# Distinguishing State and Trait Self-Compassion in Their Moderating Role on the Relationship between Stress and Affect

Mia Wiesmann

M.Sc. Thesis

Positive Clinical Psychology and Technology (PCPT)

Faculty of Behavioural, Management, and Social Sciences (BMS)

Department of Psychology, Health, and Technology (PGT)

University of Twente

1st supervisor: Dr. J. T. Kraiss

2nd supervisor: Dr. P.M. ten Klooster

January 2024

## Abstract

**Background.** Previously, the buffering effect of self-compassion on the relationship between stressful events and negative affect has mainly been studied on a between-person trait level. To address this research gap, the current research used the Experience Sampling Methodology (ESM) to distinguish state and trait self-compassion when relating the construct to the adaptation to stress and negative affect. Furthermore, it was examined if the moderation effect of self-compassion differs between individuals scoring high on depressive symptoms compared to a non-depressed population.

**Method.** To answer these objectives, a secondary analysis of ESM data obtained from 144 participants was done. The study included a baseline questionnaire assessing the demographics of the participants as well as the level of depressive symptoms. Moreover, three short daily questionnaires assessed the amount of stress at a certain measurement point, the momentary negative affect, and the level of self-compassion over the course of two weeks. Person-mean centering combined with linear mixed modelling (LMM) was used to analyse the data.

**Results.** The results showed a significant interaction effect for stressful events and state self-compassion ($b$ = -0.18; $p$ <.001), indicating that the relation between stressful events and negative affect was weaker on moments of above-average self-compassion. Furthermore, a non-significant interaction effect for stressful events and trait self-compassion on negative affect was found ($b$ = 0.02; $p$ = .724). Similar interaction effects were found for both people scoring high on depression and non-depressed participants. Specifically, a significant effect of state self-compassion and a non-significant effect of trait self-compassion were found for the group scoring high on depression and for the non-depressed population.

**Conclusion**. The findings emphasize the difference between state and trait self-compassion in moderating the relationship between stress and affect. Higher levels of state self-compassion may aid adaptive coping with stress and may buffer the negative consequences of depressive symptoms. However, the results must be interpreted tentatively as they are limited by the measures used in the current study and the sample size.

**Table of Contents**

Introduction ..... 4
Self-Compassion and Stressful Events ..... 5
Adaptation as Dynamic Construct and the Importance of State Self-Compassion ... 6
Experience Sampling Methodology ..... 7
The Role of Depression ..... 7
Current Study ..... 8
Method ..... 9
Participants ..... 9
Design ..... 9
Materials ..... 10
Procedure ..... 12
Data Analysis ..... 12
Results ..... 14
Descriptive Statistics ..... 14
Visualizations of Within-Person Differences ..... 15
Visualisations of Between-Person Differences ..... 17
Interaction Effect of Stressful Events and Self-Compassion on Negative Affect ... 18
Discussion ..... 20
Interpretation of the Findings ..... 21
Strengths and Limitations ..... 25
Conclusion ..... 26
References ..... 27
Appendices ..... 34

## Introduction

In the field of psychology, increasing attention is being paid to positive psychological constructs and how these might improve mental health and well-being. One such construct which may be beneficial for well-being is self-compassion (Neff, 2009). Neff (2011) defined self-compassion as treating oneself with kindness as well as wise and caring action when facing difficulties. The construct involves three dimensions: self-kindness versus self-judgment, feelings of common humanity versus isolation, and mindfulness versus over-identification (Neff, 2003). Self-kindness refers to being kind and understanding towards oneself when confronted with pain or failure rather than being harsh and self-critical. Common humanity concerns the perception of one's experiences as being part of the larger human experience instead of viewing them as separating or isolating. Mindfulness incorporates being aware of painful feelings or negative thoughts in a balanced way and not over-identify with these (Neff, 2003). A distinction can be made between trait and state self-compassion. Affective traits are defined as stable predispositions which are enduring aspects of an individual's personality (Rosenberg, 1998). Therefore, trait self-compassion refers to the average tendency of self-compassion in a person. On the other hand, state self-compassion refers to the level of self-compassion that an individual possesses at a specific moment in time (Mey et al., 2023).

A growing body of research has outlined the relevance of self-compassion for mental health. For instance, self-compassion might protect against the consequences of negative thoughts like rumination or self-judgment (Neff, 2003). High levels of self-compassion were further related to greater life satisfaction, social connectedness, emotional intelligence, wisdom, personal initiative, optimism, curiosity, happiness, and positive affect (Neff, 2009). Moreover, previous literature outlined the strong negative relationship between self-compassion and psychopathology, specifically depression, stress, and anxiety (MacBeth &

Gumley, 2012). This suggests that self-compassion might be a crucial explanatory factor for mental health and resilience (MacBeth & Gumley, 2012).

**Self-Compassion and Stressful Events**

Stressful events are part of everyday life in modern society and the term stress has been used extensively to refer to different situations or events. Several studies examined the negative consequences of different forms of stress. For instance, it was demonstrated that stressors such as negative events, chronic stress, trauma, or daily hassles are negatively related to physical and mental health (DeLongis et al., 1988; Thoits, 2010). Moreover, environmental stressors and stressful life events were negatively associated with well-being (Cantuaria et al., 2023; McMahon et al., 2020). However, higher levels of self-compassion might buffer the negative association between stress and mental health, as recent research outlined the significance of self-compassion in building resilience to promote emotional health and well-being (Arslan, 2023). Self-compassion was further shown to protect against the consequences of negative thoughts and was positively associated with positive affect as well as greater resilience and coping ability in dealing with stress (Arslan, 2023; Neff, 2003; Neff, 2009; Neff, 2011). Additionally, higher self-compassion has been associated with less perceived stress (Li et al., 2020).

Furthermore, high self-compassion skills may promote resilience against psychopathology and serve as an adaptive emotion regulation strategy (Trompetter et al., 2017). Self-compassionate individuals might alter the processing of the context in which stressful events occur rather than escape from such situations in that they face stressors with feelings of openness and tolerance (Trompetter et al., 2017). Previous studies outlined that self-compassion may thereby serve as an adaptive emotion regulation strategy which aids positive cognitive reappraisal and the acceptance of negative situations and decreases the use

of maladaptive coping strategies (Allen & Leary, 2010; Diedrich et al., 2014; Neff et al., 2007).

To further explain the role of self-compassion in adaptation to stressful events, previous research suggested that self-compassion may support adaptation as it simplifies the conscious and objective observation of the situation (Perez-Blasco et al., 2016). Moreover, internal thoughts and emotions are objectively noticed, instead of focusing on negative patterns. In addition, stressful situations are approached more positively as individuals possess greater confidence in their capacity to cope, are fully aware of the universality of the suffering they experience and, thus, respond kind and caring to the self (Perez-Blasco et al., 2016).

**Adaptation as Dynamic Construct and the Importance of State Self-Compassion**

A growing body of literature has suggested that adaptation to stress is a complex and dynamic process, with several resilience factors continuously influencing a dynamic network of interacting symptoms which might result in psychopathology or promote mental health (Kalisch et al., 2019; Ong & Leger, 2022). Considering that adaptation is seen as a dynamic construct, it is important to also examine self-compassion as a dynamic construct. Therefore, in the context of adaptation and the influence of self-compassion on the relationship between stress and well-being, state self-compassion should be studied as this corresponds to the dynamic nature of adaptation. Specifically, the ability to utilize self-compassion in certain moments to adapt to stressful situations might be more relevant than the average trait level of self-compassion that an individual possesses.

To address this, Mey et al. (2023) recently examined the implications of momentary self-compassion on stress and well-being. According to the authors, high levels of state self-compassion predict high affective well-being and low stress reactivity. To accurately assess the state level of self-compassion and its relation to other constructs, longitudinal study

designs are needed. Recently, Experience Sampling (ESM) has become more popular and is often used to investigate dynamic concepts or state variables (Myin-Germeys & Kuppens, 2021).

**Experience Sampling Methodology**

ESM is a structured self-report diary technique examining the variables or situations of interest close to the moment they occur in interaction with the real-world context (Koopmann & Dimotakis, 2022; Myin-Germeys et al., 2018). ESM is suitable to examine the interaction between an individual and the situation they encounter, which corresponds to the relation between stress and affect and how this is influenced by self-compassion, specifically the state level of self-compassion in that moment (Csikszentmihalyi & Larson, 2014). Additionally, ESM is well-suited to capture emotional variability and is sensitive to minor stressors in daily life which further supports the appropriateness of ESM to investigate the variables of interest (Myin-Germeys et al., 2018).

**The Role of Depression**

Previous studies suggested that the effect of self-compassion on the relationship between stressful events and affective well-being might differ in individuals scoring high on depression compared to a non-depressed population. Specifically, depressed patients were shown to score lower on self-compassion and depressive symptoms might hinder the ability to cope with stress adaptively and might increase the perception of stressful events as overwhelming (Krieger et al., 2013; Orzechowska et al., 2013). Therefore, the current research differentiated participants based on their level of depressive symptoms to gain further insights for clinical practice, specifically for the use of self-compassion interventions in the treatment of major depression.

**Current Study**

Most studies examining the influence of self-compassion on stress and well-being to date are cross-sectional, thus, not accounting for the dynamic nature of the involved concepts. Mey et al. (2023) addressed this research gap; however, they did not investigate how trait self-compassion might differ from state self-compassion in moderating the relationship between stress and affect. Therefore, the current study investigated the relationship between stressful events and negative affect and whether state and trait self-compassion moderate this relationship by using ESM data. Negative affect was used as a measurable equivalent for affective well-being. It was further examined if the moderation effect differs between individuals who were grouped based on their level of depressive symptoms, to gain insights for clinical practice. Based on these objectives, the following research questions arose:

*RQ1: To what extent is the relationship between stressful events and negative affect moderated by trait and state self-compassion?*

*RQ2: Does the extent to which the relationship between stressful events and negative affect is moderated by self-compassion differ between individuals scoring high on depression compared to a non-depressed population?*

Regarding the first research question, it was expected that state self-compassion is more relevant for the moderation due to the dynamic nature of stress and adaptation and the importance of the momentary level of self-compassion to be used in a certain stressful situation. With regards to the second research question, it was expected that the moderation effect would be less significant in individuals with higher levels of depressive symptoms since previous studies outlined that these score lower on self-compassion and cope with stress less adaptively (Krieger et al., 2013; Orzechowska et al., 2013).

# Method

This study was part of a larger research project investigating mental health in daily life. The data used to examine the research questions above was already obtained by previous studies which were approved by the Ethics Committee of Behavioural, Management and Social Sciences of the University of Twente [#211225; #220220] (Faesing, 2022; Schleich, 2022).

## Participants

For the study, 144 participants were recruited based on convenience sampling. To evaluate if this sample size was sufficient, a power analysis was done for the between-person moderation. The statistical power was calculated with the software G*power. It was assumed that a small effect size of 0.08 is found for the interaction term with a two-tailed significance level of 0.05. The analysis revealed that the sample size was sufficient ($\beta$ = 83%). The assumption of a small effect size was made as it was expected that trait self-compassion shows a rather small effect on the relationship between stress and affect. To take part in the study, the participants had to own a smartphone and an e-mail address and had to be fluent in German or English language as the study was administered in one of these languages.

## Design

Two types of questionnaires, an extensive baseline questionnaire as well as several short daily questionnaires, were used in the study. The baseline questionnaire (Appendix A) had to be completed once on the day after the registration to assess the demographic characteristics of participants and trait measures of the concepts of interest. Daily questionnaires (Appendix B) were used to measure the momentary states of the concepts of interest. For the administration of these, the researchers used a semi-random sampling scheme, meaning that the questionnaires were triggered daily at three random time points within pre-defined time intervals (Myin-Germeys & Kuppens, 2021). Specifically, the first

triggering point was set between 10 a.m. and 12 a.m., the second measurement took place between 3 p.m. and 5 p.m., and the third point was set between 8 p.m. and 10 p.m. This sampling strategy was chosen as it leads to high ecological validity, includes a relatively small participant burden, and is mostly used in ESM studies as it combines the advantages of fixed and random schemes (Myin-Germyes & Kuppens, 2021).

To increase compliance, push notifications were used. For the daily questionnaires, a reminder appeared after one hour and the questionnaires expired two hours after they were first triggered. For the baseline questionnaire, the participants received one notification to fill it out immediately after it was triggered and three additional reminders, one after seven hours, one after six days, and one after eleven days.

## Materials

For the means of data collection, participants used their mobile phones with the Ethica Data application, a tool promoting health research with participant- or patient-centric data collection in which the study was administered (https://ethicadata.com/).

### *Baseline Questionnaire*

The baseline questionnaire consisted of 43 items. For the current study, only the information collected regarding the demographics of the participants and the scale assessing the level of depression, which is described below, was used.

The Patient Health Questionnaire (PHQ) is a diagnostic scale for common psychological disorders (Williams, 2014). For this study, data obtained with the PHQ-9 was used, which assesses the nine diagnostic criteria of major depression, such as feeling down, low energy levels, or sleep disruption, with one item each. According to the diagnostic criteria of depression, items ask for the experience during the past two weeks and are scored from 0 (*not at all*) to 3 (*nearly every day*). A total sum score was established for all items with higher scores indicating more severe levels of depression and a cut-off score of 10

indicating the presence of moderate depression. The scale is well-validated (Williams, 2014). Moreover, Cronbach`s alpha was calculated and showed acceptable internal consistency of the scale (α = .78).

***State Questionnaires***

As outlined above, the daily questionnaires were triggered three times per day to assess the state levels of the concepts of interest. For the current research, these included negative affect, stressful events, and the momentary level of self-compassion.

To assess the momentary negative affect of participants, four items asked how *anxious, insecure, down,* and *guilty* participants felt. Items were scored on a seven-point Likert scale from 1 (*not at all*) to 7 (*very much*) and the mean score was established representing the negative affect of participants at a certain moment. To assess the reliability of the scale, split-half reliability testing was conducted by comparing the even to the odd items. The scale showed good internal consistency (r =.86).

Next, to measure the level of stress, participants were asked to recall the most striking activity or event they encountered since the last measurement and to score this event from -3 (*very unpleasant*) to +3 (*very pleasant*), with lower scores indicating higher levels of stress and 0 marked as neutral. This item was taken from a database called the ESM item repository and it was based on the study protocol developed by Helmich et al. (2020).

Finally, to assess the momentary level of self-compassion, two items were posed. Specifically, participants were asked how critical and how kind they currently feel towards themselves. Items were scored from 1 (*not at all*) to 7 (*very much*). The item referring to self-criticism was reversed coded, then the two items were summed up and the mean was used to represent the level of self-compassion. Cronbach’s alpha showed poor internal consistency of the two items (α =.44).

**Procedure**

The data used for the current study was collected during two timeframes. The first data collection took place from the 22nd of November until the 5th of December 2021, and the second data collection occurred between the 11th of June and the 24th of June 2022. The choice of two weeks of data collection was made according to typical practices of ESM (Conner & Lehmann, 2012; van Berkel et al., 2017). Prior to both studies, a three-day pilot study was conducted to test the study design and the administration and functioning of the daily questionnaires on the Ethica Data mobile application. Moreover, participants received an e-mail to register for the Ethica application, which included actively approving the informed consent (Appendix C).

**Data Analysis**

To be included in the data analysis the participants had to reach a response rate of 33%, thus, participants who completed less than one-third of the daily questionnaires used in the study were not included in the analysis. Due to the high participant burden and chance of dropout during ESM studies, this is a common practice to ensure data validity (Conner & Lehman, 2012). For the data analysis, the 28th version of the Statistical Package for Social Sciences (SPSS) was used. First, descriptive statistics were performed to assess the demographic characteristics of the participants and the depression scores. Moreover, the stressful event variable was dummy-coded (2 = stressful event happened; 1 = no stressful event happened).

The strategy of person-mean centering was applied to separate the between-person from the within-person effects in the moderation analysis. This approach is often used in the context of ESM studies as it explicitly disaggregates the between- and within-person effects within multilevel data (Curran & Bauer, 2011). Thereby, centering refers to the process of rescaling a variable by deviating the observed values around the variable mean (Curran &

Bauer, 2011). For the current research, the person mean (PM) was computed to display the average trait level of self-compassion per participant. For state self-compassion, the person-mean centred (PMC) score was calculated which depicts the difference between a certain state level of self-compassion and the person mean of that participant. Thus, the PMC accurately shows the within-person association which was investigated in the current research.

Furthermore, linear mixed modelling (LMM) was used to answer the research questions as this model is suitable for nested, repeated measurements and deals with at random missing data (Myin-Germeys & Kuppens, 2021). For the analysis, the MIXED command in SPSS was used and the autoregressive covariance structure (AR(1)) was applied for the repeated measurements. For the first research question, a LMM with negative affect as the dependent variable and the dummy of stressful events and the PMC of self-compassion as fixed predictors was run. The interaction term between the two predictors was included to show if the relationship between stressful events and negative affect is moderated by state self-compassion. The same model was run with the PM score for trait self-compassion instead of the PMC for state self-compassion. For the second research question, the same analysis was done but the sample was divided into groups based on the depression score, to assess if the moderation differs between people scoring high on depression compared to the non-depressed population. Specifically, people were included in the depression group if they scored equal to or above 10 on the PHQ-9. The cut-off point of 10 was chosen as previous studies suggested that this is a validated cut-off to differentiate the presence of moderate depression symptomatology from a healthy population (Williams, 2014). Specifically, a PHQ-9 score equal to or higher than 10 showed high sensitivity and specificity for major depression (Kroenke et al., 2001).

# Results

## Descriptive Statistics

In the final sample, 108 participants were included in the analyses. The sociodemographic characteristics of the participants as well as the average scores on the PHQ-9 can be seen in Table 1. It was noticeable that most participants were female and German and that 29% belonged to the group indicating the presence of moderate or severe depression. Apart from the information presented in the table, it was mentionable that only 11.9% of all daily measurements were scored as a stressful event, while 64% were scored as not stressful and 24.1% were missing.

**Table 1**

*Overview of the Demographic Characteristics (N = 108)*

| Characteristics | *M* | *SD* | *Min* | *Max* | *N* | *%* |
|---|---|---|---|---|---|---|
| Age | 28.13 | 12.25 | 14 | 60 | | |
| Gender | | | | | | |
| Female | | | | | 80 | 74.1 |
| Male | | | | | 26 | 24.1 |
| Other | | | | | 2 | 1.9 |
| Nationality | | | | | | |
| German | | | | | 81 | 75.0 |
| Dutch | | | | | 17 | 15.7 |
| Other | | | | | 10 | 9.3 |
| Occupation | | | | | | |
| Working | | | | | 40 | 37.0 |
| Studying and working | | | | | 25 | 23.1 |
| Self-employed | | | | | 3 | 2.8 |
| Student | | | | | 36 | 33.3 |
| Other | | | | | 4 | 3.8 |
| Highest level of education | | | | | | |
| Middle School | | | | | 10 | 9.3 |
| High School | | | | | 53 | 49.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bachelor's Degree | | | | | 30 | 27.8 |
| Master's Degree | | | | | 11 | 10.2 |
| Other | | | | | 4 | 3.8 |
| Depression total score (PHQ-9) | 7.10 | 4.43 | 0 | 19 | | |
| No/ mild depression (Non-depressed Population) | | | | | 77 | 71.3 |
| Moderate/ severe depression | | | | | 31 | 28.7 |

*Note*. *M* = Mean; *SD* = Standard Deviation; *Min* = Minimum; *Max* = Maximum.

**Visualizations of Within-Person Differences**

To visualize the scores of state self-compassion and negative affect within persons, the scores of the two constructs are shown per measurement point for three participants who displayed different trait levels of self-compassion (Figure 1, Figure 2, and Figure 3).

For all three participants, it was noticeable that higher scores on self-compassion on a certain measurement point often related to lower scores on negative affect, and vice versa, which may support an association of the two constructs within persons. Moreover, the participants displayed large variations in their scores on self-compassion which can be noticed by the discrepancy between the single values and the horizontal lines that indicate the average level of self-compassion and negative affect for the individual. This highlights the importance of measuring and conceptualizing self-compassion as a dynamic state which fluctuates within individuals.

**Figure 1**

*Levels of Self-Compassion and Negative Affect per Measurement Point for Participant 19 (High Trait Level of Self-Compassion)*

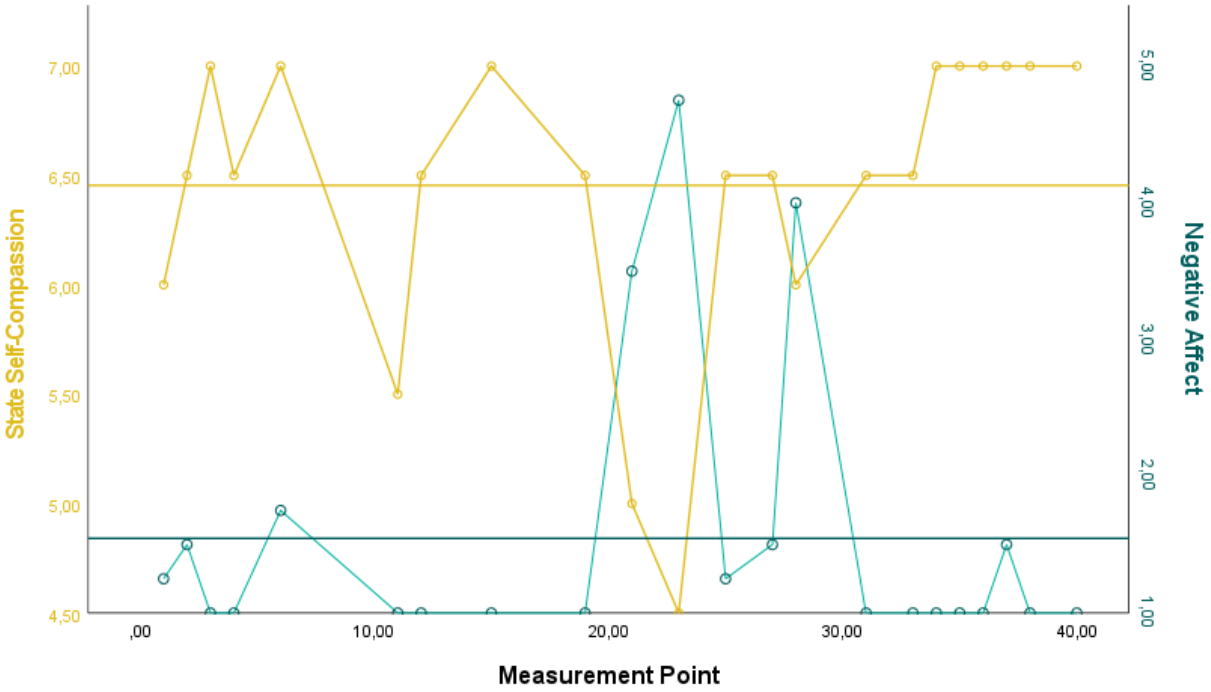



**Figure 2**

*Levels of Self-Compassion and Negative Affect per Measurement Point for Participant 58 (Moderate Trait Level of Self-Compassion)*

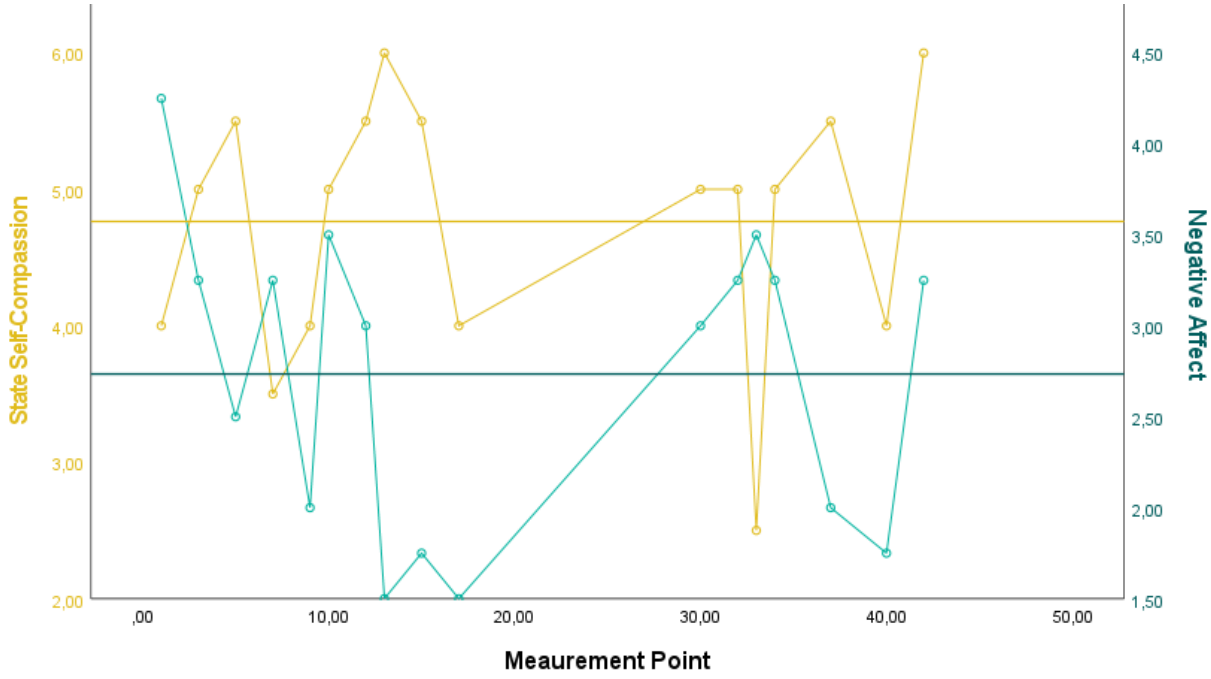
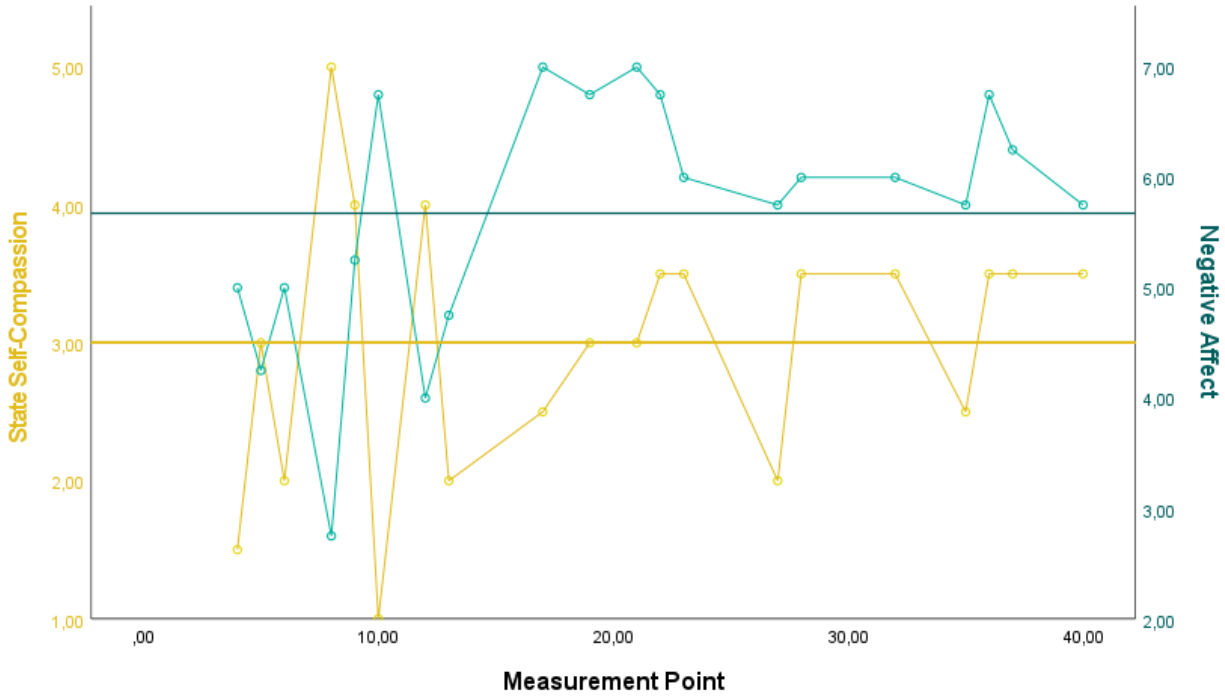


**Figure 3**

*Levels of Self-Compassion and Negative Affect per Measurement Point for Participant 130 (Low Trait Level of Self-Compassion*)

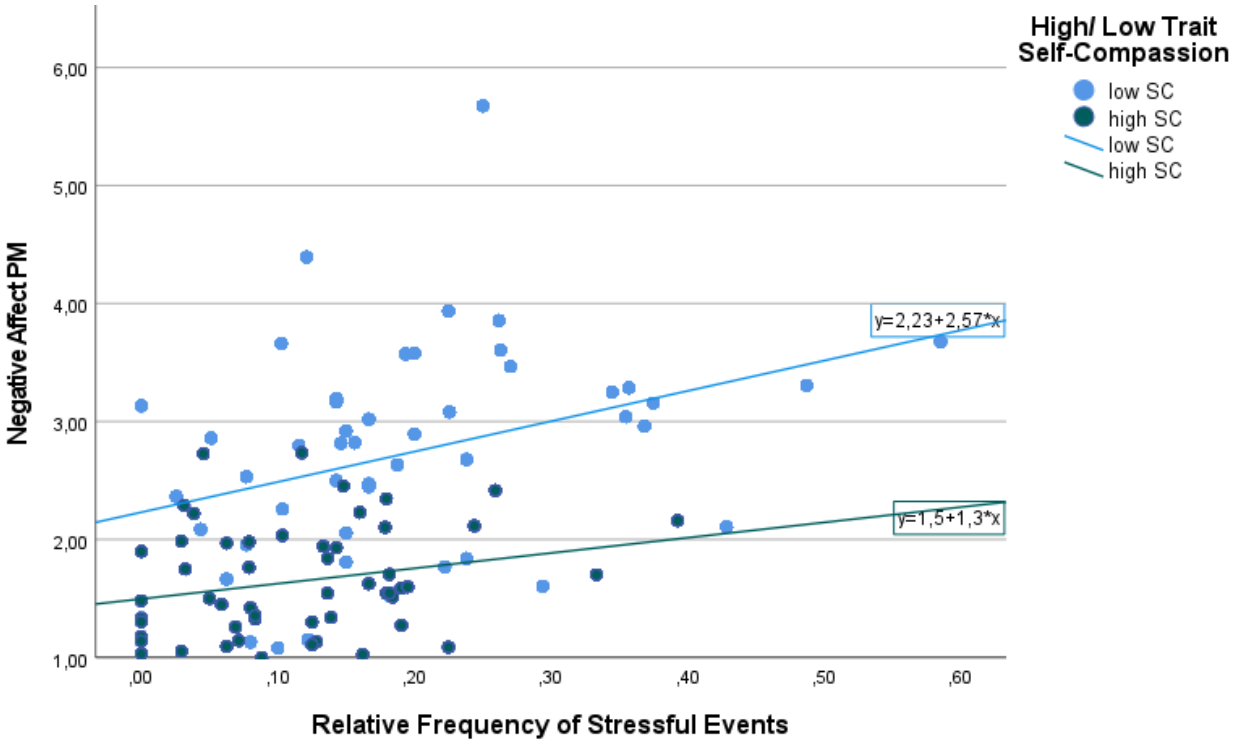



## Visualisations of Between-Person Differences

Figure 4 displays the association between the relative frequency of stressful events and negative affect on a between-person level. It was further distinguished between persons scoring high and low on trait self-compassion using a median split. For both groups, a positive relationship between negative affect and stressful events can be observed which appeared slightly stronger for individuals scoring low on self-compassion. Thus, the figure supports the notion that higher levels of self-compassion might buffer the association between stressful events and negative affect.

**Figure 4**

*Scatterplot Displaying the Association between the Relative Frequency of Stressful Events (PM) and Negative Affect for Individuals scoring high on Self-Compassion compared to Individuals scoring low on Self-Compassion*




**Interaction Effect of Stressful Events and Self-Compassion on Negative Affect**

Regarding the first research question, the model showed a significant negative interaction effect for stressful events and state self-compassion ($b$ = -0.18; $p$ <.001) and a non-significant interaction effect for stressful events and trait self-compassion ($b$ = 0.02; $p$ = .724). The findings of both models are summarized in Table 2.

**Table 2**

*Summary of LMMs for the First Research Question*

| Parameter | *b* | *SE* | *df* | *t* | Sig | 95% CI Lower Bound | 95% CI Upper Bound |
|---|---|---|---|---|---|---|---|
| Stressful events | 0.38 | 0.04 | 2752.94 | 10.59 | <.001 | 0.31 | 0.45 |
| State SC | -0.15 | 0.04 | 2744.89 | -3.81 | <.001 | -0.23 | -0.07 |
| Stressful events * state SC | -0.18 | 0.03 | 2715.33 | -5.65 | <.001 | -0.24 | -0.12 |
| | | | | | | | |
| Stressful events | 0.61 | 0.20 | 2770.88 | 3.00 | .003 | 0.21 | 1.01 |
| Trait SC | -0.73 | 0.07 | 2660.22 | -11.26 | <.001 | -0.86 | -0.61 |
| Stressful events * trait SC | 0.02 | 0.05 | 2777.80 | 0.35 | .724 | -0.07 | 0.11 |

*Note*. *SC* = Self-compassion; *df* = Degrees of freedom; *CI* = Confidence interval of unstandardized estimates.

The results of the second research question are summarized in Table 3. For the group with no or only minor depression, the results showed a negative significant interaction effect of stressful events and state self-compassion ($b$ = -0.16; $p$ <.001) and a non-significant interaction effect of stressful events and trait self-compassion ($b$ = 0.00; $p$ = .976). For the moderate to severe depression group, also a negative significant interaction effect of stressful events and state self-compassion ($b$ = -0.22; $p$ <.001) and a non-significant effect of stressful events and trait self-compassion were found ($b$ = 0.09; $p$ = .414).

**Table 3**

*Summary of LMMs for the Second Research Question*

| Group | Parameter | *b* | *SE* | *df* | *t* | Sig | 95% CI Lower Bound | 95% CI Upper Bound |
|---|---|---|---|---|---|---|---|---|
| No Depression (N=77) | Stressful events | 0.40 | 0.04 | 1958.01 | 9.80 | <.001 | 0.32 | 0.48 |
| | State SC | -0.15 | 0.05 | 1963.91 | -3.16 | .002 | -0.24 | -0.06 |
| | Stressful events * state SC | -0.16 | 0.04 | 1947.35 | -4.52 | <.001 | -0.24 | -0.09 |
| | Stressful events | 0.67 | 0.24 | 1928.71 | 2.81 | .005 | 0.21 | 1.14 |
| | Trait SC | -0.72 | 0.07 | 2018.55 | -9.80 | <.001 | -0.86 | -0.58 |
| | Stressful events * trait SC | 0.00 | 0.05 | 1936.01 | 0.03 | 0.976 | -0.10 | 0.10 |
| Depression (N=31) | Stressful events | 0.33 | 0.07 | 790.27 | 4.49 | <.001 | 0.18 | 0.47 |
| | State SC | -0.15 | 0.08 | 777.10 | -1.94 | .053 | -0.30 | 0.00 |
| | Stressful events * state SC | -0.22 | 0.06 | 763.02 | -3.51 | <.001 | -0.34 | -0.10 |
| | Stressful events | 0.32 | 0.46 | 847.07 | 0.68 | 0.495 | -0.59 | 1.22 |
| | Trait SC | -0.75 | 0.15 | 729.47 | -4.89 | <.001 | -1.06 | -0.45 |
| | Stressful events * trait SC | 0.09 | 0.11 | 848.50 | 0.82 | 0.414 | -0.13 | 0.32 |

*Note. SC* = Self-compassion; *df* = Degrees of freedom; *CI* = Confidence interval of unstandardized estimates.

## Discussion

The current study aimed to investigate the relationship between stress and negative affect and how self-compassion moderates this relationship. The constructs were examined as dynamic states by using ESM data and a distinction was made between the PM representing the average trait level of self-compassion and the PMC representing the state level of self-

compassion. By using the PMC, it was possible to accurately display the within-person fluctuation and statistically disaggregate the between-person from the within-person effects, thereby, presenting the difference between state and trait self-compassion (Curran & Bauer, 2011; Wang et al., 2019). Accordingly, when referring to state self-compassion in the context of the results, it should be kept in mind that the PMC was used for the analysis, not the observed state score of self-compassion.

As expected, the findings show that state self-compassion is more relevant in moderating the relationship between stress and affect than trait self-compassion. Additionally, it was investigated to what extent the moderation effect of self-compassion differs in individuals scoring high on depression compared to a non-depressed population. The results are contrary to the expectation that the interaction effect is less pronounced for individuals high on depression as a similar and significant moderation effect of state self-compassion and a non-significant effect of trait self-compassion were found for both groups.

**Interpretation of the Findings**

The findings regarding the first research question are in line with previous literature suggesting a buffering effect of self-compassion on negative affect when confronted with stress (Allen & Leary, 2010; Arslan, 2023; Diedrich et al., 2014; Neff et al., 2007; Trompetter et al., 2017). However, the results displayed that only the state level of self-compassion moderated the relationship between stress and affect, while the average trait level did not moderate the association. A possible explanation accounting for the differing effect of trait and state self-compassion may lie in the inherent dynamic nature of stress, adaptation, and coping (Kalisch et al., 2019; Ong & Leger, 2022). In particular, the current findings support the claim that the ability to utilize self-compassion in certain moments to adapt to stressful situations might be more relevant than the average trait level of self-compassion. Specifically, a higher level of state self-compassion may aid adaptive coping as it enhances

the objective observation of the stressful situation and the internal thoughts during that moment (Perez-Blasco et al., 2016). Moreover, higher self-compassion during a stressful situation may increase the confidence of the individual in their capacity to cope and may facilitate a kind and caring response to the self (Perez-Blasco et al., 2016).

The three dimensions of self-compassion may further assist in specific adaptive coping strategies which emphasizes the relevance of utilizing state self-compassion during stressful situations. As such, inducing a self-kind mindset in a certain difficult situation was found to enhance positive cognitive restructuring (Allen & Leary, 2010). Apart from that, self-compassion may aid in a stressful situation as it implies the realization of a common humanity of suffering. Thus, the belief that other people share the difficulties one experiences may decrease the negative consequences of stress (Allen & Leary, 2010; Perez-Blasco et al., 2016). Finally, the mindfulness dimension of self-compassion may aid adaptive coping with stress as it involves a balanced perspective of the situation and one's emotions without repressing them or feeling overwhelmed (Allen & Leary, 2010).

The results of the current study are further in line with the study of Mey et al. (2023) outlining the importance of studying self-compassion as a dynamic state by using longitudinal measures and highlighting the advantage of state self-compassion for adaptive coping, irrespective of the baseline level of self-compassion. In addition, the current results extend the previous study by demonstrating the difference between the state and trait level of self-compassion in buffering the negative association between stressful events and negative affect. Using the PMC as a moderator in the analysis, and thereby disentangling the between-person and within-person effects, further expands the existing ESM literature as this has not been done often previously which increases the relevance of the current study (Curran & Bauer, 2011; Wang et al., 2019).

Another point which might be important for the interpretation of the current findings is the measure of self-compassion which was used. The two items measure one dimension of the construct, namely self-kindness versus self-criticism, not considering the dimensions of common humanity and mindfulness (Neff, 2003). A correlation analysis of the PM trait self-compassion score used for the current analysis and the score of the participants on the multi-item baseline self-compassion scale assessing the full concept of self-compassion which was used for previous research showed a weak negative correlation ($r = -.24$). Thus, the data does not represent the full theoretical concept of self-compassion which might have influenced the interaction. Neff et al. (2021) recently developed and validated a state measure of self-compassion consisting of six items which would be a representative measure of the full construct for use in ESM studies. Therefore, it is recommended that future research repeats the analysis with this scale, thereby gaining further insights into the separate effects of the different dimensions of self-compassion in buffering the relationship between stress and affect. Particularly, it might be expected that especially self-kindness is relevant in buffering the negative effect of stress as this might be crucial for guiding behaviour and might influence the coping style (Allen & Leary, 2010). However, to validly discuss this, it is crucial to collect data representing all dimensions.

Regarding the second research question, the results are not in line with previous research suggesting that depressed individuals score lower on self-compassion and may cope with stress less adaptively (Krieger et al., 2013; Orzechowska et al., 2013). When comparing the average scores of self-compassion in the current sample, it was found that the self-compassion scores of the depression group were only slightly lower than those of the non-depressed population. Concerning the moderation analysis, for both groups the findings were similar to the results regarding the first research question: a similarly sized and significant

interaction effect of stressful events and state self-compassion and a non-significant effect of stressful events and trait self-compassion was found.

One possible explanation of the current findings relates to previous literature emphasizing that self-compassion may prevent or reduce depressive symptomatology (Körner et al., 2015; Raes, 2010). Further evidence stressed that self-compassion-based interventions significantly decrease depressive symptoms (Neff & Germer, 2012). Thus, utilizing self-compassion in a certain moment may buffer the negative effect of depressive symptoms and facilitate adaptive coping with stress which may account for the current findings. Based on these results, it is advised that interventions enhancing self-compassion should focus on inducing self-compassionate states in certain difficult situations, instead of increasing the general level of self-compassion. Concretely, self-compassion exercises could be implemented into ecological momentary interventions (EMIs) which are used to embed brief and responsive interventions into people´s daily lives (Balaskas et al., 2021). For instance, patients could use an application on their mobile phones to perform short self-compassion exercises at certain times per day. Other possible interventions connected to this point are Just-in-time adaptive interventions (JITAIs) which aim to provide the right amount of support at the right time by adapting to the dynamic internal and contextual states of an individual (Nahum-Shani et al., 2018). For example, a JITAI could use a smartwatch to detect physiological stress reactions in an individual and subsequently induce a self-compassion exercise. With these interventions, psychotherapy and the treatment of major depression could be supported as the patients learn to utilize self-compassion in stressful situations.

Another point related to the second research question concerns the different elements of self-compassion. Recently, the differentiation between the positive and negative components of self-compassion when relating the construct to depression has been increasingly studied. Specifically, the strong relationship between self-compassion and

depressive symptoms found in the literature may be largely based on the negative items of self-compassion, namely self-criticism, isolation and over-identification which are overall referred to as self-coldness (Lopez et al., 2018). As outlined above, the measure of self-compassion in the current study was limited to self-kindness and self-criticism which limits the validity of the results and the interpretations that can be drawn.

Finally, the sample size used to answer the second research question was quite small. Thus, results must be interpreted tentatively, and no firm conclusions can be drawn. It is recommended to repeat the study with a larger, clinical sample diagnosed with depression to draw validated conclusions for clinical practice.

**Strengths and Limitations**

The main limitation of the study can be seen in the measure of self-compassion which does not cover the full conceptualization of the construct, as explained above. Additionally, only one of the items used, namely *I currently feel self-critical*, includes a reference to the current moment which is crucial for ESM items. For the second item, this is missing which could further limit the validity of the results. A second limitation concerns the measure of depression. Scoring above the cut-off score on the PHQ-9 indicates that an individual is scoring higher on depressive symptoms than a healthy population, but it does not equal a validated diagnosis of depression. Thus, the results concerning the depression group must be interpreted with caution, especially when considering implications for clinical practice. Finally, the generalisability of the sample should be questioned. Most of the sample was female and German, thus, the results might not be transferable to the general population.

Apart from the outlined limitations, a strength of the current study concerns the ESM methodology. The constructs were studied according to their dynamic nature and close to the real-world context, which increases the quality of the data and allows for more substantiated conclusions than cross-sectional studies. The difference between state and trait self-

compassion in the current study stresses the importance of using ESM methods to capture dynamic psychological constructs.

**Conclusion**

To conclude, the current findings emphasize the difference between state and trait self-compassion in moderating the relationship between stress and affect. Higher levels of state self-compassion may aid adaptive coping with stress and may buffer the negative consequences of depressive symptoms.

**References**

Allen, A. B. & Leary, M. R. (2010). Self-compassion, stress, and coping. *Social and Personality Psychology Compass*, *4*(2), 107–118. https://doi.org/10.1111/j.1751-9004.2009.00246.x

Arslan, G. (2023). My inner perfectionist and nasty side! Self-compassion, emotional health, and subjective well-being in college students. *Personality and Individual Differences*, *210*, 112232. https://doi.org/10.1016/j.paid.2023.112232

Balaskas, A., Schueller, S. M., Cox, A. L., & Doherty, G. (2021). Ecological momentary interventions for mental health: A scoping review. *PloS one*, *16*(3), e0248152. https://doi.org/10.1371/journal.pone.0248152

Cantuaria, M. L., Brandt, J., & Blanes-Vidal, V. (2023). Exposure to multiple environmental stressors, emotional and physical well-being, and self-rated health: An analysis of relationships using latent variable structural equation modelling. *Environmental Research*, *227*, 115770. https://doi.org/10.1016/j.envres.2023.115770

Conner, T. S. & Lehman, B. J. (2012). Getting started: Launching a study in daily life. In T. S. Conner & M. R. Mehl (Eds.), *Handbook of research methods for studying daily life* (pp. 89–107). The Guilford Press.

Csikszentmihalyi, M. & Larson, R. (2014). Validity and Reliability of the Experience-Sampling Method. In M. Csikszentmihalyi (Eds.), *Flow and the foundations of positive psychology* (pp. 35-54). Springer. https://doi.org/10.1007/978-94-017-9088-8_3

Curran, P. J. & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual review of psychology*, *62*, 583-619. https://doi.org/10.1146/annurev.psych.093008.100356

DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, *54*(3), 486–495. https://doi.org/10.1037/0022-3514.54.3.486

Diedrich, A., Grant, M., Hofmann, S. G., Hiller, W., & Berking, M. (2014). Self-compassion as an emotion regulation strategy in major depressive disorder. *Behaviour Research and Therapy*, *58*, 43–51. https://doi.org/10.1016/j.brat.2014.05.006

Faesing, L. (2022). *Savouring in Everyday Life: An Experience Sampling Study Investigating the Associations Between Savouring Strategies, Savouring Regulation Diversity, Positive Events, and Emotional Well-Being*. [Unpublished Master Thesis]. University of Twente.

Helmich, M. A., Snippe, E., Kunkels, Y. K., Riese, H., Smit, A., & Wichers, M. (2020). Transitions in Depression (TRANS-ID) Recovery: Study protocol for a repeated intensive longitudinal n= 1 study design to search for personalized early warning signals of critical transitions towards improvement in depression. https://doi.org/10.31234/osf.io/fertq

Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A.-L. (2019). Deconstructing and Reconstructing Resilience: A Dynamic Network Approach. *Perspectives on Psychological Science*, *14*(5), 765–777. https://doi.org/10.1177/1745691619855637

Koopman, J. & Dimotakis, N. (2022). Experience Sampling Methodology. *Oxford Research Encyclopedia of Business and Management*. https://doi.org/10.1093/ACREFORE/9780190224851.013.304

Körner, A., Coroiu, A., Copeland, L., Gomez-garibello, C., Albani, C., Zenger, M., & Brähler, E. (2015). The role of self-compassion in buffering symptoms of depression

in the general population. *PLoS One*, *10*, e0136598. https://doi.org/10.1371/journal.pone.0136598

Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, *44*(3), 501-513. https://doi.org/10.1016/j.beth.2013.04.004

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9. Validity of a Brief Depression Severity Measure. *Journal of General Internal Medicine*, *16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Li, Y., Deng, J., Lou, X., Wang, H., & Wang, Y. (2020). A daily diary study of the relationships among daily self-compassion, perceived stress and health-promoting behaviours. *International Journal of Psychology: Journal International De Psychologie*, *55*(3), 364– 372. https://doi.org/10.1002/ijop.12610

López, A., Sanderman, R., & Schroevers, M. J. (2018). A Close Examination of the Relationship Between Self-Compassion and Depressive Symptoms. *Mindfulness*, *9*, 1470–1478. https://doi.org/10.1007/s12671-018-0891-6

MacBeth, A. & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical psychology review*, *32*(6), 545-552. https://doi.org/10.1016/j.cpr.2012.06.003

McMahon, G., Creaven, A.-M., & Gallagher, S. (2020). Stressful life events and adolescent well-being: The role of parent and peer relationships. *Stress Health*, *36*(3), 299– 310. https://doi.org/10.1002/smi.2923

Mey, L. K., Wenzel, M., Morello, K., Rowland, Z., Kubiak, T., & Tüscher, O. (2023). Be Kind to Yourself: the Implications of Momentary Self-Compassion for Affective

Dynamics and Well-Being in Daily Life. *Mindfulness, 14*, 622 – 636. https://doi.org/10.1007/s12671-022-02050-y

Myin-Germeys, I., Kasanova, Z., Vaessen, T., Vachon, H., Kirtley, O., Viechtbauer, W., & Reininghaus, U. (2018). Experience sampling methodology in mental health research: new insights and technical developments. *World Psychiatry, 17*(2), 123–132. https://doi.org/10.1002/wps.20513

Myin-Germeys, I. & Kuppens, P. (2021). The open Handbook of Experience Sampling Methodology. KU Leven. https://www.kuleuven.be/samenwerking/real/real-news/launch-open-handbook-of-experience-sampling-method

Nahum-Shani, I., Smith, S. N., Spring, B. J., Collins, L. M., Witkiewitz, K., Tewari, A., & Murphy, S. A. (2018). Just-in-Time Adaptive Interventions (JITAIs) in Mobile Health: Key Components and Design Principles for Ongoing Health Behavior Support. *Annals of behavioral medicine: a publication of the Society of Behavioral Medicine*, *52*(6), 446–462. https://doi.org/10.1007/s12160-016-9830-8

Neff, K. D. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*(2), 85– 102. https://doi.org/10.1080/15298860309032

Neff, K. D. (2009). Self-Compassion. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior* (pp. 561– 573). New York: Guilford Press.

Neff, K. D. (2011). Sefl-Compassion, Self-Esteem, and Well-Being. *Social and Personality Psychology Compass*, *5*(1), 1 – 12. https://doi.org/10.1111/j.1751-9004.2010.00330.x

Neff, K. D. & Germer, C. K. (2012). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, *69*(1), 28–44. https://doi.org/10.1002/jclp.21923

Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality, 41*(1), 139–154. https://doi.org/10.1016/j.jrp.2006.03.004

Neff, K. D., Pisitsungkagarn, K., & Hseih, Y. (2008). Self-compassion and self-construal in the United States, Thailand, and Taiwan. *Journal of Cross-Cultural Psychology, 39* (3), 267– 285. https://doi.org/10.1177/0022022108314544

Neff, K. D., Tóth-Király, I., Knox, M. C., Kuchar, A., & Davidson, O. (2021). The development and validation of the state self-compassion scale (long-and short form). *Mindfulness, 12*(1), 121-140. https://doi.org/10.1007/s12671-020-01505-4

Ong, A. D. & Leger, K. A. (2022). Advancing the study of resilience to daily stressors. *Perspectives on Psychological Science, 17*(6), 1591-1603. https://doi.org/10.1177/17456916211071092

Orzechowska, A., Zajączkowska, M., Talarowska, M., & Gałecki, P. (2013). Depression and ways of coping with stress: A preliminary study. *Medical science monitor: international medical journal of experimental and clinical research, 19,* 1050 – 1056. https://doi.org/10.12659/MSM.889778

Perez-Blasco, J., Sales, A., Melendez, J. C., & Mayordomo, T. (2016). The Effects of Mindfulness and Self-Compassion on Improving the Capacity to Adapt to Stress Situations in Elderly People Living in the Community. *Clinical Gerontologist, 39*(2), 90 – 103. https://doi.org/10.1080/07317115.2015.1120253

Raes, F. (2011). The effect of self-compassion on the development of depression symptoms in a non-clinical sample. *Mindfulness, 2,* 33–36. https://doi.org/10.1007/s12671-011-0040-y

Rosenberg, E. L. (1998). Levels of analysis and the organization of affect. *Review of general psychology, 2*(3), 247-270. https://doi.org/10.1037/1089-2680.2.3.247

Schleich, A. (2022). *Exploring the Associations between Gratitude, Stressful Events, and Emotional Well-Being and Distinguishing Between- and Within-Person Associations of Gratitude and Emotional Well-Being: an Experience Sampling Study* [Unpublished Master Thesis]. University of Twente.

Thoits, P. A. (2010). Stress and Health: Major Findings and Policy Implications. *Journal of Health and Social Behavior*, *51*, 41–53. https://doi.org/10.1177/0022146510383499

Thøgersen-Ntoumani, C., Dodos, L., Chatzisarantis, N., & Ntoumanis, N. (2017). A diary study of self-compassion, upward social comparisons, and body image-related outcomes. *Applied Psychology. Health and Well-Being*, *9*(2), 242–258. https://doi.org/10.1111/aphw.12089

Thøgersen-Ntoumani, C., Dodos, L. A., Stenling, A., & Ntoumanis, N. (2021). Does self-compassion help to deal with dietary lapses among overweight and obese adults who pursue weight-loss goals? *British Journal of Health Psychology*, *26*(3), 767–788. https://doi.org/10.1111/bjhp.12499

Trompetter, H. R., De Kleine, E., & Bohlmeijer, E. T. (2017). Why does positive mental health buffer against psychopathology? An exploratory study on self-compassion as a resilience mechanism and adaptive emotion regulation strategy. *Cognitive therapy and research*, *41*, 459-468. https://doi.org/10.1007/s10608-016-9774-0

Van Berkel, N., Ferreira, D., & Kostakos, V. (2017). The experience sampling method on mobile devices. *ACM Computing Surveys (CSUR)*, *50*(6), 1-40. https://doi.org/10.1145/3123988

Wang, L., Zhang, Q., Maxwell, S. E., & Bergeman, C. S. (2019). On Standardizing Within-Person Effects: Potential Problems of Global Standardization. *Multivariate behavioral research*, *54*(3), 382–403. https://doi.org/10.1080/00273171.2018.1532280

Williams, N. (2014). PHQ-9. *Occupational Medicine*, *64*(2), 139 – 140.

https://doi.org/10.1093/occmed/kqt154

# Appendix A

## Baseline Questionnaire

## Baseline Questionnaire English

### Demographics

- Age: How old are you?
- Gender: What gender do you identify as? Male, female, other
- Nationality: What is your nationality? Dutch German Other
- Occupation: What is your current occupation? Student, Working, Self-employed, studying and working, not working, other
- Highest degree obtained: Middle school (such as MBO, MTS, MEAO or Haupt- oder Realschule), High school (such as HAVO, VWO, HBS or Gymnasium/ Berufsschule/ Berufskolleg), High school, Bachelor, Master, PhD, Other
- SONA- ID

### Mental Health Continuum Short Form:

During the past month, how often did you feel...

1. Happy
2. Interested in life
3. Satisfied with life
4. That you had something important to contribute to society
5. That you belonged to a community
6. That our society is a good place or is becoming a better place, for all people
7. That people are basically good
8. That the way our society works makes sense to you
9. That you liked most parts of your personality
10. Good at managing the responsibilities of your daily life
11. That you had warm and trusting relationships with others
12. That you had experiences that challenged you to grow and become a better person
13. Confident to think or express your own ideas and opinions
14. That your life has a sense of direction or meaning to it
    a. Never
    b. Once or twice
    c. About once a week
    d. About 2 or 3 times a week
    e. Almost every day
    f. Every day

**GAD-7 for anxiety**

Over the last two weeks, how often have you been bothered by the following problems?

1. Feeling nervous, anxious, or on edge
2. Not being able to stop or control worrying
3. Worrying too much about different things
4. Trouble relaxing
5. Being so restless that it is hard to sit still
6. Becoming easily annoyed or irritable
7. Feeling afraid, as if something awful might happen
    a. Not at all
    b. Several days
    c. More than half the days
    d. Nearly every day

**PHQ-9**

Over the last 2 weeks, how often have you been bothered by any of the following problems?

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself or that you are a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching television
8. Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety or restless that you have been moving around a lot more than usual

9. Thoughts that you would be better off dead, or of hurting yourself
    a. Not at all
    b. Several days
    c. More than half the days
    d. Nearly every day

Scoring Sum Scores PHQ-9

- 0-4 no depression
- 5-9 mild depression
- 10-14 moderate depression
- 15-19 moderately severe depression
- 20-27 severe depression

**Psychological Well-being scale items from the positive relations with others subscale**

Below are three statements that may apply to you to varying degrees. For each statement, please indicate how much it applies to you. Please answer openly and honestly.

1. "Maintaining close relationships has been difficult and frustrating for me."
2. "People would describe me as a giving person, willing to share my time with others."
3. "I have not experienced many warm and trusting relationships with others."

-Strongly disagree

-Disagree

- Somewhat disagree

- neutral

- Somewhat agree

- Agree

- Strongly agree

**Trait gratitude GQ-6 (McCullough et al., 2002)**

Below are six statements that may apply to you to varying degrees. For each statement, please indicate how much it applies to you. Please answer openly and honestly.

- 1. I have so much in life to be thankful for.
- 2. If I had to list everything that I felt grateful for, it would be a very long list.
- 3. When I look at the world, I don't see much to be grateful for.*
- 4. I am grateful to a wide variety of people.
- 5. As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history.
- 6. Long amounts of time can go by before I feel grateful to something or someone.*
    - 1 = strongly disagree 2 = Disagree 3 = Somewhat disagree 4 = neutral 5 = Somewhat agree 6 = Agree 7 = Strongly agree
    - *Item 3 and 6 are reversed

**Self-compassion**

Please read each statement carefully before answering. Indicate how often you behave in the stated manner.

1. When I fail at something important to me I become consumed by feelings of inadequacy.
2. I try to be understanding and patient towards those aspects of my personality I don't like.
3. When something painful happens I try to take a balanced view of the situation.
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
5. I try to see my failings as part of the human condition.
6. When I'm going through a very hard time, I give myself the caring and tenderness I need.
7. When something upsets me I try to keep my emotions in balance.
8. When I fail at something that's important to me, I tend to feel alone in my failure
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
11. I'm disapproving and judgmental about my own flaws and inadequacies
12. I'm intolerant and impatient towards those aspects of my personality I don't like.
    a. Almost never
    b. Rarely
    c. Sometimes
    d. Often
    e. Almost always

## Baseline Questionnaire German

**Demographics:**

Alter: Wie alt sind Sie?

Nationalität: Welcher Nationalität gehören Sie an? Niederländisch, Deutsch, sonstiges

Geschlecht: Mit welchem Geschlecht identifizieren Sie sich? Männlich, weiblich, divers

Tätigkeit: Welcher Tätigkeit gehen Sie nach? Studieren, Angestellt, Selbstständig, Studieren

und Arbeiten, Nicht arbeitend, Sonstiges

Welches ist der höchste Abschluss, den Sie erworben haben? *Falls Sie derzeit immatrikuliert sind, kreuzen Sie den höchsten bereits erworbenen Abschluss an.* Weiterführende Schule (z.B. Haupt- oder Realschule), Weterführende Schule (z.B. Gymnasium, Berufsschule/Berufskolleg), Bachelor, Master oder Diplom, Promotion, Sonstiges
SONA

**MHC-SF:**

Im letzten Monat, wie oft hatten Sie das Gefühl,

1. dass Sie glücklich waren?
2. dass Sie Interesse am Leben hatten?
3. dass Sie zufrieden waren?
4. dass Sie einen wichtigen gesellschaftlichen Beitrag geleistet haben?
5. dass Sie zu einer Gemeinschaft gehörten (z.B. einer sozialen Gruppe, Ihrer Nachbarschaft oder Ihrer Stadt)?
6. dass unsere Gesellschaft besser für Ihre Bürger wird?
7. dass Menschen von Natur aus gut sind?
8. dass Sie verstehen, wie unsere Gesellschaft funktioniert?
9. dass Sie die meisten Aspekte Ihrer Persönlichkeit wertschätzen?
10. dass Sie Ihre täglichen Aufgaben und Verpflichtungen gut erfüllen konnten?
11. dass Sie warme und vertraute Beziehungen zu anderen haben?
12. dass Sie sich entwickeln oder ein besserer Mensch werden?
13. dass Sie selbstbewusst Ihre eigenen Ideen und Gedanken gedacht und geäußert haben?
14. dass Ihr Leben Richtung und Sinn hat.
    a. Nie
    b. 1-2 mal im Monat
    c. 1 mal in der Woche
    d. 2-3 in der Woche
    e. Fast täglich
    f. täglich

**GAD-7**

Wie oft fühlten Sie sich im Verlauf der letzten 2 Wochen durch die folgenden Beschwerden beeinträchtigt?

1. Nervosität, Ängstlichkeit oder Anspannung
2. Nicht in der Lage sein, Sorgen zu stoppen oder zu kontrollieren
3. Übermäßige Sorgen bezüglich verschiedener Angelegenheiten
4. Schwierigkeiten zu entspannen
5. Rastlosigkeit, so dass Stillsitzen schwer fällt
6. Schnelle Verärgerung oder Gereiztheit
7. Gefühl der Angst, so als würde etwas Schlimmes passieren
    - Überhaupt nicht
    - An einzelnen Tagen
    - An mehr als der Hälfte der Tage
    - Beinahe jeden Tag

**PHQ-9**

Wie oft fühlten Sie sich im Verlauf der letzten 2 Wochen durch die folgenden Beschwerden beeinträchtigt?

1. Wenig Interesse oder Freude an Ihren Tätigkeiten
2. Niedergeschlagenheit, Schwermut oder Hoffnungslosigkeit.
3. Schwierigkeiten ein- oder durchzuschlafen oder vermehrter Schlaf
4. Müdigkeit oder Gefühl, keine Energie zu haben
5. Verminderter Appetit oder übermäßiges Bedürfnis zu essen
6. Schlechte Meinung von sich selbst; Gefühl, ein Versager zu sein oder die Familie enttäuscht zu haben
7. Schwierigkeiten, sich auf etwas zu konzentrieren, z.B. beim Zeitunglesen oder Fernsehen
8. Waren Ihre Bewegungen oder Ihre Sprache so verlangsamt, dass es auch anderen auffallen würde? Oder waren Sie im Gegenteil „zappelig“ oder ruhelos und hatten dadurch einen stärkeren Bewegungsdrang als sonst?
9. Gedanken, dass Sie lieber tot wären oder sich Leid zufügen möchten
    - Überhaupt nicht
    - An einzelnen Tagen
    - An mehr als der Hälfte der Tage
    - Beinahe jeden Tag

**Positive Beziehungen:**

1. Es war für mich immer schwierig und frustrierend enge Beziehungen aufrechtzuerhalten.
2. Meine Bekannten würden mich als entgegenkommende Person bezeichnen, und meinen, dass ich meine Zeit gerne mit anderen verbringe.
3. Ich habe nicht viele warmherzige, vertrauensvolle Beziehungen mit anderen Menschen erlebt.
    a. 1 Stimme überhaupt nicht zu
    b. 2 stimme nicht zu
    c. 3 stimme eher nicht zu
    d. 4 Neutral
    e. 5 stimme eher zu
    f. 6 stimme zu
    g. 7 stimme stark zu

**Trait gratitude**

Im Folgenden finden Sie sechs Aussagen, die auf Sie in verschiedenem Ausmaß zutreffen können. Geben Sie bitte für jede Aussage an, wie sehr diese auf Sie zutrifft. Bitte antworten Sie offen und ehrlich

- 1. Ich habe so vieles im Leben, wofür ich dankbar sein kann.

- 2. Müsste ich alles aufschreiben, wofür ich je dankbar war, dann würde das eine sehr lange Liste ergeben
- 3. Wenn ich mir die Welt ansehe, dann kann ich nicht viel erkennen, wofür ich dankbar sein könnte.
- 4. Ich empfinde vielen verschiedenen Menschen gegenüber Dankbarkeit.
- 5. Mit zunehmendem Alter kann ich Menschen, Erlebnisse oder Augenblicke besser wertschätzen, die Teil meiner Lebensgeschichte waren.
- 6. Es kann sehr viel Zeit vergehen, bis ich jemandem oder für etwas dankbar bin.
    - 1 Stimme überhaupt nicht zu
    - 2 stimme nicht zu
    - 3 stimme eher nicht zu
    - 4 Neutral
    - 5 stimme eher zu
    - 6 stimme zu
    - 7 stimme stark zu

**Self compassion**

Bitte lesen Sie jede Aussage sorgfältig durch, bevor Sie antworten. Kreuzen Sie bei jeder

Aussage an, wie oft Sie sich in der beschriebenen Art und Weise verhalten:

1. Wenn ich bei etwas versage, was mir wichtig ist, werde ich von Gefühlen der Unzulänglichkeit aufgezehrt.
2. Ich versuche verständnisvoll und geduldig gegenüber jenen Zügen meiner Persönlichkeit zu sein, die ich nicht mag.
3. Wenn etwas Unangenehmes passiert, versuche ich einen ausgewogenen Überblick über die Situation zu erlangen.
4. Wenn es mir schlecht geht, neige ich dazu zu glauben, dass die meisten anderen Menschen wahrscheinlich glücklicher sind als ich.
5. Ich versuche, meine Fehler als Teil der menschlichen Natur zu sehen.
6. Wenn ich eine sehr schwere Zeit durchmache, schenke ich mir selbst die Zuwendung und Einfühlsamkeit, die ich brauche.
7. Wenn mich etwas aufregt, versuche ich meine Gefühle im Gleichgewicht zu halten.
8. Wenn mir etwas für mich Wichtiges misslingt, glaube ich oft, dass nur ich allein versage.
9. Wenn ich mich niedergeschlagen fühle, neige ich dazu nur noch auf das zu achten, was nicht in Ordnung ist.
10. Wenn ich mich auf irgendeine Art unzulänglich fühle, versuche ich mich daran zu erinnern, dass die meisten Leute solche Gefühle der Unzulänglichkeit haben.
11. Ich missbillige und verurteile meine eigenen Fehler und Schwächen.
12. Ich bin intolerant und unduldsam gegenüber denjenigen Seiten meiner Persönlichkeit, die ich nicht mag.
    a. Sehr selten

b. Selten
c. Gelegentlich
d. Oft
e. Sehr oft

## Appendix B

## Daily Questioannires

## Daily Questionnaires English

Below you can find several questions about your current feelings. Please try to indicate how you felt right before you started to answer the questionnaire!

**Positive and negative affect**

- How *cheerful* do you feel right now?
- How *enthusiastic* do you feel right now?
- How *satisfied* do you feel right now?
- How *relaxed* do you feel right now?
- How *anxious* do you feel right now?
- How *insecure* do you feel right now?
- How *down* do you feel right now?
- How *guilty* do you feel right now?
    - 1 (not at all) to 7 (very much)

**Gratitude**

- *How grateful do you feel right now?*

    - 1 (not at all) to 7 (very much)

**Positive relations**

- Who did you spend time with since the last time you answered a questionnaire for this study? (online or offline) If more answers apply, only choose the longest contact.
    - Family Member
    - Friend
    - Romantic Partner
    - Co-Worker/Fellow Student
    - Other
    - I did not spend time with anyone

Unless the last answer was given:

- How pleasant did you experience the contact you had?
    - 1 (not at all) to 7 (very much)
- How positive did you experience the contact you had?
    - 1 (not at all) to 7 (very much)

**Stressful event**

Think of the most striking event or activity since the last questionnaire. How (un)pleasant was this event or activity?

- -3 (very unpleasant) to +3 (very pleasant)

**Self-compassion**

1. I currently feel self-critical
2. I feel kind towards myself

    - 1 (not at all) to 7 (very much)

## Daily Questioannaores German

Im Folgenden finden Sie einige Fragen zu Ihren derzeitigen Gefühlen. Bitte versuchen Sie anzugeben, wie Sie sich gefühlt haben, kurz bevor Sie mit der Beantwortung des Fragebogens begonnen haben!

**Positiver und negativer Affekt**

- Wie fröhlich fühlen Sie sich im Augenblick?
- Wie begeistert fühlen Sie sich im Augenblick?
- Wie zufriedenfühlen Sie sich im Augenblick?
- Wie entspannt fühlen Sie sich im Augenblick?
- Wie ängstlich fühlen Sie sich im Augenblick?
- Wie unsicher fühlen Sie sich im Augenblick?
- Wie niedergeschlagen fühlen Sie sich im Augenblick?
- Wie schuldig fühlen Sie sich im Augenblick?
    - 1(gar nicht) bis 7 (sehr stark)

**State gratitude**

- Wie dankbar fühlen Sie sich im Augenblick?
    - 1(gar nicht) bis 7 (sehr stark)

**Positive relations**

- Mit wem haben Sie seit dem letzten Fragebogen Zeit verbracht? (Online und Offline) Wenn mehrere Antworten zutreffen, wählen Sie nur den längsten Kontakt aus.
    - Familienmitglied
    - Freund*in
    - Romantische Partner*in
    - Kolleg*innen/ Komoliton*innen
    - Sonstige
    - Ich habe mit niemandem Zeit verbracht

  Unless the last answer was given:

- Wie angenehm haben Sie den Kontakt empfunden?
    - 1(gar nicht) bis 7 (sehr stark)
- Wie positiv haben Sie den Kontakt empfunden?
    - 1(gar nicht) bis 7 (sehr stark)

**Stressful events**

Denken Sie an das auffälligste Ereignis oder die auffälligste Aktivität seit dem letzten

Fragebogen. Wie (un)angenehm war dieses Ereignis oder diese Aktivität?

- -3(sehr unangenehm) bis +3 (sehr angenehm)

**Self-compassion**

1. Ich fühle mich selbstkritisch
2. Ich bin freundlich zu mir selbst
    a. 1(gar nicht) bis 7 (sehr stark)

# Appendix C

## Informed Consent

### Informed Consent English

Dear participant,

Thank you for your participation in this study. Before you participate, it is important that you understand the goal of this research and what the study will ask from you. The purpose of this study is to find out how well being is related to several positive psychology constructs. To explore this relationship, we want to measure fluctuations in mental health in daily life to gather a more detailed picture of the dynamics of mental health.

For this study, we will ask you to fill in several questionnaires on your mobile phone. All questionnaires will be completed in the Ethica app. The study will start with a questionnaire concerning your demographics and general mental health. This initial questionnaire will take about 10 minutes to complete. Afterwards, you will receive three daily questionnaires per day for a period of two weeks. Notifications will remind you about the next questionnaire. The questionnaires will be provided in the morning, afternoon and evening. One daily questionnaire takes approximately 3 minutes to complete. It is important that you answer the questionnaires as soon as possible. *Please make sure that you turn on the notifications for the Ethica app on your mobile device*.

The information that we collect from this research project will be kept confidential. This means that only the researchers have insight into your answers. All personal data (such as age, gender etc.) will be anonymized and will not be published and/or given to a third party. Your participation in this study is voluntary. You are free to withdraw from this study at any time and without giving a reason.

**Contact information**

If you have any questions regarding this study, you can contact the researchers of this project Amelie Schleich (a.c.schleich@student.utwente.nl) and Allegra Passmann (a.v.passmann@student.utwente.nl)

**Consent**

I have read and understood the information provided and had the opportunity to ask questions. I understand that my participation is voluntary and that I am able to withdraw at any time, without a reason or cost. I hereby voluntarily agree to take part in this study.

## Informed Consent German

Liebe Teilnehmer*innen,

wir danken Ihnen für Ihre Teilnahme an dieser Studie. Bevor Sie teilnehmen, ist es wichtig, dass Sie sowohl das Ziel als auch die Anforderungen, die diese Studie an Sie stellt, verstehen. Ziel dieser Studie ist es, herauszufinden, wie die mentale Gesundheit mit verschiedenen Konstrukten der positiven Psychologie zusammenhängt. Um diesen Zusammenhang zu erforschen, wollen wir die Schwankungen der psychischen Gesundheit im Alltag messen, um ein detaillierteres Bild von der Dynamik der psychischen Gesundheit zu erhalten.

Für diese Studie werden wir Sie bitten, mehrere Fragebögen auf Ihrem Mobiltelefon auszufüllen. Alle Fragebögen werden über die Ethica-App ausgefüllt. Die Studie beginnt mit einem Fragebogen zu Ihren demografischen Daten und Ihrer allgemeinen psychischen Gesundheit. Das Ausfüllen dieses ersten Fragebogens wird etwa 10 Minuten dauern. Danach erhalten Sie über einen Zeitraum von zwei Wochen täglich drei Fragebögen. Diese werden Sie gefragt morgens, nachmittags, und abends auszufüllen. Dabei werden Benachrichtigungen Sie an den nächsten Fragebogen erinnern. Das Ausfüllen eines täglichen

Fragebogens dauert etwa 3 Minuten. Es ist wichtig, dass Sie die Fragebögen so schnell wie möglich beantworten. *Bitte stellen Sie sicher, dass Sie die Benachrichtigungen für die Ethica-App auf Ihrem Mobilgerät einschalte*n.

Die Informationen, die wir im Rahmen dieses Forschungsprojekts sammeln, werden vertraulich behandelt. Dies bedeutet, dass nur die Forscher Einblick in Ihre Antworten haben. Alle persönlichen Daten (wie Alter, Geschlecht usw.) werden anonymisiert und werden nicht veröffentlicht und/oder an Dritte weitergegeben. Ihre Teilnahme an dieser Studie ist freiwillig. Es steht Ihnen frei, jederzeit und ohne Angabe von Gründen von dieser Studie zurücktreten.

**Kontaktinformationen**

Wenn Sie Fragen zu dieser Studie haben, können Sie sich an die Forscherinnen dieses Projekts Amelie Schleich (a.c.schleich@student.utwente.nl) und Allegra Passmann (a.v.passmann@student.utwente.nl) wenden.

**Einverständniserklärung**

Ich habe die bereitgestellten Informationen gelesen und verstanden und hatte die Möglichkeit, Fragen zu stellen. Ich weiß, dass meine Teilnahme freiwillig ist und dass ich jederzeit ohne Angabe von Gründen und ohne Kosten von der Teilnahme zurücktreten kann. Ich erkläre mich hiermit freiwillig bereit, an dieser Studie teilzunehmen.