

**The Association between Gratitude and Positive and Negative Affect in Daily Life: An
Experience Sampling Study**

Master Thesis

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Abstract

Background. Currently, psychological research is devoting greater attention to positive psychology. One emotion that is receiving increasing interest is gratitude, as it appears to improve well-being and reduce pathological symptoms. Gratitude has been shown to be correlated with positive affect and negatively associated with negative affect at the trait level. So far, however, little is known about the intrapersonal relationship between gratitude and affect, although knowing more about gratitude and its variation with affect could be of great importance for future interventions. Therefore, this study examines the temporal relationship between gratitude and affect using the experience sampling method (ESM) with a focus on the association between these constructs at both the within- and between-person level.

Method. This secondary data analysis involved 45 participants (mean age=25.24, 71.7% female), who answered three questionnaires on gratitude and positive and negative affect every day for 14 days. Participants were also required to complete a baseline questionnaire that included demographic data and trait measurements. Linear mixed modelling (LMM) was used to analyse the data. Person-mean centering was employed to determine between- and within-person associations.

Results. There was a strong positive correlation between momentary gratitude and positive affect ($\beta=.58$, $p<.001$) and for negative affect and momentary gratitude a negative moderate association was found ($\beta=-.35$, $p<.001$). Further, analyses on the between-person level revealed that gratitude and positive affect were significant and moderately associated ($\beta=.31$, $p<.001$). For negative affect, the model showed a weak negative relationship ($\beta=-.12$, $p<.02$). A stronger association was found for the association of positive affect and gratitude within a person ($\beta=.44$, $p<.001$), while the analyses for negative affect showed a weak negative association at the within-person level ($\beta=-.28$, $p<.001$).

Conclusion. The results suggest that people who feel more gratitude also experience more positive feelings and fewer negative feelings in a daily context. These results of the current study are consistent with the findings of previous research. When looking at the between-person and within-person associations of gratitude and affect, it seems to be mainly a within-person association, i.e. that gratitude is not as strongly related to the average level of affect, but that people feel relatively more gratitude in moments of high positive affect and low negative affect. Overall, these findings argue for the inclusion of gratitude in psychological interventions for individuals, as it appears to be of great value in increasing positive feelings and well-being.

Keywords: Gratitude, Positive Affect, Negative Affect, Experience Sampling Method, ESM.

The Association between Gratitude and Affect in Daily Life: An Experience Sampling Study

Scientific research has shown that people who experience positive emotions perceive many benefits in life and have a better quality of life, mainly due to their enhancing effect (Seligman & Csikszentmihalyi, 2014). Gratitude in particular can serve several functions, such as prosocial behaviour and being a source of resilience. In addition, Bannink (2012) revealed that focusing on the positive in life can help improve well-being and reduce pathological symptoms. One interesting relationship is that between gratitude and affect, as it appears that gratitude is strongly correlated with positive affect and negatively associated with negative affect at the trait level (McCullough et al., 2002; Jans-Beken et al., 2019). However, most previous studies have focused on the interpersonal level rather than the intrapersonal level. Curran and Bauer (2011) have shown that looking at the intrapersonal level is of great importance, as examining only the interpersonal level would limit the development of a full understanding of the true nature of relationships. For this reason, the present study focuses on the relationship of these constructs at both the within and between-person levels. Further, an experience-sampling study can thus make a valuable contribution to a more detailed understanding of the relationship between gratitude and affect in daily life.

Positive Psychology

In recent years, there has been an increasing focus on positive psychology. This is a comparatively new area of psychology and generally refers to well-being, the positive aspects of life and how to improve the quality of life (Seligman & Csikszentmihalyi, 2014). Positive Psychology aims to complement traditional approaches to problem-solving and pathology reduction by, for example, promoting positive emotions, positive relations and accomplishments (Bannink, 2012). One theoretical framework that is commonly used in the context of positive psychology is the broaden-and-build theory by Fredrickson (1998). This theory states that positive emotions expand people's resources, while negative emotions narrow their focus in preparation for immediate action (Fredrickson, 2013). Following this theory, Jans-Beken et al. (2019) also suggest that positive emotions have survived as part of the human experience as their broadening effect allows us to build lasting personal resources, which indirectly serves survival in the long run. This confirms the importance of experiencing positive emotions on a daily basis,

which is not only helpful in the short term but also brings long-term benefits. Moreover, well-being interventions are also becoming increasingly popular and focus on the enhancement of various positive emotions, such as gratitude, hope, optimism and happiness (Jackowska et al., 2016; Casellas-Grau et al., 2013; Malouff & Schutte, 2016; Proyer et al., 2016). Bolier et al. (2013), confirmed that positive psychology interventions (PPIs) can increase subjective well-being as well as psychological well-being and also contribute to the reduction of depressive symptoms. Overall, positive emotions are increasingly becoming the focus of research and treatment, as positive emotions play an important role in preserving people's well-being.

Gratitude

One positive emotion that is receiving increasing attention in positive psychology is gratitude, as it seems to serve a positive role in relation to well-being. In general, gratitude can be understood as a state of mind that focuses on the positive things in life (Wood et al., 2008). Depending on the context, gratitude can have different meanings and it can refer e.g. to a state, an attitude, a characteristic, or a feeling. There exist several definitions in the literature that refer to the state or trait of gratitude. Rash et al. (2011) defined the state level of gratitude as a positive social emotion felt when another person freely bestows an unearned act of kindness or generosity. Therefore, gratitude as an emotion is most strongly triggered and experienced when one receives a benefit from another person. Interestingly, this can influence people's behaviour in trying to increase the chances of such benefits in the future (McCullough et al., 2001). Looking more closely at the stable level of gratitude as a trait, it can be conceptualised as a general tendency to recognise the role of other people's benevolence in positive experiences and outcomes and to respond with grateful feelings (McCullough et al., 2002). In broader terms, it is a stable disposition that leads individuals to be more susceptible to the affective experience of gratitude (Emmons & Mishra, 2011). Besides gratitude as prosocial behaviour, it can also be a very powerful source of resilience in moments when people experience negative emotions, e.g. by being grateful for what one has and remembering the good things that have happened to one. In conjunction with the "building" hypothesis of broaden-and-build theory, it is claimed that people with a high gratitude disposition tend to experience frequent and intense grateful emotions and that this experience of positive emotions subsequently builds up various personal resources (Fredrickson et al., 2003; McCullough et al. 2004; Xiang & Yuan, 2020).

Several studies revealed that momentary levels of gratitude have been positively correlated to the trait level of gratitude, meaning that individuals with high levels of trait gratitude also tend to report higher levels of momentary gratitude (McCullough et al., 2004; Wood et al., 2008). If a person is characterized as very grateful, he or she is able to perceive actions more positively than a less grateful person (Wood et al., 2008). When looking at other previous studies, it is noticeable that gratitude was predominantly examined as a general characteristic and the state effects were often overlooked. This may be because cross-sectional and one-time surveys were mostly used to study the phenomenon, rather than methods that use momentary assessments. These studies show that gratitude can help to increase well-being and life satisfaction as well as decrease distress and depressive symptoms (Bohlmeijer et al., 2021; Wood et al., 2010; Wood & Joseph, 2010; Kashdan et al., 2006; Davis et al., 2016). Another experimental study showed that gratitude interventions even have a positive impact on subjective well-being, optimism, and sleep quality and show a decrease in blood pressure (Jackowska et al., 2016). In such interventions, gratitude is used as a resource builder through the expanding effect of positive emotions.

Nonetheless, there are some studies in which momentary assessments have been used to examine both the state and properties of gratitude and its association with other mental health phenomena. In an ESM study conducted by Kashdan et al. (2006), which examined the trait and state of gratitude in the context of post-traumatic stress disorder (PTSD), the trait of gratitude was found to be a significant predictor of higher daily well-being in veterans with PTSD. Interestingly, the momentary state of gratitude was even more strongly related to well-being than the trait of gratitude. Furthermore, another ESM study by McCullough et al. (2004) found a strong positive correlation between dispositional and momentary gratitude, suggesting that individuals with high levels of trait gratitude also experience higher levels of gratitude in their daily lives. This confirms the aforementioned finding that individuals process events in different ways and that individuals with lower levels of dispositional gratitude are more likely to experience gratitude in their daily life. Overall, the results suggest that gratitude is positively correlated with other pleasant emotions and experiences and has a positive impact on well-being in general.

Affect

One construct that varies from person to person is mood. Lane and Therry (2000) defined mood as "a set of feelings that are fleeting in nature, vary in intensity and duration, and usually encompass more than one emotion" (p. 17). A key element of the definition of mood is that emotion is also part of the same conceptual framework and a clear distinction between them is often not possible (Lane & Therry, 2000). A third concept besides emotion is "affect", which is another important component and similarly refers to states of feeling that vary on a continuum from positive to negative. Watson and Tellegen (1985) have conceptualised this in a two-dimensional model, specifically as positive and negative affect.

Positive affect involves experiencing positive emotions and is associated with a variety of positive outcomes (Watson et al., 1988; Crawford & Henry, 2004). Examples of such emotions can be joy, engagement, pride or interest. Several studies in this area discovered that people who report experiencing positive affect tend to be e.g. more calm, resilient and optimistic compared to those who report less positive affect (Fredrickson et al., 2003; Tugade et al., 2004; Gable et al., 2006). Interestingly, frequent positive affect is a key aspect of subjective well-being (SWB), as well as life satisfaction and negative affect (Busseri, 2018). Contrary, negative affect can be conceptualized as the experiencing of emotional distress (Watson et al., 1988; Crawford & Henry, 2004). These emotions include e.g. depression, anxiety, fear and anger. The broaden-and-built theory can also be applied here, which suggests that positive affect and the perceived positive emotions broaden people's awareness, while negative affect narrows people's scope of focus. It is also possible that positive affect leads to new information being processed and connections being made at a higher level, expanding ideas and areas of perception (Fredrickson, 2000). Nevertheless, it is also important to experience and accept negative emotions, as they are essential to a person's life journey (Manela, 2016). Therefore, facing negative feelings can also be beneficial.

Gratitude and Affect

To relate all the constructs mentioned, the following picture emerges: gratitude is a positive emotion that has been repeatedly found to be strongly correlated with positive affect and negatively associated with negative affect (McCullough et al., 2002; Watkins et al., 2003; Jans-Beken et al., 2019). Moreover, Israel-Cohen et al. (2014) propose that gratitude can serve as a

protective factor due to the greater appreciation of life associated with it. This implies that gratitude may strengthen and build resilience. Consequently, positive affect facilitates new behaviours that simultaneously promote positive life choices and action plans, again arguing for the broad-and-build theory and supported by several studies (Fredrickson, 2000; Fredrickson & Branigan, 2005; Wadlinger & Isaacowitz, 2006). Another study by Lambert et al., (2012) demonstrated that positive affect mediates the relationship between gratitude and depression, suggesting that gratitude contributes to building psychological resources. In terms of negative affect, some findings show a moderate negative relationship between gratitude and negative affect (McCullough et al., 2002; Froh et al., 2011). However, Froh et al. (2009) have found no significant relationship. Furthermore, there may be the assumption that negative feelings lead to more gratitude in some people, as they still remember what they are grateful for in difficult times. Perhaps gratitude is much more needed in difficult times.

Some recently published studies are beginning to examine the intrapersonal (within) levels of gratitude and affect more closely rather than the often-studied interpersonal (between) levels. First, Nezlek et al. (2019) discovered in an ESM study that daily experienced feelings of gratitude are positively related to positive measures, including positive affect at the individual level (within-person level). In the study conducted by Jans-Beken et al. (2019), the researchers determined that momentary gratitude is a significant predictor of positive affect in the everyday context and that it is maintained even in the presence of negative affect. However, in both studies, they were unable to clearly distinguish between within- and between-person contexts.

To date, most studies have focused on the trait level of gratitude and its relationship to affect. However, some previous studies suggest that there may be a temporal relationship between within-level gratitude and affect. In order to be able to draw clearer conclusions, a distinction between the relationships between and within persons is missing.

Between- and Within-Person Associations

As mentioned earlier, some studies have examined so-called between- and within-person associations. By analysing the relationship between two sets of effects, a deeper understanding of the factors that influence these two different types of effects can be gained (Curran & Bauer, 2011; Wang & Maxwell, 2015). The term "between-person" refers to the presence of differences between people (Hoffman, 2015). To elaborate, the between-person effect might describe that a

person who feels more gratitude on average than others is more likely to feel more positive emotions and less likely to feel negative emotions. Hoffman (2015) conceptualised the associations within a person as the intra-individual variation within a person when measured repeatedly over time, i.e. how a person deviates from their own baseline. Conversely, the within-person effect focuses on what happens to a person's individual gratitude level and whether there are differences in affect when this varies. Analyses of both can make it possible to get a clearer picture of what happens between these constructs. The disadvantage of e.g. cross-sectional studies, however, is that by definition they cannot capture within-person associations but rather focus on what happens between individuals (Curran & Bauer, 2011). Therefore, in recent years, there have been demands to gain more insights into the relationship between constructs by studying processes that take place within individuals rather than between them (Curran & Bauer, 2011; Hoffart, 2014). In research, it has often been a problem to interpret between-person outcomes as within-person outcomes, although they often cannot be generalised to within-person outcomes (Curran & Bauer, 2011). This is what is known as an ecological fallacy, which should be avoided in research. Further, such generalisation can lead to false conclusions ranging from misclassification systems and biased testing to deceptive impressions of correlations at the conceptual level (Fisher et al., 2018). Concerning gratitude and affect at the group level, it could lead to assumptions that are not transferable to individuals and thus e.g. tailored gratitude interventions could have other unintended effects on individuals and would be of no use.

Therefore, due to the lack of differentiated research on associations between and within individuals, it is important for this study to use an appropriate research method to distinguish between the two constructs, as gratitude and affect can vary significantly over time at the individual level. This is also important to gain a clearer understanding of the relationship for future research.

Experience Sampling Method

One suitable method to overcome the barriers of the previous disadvantages of studies in terms of gratitude and positive and negative affect and look more into the state associations is the experience sampling method (ESM), also known as ecological momentary assessment (EMA). Generally speaking, ESM refers to structured self-report diary techniques that assess different types of behaviours and emotions. A major disadvantage of cross-sectional studies is that they

often rely on the retrospective memory of respondents, which is not the case with the ESM, as there is less likelihood of recall bias (Scollon et al., 2003; Woltjes, 2019). In addition, the ESM assesses people in real-time, as the focus is on the naturally flowing nature of experiences and the aim is to assess experiences as close as possible in times when the events happen (Myin-Germeys & Kuppens, 2021). Therefore, the ESM usually involves more than one assessment per day. This also provides better insight into the variation of variables in terms of many different settings (Larson & Csikszentmihalyi, 2014). Moreover, this sampling method takes into account fluctuations in order to present more reliable data of varying constructs. Lastly, this longitudinal study method takes into account changes in behaviour and more closely examines the relationships between time-varying variables over time (Verhagen et al., 2019).

The Present Study

Since there is a lack of supporting evidence on how both concepts change over time, the aim of this study is to examine more closely the relationship between momentary gratitude and positive and negative affect among participants using the experience sampling method. In addition, there is a lack of research on what is known about the extent of gratitude between and within individuals, as well as about positive and negative affect, as most studies that have focused on demonstrating a link between both concepts have only focused on studies between individuals. At the between-person level, there may be a negative relationship between gratitude and negative affect, as research confirms (McCullough et al., 2002; Froh, et al., 2011). However, it could be that the extent or even the direction is different at the individual level, at least for some people or in certain moments. It is possible that gratitude is also used as a coping strategy in moments when negative affect is high. Meaning that people feel more gratitude in moments when they actually experience negative emotions. Lastly, gratitude is not only a prosocial behaviour, as it can also be a very powerful source of resilience, which can also vary among individuals. To put more emphasis on the relevance of this association, the following two research questions were created:

- 1. How are momentary gratitude and positive and negative affect associated over time and per participant?*
- 2. How is momentary gratitude related with momentary (within person) and average (between person) positive and negative affect in daily life?*

Method

Design

The data for this study was originally collected as part of two master's theses at the University of Twente. The overall aim of this study was to find out how well-being is related to different constructs of positive psychology (e.g. gratitude, self-compassion, positive relations). The present study concerns a secondary analysis.

After the approval by the Ethics Committee BMS of the University of Twente (211225), the data collection started on 22/11/2021 and ended on 05/12/2021, lasting a total of 14 days. This time period of data collection is in line with Connor & Lehman's (2012) findings that ESM studies are usually conducted over a period of one to four weeks. This two-week period is most common for these types of studies, as it limits a decline in adherence as well as the burden on participants, resulting in a good response rate (Connor & Lehmann, 2012; van Berkel et al., 2017). Studies that run for too long risk a higher drop-out rate and a greater amount of missing data. Finally, it allows for a more detailed look at the temporal frequency of gratitude and affect over time.

One day after registration (day 2), the study started with a demographic data questionnaire including a baseline questionnaire on the participants' general mental health with different questionnaires of positive constructs. The first questionnaire took about 10 minutes to complete. On the same day, the daily assessment started and participants received three questionnaires per day for the next 14 days. The questionnaires were handed out in the morning, afternoon and evening. Filling out a daily questionnaire took about 3 minutes. It was ensured that the duration was not too long and thus did not represent a further burden for the participants in order to keep the dropout rate and the missing data as low as possible. In total, each participant received 43 surveys during this study period, including the baseline questionnaire.

In this study, a fixed schedule with interval sampling was used to trigger the daily questionnaire. The three daily questionnaires were administered at a random point in time within a fixed time interval (Conner & Lehman, 2012). This had the advantage that the participants had an approximate idea of when they would receive the questionnaires due to the fixed time intervals, in order to know for instance when they would be sent, even in case of technical problems with the notifications. At the same time, it was also useful that it was not completely fixed, as it helped the participants to answer more intuitively and reduce anticipation.

Participants

In order for participants to take part in this study, they had to be fluent in German or English, have a smartphone to receive the surveys, have an email and be at least 18 years old. All interested participants gave informed consent on the first day and had the option to withdraw from the study at any time without giving a reason. Convenience sampling was used to recruit participants. Both researchers asked German and Dutch acquaintances to participate in their study. Here, it is an advantage that this group of people is likely to participate in the longitudinal study because they are familiar with the researchers. This was apparent in the sample size, as 68 people participated in the study. In general, sample sizes for ESM studies tend to be small because of the effort involved (Conner & Lehmann, 2012). The average sample size of ESM studies was 53 in a study by Van Berkel et al. (2017), hence the sample size in the study was above average.

Procedure

The researchers of the original study decided to conduct a pilot study after setting up the study in Ethica to find points for improvement and to check if everything was functioning as planned. Therefore, they participated in the trial for three days and checked whether their questionnaires were working as intended. This pilot study was also helpful to review the trigger logic and the corresponding notifications. After that, the recruitment of participants began.

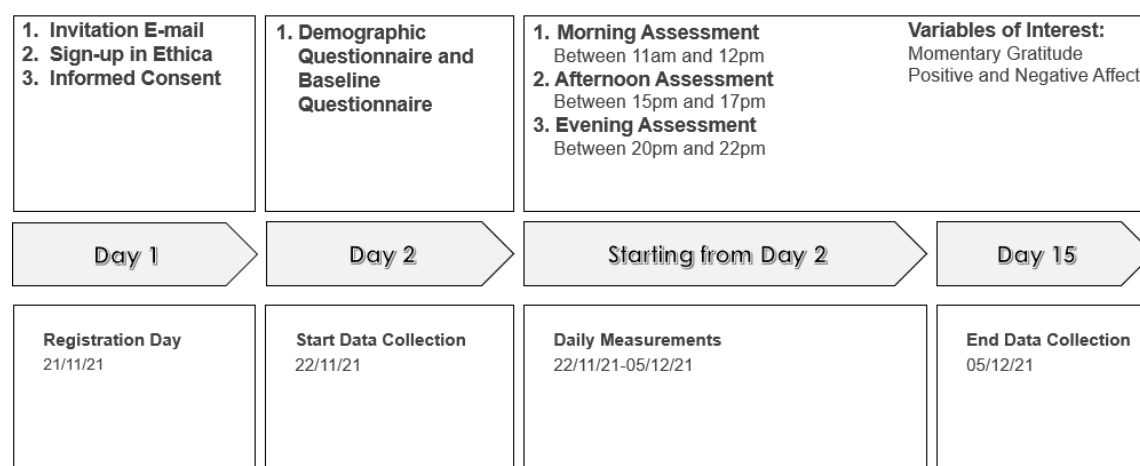
When this was completed, all potential respondents received an email prepared by the researchers with step-by-step instructions for the Ethica app and explanations of the assessments (Appendix B). After downloading the app, signing up and entering the code for the study, participants received the consent form and were asked to accept it in order to participate in the study.

The study officially began when participants received the demographic information and baseline information questionnaire. There was no time limit for this questionnaire and participants had until the end of the study to complete them. However, the participants received a total of three reminders: the first after seven hours, the second after six days and the third after eleven days. The last reminder had the indication that this was the last chance to complete the questionnaire. On the same day, the daily measurements began. The first questionnaire appeared

at a random time point between 10 am and 12 pm, the second between 15 pm and 17 pm and the last daily questionnaire was available in the evening between 20 pm and 22 pm. For all three daily surveys, respondents had two hours from the time of the trigger to complete the survey, with a reminder appearing after one hour. After 14 days, the data collection was completed. Figure 1 shows an overview of the study design.

Figure 1

Timeline of the Study Design Including the Variables of Interest



Materials

Ethica and Informed Consent

The participants received the questionnaires via a platform called Ethica, which draws on experience sampling (<https://ethicadata.com/>). This research platform enables researchers to measure several constructs on a daily basis using a variety of self-created assessments. In addition, this application allows participants to answer their surveys several times a day, regardless of their location. To participate in studies via Ethica, participants need a mobile device where they download the app and register for the respective study with a code. This process was also explained in the consent form (see Appendix A). Furthermore, participants were asked to turn on the in-app features on their mobile phones to ensure that they do not forget to answer the surveys and maximize the response rate. They were also asked to complete the surveys as soon as possible after they were sent to them to minimise retrospective bias. In addition, it was pointed

out that the questions should be answered as the respondents felt immediately before they started answering the questions in order to reduce reactivity.

Since the different questionnaires also contained other variables that were of interest to the other researchers, only those that were important in terms of gratitude and positive and negative affect were considered for this study. Furthermore, all questionnaires were provided in German or English, which can be found in Appendix B. Following, only the measurements relevant to the present study are discussed.

Demographic and Baseline Questionnaire

The questionnaire contained 43 items including the demographics and several trait measurements (e.g. gratitude, self-compassion, anxiety). In the demographics, general information about the identity of the participants was asked (see Appendix B). To obtain more general information about the characteristics of the sample population, two questionnaires were included.

First, to measure the overall mental well-being the Mental Health Continuum Short Form (MHC-SF) was enclosed. This self-reported questionnaire comprises three subscales: emotional, social and psychological well-being (Keyes et al., 2008). More specifically, the scale contains three items on emotional well-being, six items on psychological well-being and five items on social well-being. There are 14 items in total, rated from 0 (*Never*) to 5 (*Every day*). The statements refer to the past month and ask about certain aspects, such as happiness, satisfaction, interest in life and questions about society. The higher the mean value, the higher the mental well-being, whereby the individual subscales can also be calculated individually. Lamers et al. (2011) evaluated the MHC-SF and reported a good convergent validity as well as a high internal and moderate test-retest reliability ($\alpha=.89$). This suggests that the scale is a valid and reliable instrument for measuring positive mental health (Lupano Perugini, 2017). For this study, internal consistency is good (Cronbach's $\alpha = .84$).

Secondly, the Gratitude Questionnaire-Six Item Form (GQ-6) by McCullough et al. (2002) was used to obtain more information about the characteristic of gratitude. This questionnaire consists of 6 items with a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Some of the statements were for example: "I have so much in life to be grateful for", "If I had to list everything that I felt grateful for, it would be a very long list." and "As I get older I find myself more able to appreciate the people, events, and situations that have

been part of my life history". A high mean score on this scale indicates a high level of character gratitude. In general, the GQ-6 is a valid instrument for measuring trait gratitude with a good internal consistency (McCullough et al., 2002; Hudecek et al., 2020; Yost-Dubrow & Dunham, 2017). For this current study, Cronbach's alpha is .83.

ESM Measures

For the daily assessments, the same survey was asked three times a day. This consisted of 5 short questionnaires measuring several state constructs and included a total of 15 questions (see Appendix C). For this study, two of them were important. First, positive and negative affect were measured using the 8-item scale, varying on a 7-point Likert scale from 1 (*Not at all*) to 7 (*Very much*). This scale was already used in previous ESM studies (Geschwind et al., 2011; Jans-Beken et al., 2019) and was originally derived from the original Positive and Negative Affect Schedule (PANAS), which was developed by Watson, Clark, & Tellegen (1988) and is one of the most widely used scales for measuring positive and negative affect. It was designed to measure affect in different contexts, such as the present moment, and is therefore particularly appropriate for this study. The first four questions focused on positive affect, namely "How **cheerful** do you feel right now?", "How **enthusiastic** do you feel right now?", "How **satisfied** do you feel right now?" and "How **relaxed** do you feel right now?". The next four questions were about negative affect: "How **anxious** do you feel right now?", "How **insecure** do you feel right now?", "How **down** do you feel right now?" and "How **guilty** do you feel right now?". For both scales, a mean score was obtained. A high mean value for positive affect indicates that more positive emotions were experienced, while a high value for negative affect accordingly implies that more negative emotions were experienced. A split-half reliability test for this scale yielded an internal consistency of .83 for positive affect and .85 for negative affect, which is acceptable.

Next, momentary gratitude was measured using the one-item scale "How **grateful** do you feel right now?". This question could be answered on a 7-point Likert scale, ranging from 1 (*Not at all*) to 7 (*Very much*), indicating the level of gratitude at that moment, with a higher score indicating a higher level of gratitude and a lower score indicating a lower level of perceived gratitude. This scale was chosen based on the statement "I feel grateful", which has already been used in several ESM studies (DeWall et al., 2012; Visserman et al., 2018; Jans-Beken et al., 2019). However, the wording was changed to a question format as it is more typical and

appropriate for ESM studies to get a better momentary assessment according to research by Myin-Germeys & Kuppens (2021). For this item, split-half reliability revealed an internal consistency of .81.

Data Analysis

The data obtained from the study were analysed with the programme IBM SPSS Statistics 27. After first screening the data, 18 participants that did not answer enough surveys and reached the requirement of a 50% response rate were excluded from the analyses. According to Conner & Lehmann (2012), it is reasonable to only include participants in the analysis who have performed at least 50% of the measurements, otherwise, the results are not reliable enough. Additionally, four participants were excluded as the baseline questionnaire was missing or incomplete. Another participant stated that she is 14 years old, which is not in line with the participation requirement criterion. In total, the final sample consisted of 45 participants, which remains comparable to the average sample size of ESM studies ($N=53$) (Van Berkel et al., 2017).

To investigate the relationship between gratitude and affect, a number of analyses were performed using linear mixed models (LMMs). This model was chosen because it is suitable for processing multilevel (repeated) data, which is the case in a longitudinal study (Shek & Ma, 2011; Myin-Germeys & Kuppens, 2021). LMMs can also adequately account for missing data at random using maximum likelihood estimation. This is done by estimating the most likely response of a respondent, based on the previously reported values (Shek & Ma, 2011). This has the advantage that participants with missing data are not deleted.

At the beginning of each analysis, a LMM with a first-order autoregressive covariance structure (AR1) was used to analyse the nested repeated measures, as it assumes that correlations between measures decrease in an exponential manner over time (Barnett et al., 2010). For every analysis, the variable “Name” was set as the subject and the variable “Timepoint” as the repeated measure. Lastly, all used variables were also z-transformed in order to standardise the variables and ease interpretation. For the interpretation of the standardised estimates, Cohen's (1988) guideline was used, which states that coefficients are classified as weak (<0.3), moderate (>0.3 and <0.5) or strong (>0.50).

To investigate the first research question and to get a better insight into gratitude and affect during the 14-day period, three LMMs were conducted. In each model, momentary

gratitude and positive and negative affect were set as dependent variables, while the time variable was used as a fixed factor to calculate the estimated marginal means. Three further analyses were carried out, this time using "Name" as a fixed factor variable and the remaining variables again as dependent variables. This serves to determine the variation of the three constructs among all participants. In addition, individual cases were examined more closely, as the models' estimates represent a group-level average.

To answer the second research question and to be able to disaggregate between- and within-person associations, two new variables of momentary gratitude needed to be created: One variable with the person-centered scores (PMC) to analyse the within associations and one with the person-mean scores (PM) to analyse the between associations of gratitude and affect (Curran & Bauer, 2011). This was done by first aggregating all daily scores per person to obtain the mean of each person, which is the PM variable. After that, PM was subtracted from the daily values of the participants to receive the PMC values, creating the variable for investigating within associations. Subsequently, analyses were conducted. An LMM was carried out with positive affect as the dependent variable and momentary gratitude as the independent variable. In further models, the two newly created variables of momentary gratitude (PM and PMC) were used as independent variables and positive affect as the dependent variable. The same analyses were done with negative affect. First, LMM was conducted with negative affect as dependent and momentary gratitude as the independent variable, followed by models where person mean momentary gratitude (PM) and person mean-centered momentary gratitude (PMC) were set as independent variables. The cut-off point for statistical significance level of $<.05$ was used for the analyses. Lastly, All graphs were visualised using Microsoft Excel.

Results

Sample Characteristics and Descriptive Statistics

The final sample included in the analyses consisted of 45 participants. The age range was between 18 and 57 years with a mean age of 25.24 ($SD=9.88$). Most participants were in their twenties ($n=34$, 73.9%) and were students. It was noticeable that two-thirds of the sample was female and one-third male. Lastly, half of the sample consisted of German participants ($n=24$, 52.2%). More detailed information on the characteristics of the sample can be found in Table 1.

Table 1

Frequencies of the Sample Characteristics (N=45)

<i>Variable</i>		<i>n</i>	<i>%</i>	<i>M(SD)</i>
Gender	Female	33	71.7	
	Male	12	28.3	
Age	18-30	40	89.1	25.24 (9.88)
	30+	5	10.9	
Nationality	German	24	52.2	
	Dutch	16	36.9	
	Other	5	10.9	
Employment	Student	21	47.8	
	Student and working	14	30.5	
	Working	7	15.2	
	Self-employed	3	6.5	
Highest level of education	High School	24	52.2	
	Bachelor	14	30.4	
	Master	7	15.2	
	Other	1	2.2	

Looking more closely at the baseline measurements, the mean value of the MHC-SF at baseline in this sample can be interpreted as low ($M=2.88$, $SD=0.76$). This is compared to another study in which Lamers et al. (2011) reported a mean value of 3.98 ($SD=0.85$) for the Dutch population, which is significantly higher.

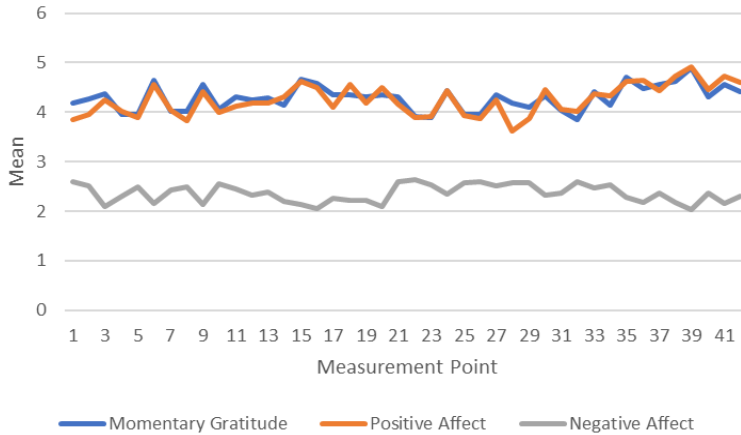
The mean score of trait gratitude (GQ-6) in this study ($M=5.62$, $SD=0.82$) was average. This is consistent with the findings of Jans-Beken (2019), who calculated a mean of 5.42 ($SD=0.86$) for Dutch adults. Similarly, McCullough et al. (2002) reported a mean of 5.92 among undergraduate psychology students ($SD=0.88$).

Momentary gratitude and affect over time and per participant

Afterwards, estimated marginal means of momentary gratitude, positive and negative affect, as well as gratitude across all participants, were calculated for the 42 measurement points. Figure 2 shows the distribution of all variables over time. It is noticeable that at measurement point 28, i.e. day 10, the perceived positive affect was the lowest ($M=3.61$, $SD=0.16$). Towards the end of the study at measurement point 39, however, positive affect and gratitude both peaked ($M=4.91$, $SD=0.21$; $M=4.89$, $SD=0.27$). At that time, negative affect was lowest ($M=2.03$, $SD=0.20$). Shortly before, at measurement time 32, gratitude was at its lowest level of the entire 14 days ($M=3.9$, $SD=.19$). At time point 22, negative affect was at its highest ($M=2.6$, $SD=.20$), while gratitude and positive affect had lower values. Overall, it can be seen that momentary gratitude and positive affect are strongly correlated, while negative affect is negatively correlated with momentary gratitude and positive affect during the study period.

Figure 2

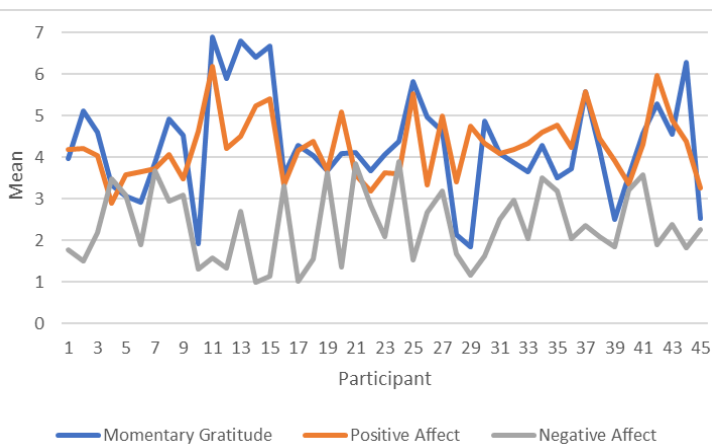
Mean Scores of Momentary Gratitude, Positive and Negative Affect During the 14-Day Period



Besides, the mean scores of all three variables were observed per participant. It appears that momentary gratitude and positive affect were also at a similar average level for each participant. Negative affect, on the other hand, was often perceived in the opposite way by participants. This can be seen in Figure 3.

Figure 3

Mean Scores of Momentary Gratitude, Positive and Negative Affect per Participant

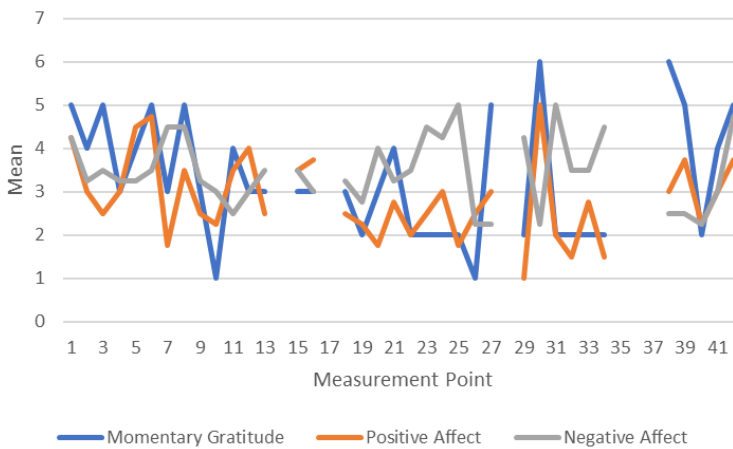


In order to get a more detailed overview at the individual level, 4 individual participants were selected. Starting with participant 4, who had the lowest mean score of positive affect among all participants. Here, it can be seen that momentary gratitude and positive affect do not show a clear similar pattern. Negative affect seems to work in the opposite direction than

positive affect. All three constructs seem to show relatively high variability. The graph can be found in Figure 4.

Figure 4

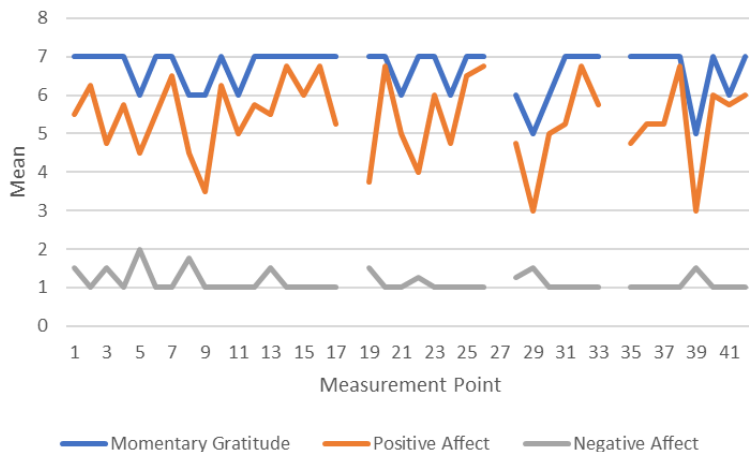
Line chart displaying Momentary Gratitude, Positive Affect and Negative Affect per Measurement Point for Participant 4



Next, the participant with the highest scores on PM, gratitude and positive affect was chosen (Participant 11). Due to the low response rate, it was decided to not visualize this individual. Instead, participant 15 was visualized (see Figure 5). As in the first graph, the state of gratitude and positive affect does not show such a close and similar pattern. Nevertheless, they behave more in similar directions. Here, the stability of negative affect is striking and different from the first chart.

Figure 5

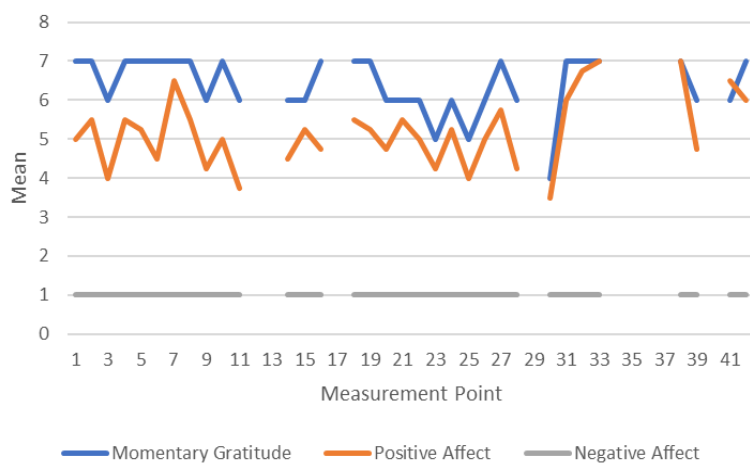
Line chart displaying Momentary Gratitude, Positive Affect and Negative Affect per Measurement Point for Participant 15



Thirdly, participant 14 was selected who showed the least negative affect over time (see Figure 6). Similar to the previous participant, positive affect and gratitude show a similar directionality. Negative affect is completely stable over the 14 days and does not fluctuate. However, it is not certain here whether it is a serious responder with a pathological level of denial of negative feelings or social desirability.

Figure 6

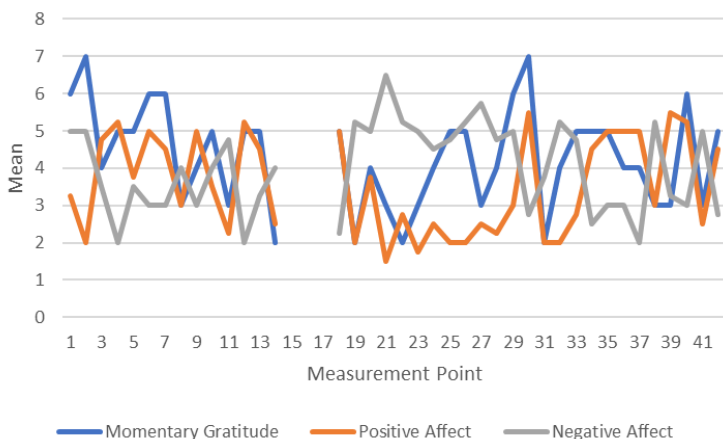
Line chart displaying Momentary Gratitude, Positive Affect and Negative Affect per Measurement Point for Participant 14



In contrast, the participant with the highest negative affect was chosen (Participant 24). As in the first graph, the momentary gratitude and positive affect do not behave so clearly in the same way. Unlike the other graphs, interestingly, positive and negative affect seem to behave in opposite ways. When positive affect is higher, negative affect is lower and when positive affect is lower, negative affect is higher. The graph can be found in Figure 7.

Figure 7

Line chart displaying Momentary Gratitude, Positive Affect and Negative Affect per Measurement Point for Participant 24



Altogether, it can be seen that all three constructs show different patterns among the participants. This suggests that gratitude and affect vary differently within people. However, it is noticeable that positive affect and gratitude have stronger associations than negative affect. Often negative affect is associated in the opposite direction.

Momentary gratitude and affect between- and within persons

When looking at the between- and within-person levels, linear mixed models revealed a positive association between momentary gratitude and positive affect ($F(1, 1429.99) = 25.08, p < .001, \beta = .58, CI = [.42, .49]$). The analyses of the associations between and within individuals showed that the association between gratitude between-person (PM) and positive affect was significant and moderately correlated ($F(1, 305.14) = 8.46, p < .001; \beta = .31, CI = [.25, .41]$). The within-person association measured with the person mean-centered variable, showed a stronger

relationship ($F(1, 1330.60) = 23.48, p < .001$), which can be still interpreted as moderate ($\beta = .44$, $CI = [.45, .54]$). This correlation was significantly stronger on the within-person level than on the between-person level, as can be seen from the non-overlapping confidence intervals PM and PMC. The outcome of the analyses of the relationship between gratitude and positive affect can be seen in Table 3.

Table 3

Linear Mixed Model Analyses of Positive Affect and Gratitude

DV	IV	$B [SE]$	$\beta [SE]$	df	t	p	95% CI [LB, UB]
Positive Affect	Momentary Gratitude	.46[.02]	.58[.02]	1429.99	25.61	<.001	[.42, .49]
	Gratitude (PM)	.33[.04]	.31[.04]	305.14	8.46	<.001	[.25, .41]
	Gratitude (PMC)	.49[.02]	.44[.02]	1330.60	23.48	<.001	[.45, .54]

Note. β indicates the standardised B-estimate, while all other values are unstandardised estimates. DV and IV indicate the dependent and independent variables.

Next, three further LMMs were conducted to analyse the between- and within-person effect for the association between gratitude and negative affect. For negative affect and momentary gratitude, there was a significant negative moderate association ($F(1, 1523.41) = 15.62, p < .001, \beta = -.35, CI = [-.30, -.23]$). Regarding the between-person analysis, the model showed a significant negative weak relationship ($F(1, 149.82) = 2.36, p < .02, \beta = -.12, CI = [-.22, -.02]$). The last analysis revealed a significant negative weak effect on the within-person level ($F(1, 1285.59) = 15.70, p < .001, \beta = -.28, CI = [-.32, -.25]$). Nevertheless, the within-person association is significantly stronger than the between-person association, as the confidence intervals of PM and PMC do not overlap. Table 4 displays the model results of the analyses between gratitude and negative affect.

Table 4*Linear Mixed Model Analyses of Negative Affect and Gratitude*

DV	IV	<i>B</i> [<i>SE</i>]	β [<i>SE</i>]	<i>df</i>	<i>t</i>	<i>p</i>	95% CI [<i>LB</i> , <i>UB</i>]
Negative Affect	Momentary Gratitude	-.27 [.02]	-.35 [.02]	1523.41	-15.62	<.001	[-.30, -.23]
	Gratitude (PM)	-.12 [.05]	-.12 [.05]	194.82	-2.36	.02	[-.22, -.02]
	Gratitude (PMC)	-.28 [.02]	-.26 [.02]	1285.59	-15.70	<.001	[-.32, -.25]

Note. β indicates the standardised B-estimate, while all other values are unstandardised estimates. DV and IV indicate the dependent and independent variables.

Discussion

The aim of this secondary data analysis was to examine the association between momentary gratitude and positive and negative affect in more detail. In particular, the within-person relationship between gratitude and affect was of great interest, as previous cross-sectional studies have mostly focused on the between-person level (McCullough et al., 2002; Wood et al., 2010). The results of this study are consistent with previous findings that gratitude is positively correlated with positive affect and negatively correlated with negative affect (McCullough et al., 2002; Watkins et al., 2003; Jans-Beken et al., 2019). Therefore, it can be said that in moments when people experience more gratitude they also experience more positive affect and less negative affect and vice versa. Moreover, in current research, no study has yet focused on the distinction between within- and between levels of gratitude in relation to affect, which is a unique contribution of this study. Here, momentary gratitude seems to be positively correlated with positive affect and negatively correlated with negative affect, both at the within-person level and at the between-person level.

Main findings

Looking at the relation of the three variables of interest over time it can be seen that momentary gratitude and positive affect are positively correlated, while negative affect is negatively correlated with momentary gratitude and positive affect during the study period. This is also consistent with previous findings suggesting a positive relationship between gratitude and positive affect and a negative relationship with negative affect (McCullough et al., 2002; Watkins et al., 2003; Jans-Beken et al., 2019). The same was observed when looking at the average scores of the participants. By looking at the individual graphs, it can be seen that there were some variations among participants. However, it was noticeable that for most participants positive affect and momentary gratitude were more strongly associated than negative affect and gratitude. Moreover, negative affect was often associated in the opposite direction. This is also what the LMMs of this study revealed. More specifically, the analyses found a strong positive correlation between gratitude and positive affect, while there was a moderate negative correlation between gratitude and negative affect. This is in line with the finding of a study by McCollough (2002) that gratitude seems to be strongly correlated with positive affect. Similarly, in an ESM study, Jans-Beken et al. (2019) reported that momentary gratitude and positive affect

are positively correlated. Regarding negative affect, some studies confirm the moderate negative relationship between gratitude and negative affect found in the present study (McCullough et al., 2002; Froh et al., 2011). All this suggests that gratitude seems to have a stronger impact on positive affect than negative affect. One possible explanation could be that people who feel grateful are more inclined to increase their positive emotions than to decrease their negative emotions. Moreover, perhaps people are more likely to feel gratitude in moments when they feel good, i.e. experience high positive affect. This is also because gratitude can be seen as a positive emotion that broadens people's resources, as it is called in the broaden-and-build theory (Fredrickson et al., 2003; McCullough et al. 2004). It could be that people do not engage that much in gratitude in moments of low negative affect and low positive affect as they do in moments of high positive affect.

However, Froh et al. (2009) have found no significant relationship between gratitude and negative affect, which is not in line with the findings of this study. This discrepancy may be due to the fact that the sample studied consisted of children and adolescents. Furthermore, Froh (2009) argued that pathology and well-being are separable constructs and therefore grateful interventions can improve the well-being of adolescents without necessarily alleviating pain and suffering. This is in line with Keyes' (2007) dual continua model, according to which pathology and well-being are two related but distinct constructs, which suggests that mental health could be improved by enhancing positive emotions without alleviating negative emotions.

A closer look at the between- and within-person associations showed that for between-person associations, momentary gratitude and positive affect were significantly and moderately correlated, while there was a negative and weak relationship between negative affect and the between-person variable of gratitude. Studies which used cross-sectional designs can confirm these significant correlations at the between-person level between momentary gratitude and positive affect and negative affect (e.g. McCullough et al., 2002; Wood et al., 2010). Looking more closely at experimental research on how gratitude appears to impact negative affect on the between-person level, Dickens (2017) published a review of the effectiveness of gratitude interventions. The results showed that the effect of interventions on negative affect was inconsistent, with most studies showing no significant effect. Interestingly, a significant effect of gratitude on negative affect was only observed when the effect was compared to negative conditions. Combined, this finding and the results of the current study may suggest that gratitude

is of greater importance for positive affect compared to negative affect on the between-person level. Next, the within-person association of gratitude and positive affect showed a stronger positive association than the between-person association. For the within-person association between gratitude and negative affect, there was a weak negative association. This difference in the strength of the effects may indicate that positive and negative affect are at least to some degree independent of each other. This finding contributes to the ongoing discussion about whether negative and positive affect are two continua or one continuum (e.g. Dejonckheere et al., 2018).

The main finding of this study is the aforementioned within-person correlation of gratitude and affect, as it is still little researched and could be a basis for future explorations. As within-person associations have not been studied extensively in research, there are no comparative studies on gratitude and affect. This precise division of between and within was very important in order to distinguish exactly what happens not only at the group level but also within the people themselves (Curran & Bauer, 2011). Therefore, this study has the advantage of making interpretations at both levels and not only on the between-person level, as most studies did. Often the results at the between-person level cannot be generalised to within-person results and it is necessary to look at individuals more closely (Curran & Bauer, 2011). This can result in false assumptions in psychological research, causing erroneous results that need to be avoided (Fisher et al., 2018). Also in the case of gratitude and affect, it could lead to wrong conclusions at the group level which are not applicable to individuals. Based on the observation that the associations within an individual were somewhat stronger than those between individuals, it can be assumed that the state of gratitude plays an important role at the individual level. Furthermore, as it appears to be mainly a within-person association, it seems that being more grateful on average does not seem to be related that strongly with average levels of affect, but rather that people experience relatively high gratitude in moments of high positive affect and low negative affect. This result suggests that the participants in this study have a more hedonistic mindset towards well-being, i.e. when I feel good, I am grateful, and when I feel bad, I am ungrateful. Overall, this difference of strengths again highlights the importance of clearly disaggregating between- and within-person associations and this finding may be very useful for future gratitude interventions focused on increasing gratitude within individuals above their mean in turn to increasing their well-being.

Strengths and Limitations

One of the greatest strengths of this study was the used experience sampling method. The sampling method, which has been increasingly used in recent years, is convincing because of its long-term nature, which makes it possible to study several psychological constructs over a long period of time, which is not possible with cross-sectional designs (Myin-Germeys & Kuppens, 2021). These in vivo self-reports of individuals offer the possibility to investigate behaviours and emotions with high ecological validity (Rhee, et al., 2020). In addition, through the multiple measurements per day and the use of an app, it was possible to get a more accurate insight into the patients' daily life and their feelings throughout the day (Myin-Germeys & Kuppens, 2021). Another unique benefit is that for this study not only the between-level of associations was considered, but also the within-level and both could be compared to each other. This distinction makes it clear that there exist differences between both levels of association and that between-person findings should not automatically be applied to individual people.

Apart from the strengths of the study, there are also some limitations to consider. It could be that the researchers' convenience sampling led to a bias in the sample selection. Since the researchers only consulted people from their environment, the majority of the sample consists of well-educated individuals. It could be that these individuals are more aware of the study and in control of their emotions as they may be more reflective. In addition, most of the participants were between 18 and 30 years old (89.1%), making it a rather young sample. Finally, this study consisted of 71.7% women. It might be here that women have a different perception of the constructs and may be more aware of their feelings. One further restriction of this study was that the data was analysed at the same point in time and remains still observational data. It could be that other time periods would have led to slightly different results. It is also not clear whether the corona measurements had any influence on the participants' answers. This means that no conclusions can be drawn about temporal precedence or causality.

Next, the constant monitoring of one's own feelings could also have an impact on the results of the study. By becoming more aware of their feelings while repeatedly answering the same questions each day, participants might try to adjust their feelings (Steinbach, 2018). This can be referred to as measurement reactivity. Although no socially undesirable behaviour was investigated, it may be that they wanted to adapt their answers in order to appear as grateful

people rather than ungrateful, for example. Lastly, gratitude was only assessed as an affective general feeling in the daily assessments, although it is known that there are different forms of gratitude (Jans-Beken, 2019). It could be that individuals have a different understanding of gratitude, as it was not clearly defined in advance. Also, participants in further ESM studies could be asked what they are grateful for at the moment to get a more detailed overview of perceived momentary gratitude.

Further research

In the future, it would be important for more studies to focus on within-person associations. Not only gratitude and affect, but also other constructs can be studied more closely to understand what happens within individuals and to avoid the generalisation of between-person results. Since the focus of the analyses was on the group level of within-level associations, it might also be important to look at the individual within-level associations and examine possible differences in more detail. It is likely that for individuals in the sample the within-person association is absent, stronger or weaker. In a longitudinal study, Kraiss et al. (2022) highlight the differences in associations between individuals for well-being and distress and indicates extensive variability in individual slopes. The same could also be the case for gratitude and affect, as for some people there may be individual differences in how they perceive these feelings and their variation. Future research should look more closely at individual cases to gain a deeper understanding of how gratitude and affect are related. Regarding affect, future work could look at the subconstructs of the Positive and Negative Affect Schedule (PANAS) to see if there are any variations in relation to gratitude. This would help to get a more accurate picture of the two constructs and the associations. Lastly, another possible idea for the future would be to take a closer look at the individuals again, but also with regard to trait measurements. It could be that there are differences between people with high or low trait gratitude and the corresponding state measurements, i.e. individuals with a high baseline level of trait gratitude are perceiving more stable feelings with regard to momentary gratitude and perceived affect than those with a low baseline level of gratitude.

Conclusion

This study revealed several findings regarding the associations between gratitude and positive and negative affect. The results show that gratitude has a stronger influence on the increase of positive affect than the decrease of negative affect, which could be useful for future clinical interventions that specialise in the enhancement of positive emotions instead of decreasing negative ones using gratitude. Moreover, a unique feature of this study was that it examined within-associations. The results conclude a significant within-person and also between-person association of momentary gratitude and positive and negative affect, with a stronger correlation on the individual level. This could indicate that gratitude interventions are more effective within individuals than previously assumed. Overall, the results of this study illustrate for the first time that the correlation between gratitude and affect exists not only between people, but also within people. Therefore, these insights support the inclusion of interventions that enhance gratitude within individuals in order to increase their overall well-being.

References

- Bannink, F. (2012). *Practicing Positive CBT: From Reducing Distress to Building Success*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118328941>
- Barnett, A. G., Koper, N., Dobson, A. J., Schmiegelow, F., & Manseau, M. (2010). Using information criteria to select the correct variance-covariance structure for longitudinal data in ecology. *Methods in Ecology and Evolution*, *1*(1), 15-24.
- Bohlmeijer, E. T., Kraiss, J. T., Watkins, P., & Schotanus-Dijkstra, M. (2021). Promoting gratitude as a resource for sustainable mental health: results of a 3-armed randomized controlled trial up to 6 months follow-up. *Journal of happiness studies*, *22*(3), 1011-1032. <https://doi.org/10.3389/fpsyg.2021.799447>
- Bolier, L., Haverman, M., Westerhof, G.J. et al. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC Public Health*, *13*, 119. <https://doi.org/10.1186/1471-2458-13-119>
- Busseri, M. A. (2018). Examining the structure of subjective well-being through meta-analysis of the associations among positive affect, negative affect, and life satisfaction. *Personality and Individual Differences*, *122*, 68-71. <https://doi.org/10.1016/j.paid.2017.10.003>.
- Casellas-Grau, A., Font, A., Vives, J. (2013). Positive psychology interventions in breast cancer. A systematic review. *Psycho-Oncology*, *23*(1), 9-19, <https://doi.org/10.1002/pon.3353>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2 ed.). Routledge. <https://doi.org/10.4324/9780203771587>
- Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *43*(3), 245–265. <https://doi.org/10.1348/0144665031752934>

- 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*(1), 583- 619. <https://doi.org/10.1146/annurev.psych.093008.100356>
- Davis, D. E., Choe, E., Meyers, J., Wade, N., Varjas, K., Gifford, . . . Worthington, E. L., Jr. (2016). Thankful for the little things: A meta-analysis of gratitude interventions. *Journal of Counseling Psychology*, *63*(1), 20–31. <https://doi.org/10.1037/cou0000107>
- Dejonckheere, E., Mestdagh, M., Houben, M., Erbas, Y., Pe, M., Koval, P., Brose, A., Bastian, B., & Kuppens, P. (2018). The bipolarity of affect and depressive symptoms. *Journal of Personality and Social Psychology*, *114*(2), 323-341. <https://doi.org/10.1037/pspp0000186>
- DeWall, C. N., Lambert, N. M., Pond, R. S., Jr., Kashdan, T. B., & Fincham, F. D. (2012). A grateful heart is a nonviolent heart: Cross-sectional, experience sampling, longitudinal, and experimental evidence. *Social Psychological and Personality Science*, *3*(2), 232–240. <https://doi.org/10.1177/1948550611416675>
- Dickens, L. R. (2017). Using Gratitude to Promote Positive Change: A Series of Meta-Analyses Investigating the Effectiveness of Gratitude Interventions. *Basic and Applied Social Psychology*. <https://doi.org/10.1080/01973533.2017.1323638>
- Emmons, R. A., & Mishra, A. (2011). Why Gratitude Enhances Well-Being: What We Know, What We Need to Know. In *Designing positive psychology: Taking stock and moving forward* (pp. 248-262). Oxford University Press.
- Fisher, A. J., Medaglia, J. D., & Jeronimus, B. F. (2018). Lack of group-to-individual generalizability is a threat to human subjects research. *Proc Natl Acad Sci U S A*, *115*(27), 6106-6115. <https://doi.org/10.1073/pnas.1711978115>
- Fredrickson, B. L. (2000). Cultivating positive affect to optimize health and well being. *Prevention & Treatment*, *3*(1). <https://doi.org/10.1037/1522-3736.3.1.31a>

- Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in Experimental Social Psychology*, *47*, 1 – 53. <https://doi.org/10.1016/B978-0-12-407236-7.00001-2>
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & emotion*, *19*(3), 313–332. <https://doi.org/10.1080/02699930441000238>
- Fredrickson, B. L., & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition & Emotion*, *12*, 191–220. <https://doi.org/10.1080/026999398379718>
- Fredrickson, B. L., Tugade, M. M., Waugh, C, Larkin, G. (2003). What good are positive affect in crises? A prospective study of resilience and affect following the terrorist attacks on the United States on September 11th. *Journal Personality and Social Psychology*, *84* (2), 365 – 376. <https://doi.org/10.1037//0022-3514.84.2.365>
- Froh, J. J., Fan, J., Emmons, R. A., Bono, G., Huebner, E. S., & Watkins, P. (2011). Measuring gratitude in youth: Assessing the psychometric properties of adult gratitude scales in children and adolescents. *Psychological Assessment*, *23*, 311–324. <https://doi.org/10.1037/a0021590>
- Froh, J. J., Yurkewicz, C., & Kashdan, T. B. (2009). Gratitude and subjective well-being in early adolescence: Examining gender differences. *Journal of Adolescence*, *32*(3), 633–650. <https://doi.org/10.1016/j.adolescence.2008.06>
- Gable, S. L., Gonzaga, G. C., Strachman, A. (2006). Will you be there for me when things go right? supportive responses to positive event disclosures. *Journal of Personality and Social Psychology*, *91*(5), 904 – 917. <https://doi.org/10.1037/0022-3514.91.5.904>
- Geschwind, N., Peeters, F., Drukker, M., van Os, J., & Wichers, M. (2011). Mindfulness training increases momentary positive emotions and reward experience in adults vulnerable to

depression: a randomized controlled trial. *J Consult Clin Psychol*, 79(5), 618-628.
<https://doi.org/10.1037/a0024595>

Hoffart, A. (2014). The Need to Study Within-Person Processes in Psychotherapy: A Discussion of Alliance Studies. *SOJ Psychology*, 1(2), 1-5. <https://doi.org/10.15226/23746874/1/2/00111>

Hoffman, L. (2015). *Longitudinal analysis: Modeling within-person fluctuation and change*. Routledge. <https://doi.org/10.4324/9781315744094>

Hudecek, M. F. C., Blabst, N., Morgan, B., & Lerner, E. (2020). Measuring Gratitude in Germany: Validation Study of the German Version of the Gratitude Questionnaire-Six Item Form (GQ-6-G) and the Multi-Component Gratitude Measure (MCGM-G). *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.590108>

Israel-Cohen, Y., Uzefovsky, F., Kashy-Rosenbaum, G., & Kaplan, O. (2014). Gratitude and PTSD symptoms among Israeli youth exposed to missile attacks: examining the mediation of positive and negative affect and life satisfaction. *The Journal of Positive Psychology*, 10(2), 99–106. <https://doi.org/10.1080/17439760.2014.927910>

Jackowska, M., Brown, J., Ronaldson, A., & Steptoe, A. (2016). The impact of a brief gratitude intervention on subjective well-being, biology and sleep. *Journal of Health Psychology*, 21(10), 2207–2217. <https://doi.org/10.1177/1359105315572455>

Jans-Beken, L. (2019). The dialectic dynamics between trait gratitude, subjective well-being, and psychopathology across 30 weeks. *Counselling Psychology Quarterly*, 32(3-4), 502–515. <https://doi.org/10.1080/09515070.2019.1638228>

Jans-Beken, L., Jacobs, N., Janssens, M., Peeters, S., Reijnders, J., Lechner, L., & Lataster, J. (2019). Reciprocal relationships between State gratitude and high- and low-arousal positive affects in daily life: A time-lagged ecological assessment study. *Journal of Positive Psychology*, 14(4), 512-527. <https://doi.org/10.1080/17439760.2018.1497684>

- Kashdan, T. B., Uswatte, G., & Julian, T. (2006). Gratitude and hedonic and eudaimonic wellbeing in Vietnam war veterans. *Behaviour Research and Therapy, 44*(2), 177–199. <https://doi.org/10.1016/j.brat.2005.01.005>
- Keyes, C. L. M. (2007). Promoting and protecting mental health as flourishing – A complementary strategy for improving national mental health. *American Psychologist, 62*(2), 95-108. <https://doi.org/10.1037/0003-066x.62.2.95>
- Keyes, C.L.M., Wissing, M., Potgieter, J.P., Temane, M., Kruger, A., & van Rooy, S. (2008). Evaluation of the mental health continuum-short form (MHC-SF) in Setswana-speaking South Africans. *Clinical Psychology & Psychotherapy, 15*(3), 181–192. <https://doi.org/10.1002/cpp.572>
- Kraiss, J.T., Kohlhoff, M. & ten Klooster, P.M. (2022). Disentangling between- and within person associations of psychological distress and mental well-being: An experience sampling study examining the dual continua model of mental health among university students. *Curr Psychol.* <https://doi.org/10.1007/s12144-022-02942-1>
- Lambert, N. M., Fincham, F. D., & Stillman, T. F. (2012). Gratitude and depressive symptoms: The role of positive reframing and positive emotion. *Cognition & Emotion, 26*, 615–633. <https://doi.org/10.1080/02699931.2011.595393>
- Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the Psychometric Properties of the Mental Health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology, 67*(1), 99-110.
- Lane, A. M., & Terry, P. C. (2000). The Nature of Mood: Development of a Conceptual Model with a Focus on Depression. *Journal of Applied Sport Psychology, 12*(1), 16–33. <https://doi.org/10.1080/10413200008404211>

- Larson R., Csikszentmihalyi M. (2014) The Experience Sampling Method. In: *Flow and the Foundations of Positive Psychology*, 21-34. Springer, Dordrecht.
https://doi.org/10.1007/978-94-017-9088-8_2
- Lupano Perugini, M. L., de la Iglesia, G., Castro Solano, A., & Keyes, C. L. (2017). The Mental Health Continuum-Short Form (MHC-SF) in the Argentinean Context: Confirmatory Factor Analysis and Measurement Invariance. *Europe's journal of psychology*, 13(1), 93-108. <https://doi.org/10.5964/ejop.v13i1.1163>
- Malouff, J. M. & Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, 12(6), 596-604.
<https://doi.org/10.1080/17439760.2016.1221122>
- Manela, T. (2016). Negative Feelings of Gratitude. *J Value Inquiry*, 50, 129–140.
<https://doi.org/10.1007/s10790-015-9501-1>
- McCullough, M. E., Emmons, R. A., & Tsang, J.-A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82(1), 112–127. <https://doi.org/10.1037/0022-3514.82.1.112>
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin*, 127(2), 249-266. <https://doi.org/10.1037/0033-2909.127.2.249>
- McCullough, M. E., Tsang, J.-A., & Emmons, R. A. (2004). Gratitude in Intermediate Affective Terrain: Links of Grateful Moods to Individual Differences and Daily Emotional Experience. *Journal of Personality and Social Psychology*, 86(2), 295–309.
<https://doi.org/10.1037/0022-3514.86.2.295>
- McCullough, M.E., Emmons, R.A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82, 112–127.
<https://doi.org/10.1037//0022-3514.82.1.112>

- Myin-Germeys, I. & Kuppens, P. (editors) (2021). Open Handbook of Experience Sampling Methodology. <https://www.kuleuven.be/samenwerking/real/real-book/index.htm>
- Nezlek, J.B., Krejtz, I., Rusanowska, M., Holas, P. (2019). Within-Person Relationships Among Daily Gratitude, Well-Being, Stress, and Positive Experiences. *Journal of Happiness Studies*, 20, 883–898. <https://doi.org/10.1007/s10902-018-9979-x>
- Proyer R. T., Gander, F., Wellenzohn, S., Ruch, W. (2016). Nine beautiful things: A self-administered online positive psychology intervention on the beauty in nature, arts, and behaviors increases happiness and ameliorates depressive symptoms. *Personality and Individual Differences*, 94, 189-193. <https://doi.org/10.1016/j.paid.2016.01.028>.
- Rash, J. A., Matsuba, M. K., & Prkachin, K. M. (2011). Gratitude and Well-Being: Who Benefits the Most from a Gratitude Intervention? *Applied Psychology: Health and WellBeing*, 3(3), 350–369. <https://doi.org/10.1111/j.1758-0854.2011.01058.x>
- Rhee, L., Bayer, J. B., & Hedstrom, A. (2020). Experience sampling method. In J. Van den Bulck (Ed.), *The International Encyclopedia of Media Psychology*. John Wiley & Sons.
- Scollon, C. N., Kim-Prieto, C., & Diener, E. (2003). Experience sampling: promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies*, 4(1), 5-34. <https://doi.org/10.1023/a:1023605205115>
- Seligman, M. E. P., & Csikszentmihalyi, M. (2014). Positive Psychology: An Introduction. In: *Flow and the Foundations of Positive Psychology*. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-9088-8_18
- Shek, D.T., & Ma, C.M. (2011). Longitudinal data analyses using linear mixed models in SPSS: concepts, procedures and illustrations. *Scientific World Journal*, 5(11), 42-76. <https://doi.org/10.1100/tsw.2011.2..>

- Steinbach, E. M. (2018). Binge-Watching and its Impact on Learning Behaviour and Important Daily Life Activities among University Students: A Study using Ecological Momentary Assessment (Bachelor's thesis, University of Twente).
- Tugade, M. M., Fredrickson, B. I., Barret, L. F. (2004). Psychological resilience and positive emotional granularity: examining the benefits of positive emotion on coping and health. *Journal of Personality*, 72, 1161 – 1190. <https://doi.org/10.1111/j.1467-6494.2004.00294.x>
- Visserman, M. L., Righetti, F., Impett, E. A., Keltner, D., & Van Lange, P. A. M. (2018). It's the Motive That Counts: Perceived Sacrifice Motives and Gratitude in Romantic Relationships. *Emotion*, 18(5), 625-637. <https://doi.org/10.1037/emo0000344>
- Wadlinger, H. A., & Isaacowitz, D. M. (2006). Positive Mood Broadens Visual Attention to Positive Stimuli. *Motivation and Emotion*, 30, 87-99. <https://doi.org/10.1007/s11031-006-9021-1>
- Wang, P. L., & Maxwell, S. E. (2015). On disaggregating between-person and within-person effects with longitudinal data using multilevel models. *Psychological Methods*, 20(1), 63-83. <https://doi.org/10.1037/met0000030>.
- Watkins, P.C., Woodward, K., Stone, T., & Kolts, R.L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality*, 31, 431–452. <https://doi.org/10.2224/sbp.2003.31.5.431>
- Watson, D., & Tellegen, A. (1985). Toward a Consensual Structure of Mood. *Psychological Bulletin*, 98(2), 219-235. <https://doi.org/10.1037/0033-2909.98.2.219>
- Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *Journal of abnormal psychology*, 97(3), 346-353. <https://doi.org/10.1037/0021-843X.97.3.346>

- Woltjes, S. (2019). Ecological Momentary Assessment Versus Cross-Sectional Survey [Wageningen University & Research Centre].
- Wood, A. M., & Joseph, S. (2010). The absence of positive psychological (eudemonic) well-being as a risk factor for depression: a ten year cohort study. *Journal of Affective Disorders, 122*(3), 213–217. <https://doi.org/10.1016/j.jad.2009.06.032>.
- Wood, A. M., Froh, J. J., Geraghty, A. W. A. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review, 30*(7), 890-905. <https://doi.org/10.1016/j.cpr.2010.03.005>.
- Wood, A. M., Maltby, J., Gillett, R., Linley, P. A., & Joseph, S. (2008). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality, 42*(4), 854–871. <https://doi.org/10.1016/j.jrp.2007.11.003>
- Xiang, Y., & Yuan, R. (2020). Why Do People with High Dispositional Gratitude Tend to Experience High Life Satisfaction? A Broaden-and-Build Theory Perspective. *Journal of Happiness Studies*. <https://doi.org/10.1007/s10902-020-00310-z>
- Yost-Dubrow, R., & Dunham, Y. (2017). Evidence for a relationship between trait gratitude and prosocial behaviour. *Cognition and Emotion, 32*(2), 397–403. <https://doi.org/10.1080/02699931.2017.1289153>

Appendix A Informed Consent

English version

INFORMED CONSENT

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.

German version

EINVERSTÄNDNISERKLÄRUNG

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 einschalten.*

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 zurückzutreten.

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.

jederzeit ohne Angabe von Gründen und ohne Kosten zurücktreten kann. Ich erkläre mich hiermit freiwillig bereit, an dieser Studie teilzunehmen.

Appendix B

Demographics and Baseline questionnaire

English version

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
 1. Never
 2. Once or twice
 3. About once a week
 4. About 2 or 3 times a week
 5. Almost every day
 6. 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

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.
 1. Almost never
 2. Rarely
 3. Sometimes
 4. Often
 5. Almost always

German version

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), Weiterführende 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.
 1. Nie
 2. 1-2 mal im Monat
 3. 1 mal in der Woche
 4. 2-3 in der Woche
 5. Fast täglich
 6. 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.
 1. 1 Stimme überhaupt nicht zu
 2. 2 stimme nicht zu
 3. 3 stimme eher nicht zu
 4. 4 Neutral
 5. 5 stimme eher zu
 6. 6 stimme zu
 7. 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.
 1. Sehr selten
 2. Selten
 3. Gelegentlich
 4. Oft
 5. Sehr oft

Appendix C

Daily measurements

Englisch version:

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)

German version:

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 zufrieden fühlen 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)