless of the topic or question (Demetriou et al., 2015). Lastly, the data was collected via a voluntary questionnaire that was aimed to collect data only from EU citizens. Consequently, the results can only be generalized to the EU, and it is not guaranteed that they can be replicated in other cultures.

Possible improvements for future studies could be the use of a random sample including participants from different countries and cultures to improve generalizability and reduce the likelihood of biases. By including more items measuring the constructs which are important for the topic of gender differences in negative affect and emotion regulation, it may be possible to achieve more reliable findings, thus better insight into the research topic. Finally, to better assess the time dynamic aspect of emotions, future research should consider

using a longitudinal research design in which the variables are assessed at different time points.

### **Practical Implications and Future Research**

Our study results emphasize the dynamic nature of emotions as well as the need to focus on individual differences in these dynamics to broaden our understanding of why some individuals are more adaptive in their emotional functioning than others. Some important practical implications are worth mentioning. Finding support for the second hypothesis, that women have less access to emotion regulation strategies, may be of great importance for the clinical field. In general, it emphasizes the role of emotion regulation in the development and maintenance of psychopathology, especially in mood and anxiety disorders. Having identified limited accessibility to emotion regulation strategies in women stresses the need to tailor the treatment to the individual. Women might benefit from an increased focus on emotion regulation skills training in interventions, such as CBT, DBT, and ERT.

Future research could investigate why women tend to have less access to emotion regulation strategies, for example, if differences in hormones could contribute to choosing one strategy over the other. Furthermore, we think an interesting question could concern the integration of emotion regulation training in upbringing. That means, teaching emotional regulation skills in childhood could improve the ability of individuals vulnerable to disorders, such as depression and anxiety, to deal with emotional situations in later life.

### **Conclusion**

To conclude, despite the limitations, our research contributed to the research of emotion dynamics by providing important insights into gender differences in negative affect and emotion regulation. Taken together, the findings suggest that women and men do not significantly differ in negative affect. Additionally, no significant differences in rumination were found, which was a proposed explanation for previously found differences in negative

emotions. Therefore, previous findings could not be replicated. Nonetheless, results indicate that women tend to have less access to emotion regulation strategies when compared to men. This finding highlights the importance of emphasizing the role of emotion dysregulation in mental disorders, more specifically it is supposed to encourage increased inclusion of emotion regulation strategies in addition to normal treatment, in particular for women.



**References**

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217–237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- American Psychiatric Association. (2022). Depressive Disorders. *Diagnostic and Statistical Manual of Mental Disorders*.  
[https://doi.org/10.1176/appi.books.9780890425787.x04\\_depressive\\_disorders](https://doi.org/10.1176/appi.books.9780890425787.x04_depressive_disorders)
- APA Dictionary of Psychology. (n.d.). Dictionary.apa.org.  
<https://dictionary.apa.org/negative-affect>
- Brebner, J. (2003). Gender and emotions. *Personality and Individual Differences, 34*(3), 387–394. [https://doi.org/10.1016/s0191-8869\(02\)00059-4](https://doi.org/10.1016/s0191-8869(02)00059-4)
- Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). *Routledge*.  
<https://doi.org/10.4324/9780203771587>
- de Boise, S., & Hearn, J. (2017). Are men getting more emotional? Critical sociological perspectives on men, masculinities and emotions. *The Sociological Review, 65*(4), 779–796. <https://doi.org/10.1177/0038026116686500>
- Demetriou, C., Ozer, B. U., & Essau, C. A. (2015). Self-Report Questionnaires. *The Encyclopedia of Clinical Psychology*, 1–6.  
<https://doi.org/10.1002/9781118625392.wbecp507>
- English, T., Lee, I. A., John, O. P., & Gross, J. J. (2016). Emotion regulation strategy selection in daily life: The role of social context and goals. *Motivation and Emotion, 41*(2), 230–242. <https://doi.org/10.1007/s11031-016-9597-z>
- Fassbinder, E., Schweiger, U., Martius, D., Brand-de Wilde, O., & Arntz, A. (2016). Emotion Regulation in Schema Therapy and Dialectical Behavior Therapy. *Frontiers in Psychology, 7*. <https://doi.org/10.3389/fpsyg.2016.01373>

- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191. <https://doi.org/10.3758/BF03193146>
- Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology*, 61(3), 427–434. <https://doi.org/10.1037/0022-3514.61.3.427>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41–54. <https://doi.org/10.1023/b:joba.0000007455.08539.94>
- Hampel, P., & Petermann, F. (2006). Perceived stress, coping, and adjustment in adolescents. *Journal of Adolescent Health*, 38(4), 409–415. <https://doi.org/10.1016/j.jadohealth.2005.02.014>
- Houben, M., Van Den Noortgate, W., & Kuppens, P. (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychological Bulletin*, 141(4), 901–930. <https://doi.org/10.1037/a0038822>
- Jazaieri, H., Urry, H. L., & Gross, J. J. (2013). Affective Disturbance and Psychopathology: An Emotion Regulation Perspective. *Journal of Experimental Psychopathology*, 4(5), jep.030312. <https://doi.org/10.5127/jep.030312>
- Johnson, S. (2005). Mania and dysregulation in goal pursuit: a review. *Clinical Psychology Review*, 25(2), 241–262. <https://doi.org/10.1016/j.cpr.2004.11.002>
- Kuppens, P., & Verduyn, P. (2015). Looking at emotion regulation through the window of emotion dynamics. *Psychological Inquiry*, 26(1), 72–79. <https://doi.org/10.1080/1047840x.2015.960505>
- Kuppens, P., & Verduyn, P. (2017). Emotion dynamics. *Current Opinion in Psychology*, 17,

- 22–26. <https://doi.org/10.1016/j.copsyc.2017.06.004>
- Koval, P., Kuppens, P., Allen, N. B., & Sheeber, L. (2012). Getting stuck in depression: The roles of rumination and emotional inertia. *Cognition & Emotion*, *26*(8), 1412–1427. <https://doi.org/10.1080/02699931.2012.667392>
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, *4*(863). <https://doi.org/10.3389/fpsyg.2013.00863>
- Malesza, M. (2019). Relationship between emotion regulation, negative affect, gender and delay discounting. *Current Psychology*. <https://doi.org/10.1007/s12144-019-00366-y>
- Mennin, D. S., Holaway, R. M., Fresco, D. M., Moore, M. T., & Heimberg, R. G. (2007). Delineating Components of Emotion and its Dysregulation in Anxiety and Mood Psychopathology. *Behavior Therapy*, *38*(3), 284–302. <https://doi.org/10.1016/j.beth.2006.09.001>
- Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory. *Psychological Bulletin*, *101*(2), 259–282. <https://doi.org/10.1037/0033-2909.101.2.259>
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*(4), 569–582. <https://doi.org/10.1037/0021-843x.100.4.569>
- Nolen-Hoeksema, S., & Jackson, B. (2001). Mediators of the Gender Difference in Rumination. *Psychology of Women Quarterly*, *25*(1), 37–47. <https://doi.org/10.1111/1471-6402.00005>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking Rumination. *Perspectives on Psychological Science*, *3*(5), 400–424. <https://doi.org/10.1111/j.1745-6924.2008.00088.x>
- Nolen-Hoeksema, S., & Aldao, A. (2011). Gender and age differences in emotion regulation

- strategies and their relationship to depressive symptoms. *Personality and Individual Differences*, 51(6), 704–708. <https://doi.org/10.1016/j.paid.2011.06.012>
- Otten, D., Tibubos, A. N., Schomerus, G., Brähler, E., Binder, H., Kruse, J., Ladwig, K.-H., Wild, P. S., Grabe, H. J., & Beutel, M. E. (2021). Similarities and Differences of Mental Health in Women and Men: A Systematic Review of Findings in Three Large German Cohorts. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.553071>
- Renna, M. E., Quintero, J. M., Fresco, D. M., & Mennin, D. S. (2017). Emotion regulation therapy: A mechanism-targeted treatment for disorders of distress. *Frontiers in Psychology*, 8(98). <https://doi.org/10.3389/fpsyg.2017.00098>
- Sansone, R. A., & Sansone, L. A. (2012). Rumination: Relationships with physical health. *Innovations in clinical neuroscience*. 9(2), 29-34.
- Seney, M. L., & Sibille, E. (2014). Sex differences in mood disorders: perspectives from humans and rodent models. *Biology of Sex Differences*, 5(1). <https://doi.org/10.1186/s13293-014-0017-3>
- Stringer, D. M. (2013). Negative Affect. *Encyclopedia of Behavioral Medicine*, 1303–1304. [https://doi.org/10.1007/978-1-4419-1005-9\\_606](https://doi.org/10.1007/978-1-4419-1005-9_606)
- Taber, K. S. (2017). The Use of Cronbach’s Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Tamres, L. K., Janicki, D., & Helgeson, V. S. (2002). Sex Differences in Coping Behavior: A Meta-Analytic Review and an Examination of Relative Coping. *Personality and Social Psychology Review*, 6(1), 2–30. [https://doi.org/10.1207/s15327957pspr0601\\_1](https://doi.org/10.1207/s15327957pspr0601_1)
- Thomsen, D. K., Mehlsen, M. Y., Viidik, A., Sommerlund, B., & Zachariae, R. (2005). Age and gender differences in negative affect—Is there a role for emotion regulation?

*Personality and Individual Differences*, 38(8), 1935–1946.

<https://doi.org/10.1016/j.paid.2004.12.001>

Wetherell, M. (2012). *Affect and Emotion: A New Social Science Understanding*.

<https://doi.org/10.4135/9781446250945>

**Appendix A**

Questionnaire Survey Emotion Dynamics

Age	
Gender	Male/Female/Non-binary/Prefer not to say
Nationality	EU citizen/ non EU citizen
Parenting style Parent 1	Male/Female/ Non-binary
Parenting style Parent 2	Male/Female/ Non-binary

Think about <b>your childhood</b> and how you grew up over the years...	
How did you perceive your parents combined parenting style to be ?	0 = Very neglectful; 50 = Balanced; 100 = Very overprotective
How did you perceive the parenting style of <b>Parent 1</b> to be?	0 = Very neglectful; 50 = Balanced; 100 = Very overprotective
How did you perceive the parenting style of <b>Parent 2</b> to be?	0 = Very neglectful; 50 = Balanced; 100 = Very overprotective

How well did you deal with negative emotions when you were younger ? (age 12-18)	0 = Not well at all; 50 = Average 100 = Exceptionally well
How well did you deal with negative emotions from age 19 to today?	0 = Not well at all; 50 = Average 100 = Exceptionally well

Once faced with an anxious, depressive otherwise negative emotion: How much does it affect your mood throughout the day ?	0 = Little; 50 = Average; 100 = Considerably
Think about a situation in which emotions might have augmented each other (e.g. anxiousness making you more irritated and	0 = Little; 50 = Average; 100 = Considerably

<p>irritation contributing to anger). How much did the intensity of your emotional experience increase?</p>	
---	--

<p>Think about your mood/lifestyle <b>in the last month</b>. Determine whether you agree or disagree with the following statement.</p>	
<p>If I am sad, the feeling passes quickly and I do not feel sad anymore.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>When I'm sad, I believe there is nothing I can do to make me feel better.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>I can manage my emotions as well as I would like to.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>When I am sad, I extensively analyze my emotions' causes, manifestations or consequences.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>When I am sad I want to resolve the feeling as soon as possible.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>When I am sad I know exactly what to do to resolve this feeling.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>I am someone who gets easily nervous.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>When confronted with a task I tend to do it immediately and thoroughly.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>
<p>I see myself as outgoing and sociable.</p>	<p>0 = Strongly disagree; 50 = Neither agree nor disagree; 100 = Strongly agree</p>

<p>Think about your mood/lifestyle <b>in the past month</b>. This section will be concerned with the <i>frequency</i> of your experiences.</p>	
<p>How often did you experience negative emotions, e.g. sadness?</p>	<p>0 = Never, 50 = About half the time; 100 = Always</p>
<p>How often did you experience Melancholia (defined as a state of deep or deliberating sadness)?</p>	<p>0 = Never, 50 = About half the time; 100 = Always</p>

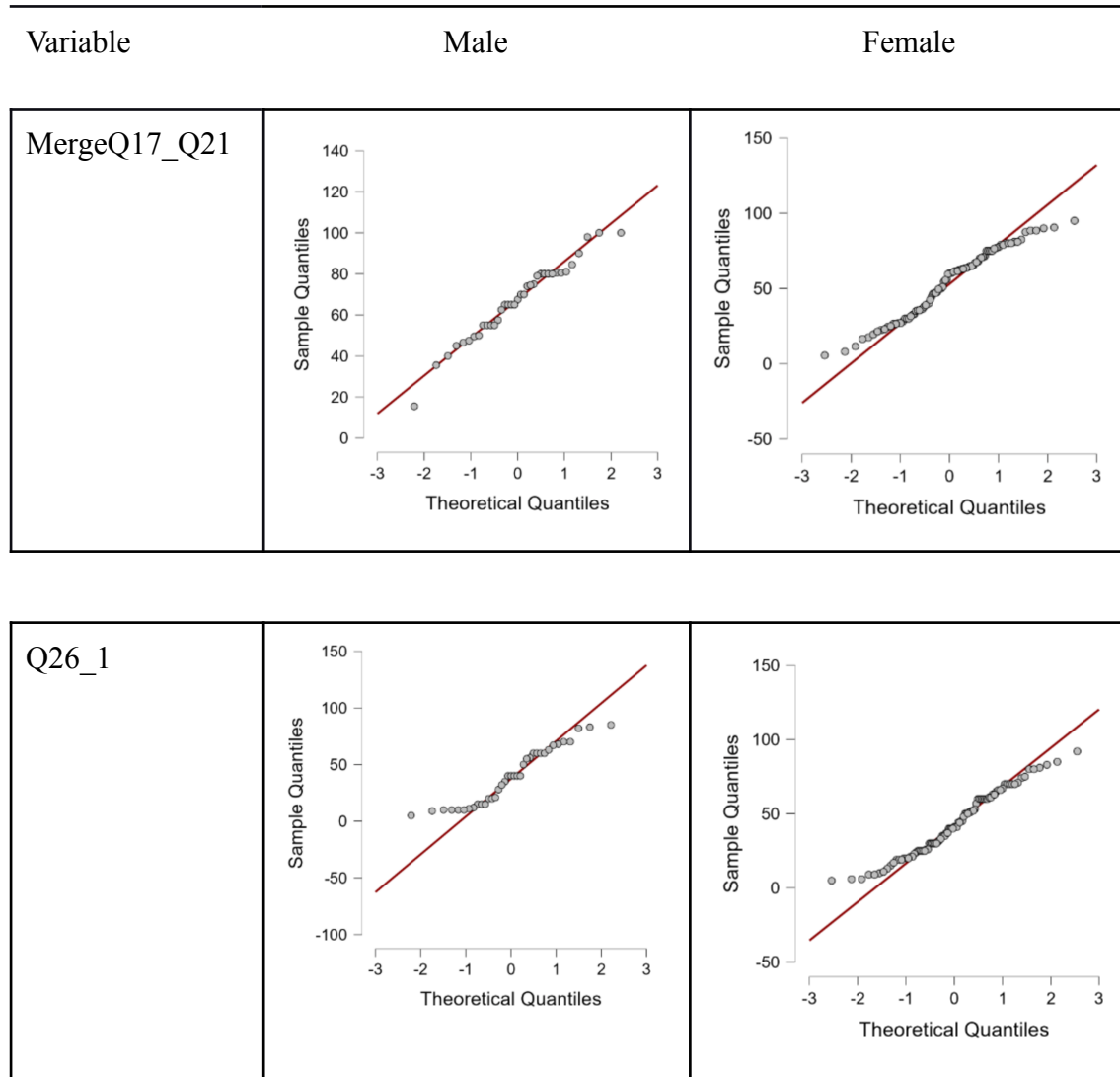
How often do you pay attention? If you're paying attention now, answer with 60.	0 = Never, 50 = About half the time; 100 = Always
How often did you engage in risky driving behavior (e.g. speeding, drink-drive, unfastening of a seat belt, driving while feeling sleepy, and highway code violations) when feeling sad?	0 = Never, 50 = About half the time; 100 = Always
How often did you engage in risky driving behavior to reduce feelings of sadness?	0 = Never, 50 = About half the time; 100 = Always
How often did you engage in aggressive behavior (e.g. acts of physical violence, shouting, swearing, and harsh language) when feeling sad?	0 = Never, 50 = About half the time; 100 = Always
How often did you engage in aggressive behavior to reduce feelings of sadness?	0 = Never, 50 = About half the time; 100 = Always
How often do you engage in substance use (alcohol, drugs) when feeling sad?	0 = Never, 50 = About half the time; 100 = Always
How often do you engage in substance use to reduce feelings of sadness?	0 = Never, 50 = About half the time; 100 = Always
How often do you engage in sexual risky behaviour (unprotected sex, multiple sex partners) when feeling sad?	0 = Never, 50 = About half the time; 100 = Always
How often do you engage in sexual risky behaviour to reduce feelings of sadness?	0 = Never, 50 = About half the time; 100 = Always



**Appendix B**

**Figure 1**

*Q-Q Plots of Male and Female Distribution of Variable MergeQ17\_Q21 and Q26\_1*



**Table 1**

*Pearson Correlation Table for all Variables*

Variable		ReverseQ17	Q21_1	MergeQ17_Q 21	Q26_1
ReverseQ17	Pearson's r	—			
	p-value	—			
Q21_1	Pearson's r	.58	—		
	p-value	<.001	—		
MergeQ17_ Q21	Pearson's r	.9	.88	—	
	p-value	<.001	<.001	—	
Q26_1	Pearson's r	-.47	-.45	-.5	—
	p-value	<.001	<.001	<.001	—

**Table 2**

*Independent Samples t-Test (Outlier Excluded)*

	Test	Statistic	df	p	Cohen's d
MergeQ17_ Q21	Student	3.57	125	<.001	.703
	Welch	4.04	84.995	<.001	.745
Q26_1	Student	-0.89	125	.378	-.174
	Welch	-0.83	57.093	.408	-.169

**Table 3**

*Independent Sample t-Test Q19\_1, Q4*

	Test	Statistic	df	p	Cohen's d
Q19_1	Student	0.44	126	.663	.085

**Table 4***Pearson Correlation Table Rumination and Negative Affect*

Variable		Q19_1	Q21_1
Q19_1	Pearson's r	—	
	p-value	—	
Q21_1	Pearson's r	.22	—
	p-value	.013	—