Master's Thesis

Exploring the Association Between Self-Compassion and Self-Efficacy in Daily Life of Students

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Content

Abstract

Background. Cross-sectional research on the relationship between self-compassion and self-efficacy has been gaining increasing attention as all main components of self-compassion were positively associated with self-efficacy. Nonetheless, no study so far investigated this association as a day to day experience.

Objective. This study examined the association between trait and state self-compassion, as well as trait and state self-efficacy. Trait scores were obtained through one-time trait questionnaires, while state scores were obtained using the Experience Sampling Method (ESM). Further, it was examined whether the relationship between state self-compassion and state self-efficacy was a between- or within-person effect.

Method. An experience sampling study was conducted for eight consecutive days among 30 students (M_{Age} = 22.6; 50% female and 50% male) based on convenience sampling. Traits were measured by the Self-Compassion Scale-Short Form (SCS-SF) and the New General Self-Efficacy Scale (NSGE). State self-compassion and self-efficacy were measured using two items per construct three times per day.

Results. Pearson correlation showed no correlation between trait and state self-compassion (r = -.01, p = .951), as well as for self-efficacy (r = .032, p = .852). A linear regression analysis showed that individuals high on trait self-compassion do not necessarily have higher trait self-efficacy as well (β = .06, p = .76). Further, multilevel linear analysis revealed a weak positive between-person association (β = .22, SE = .06, p < .001), as well as a weak positive within-person association (β = .09, SE = .04, p < .012).

Conclusion. This study provides insights into self-compassion and self-efficacy as a day to day experience. Self-compassion and self-efficacy can affect how confident people experience the situation, and further research into their association could lead to more insights on how to benefit individuals that are overwhelmed by the difficulty of a situation or event. These individuals might learn to be more confident with their abilities and deal with their problems more efficient without being preoccupied by thoughts about the perceived difficulty.

Exploring the Association Between Self-Compassion and Self-Efficacy in Daily Life of Students

Research on the relationship between self-compassion (being kind to oneself, knowing that negative events happen to anyone and being mindful) and self-efficacy (a person's belief about their abilities) has been researched in the past (Bandura, 1986, & Neff, 2003). For instance, in an experimental setting using a questionnaire package, all three main features of self-compassion, namely self-kindness, common humanity, and mindfulness, that will be explained below, have been positively associated with self-efficacy in a Turkish student sample (Iskender, 2009). However, previous research mostly incorporated one-time measurements in an experimental setting and did not study this association in the context of daily life. Recent research by Waring and Kelly (2019) used induced trait self-compassion and found that contextual factors might have caused incremental variance of their results, arguing that future research should look more into the daily lives of participants to gain more insight into their affective states.

Nonetheless, most prior research regarding emotions and affective states used them as stable trait-like constructs. Furthermore, various researchers suggested that the nature of affective states fluctuate over time as a response to daily life events and emphasises the relevance of measuring those constructs in day to day life, which a onetime measurement cannot assess (Kuppens, Oravecz, & Tuerlinckx, 2010). In particular, Fridhandler (1986) distinguished states, that are characterized by their short-lived temporal duration from traits, which are highly enduring, to the point of being lifelong. As such, he explains that traits are manifested discontinuously concerning an important event, meaning that they are not displayed at all times. For example, a person can be self-compassionate in general, but he or she is not permanently self-compassionate in each situation. Besides, he argues that states are manifested continuously in a given situation, meaning that if a person is kind to oneself in a certain situation, then that person will be kind until the state is over.

Nevertheless, no study so far investigated the relationship between self-compassion and self-efficacy in daily life over a longer period. Both constructs have been positively associated in the past, however, this was at the trait level. Apart from these constructs having stable trait components, both also have state components that can fluctuate during the day. Moreover, both constructs are highly related, yet possess distinctive qualities (Allen et al., 2020). Self-compassion emphasizes self-acceptance, while self-efficacy entails self-evaluation. How self-compassion and self-efficacy as states influence each other is still unknown, which highlights the need to explore both constructs together using their trait and state components.

Self-Compassion

With the rise in interest in Positive Psychology (the study of human flourishing, happiness and optimal human functioning; Vada et al., 2020), there is now research and theory related to self-compassion and its beneficial effects on the individual. The Positive Psychology movement argues that it is important to consider well-being not only as an absence of psychopathology but also in terms of strengths and potential (Neff et al., 2007). Neff et al. (2007), investigated self-compassion as part of this movement and stated that self-compassion is an important human strength that allows a person to invoke qualities of kindness, equanimity, and feelings of inter-connectedness, even when confronted with the difficulties of life. Self-compassion has been defined as an individual's tendency to not judge oneself when faced with personal struggles and feelings of distress, but rather be caring and understanding, while also acknowledging that such experiences are common human experiences (Neff, 2003). In general, self-compassion consists of three parts: the first one is self-kindness which is about one's capacity to treat oneself with kindness and understanding when faced with negative events. The second feature is common humanity, which emphasizes the fact that difficult experiences, such as pain and failure, are part of human life instead of believing that suffering is only limited to oneself. It is also about realizing that everyone experiences difficulties at some point in their life. Lastly, the third feature of self-compassion is mindfulness, which refers to a non-judgemental attitude towards one's own momentary emotions and thoughts (Neff, 2003).

Research about self-compassion on the trait level showed that it is associated with mental health benefits as well as adaptive functioning with regards to difficult situations (Neff, 2004). Additionally, self-compassion has been positively associated with current markers of psychological well-being, such as self-acceptance, social connectedness, self-esteem, autonomy, mindfulness, environmental mastery, and purpose in life. Moreover, self-compassion was associated with higher levels of reflective and affective wisdom, personal initiative, feelings of happiness, optimism, as well as positive affect (Neff, Rude, & Kirkpatrick, 2007). Further, trait self-compassion has been associated with decreased levels of anxiety, fear of failure, and symptoms of depression, while also increasing levels of happiness, optimism, perceived competence, and motivation (Neff, 2003; Neff & Germer, 2017). Besides, self-compassionate students were found to be less afraid of failure and more confident about their abilities than students who lacked a self-compassionate mindset (Smeets, Neff, Albers & Peters, 2014). Dreisoerner, Junker, and van Dick (2020) increased levels of self-compassion through compassionate writing and suggested that people high on self-compassion are more accepting

of their faults, while also being kinder to themselves. Neff and Vonk (2009) compared different research methodologies, such as the Experience Sampling Method (ESM), reactions to interpersonal feedback, reflections on real-life negative personal experiences, and mood inductions and found that in all of these methodologies, people high on self-compassion showed better emotional resilience, by being more adaptive in their responses to daily difficulties, they were more accurate in their self-concept, and more realistic at rating their performance, compared to participants low in self-compassion.

Apart from representing a stable individual difference, self-compassion was found to be sensitive to situational factors. A study by Breines and Chen (2013) used support giving schemas, in which participants either thought about giving support or actually gave support to others, which showed that in both cases state self-compassion increased. Research about the differences between trait and state level differences on self-compassion indicated that the induction of trait and state self-compassion lead to a similar psychophysiological response pattern of reduced arousal and parasympathetic activation leading to more efficient emotion regulation in difficult times (Kirschner et al., 2019). Even though, they stated that further investigation is necessary to support their findings (Kirschner et al., 2019).

Self- Efficacy

Self-efficacy has been defined as a person's judgement of their capabilities to plan and execute courses of action needed to do specified types of performances (Bandura, 1986). Self-efficacy affects how persons react by comparing their own perceived capabilities with the difficulty of the task, how much effort they expend, how they endure when faced with difficulties, thought patterns, stress levels, and the level of accomplishment they achieve (Bandura, 1997). The higher the level of confidence, the more perseverance the person will exhibit to complete a task (Bandura, 1997). The definition of self-efficacy as being a construct that is situationally oriented has been conceptualized as a state-like variable, in which it mobilizes motivation and cognitive resources to meet situational demands (Gist and Mitchell, 1992). For instance, researchers found that students with high academic self-efficacy possessed higher academic motivation, level of effort, persistence, and emotional reactions (Zimmerman, 2000), while also being better able to cope with stress and challenges compared to students with low academic self-efficacy (Feldman & Kubota, 2015).

Despite this, self-efficacy has also been defined as a trait-like variable as which it predicts performance regardless of a given task or context. For instance, Chen et al. (2001), defined general self-efficacy as a trait-like variable, which influences a person's perception of

their ability to act in differing contexts. To be precise, this allows the comparison of different people and to individually look at how they view themselves as capable of performing a task or dealing with a challenge regardless of the situation. Furthermore, Chen et al. (2001) found a moderate correlation between trait and state level self-efficacy in their study. Even though, they stated that further investigation is necessary to support their findings (Chen et al., 2001).

Thus, this study will explore this idea and will compare a person's state level self-efficacy with one's trait level self-efficacy. After that, it will be examined how they are associated. The trait level definition of self-efficacy will be adopted from Chen et al. (2001). State level self-efficacy has been conceptualized to change over time due to momentary fluctuations during the day, depending on the context or situation.

Self-Compassion and Self-Efficacy

Previous studies researched the association between self-compassion and self-efficacy, but most investigated them on a trait level and did not investigate them in the context of daily life (Iskender, 2009). With the benefits of high levels of self-compassion and self-efficacy, such as increased psychological resilience and emotion regulation, people could potentially better deal with negative events and their outcomes. Moreover, it has been researched that state self-compassion indirectly affects the openness to cognitive appraisals, which affects how a person compares their skills to the difficulty of a task (Kirschner et al., 2019). With differing levels of self-compassion, people might be able to change their appraisal of different situations and tasks.

Iskender (2009) researched gender differences between self-compassion, self-efficacy, as well as their relation. The study demonstrated that the above mentioned main features of self-compassion were positively associated with self-efficacy. He argued that this could be due to the perception of satisfactory feelings, which lead to higher levels of self-efficacy. Moreover, components of self-compassion, especially mindfulness, were a significant predictor of self-efficacy. To be precise, when being mindful, one adopts a non-judgemental perspective about the momentary experiences, feelings, and thoughts, which in turn increase the level of self-efficacy (Manavipour & Saeedian, 2016). Additionally, Smeets et al. (2014) randomized participants into a brief online self-compassion intervention and found that self-compassion interventions enhanced participants' confidence in their ability to deal with challenging situations. They further found significant increases in self-compassion, mindfulness, optimism, and self-efficacy, and decreases in rumination in comparison to participants who were in a randomized active control group. Moreover, Allen et al. (2020) found a moderate positive association between self-compassion and measures of self-efficacy and suggested that self-

compassion and self-efficacy share common features. To be specific, he argued that self-compassion is conceptually related with, but a distinct self-related construct than self-efficacy. Research by Chen (2018) found that high self-compassionate individuals have more realistic self-appraisals than individuals low on self-compassion. As such, individuals with more realistic self-appraisals may be better at accurately judging their ability to the difficulty of a task, affecting how self-efficacious they are. In line with this, Smeets, Neff, Albers and Peters (2014) hypothesized that teaching self-compassion reduces harsh self-criticism, which tends to undermine perceived competence. Nevertheless, no research examined the association between self-compassion and self-efficacy at the state level. Thus, the current study aims to do so and explore the relation between self-compassion and self-efficacy in the context of daily life.

Current Study

The goal of this study was to explore how self-compassion and self-efficacy are associated, both between individuals and within individuals, that is, the variability of an individual over the course of several days. Most cross-sectional research make use of one-time measurements to assess the trait level at one point of time and to compare between individuals. The assessment of states, thus allowing for inferences regarding the variability of an individual, can be achieved by utilising the ESM, which collects data multiple times per day over several days (Myin-Germeys, et al., 2018). ESM allows researchers to get insight into emotions as they naturally occur in daily life, without causing impactful disruptions for the participants (Palmier-Claus et al., 2011). Thus, this study will make use of the ESM to explore momentary fluctuations of state levels of self-compassion and self-efficacy.

(1) It is anticipated that trait and average state self-compassion are positively associated, indicating that individuals high on trait self-compassion experience higher average levels of state self-compassion.

(2) It is anticipated that trait and state self-efficacy are positively associated, indicating that individuals high on trait self-efficacy experience higher average levels of state self-efficacy.

(3) It is expected that there is a strong positive association between trait self-compassion and trait self-efficacy, as they have been positively associated in the past.

(4) It is anticipated that the association between state self-compassion and state self-efficacy will be a strong positive between-person association, indicating that individuals that on average experience high state self-compassion tend to also experience higher levels of state self-efficacy on average.

(5) It is also expected that the association between state self-compassion and state self-efficacy will be a moderate positive within-person association, implying that during moments in which an individual experiences higher levels of self-compassion compared to its average level, that individual tends to also experience higher levels of self-efficacy at that specific moment.

Methods

Design

ESM was used to measure real-time and real-world experiences of self-compassion and self-efficacy (Myin-Germeys, et al., 2018). The use of ESM allowed the gathering of data about constructs, such as psychological mechanisms from the participant's daily experiences and increases ecological validity of the study as there are no recollection or memory biases (Verhagen, Hasmi, Drukker, van Os, & Delespaul, 2016). The data collection took place in April 2020 with the use of Ethica. Participants used their own mobile devices to complete the study. The online study was approved by the Behavioral, Management, and Social Sciences ethics committee of the University of Twente (Request-Nr: 200382).

Participants

To take part in the study, participants had to be proficient in English, aged 18 or older, and own a mobile device from Android or Apple to use the Ethica application. A convenience sampling strategy was used and participants were recruited through the Test Subject Pool BMS (SONA) System of the University of Twente and social media platforms. In total, 43 individuals took part in the study, from whom most were students at the University of Twente. Their age was ranging from 18 to 35 years old (M_{age}= 22.6, SD_{age}= 38.2, female 50% and male 50%). Their nationalities were Dutch (43.3%), German (30%), and other (26%).

Material and Measures

Ethica

Ethica is a software that allows the creation and maintenance of surveys and other forms of studies (ethicadata.com). It is a platform where participants can join in using their mobile devices to complete questionnaires in ESM research. Furthermore, it gives the researcher the possibility to have an overview of the collected data, while also being able to monitor the study and adjust it to the current needs. The mobile application can be used on mobile devices that

have Android or iOS operating systems. This study used Ethica version 153. Researchers were able to schedule the questionnaires and reminders were sent to notify the participants.

Trait Questionnaire

Trait Self-Compassion. Trait self-compassion was measured by 12 items from the Self-Compassion Scale-Short Form (Appendix A). Participants rated statements on a 5-point Likert scale (1=*almost never*; 5=*almost always*) about how they perceive themselves during hardships. The six facets of self-compassion were measured, including *self-kindness* (e.g. "When I'm going through a very hard time, I give myself the caring and tenderness I need."), *self-judgement* (e.g. ". I'm disapproving and judgmental about my own flaws and inadequacies."), *common humanity* (e.g. "I try to see my failings as part of the human condition."), *isolation* (e.g. "When I'm feeling down, I tend to feel like most other people are probably happier than I am."), *mindfulness* (e.g." When something upsets me I try to keep my emotions in balance.") and *over-identification* (e.g. "When I fail at something important to me I become consumed by feelings of inadequacy). Items for self-judgement, isolation, and over-identification were reverse scored. Higher levels of composite scores indicated higher levels of self-compassion. The short and long form of the questionnaires have been factorially validated in the past and their correlation is r = .97 with an internal consistency of α=.86 (Raes et al., 2011). The analysis of the current sample showed a Cronbach's alpha of .77, which points to good internal consistency for the total scale (Blanz, 2015).

Trait Self-Efficacy. Trait self-efficacy was measured using the New General Self-Efficacy Scale (NGSE), consisting of 8 items (Appendix A). Participants rated statements on a 5-point Likert scale (1=*almost never*; 5=*almost always*). The items included statements like "I will be able to achieve most of the goals that I have set for myself" and "Compared to other people, I can do most tasks very well". The scores ranged from 8 (lowest trait self-efficacy) to a maximum of 40 (highest trait self-efficacy). The scale has an internal consistency of α=.86 and test-retest reliability of r = .90. Moreover, it has been demonstrated that this scale possesses high content validity compared to other contemporary self-efficacy scales (Chen et al., 2001). For the current study, the Cronbach's alpha was .65, representing acceptable internal consistency (Blanz, 2015).

State Questionnaire

The questionnaire used for the current study can be found in Appendix A. Moreover, the reliability and validity of all items used will be discussed in the Results section.

State Self-Compassion. State self-compassion was measured by two items from the trait questionnaire. Participants indicated to what extent they agree to different statements on a 5-point Likert scale (1=*strongly disagree;* 5=*strongly agree).* The statements were adapted

from the *self-kindness* (e.g. “Right now, I am giving myself the caring and tenderness I need towards my negative feelings.”) and *common humanity* (e.g. **“**Any feelings of inadequacy I experience right now, are shared by most people.”) sub-scale. The component of *mindfulness* was not measured.

State Self-Efficacy. State self-efficacy was measured by two items adapted from the NGSE scale. Participants rated two statements (“Right now, I believe I can succeed in my current task, if I set my mind to it.” and “Right now, I don't feel confident in my ability to effectively accomplish my current task.”) on a 5-point Likert scale (1=*strongly disagree;* 5=*strongly agree).*

Procedure

Before the start of the study, a two-day pilot study took place with three participants. In the beginning, participants were instructed to download the *Ethica* application on their mobile devices to join the study and to receive the daily notifications. They either signed up through SONA or directly through the researchers. The study took place over nine days. On the first day, participants were informed about the study, they gave their consent to take part, which they could withdraw during any time (see Appendix B). They further completed the trait questionnaires of self-compassion and self-efficacy and filled in their demographic information. Nevertheless, due to technical difficulties, participants filled in the trait questionnaire and gave their consent on the second day instead of the first day. Furthermore, participants were asked to contact the researchers in case they had any questions or problems with the study. The trait questionnaires were available between 9:00 AM and 11:30 AM on the first day of the study before the state questions were sent. This was done to prevent influences on trait measures. Participants were notified the moment the survey was available and if they did not complete it, they received a reminder after two and four hours. If participants failed to respond in the next 24 hours from the time the survey notification came, the questionnaire expired and it was not possible to be filled in again. Due to some technical difficulties, some participants stated that they received the survey notification for the questionnaire even after they filled it in. This lead to the expiration of the survey being changed to seven hours after one week from the beginning of the study. The following seven days, participants were asked to reply to the questions three times per day. Participants received the prompts at random time points in a certain period. These periods were between 9:00 AM and 10:30 AM, between 2:00 PM and 3:30 PM and between 8:00 PM and 9:30 PM. The notification was sent the moment the survey became available and if participants did not respond, another notification was sent after 15, 30 and 45 minutes. If during that time, participants did not respond for 90 minutes after receiving the initial

notification, the questionnaire expired. When filling out the questionnaire, participants had to pick an answer or otherwise they could not proceed with the survey.

Data Analysis

The analysis was conducted using IBM SPSS Statistics (version 26). For this, the data was exported from Ethica. Participants with a response rate of ≥ 50% on the daily state questionnaire were included in the final data set. This is following the common cut-off point using ESM studies (Conner & Lehman, 2012). Furthermore, descriptive statistics were used to calculate the demographic data (e.g. age, gender, nationality) and the mean trait self-compassion and trait self-efficacy scores from the trait questionnaire.

Since ESM uses multiple data collection points for the participants, there is a need to disaggregate between-person and within-person effects into one model to prevent errors of inference (Curran & Bauer, 2011). Thus, an average person mean (PM) score was calculated per participant over eight days, for both, self-compassion and self-efficacy, to allow for a between-person analyses. Moreover, the state scores for self-compassion and self-efficacy were subtracted from their PM score to receive the person mean-centered scores (PM-centered) from each participant. The PM-centered scores reflect momentary deviations in state self-compassion and self-efficacy of all participants per timepoint, pointing out how much the state levels at each timepoint differ from the PM score, allowing for within-person analyses.

Standardization of all state and trait variables was done to receive z-scores, that assist in comparing them. Consequently, the following analyses were conducted using the z-scores, which resulted in standardized estimates. ESM data consists of two levels of information. State self-compassion and state self-efficacy (Level 1) and for each participant (Level 2). To deal with potentially missing measurement points and to ensure that no data dependency happens, multiple linear mixed model (LMM) analysis were conducted, using an autoregressive covariance structure (AR1).

To evaluate the reliability of the SCS-SF and the NGSE, a Cronbach's alpha was calculated. According to Field (2013), an alpha value of $\alpha > 0.7$ and above is being considered as excellent, $\alpha > 0.6$ is being considered as good, and an α as low as .5 is deemed acceptable. Next, to calculate the reliability of the state measures, that is the stability of responses, the longitudinal dataset was split into two halves and the scores of the first half and second half of the time points were compared using Pearson correlation analysis (Palmier-Claus et al., 2011). Furthermore, the answers were split according to odd and even numbers of time points, to obtain two correlation coefficients per construct, to improve the conclusion about the stability of responses. According to Cohen (1988), a Pearson a weak association corresponds to *r* of > .1 (-

.1), a moderate correlation corresponds to > .3 (-.3), and a strong correlation corresponds to > .5 (-.5).

A multilevel linear model analysis was used with state self-compassion as a dependent variable and the PM-centered (within-person) scores and the PM (between-person) scores for state self-efficacy as fixed variables to examine whether the relationship between state self-compassion and state self-efficacy was a within-person or a between-person one.

Besides this, the association between trait self-compassion and trait self-efficacy was examined by linear regression analysis, using trait self-compassion as dependent and trait self-efficacy as the independent variable. Besides, to assess the validity of the state items for self-compassion and self-efficacy, two Pearson correlations were conducted between trait self-compassion and state self-compassion, as well as between trait self-efficacy and state self-efficacy. For this, the PM scores and the trait scores were used.

Results

Descriptive Statistics

43 participants took part in this study. 13 participants were excluded due to response rates lower than 50%, so their data was deleted. The average participant responded to 76.94% of questionnaires. Descriptive Statistics are about the trait data is provided in Table 1.

Table 1

Minimum, Maximum Scores, Means (M) and Standard Deviations (SD) of Trait Self-Compassion and Trait Self-Efficacy.

Variables	Minimum	Maximum	M	SD
Trait self-compassion	23 (12)	52 (60)	38.63	7.11
Trait self-efficacy	20 (8)	36 (40)	30.64	3.26

N=30

Assessment of Reliability

To examine the stability of responses, the data set was split into halves. The first half was compromised of data up to time point 11, while the second half was compromised of the remaining time points to compare the first and second half of the data, as well as based on odd and even numbers of time points. A Pearson correlation analysis showed a significant positive correlation between the scores for self-compassion (first and second half: $r = .83$, $p < .001$; even and odd numbers: $r = .85$, $p < .001$). Further, there was a significant positive correlation between

self-efficacy scores (first and second half: $r = .43$, $p < .001$; even and odd numbers: $r = .79$, $p < .001$).

Assessment of Validity

A Pearson correlation analysis between the PM score of state self-compassion and the SCS-SF questionnaire for trait self-compassion demonstrated no correlation ($r = -.01$, $p = .951$), indicating that participants who scored high on the trait level do not necessarily score high on the state level as well. In the same way, the analysis between the NGSE and the state self-efficacy (PM) demonstrated no correlation ($r = .032$, $p = .852$), implying that participants high on the trait level do not necessarily score high on the state level.

Trait Self-Compassion and Trait Self-Efficacy

A linear regression analysis was used to examine the association between trait self-compassion and trait self-efficacy. At first, to assess linearity, a scatterplot was plotted using trait self-compassion against trait self-efficacy with a superimposed regression line and a visual inspection of these plots revealed a linear relationship between these variables. Furthermore, homoscedasticity and normality of the residuals were confirmed and no outliers were observed. Trait self-compassion statistically did not predict trait self-efficacy, $F(1, 30) = .95$, $p = .76$. This accounts for .03% of the variation in trait self-compassion with adjusted $R^2 = -.03\%$ and implies a small effect size (Cohen, 1988). Moreover, trait self-compassion and trait self-efficacy were not correlated ($\beta = .06$, $p = .76$).

State Self-Compassion and State Self-Efficacy

Linear mixed modelling with state levels of self-compassion and average state levels of self-efficacy (between-person, PM) and on state self-efficacy levels at a specific time point (within-person, PM-centred) were conducted to explore their association. This showed that PM state self-efficacy scores significantly predicted state self-compassion $F(1, 118.84) = 13.43$, $p < .001$, and PM-centred state self-efficacy scores also significantly predicted state self-compassion, $F(1, 473.6) = 6.31$, $p = .012$. The results showed a weak positive between-person association ($\beta = .22$, $SE = .06$, $p < .001$, 95% CI [0.1, 0.34]), as well as a weak positive within-person association ($\beta = .09$, $SE = .04$, $p = .012$, 95% CI [0.02, 0.16]).

Individual cases

To obtain a more in-depth picture of participants' daily levels of state self-compassion and self-efficacy over time, several participants were selected and graphs were generated to further examine them on the individual level. Some participants will be further examined in the discussion section below.

Participant 11. Participant 11 scored above average on trait self-compassion (4.08) and above average on trait self-efficacy (4.25). He experienced, in contrast to the total sample, higher levels of state self-compassion (*PM* = 3.93) than of state self-efficacy (*PM* = 3.58). Furthermore, this participant showed high fluctuations in self-efficacy (Figure 1), ranging from 2 to 4.5, while he is more stable in self-compassion. During some measurement points (e.g. 20, 22), a strong negative association can be seen in which he experienced mainly high self-compassion levels while having low self-efficacy levels.

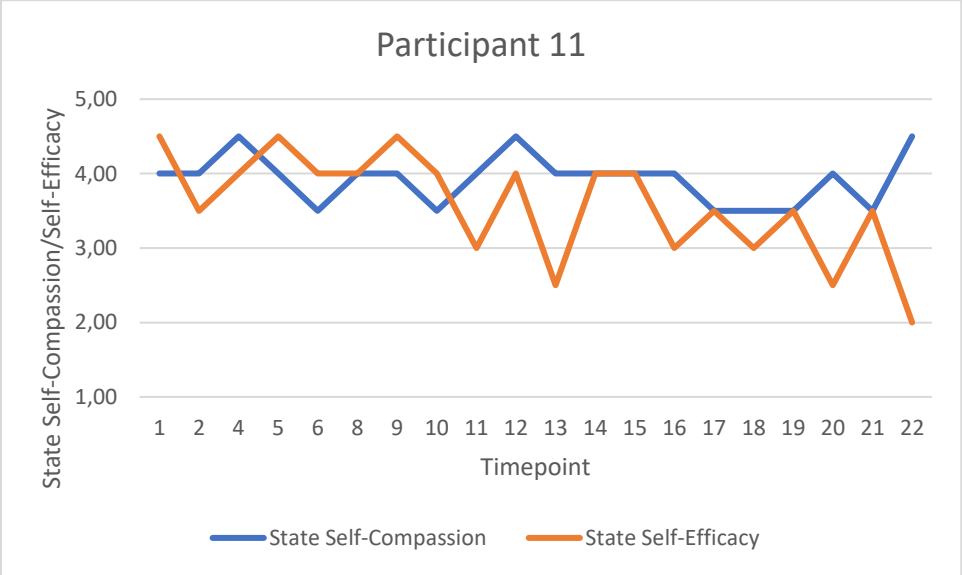


Figure 1. Line graph depicting state self-compassion and self-efficacy levels per timepoint of participant 11.

Participant 16. This participant is above average in trait self-compassion (3.5) and above average in trait self-efficacy (4.13). Moreover, the state scores of self-compassion (*PM* = 2.62) were below average, while the state scores of self-efficacy were above average (*PM* = 4.26). This individual experienced higher variability in his scores compared to other participants. His state self-compassion scores range from 1 to 4 and his state self-efficacy scores from 2 to 5. During some measurement points (e.g. 11, 12, 14) a positive association can be seen, while during other measurement points (e.g. 24) there is a negative association.

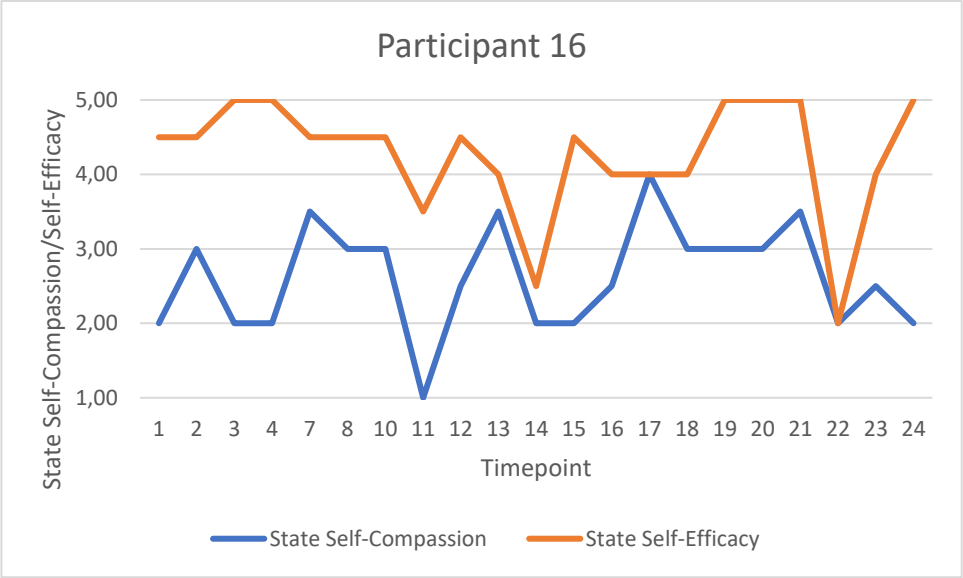


Figure 2. Line graph depicting state self-compassion and self-efficacy levels per timepoint of participant 16.

Participant 20. This participant scored above average in trait self-compassion (3.83) and above average in trait self-efficacy (4.5). This participant experienced variability in a small range compared to other participants. A positive association between self-compassion and self-efficacy can be seen (Figure 3), in which self-compassion and self-efficacy simultaneously increased (e.g. 12, 15, 20) or decreased (e.g. 13, 17, 19).

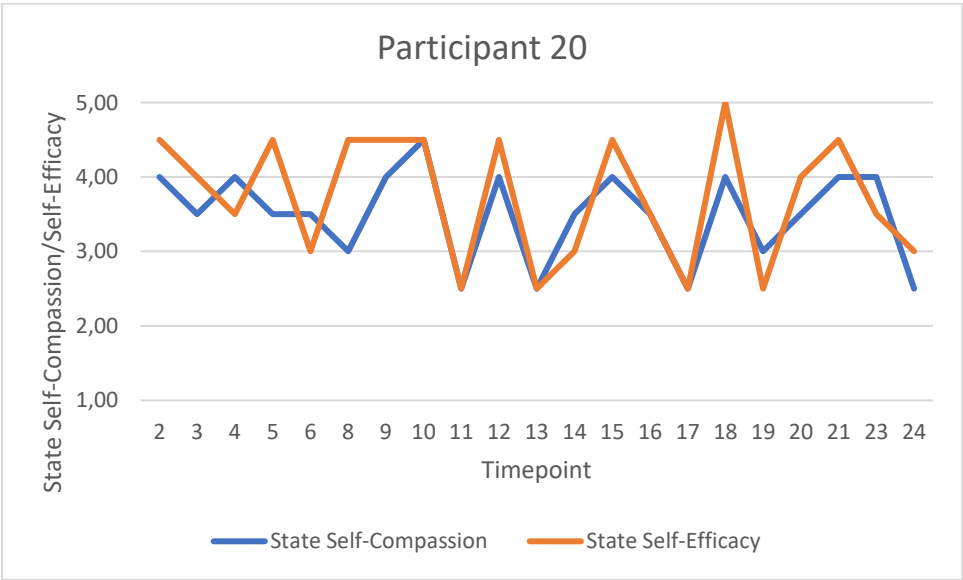


Figure 3. Line graph depicting state self-compassion and self-efficacy levels per timepoint of participant 20.

These examples illustrate that the found positive within-person association between self-compassion and self-efficacy differs between individuals and in varying degrees. While for some individuals there was a strong positive association for most of the time points, for another individual there was a negative association visible.

Discussion

This study aimed to investigate the relationship between self-compassion and self-efficacy in the context of daily life. It was examined whether self-compassion and self-efficacy were positively related and whether the association between momentary levels of self-compassion and self-efficacy was a between- or within-person effect. These are the key findings of this research: first, the results provide no support for the hypothesis that trait self-compassion and the average of state self-compassion measured repeatedly for a week are associated. This implies that individuals, who report higher general levels of self-compassion not necessarily experience higher average momentary levels of self-compassion. Second, there was no support for the hypothesis that trait self-efficacy and state self-efficacy are associated. This indicates that individuals with higher general levels of self-efficacy not necessarily experience higher levels of momentary self-efficacy. Third, there was no support for the hypothesis that there was an association between trait self-compassion and trait self-efficacy. This suggests that individuals with high trait self-compassion do not necessarily have higher trait self-efficacy. Furthermore, there was partial support for the hypothesis that there was a between-person association between state self-compassion and state self-efficacy, even though this association was only weak, implying that individuals that on average experience high state self-compassion tend to also experience slightly increased levels of average state self-efficacy, and vice versa. Lastly, the results provide partial support for the hypothesis that there was a within-person association between state self-compassion and state self-efficacy, although this association was weak. This indicates that in moments in which an individual experiences higher levels of self-compassion compared to his average level, he also tends to experience higher levels of self-efficacy at that specific moment, and vice versa.

Interpretation of Results

Trait and Mean State Association for Self-Compassion and Self-Efficacy

Contrary to the expectations resulting from mostly experimental research – as no other ESM study investigated trait and state self-compassion combined – individuals that showed higher dispositional self-compassion did not tend to show higher levels of average state self-compassion. A possible explanation for this could be that the items used to measure momentary

self-compassion only included the components of common humanity and self-kindness, while leaving out mindfulness. Neff and Vonk (2009) found out that especially mindfulness affects momentary levels of self-compassion, so not measuring mindfulness might have affected the found results. The other components of self-compassion were investigated in different research, such as by Waring and Kelly (2019) who used a mostly female Asian student sample and found that trait and state self-compassion are positively associated when participants shared their experiences of failure with a peer but not when they experienced the event alone. They argued that it is unclear if sharing the experience with another person increased momentary self-compassion levels or if being alone reduced the effect of trait self-compassion. Further, they stated that they only primed common humanity and not all three components of self-compassion, which might have influenced the level of self-compassion. Another study by Tóth-Király and Neff (2020) found that the induction of state self-compassion changed all subscales of the Self-Compassion Scale to the almost same degree as interventions for trait self-compassion did. They further stated that training one component of self-compassion changes how the individual experiences the other components, arguing that self-compassion works as a system which can change in its dynamic. For instance, if an individual is trained in the mindfulness component, that individual will experience the common humanity and self-kindness component differently. Thus, increasing general self-compassion might affect the experienced momentary self-compassion and the other way around.

The current results imply that individuals who showed higher dispositional self-efficacy did not tend to show higher levels of average state self-efficacy. This is inconsistent with research by Chen et al. (2001) who found a moderate correlation between general and momentary self-efficacy. They further hypothesized that high trait self-efficacy acts as a buffer against external influences that may influence state self-efficacy. A possible explanation for the different results could be the difference of the sample, as Chen et al. (2001) used a student sample from America mostly consisting of females (78%), while the current sample involved students with mixed nationalities, which had an even gender distribution.

Taken together, the hypotheses about the association between trait and state self-compassion, as well as between trait and state self-efficacy was not in line with the expectations, as both showed no association between the two constructs. Both state scores were on average higher than the trait scores. One potential reason for this is that traits are more than just averaged states and that both constructs measure different phenomena (Zuckerman, 1979). This is related to research by Matthews, Deary, and Whiteman (2003) who argued that one’s traits influence

states in combination with situational and environmental factors, indicating that different aspects influence one's emotional state.

Trait Self-Compassion and Trait Self-Efficacy

This study demonstrates that trait self-compassion and trait self-efficacy are not correlated, indicating that individuals with a high level of trait self-compassion not necessarily experience higher levels of trait self-efficacy. This is not in line with research by Iskender (2009) who found that the three main parts of self-compassion were positively associated with self-efficacy. A reason for this might be the difference between the sample, as the current study used a student sample consisting mostly of Dutch and German students, while the participants in the study from Iskender (2019) were mostly Turkish. Thus, the difference in results could be attributed to cultural differences. However, more research is necessary to replicate this study's findings.

State Self-Compassion and State Self-Efficacy

This study's findings show that there is a weak positive association on the between-person level. This implies that individuals with higher levels of state self-compassion on average compared to others tend to experience slightly increased average levels of state self-efficacy, and vice versa. Moreover, Smeets et al. (2014) hypothesized that teaching self-compassion might reduce harsh self-criticism, which tends to reduce the perceived competence of oneself. In line with this, Ying and Han (2009) hypothesized that the mindfulness aspects of self-compassion allows the individual to remain objective during appraisals, which were not measured in the current study. They further hypothesized that self-kindness produces a gentle and forgiving mindset towards oneself that facilitates the recognition of internal strengths that are used during appraisals. One possible explanation for this is that highly self-compassionate individuals have a more positive perception of their abilities by taking a more balanced perspective on their shortcomings rather than to increase them through self-judgment, feelings of isolation, or over-identification with their emotions compared to individuals with low levels of self-compassion (Neff, Hsieh & Dejitterat, 2005).

Furthermore, the present results imply a weak positive within-person association between self-compassion and self-efficacy, indicating that during moments in which individuals experience higher levels of self-compassion compared to their average level of self-compassion, they also experience higher self-efficacy levels at that specific moment. A possible explanation for this is that feeling self-compassionate in one moment allows the individual to acknowledge their weaknesses and strengths in order to make a more appropriate judgement

about the difficulty of a task (Chen, 2018). This finding can also be explained by the research of Manavipour and Saeedian (2016) who proposed that by mindfulness one adopts a non-judgemental perspective about momentary experiences, which leads to a different judgement about one's ability to perform a certain task, that in turn increases the level of self-efficacy. Besides, Neff and Vonk (2009) compared different research methodologies, amongst other things ESM, and found that individuals high on momentary self-compassion have better emotional resilience and a more accurate description of their self-concept, which include judgements about their abilities, compared to individuals low on momentary self-compassion. They further stated that especially teaching mindfulness leads to higher momentary levels of self-compassion.

Concluding, the results demonstrated a significant positive between- and within-person association between self-compassion and self-efficacy. Thus, to increase the level of self-efficacy, one might target momentary self-compassion or vice versa.

Further findings

In general, the results indicate that participants' experience of self-compassion and self-efficacy was varying considerably. This is in line with other studies using ESM (Kashdan & Steger, 2006) and provides support that emotional states have a fluctuating nature. Nonetheless, this study did not examine the situational or environmental factors influencing participants during the measurement moments. For instance, there might have been influencing factors in the environment, such as the presence of others, that may have impacted the momentary experiences of the participants. Thus, individual reasons as for why these variations occurred cannot be presented and further research is necessary. Overall, individuals experienced higher momentary levels of self-efficacy than of self-compassion, which may be due to their trait levels being higher as well. This can be seen in Participant 20: in moments he or she experienced increases or decreases in self-compassion, self-efficacy also increased or decreased simultaneous. This may imply that when an individual experiences low self-compassion, they might get harder on themselves, lowering their momentary self-efficacy levels. Further, Participant 11 depicts an individual who generated self-compassion in moments in which the momentary self-efficacy levels drop. This negative association may imply that this individual generates self-compassion during difficult moments. How this generation of self-compassion happens has to be further researched (Kirschner et al. 2019).

Strengths and Limitations

The findings of this study contribute to the literature about self-compassion and self-efficacy using ESM. One advantage of this study concerns the assessment of self-compassion and self-efficacy using ESM, providing insights into an individual's experiences about their affective states in real-life and real-time. Furthermore, the methodological nature of ESM, in general, improves the ecological validity of the study (Verhagen, et al., 2016), as well as the external validity by examining participants daily routine and providing insights into their experiences as they naturally occur and increasing the generalisability of the study's findings to the real-life context. Moreover, ESM allowed the investigation of not only between-person but also within-person associations.

Additionally, one strength regards the trait and state measures, as well as their psychometric properties. The reliability for the trait self-efficacy measure showed acceptable reliability, indicating moderate levels of internal consistency, while the self-compassion measure showed good reliability, indicating high levels of internal consistency. Besides, the stability of responses in state measures revealed a positive correlation based on the splitting between the first and second half, as well as the splitting between odd and even time points, indicating that the state measures consistently measured the fluctuations participants experienced over the day.

Apart from the strengths, the study also has shortcomings. First, due to technical issues with the survey platform Ethica, some participants received fewer prompts per day, resulting in lower response rates, which could have affected the validity. Next, the eight days study duration was mismanaged for some of the participants, leading to insufficient data points (below 50% response rate) for 13 of the 43 participants. Aside, ESM does not allow for drawing conclusions regarding causality, indicating that there may have been confounding variables accounting for the results. Therefore, more elaborate research of experimental nature is needed to explore the underlying processes that may affect the fluctuations in affective states and the association between self-compassion and self-efficacy. Moreover, the items used to measure state self-compassion included the components common humanity and self-kindness, while leaving out mindfulness, thereby neglecting one component which may have affected the results.

Future Research

Future research should address several issues with the current study. First, a more elaborate pilot test should be conducted to prevent that the above mentioned technical issues occur and to protect the study against issues that may reduce the ecological validity. Next, to increase the generalizability of results, future research should use a different sample with more

diverse participants with different cultural and economic backgrounds to test whether or not the same results would hold true and to draw inferences about the obtained data. Additionally, the time frame of the study should be increased. A longer duration could allow capturing more measurement points for a more detailed analysis of the variables. Also, future studies should include more categorical context variables, for instance, the presence of others in the environment, as it is more likely to see the common humanity of failing if one can share their experiences with others. Besides, the random-time sampling slots should be adjusted, as currently participants were asked the prompts the same time every day (around 9:30, around 14:45 and around 20:30) to make it less predictable and to reduce measurement reactivity (Verhagen et al., 2016). Also, more suitable state measures for the constructs should be used, as currently there is no state measure incorporating the mindfulness component. For instance, Neff and colleagues (2020) developed and validated a new scale to test for state self-compassion. Furthermore, future research should look further into the association between trait and state self-compassion and trait and state self-efficacy, as currently, the two constructs showed no correlation in contrast to previous experimental studies that found a correlation. Besides, there was no association between trait self-compassion and trait self-efficacy, contrary to previous studies which found a strong one. The association between state self-compassion and state self-efficacy should also be further researched to see if the results hold true, as this is the only study that investigated state self-compassion and state self-efficacy together using ESM.

Conclusion

This study provides insights into the constructs of self-compassion and self-efficacy, as well as into their real-life association, as most previous studies approached them as trait-like, stable constructs, therefore neglected the fluctuating nature of affective states. As self-compassion and self-efficacy can influence how confident people feel about themselves, further research into their association could lead to more insights on how to benefit individuals that are overwhelmed by the difficulty of a situation or event. These individuals might learn to be more confident with their abilities and deal with their problems more efficient without being affected by the perceived difficulty.

References

Allen, L. M., Roberts, C., Zimmer-Gembeck, M. J., & Farrell, L. J. (2020). Exploring the relationship between self-compassion and body dysmorphic symptoms in adolescents. *Journal of Obsessive-Compulsive and Related Disorders, 25,* 100535. https://doi.org/10.1016/j.jocrd.2020.100535

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: Freeman.

Blanz, M. (2015). *Forschungsmethoden und Statistik für die Soziale Arbeit: Grundlagen und Anwendungen* (1st ed.). Stuttgart, Germany: Kohlhammer.

Bluth, K., & Eisenlohr-Moul, T. A. (2017). Response to a mindful self-compassion intervention in teens: A within-person association of mindfulness, self-compassion, and emotional well-being outcomes. *Journal of Adolescence, 57,* 108–118. https://doi.org/10.1016/j.adolescence.2017.04.001

Breines, J. G., & Chen, S. (2013). Activating the inner caregiver: The role of support-giving schemas in increasing state self-compassion. *Journal of Experimental Social Psychology*, *49*(1), 58–64. https://doi.org/10.1016/j.jesp.2012.07.015

Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a New General Self-Efficacy Scale. Organizational Research Methods, 4(*1*), 62–83. https://doi.org/10.1177/109442810141004

Chen, S. (2018). *Harvard Business Review*, 96(*5*), p116-123.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Abingdon, United Kingdom: Routledge.

Conner, T. S., & Lehman, B. J. (2012). Launching a study in daily life. In *Handbook of research methods for studying daily life* (pp. 89–105). EBSCO Publishing.

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

Di Bello, M., Carnevali, L., Petrocchi, N., Thayer, J. F., Gilbert, P., & Ottaviani, C. (2020). The compassionate vagus: A meta-analysis on the connection between compassion and heart

rate variability. *Neuroscience & Biobehavioral Reviews*, *116*, 21–30. https://doi.org/10.1016/j.neubiorev.2020.06.016

Di Maio, S., Keller, J., Hohl, D. H., Schwarzer, R., & Knoll, N. (2020). Habits and self-efficacy moderate the effects of intentions and planning on physical activity. *British Journal of Health Psychology*, 1–17. https://doi.org/10.1111/bjhp.12452

Dreisoerner, A., Junker, N. M., & van Dick, R. (2020). The Relationship Among the Components of Self-compassion: A Pilot Study Using a Compassionate Writing Intervention to Enhance Self-kindness, Common Humanity, and Mindfulness. *Journal of Happiness Studies*, 1–27. https://doi.org/10.1007/s10902-019-00217-4

Ethica. (2020). *About Ethica Data*. https://ethicadata.com/about/

Feldman, D. B., & Kubota, M. (2015). Hope, self-efficacy, optimism, and academic achievement: Distinguishing constructs and levels of specificity in predicting college grade-point average. *Learning and Individual Differences*, *37*, 210–216. https://doi.org/10.1016/j.lindif.2014.11.022

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (Fourth edi). SAGE Publications.

Fridhandler, B. (1986). Conceptual note on state, trait, and the statetrait distinction. Journal of Personality and Social Psychology, 50(1), 169-174. https://doi.org/10.1037/0022-3514.50.1.169

Gist, M. E., & Mitchell, T. R. (1992). Self-Efficacy: A Theoretical Analysis of Its Determinants and Malleability. The Academy of Management Review, 17(*2*), 183. https://doi.org/10.2307/258770

Iskender, M. (2009). *The Relationship Between Self-Compassion, Self-Efficacy, and Control Belief about Learning in Turkish University Students. Social Behavior and Personality: An International Journal,* 37*(5), 711–720.* doi:10.2224/sbp.2009.37.5.711

Kashdan, T. B., & Steger, M. F. (2006). Expanding the Topography of Social Anxiety: An Experience-Sampling Assessment of Positive Emotions, Positive Events, and Emotion Suppression. *Psychological Science*, *17*(2), 120–128. https://doi.org/10.1111/j.1467-9280.2006.01674.x

Kirschner, H., Kuyken, W., Wright, K., Roberts, H., Brejcha, C., & Karl, A. (2019). Soothing Your Heart and Feeling Connected: A New Experimental Paradigm to Study the

Benefits of Self-Compassion. *Clinical Psychological Science*, *7*(3), 545–565. https://doi.org/10.1177/2167702618812438

Kuppens, P., Oravecz, Z., & Tuerlinckx, F. (2010). Feelings change: Accounting for individual differences in the temporal dynamics of affect. *Journal of Personality and Social Psychology*, *99*(6), 1042–1060. https://doi.org/10.1037/a0020962

Li, Y., Deng, J., Lou, X., Wang, H., & Wang, Y. (2019). A daily diary study of the relationships among daily self-compassion, perceived stress and health-promoting behaviours. *International Journal of Psychology*, *55*(3), 364–372. https://doi.org/10.1002/ijop.12610

Manavipour, D., & Saeedian, Y. (2016). The role of self-compassion and control belief about learning in university students' self-efficacy. *Journal of Contextual Behavioral Science*, 5(*2*), 121–126. https://doi.org/10.1016/j.jcbs.2016.02.003

Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). *Personality traits*. Cambridge University Press.

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

Neff, K. D. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. Self and Identity, 2(*2*), 85-102.

Neff, K. D. (2004). Self-compassion and psychological well-being. Constructivism in the Human Sciences, 9(*2*), 27-37.

Neff, K. D., Hsieh, Y.-P., & Dejitterat, K. (2005). *Self-compassion, Achievement Goals, and Coping with Academic Failure. Self and Identity, 4(3), 263–287.* doi:10.1080/13576500444000317

Neff, K. D., Rude, S. S., & Kirkpatrick, K. L. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality*, *41*(4), 908–916. https://doi.org/10.1016/j.jrp.2006.08.002

Neff, K. D., & Vonk, R. (2009). *Self-Compassion Versus Global Self-Esteem: Two Different Ways of Relating to Oneself. Journal of Personality, 77(1), 23–50.* doi:10.1111/j.1467-6494.2008.00537.x

Neff, K. D., Tóth-Király, I., Knox, M., Kuchar, A. & Davidson, O. (2020). The development and validation of the State SelfCompassion Scale (long and short form). Mindfulness. doi: 10.1007/s12671-020-01505-4

Palmier-Claus, J. E., Myin-Germeys, I., Barkus, E., Bentley, L., Udachina, A., Delespaul, P. A. E. G., Lewis, S. W., & Dunn, G. (2011). Experience sampling research in individuals with mental illness: Reflections and guidance. *Acta Psychiatrica Scandinavica*, 123(*1*), 12–20. https://doi.org/10.1111/j.1600-0447.2010.01596.x

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and Factorial Validation of a Short Form of the Self-Compassion Scale. *Clinical Psychology and Psychotherapy Clin. Psychol. Psychother*, *18*, 250–255. https://doi.org/10.1002/cpp.702

Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014). *Meeting Suffering With Kindness: Effects of a Brief Self-Compassion Intervention for Female College Students. Journal of Clinical Psychology, 70(9), 794–807.* doi:10.1002/jclp.22076

Tóth-Király, I., & Neff, K. D. (2020). *Is Self-Compassion Universal? Support for the Measurement Invariance of the Self-Compassion Scale Across Populations. Assessment, 107319112092623.* doi:10.1177/1073191120926232

Vada, S., Prentice, C., Scott, N., & Hsiao, A. (2020). Positive psychology and tourist well-being: A systematic literature review. *Tourism Management Perspectives*, *33*, 100631. https://doi.org/10.1016/j.tmp.2019.100631

Verhagen, S.J.W, Hasmi, L., Drukker, M., van Os, J., Delespaul, P.A.E.G. (2016). Use of the experience sampling method in the context of clinical trials. Evid Based Mental Health, 19(3). doi: 10.1136/ebmental-2016-102418

Waring, S. V., & Kelly, A. C. (2019). Trait self-compassion predicts different responses to failure depending on the interpersonal context. *Personality and Individual Differences*, *143*, 47–54. https://doi.org/10.1016/j.paid.2019.01.043

Ying, Y., & Han, M. (2009). *Stress and Coping with a Professional Challenge in Entering Masters of Social Work Students: The Role of Self-Compassion. Journal of Religion & Spirituality in Social Work: Social Thought, 28(3), 263–283.* doi:10.1080/15426430903070210

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. Contemporary Educational Psychology, 25(*1*), 82-91.

Zuckerman, M. (1979). Traits, states, situations, and uncertainty. *Journal of Behavioral Assessment, 1*(1), 43–54. https://doi.org/10.1007/bf01322417

Appendices

Appendix A: Trait Questionnaires

Self-Compassion Scale - Short Form (Raes et al., 2011)

** Items with reverse scoring*

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.

New General Self-efficacy Scale (NGSE)

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

To calculate the total score for each participant, take the average rating of the items by adding respondents' answers to each item and dividing this sum by the total number of items (8).

Daily Questionnaire

1. Currently, I don't feel entangled in my thoughts.
2. At the moment, I feel determined to stick to my current task until it's complete.
3. Any feelings of inadequacy I experience right now, are shared by most people.
4. Right now, I don't feel confident in my ability to effectively accomplish my current task.
5. Right now, I am giving myself the caring and tenderness I need towards my negative feelings.
6. Right now, I believe I can succeed in my current task, if I set my mind to it.
7. I am currently struggling with my thoughts.
8. At the moment, I don't feel committed to my current task as much as I should.

Appendix B: Ethica

B-1 sign up information provided to the participants upon registering

Thank you very much for signing up for our study! Before you start, a short introduction will follow.

The purpose of this study is to measure how you feel throughout the day. By using monitoring tools that help us to identify the daily fluctuations of constructs from mental health, we can obtain an insight into their dynamic interactions. This can then be applied to develop more personalized psychological interventions and therapies.

This study will run for about a week. On the first day we will start with a couple of questionnaires. These initial questionnaires need to be filled in only once and it shouldn’t take more than 30 minutes. From the next day onward, you will receive notifications via ethica when you can answer a couple of questions throughout the day. That will happen three times per day - morning, afternoon and evening and it won’t take more than 15 minutes per day. That will continue for 7 days until the end of the study. Please keep in mind you can opt-out of the study at any moment by simply not answering any questions or deleting ethica without needing to provide any reason.

We know people are quite occupied nowadays but we will ask you to fill in these daily questions as much as possible. For this purpose, we are giving you the possibility to fill it in for an hour after receiving a notification instead of immediately, afterwards it will expire

and you won’t be able to do it. Please, check occasionally if you have some activities to be done.

Additionally, we want to ask you to turn on the notification option for the Ethica app and to adjust the battery optimization settings which sometimes might intervene with the pop-up and sound notifications. We will provide you with some guidelines on how to do it if you don’t know, they can be found in the overview of the study.

And that is it for today! ***further information will be provided to you tomorrow in the app. Make sure to check your phone for details. We will send a notification via ethica as well to remind you.***

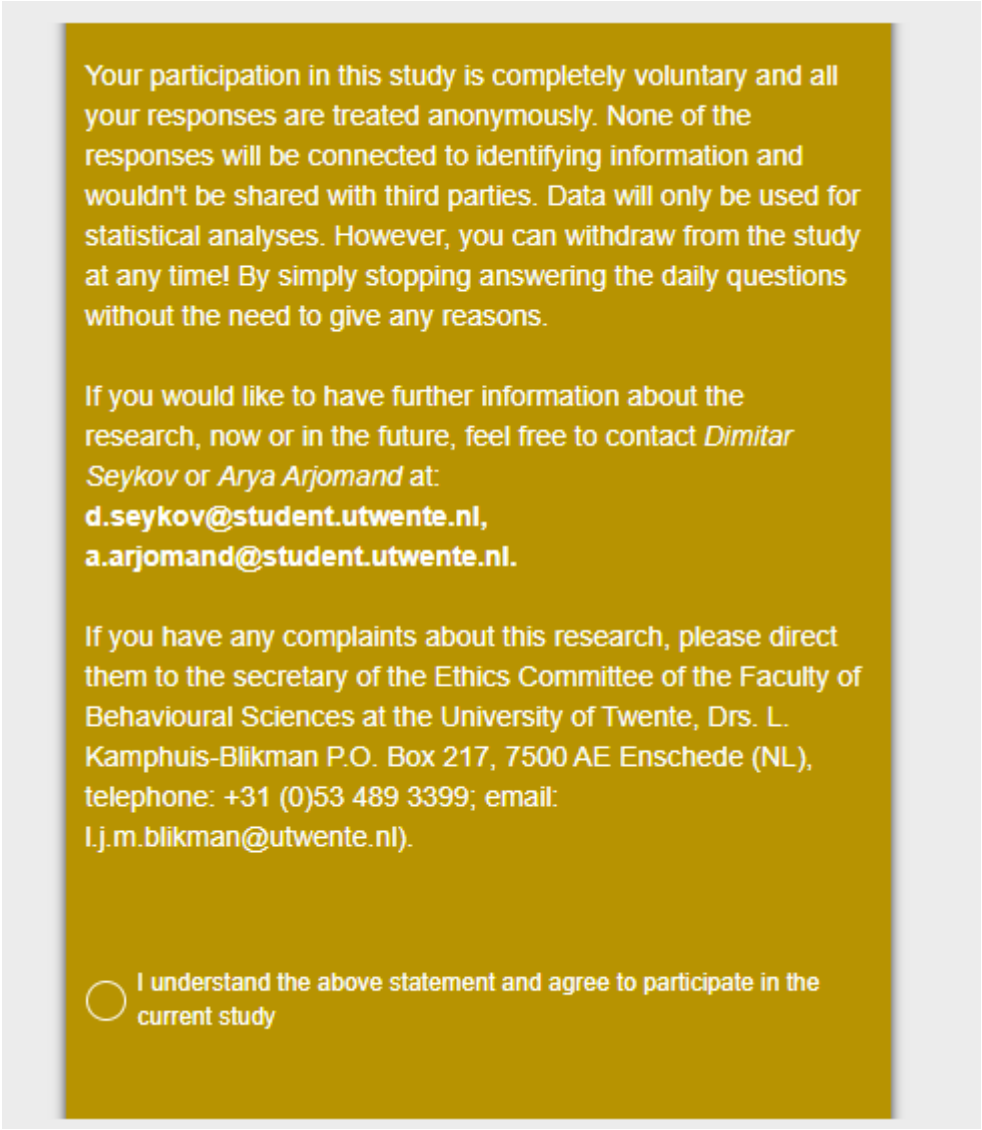
Thank you again for joining. If you have any trouble setting up the app or have questions about the study at any point feel free to contact

Dimitar Seykov or *Arya Arjomand* at:

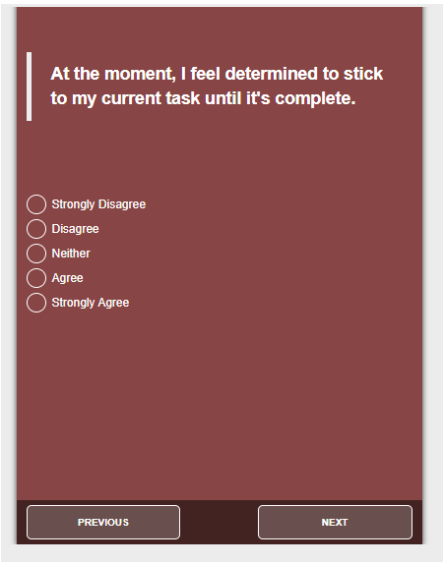
d.seykov@student.utwente.nl

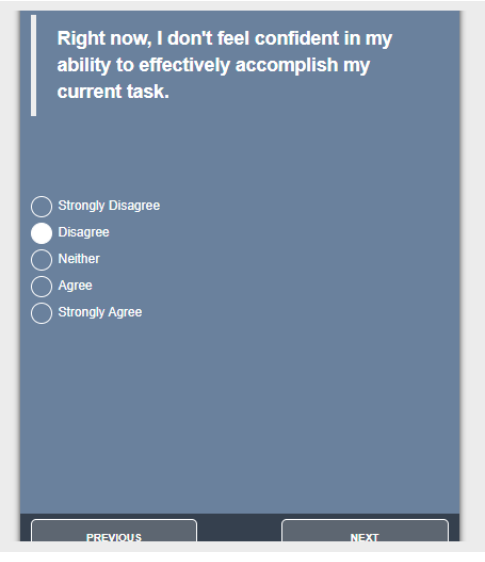
a.arjomand@student.utwente.nl

B-2 Consent form



B-3 example daily state survey provided to the participants on the smartphone app





B-4 daily reminder notification settings on Ethica web app for researchers