

**The Link between Self-Compassion and Stress in the Daily Lives of
University Students: An Observational Study using the Experiencing
Sampling Methodology**

Bogdan Filip Popovic

(s2110725)

Faculty of Behavioural, Management and Social Sciences

Bachelor's Thesis

14th of February, 2022

First supervisor: Dr. Matthis L. Noordzij

Second supervisor: Gerko Schaap

Abstract

The current literature demonstrates that self-compassion plays a buffering role in association with stress on a between-person level. However, momentary fluctuations naturally underlie the constructs on a within-individual level. Thus, this study aims to utilise ecological momentary assessments to inquire into momentary fluctuations of said constructs.

Additionally, buffering was established as a new scale, and two items were self-constructed.

Buffering was defined as the alleviation of momentary stress through momentary self-compassion. Associations between self-compassion, stress and buffering were analysed in a sample of 31 university students ($M_{age} = 21.5$, $SD_{age} = 1.6$, 55.2% female) by administering five daily questionnaires for seven days via the app "Ethica". The outcomes of this study illustrated a negative association between self-compassion and perceived stress on a trait level, as well as on the state level. The disaggregation of the between and within-person measurements revealed that momentary stress was weakly and negatively predicted by momentary buffering levels and not by the weekly average buffering levels ($\beta = -.18$, $p < .001$, 95% CI [-0.24, -0.12]). Ambiguously, this negative association could show that self-compassion indeed buffered against state stress, but it could also mean that buffering levels went up when the experienced stress levels went down, which would disapprove of a buffering role through self-compassion against state stress. In the future, it will be vital to account for this ambiguity, for instance, by filtering out participants with low state stress levels and making the stress item more specific.

Keywords: self-compassion, buffering, within-person variation, ecological momentary assessment, Experience Sampling Methodology, ESM

The Link between Self-Compassion and Stress in the Daily Lives of University Students: An Observational Study using the Experiencing Sampling Methodology

Many people who start studying or are in the process of studying experience various levels of stress in their daily academic lives. For many, these stress levels seem to be elevated (Stallman, 2010). The research on stress suggests that stress potentially has a negative effect on academic performance, especially when it is perceived as something undesired (Lin & Huang, 2014). Additional sources of stress for students can arise through issues with financial matters or imbalances between studying, working and living (Ryan, Shochet, & Stallman, 2010). While this experience of stress might be a burden to many students, at the same time, it can also represent an opportunity for many to find constructive ways to deal with the stress they live through. This is precisely the aim of practising positive psychological skills such as self-compassion, which gained an increasing amount of attention in the last decades.

The positive consequences of cultivating self-compassion are diverse. According to the meta-analysis of MacBeth and Gumley (2012), individuals with elevated levels of self-compassion are less likely to experience stress, anxiety and depression. On top of that, self-compassionate people tend to experience more positive emotions, such as happiness & optimism (Hollis-Walker & Colosimo, 2011). Another aspect worth mentioning is the buffering role that self-compassion seems to play in relation to the negative consequences of suffering, according to Waters et al. (2020). To define, "a buffering effect occurs when positive emotions, processes, conditions, and/or relationships serve to diminish or stave off psychological ill-health during the crisis." Lastly, it is vital to note that most of the research about self-compassion tends to be cross-sectional and on a trait level and thus limited to between-individuals measurements. Little effort went into exploring the momentary fluctuations of these constructs. When the average score of a person's stress or self-compassion level is calculated, the momentary fluctuations are not considered, which is not a

holistic approach because research has shown that these momentary fluctuations do exist on a within-individual level (Breines et al., 2014; Kelly & Stephen, 2016; Smyth et al., 2009).

To account for the within-individual variations, self-compassion should be regarded as a state and not merely a trait (Neff et al., 2021). This is essential because trait levels rather display static and fixed scores of the respective construct. However, considering the state level of a construct counteracts the static nature of trait scores / between-persons measurements and takes into account the fluctuating, dynamic nature of a construct like self-compassion (Kelly & Stephen, 2016). This is further supported by the findings from Curran and Bauer (2011), who suggest that in order to make statements about an increase of, for example, "a positive affect", between-person measurements cannot be the mere focus, as an increase in a particular construct in an individual is in nature a within-individual process. One possibility of measuring the within-individual processes is through the use of the Experience Sampling Methodology (ESM) (Myin-Germeys et al., 2018).

Thus, the general aim of this study will be to observe the momentary changes in levels of self-compassion and experienced stress of the subject, specifically, whether there is evidence that higher state self-compassion levels play a buffering role, mainly when the momentary levels of stress experienced by the individual are high.

Self-Compassion

The construct of compassion is one of the main focuses in eastern philosophical traditions, particularly Buddhism (Neff, 2003). However, it is relatively new in the field of western psychology. Compassion is conceptualised as opening the heart toward the suffering of other living beings, be it a human being or any being that is sentient, including animals and insects. It is about recognising the state of suffering that they find themselves in and generating the wish to help these living beings who are suffering, becoming free from it. On the basis of compassion, Neff (2003) conceptualised a new term named self-compassion. In

self-compassion, the tendency of opening the heart towards suffering and facing it with non-judgmental understanding is directed toward oneself. The construct is constituted by three main components: *self-kindness*, *common humanity* and *mindfulness* (Neff, 2003).

"*Self-kindness* refers to the tendency to be caring and understanding with oneself rather than being harshly critical." (Neff & Germer, 2013). It opposes negative self-talk by emphasising the importance of being kind to oneself even in spite of failures and wrongdoings that one has done, expressing an understanding attitude and not a judgmental one. This non-judgmental understanding and recognition of one's shortcomings are essential in order to help ourselves (Neff et al., 2013).

Common humanity broadens the perspective and includes the whole human race. This aspect of self-compassion should serve as a reminder that the nature of human beings is imperfect and that we all share the suffering experience with each other. The feeling of being alone and disconnected from the outside world with the suffering that one experiences stand in contrast to experiencing a feeling of connection with other sentient beings who go through similar hardships as oneself. This alleviates the feeling of loneliness and alienation that often exists when people suffer (Neff, 2011).

Mindfulness is the last element constituting self-compassion. The practice of mindfulness lies in non-judgmental awareness toward thoughts and emotions that happen in the present moment and not being too overidentified with them. This implies that any arising thought or emotion will be faced with openness. In the context of self-compassion, the particular focus lies in becoming aware of the negative thoughts that are entailed in self-judgment and self-criticism in order to cultivate compassion toward oneself (Germer & Neff, 2013; Neff, 2011; Neff & Germer, 2013; Neff et al., 2021). Based on the aforementioned benefits that the cultivation of self-compassion brings, it seems significant to examine the connection between self-compassion and individuals' experiences of stress.

Stress

Stress is a wide-ranging concept which has been subject to a lot of research. Until today many definitions that were brought up differ from each other. However, a significant paradigm shift that has been made is to regard stress not merely as environmental stimuli that an agent is exposed to but to see stress more as an interactional relationship, in which the stressor or the event itself is being distinguished from the stress response, which is the reaction to the stressor (Kelso, French, & Fernandez, 2005; Koolhaas et al., 2011; Lazarus, 1984).

Lazarus (2000) also states that stress is part of a "biosocial-psychological" complex web, and it cannot be viewed in a mere biological or psychological sense, as it consists of many different factors. These various parts make up entities that can be denoted as an emotion like anger, joy etc. Especially students, who will partake in this study, are exposed to many stressors in their everyday academic lives. It is shown that stress is a strong predictor of psychological distress in students, which is associated with anxiety and depressive symptoms (Lin et al., 2014; Morrison & O'Conner, 2005).

An important note to make here is that Lazarus and Folkman (1984) also proposed the Process Model of Coping, which basically suggests that it is relevant to how the event is appraised by the individual. In other words, the capability of the individual to deal with the stressor depends on how they evaluate what happens and how they react. The logical conclusion of this is that not every stressor induces the same response in an individual. Stress responses vary, which in turn indicates that people can change the way they respond to stressors. The emotional or behavioural responses can either exacerbate or alleviate the stress response (Sirois, Molnar & Hirsch, 2015). Thus, individuals can eventually learn to respond to particular stressors in a more positive and constructive way (Smyth et al., 2009).

Stress, Self-Compassion and Buffering

The practice of self-compassion might represent a valuable opportunity to respond to

stressors in a more positive way (Germer & Neff, 2013; Neff & Germer, 2013). The existing evidence about the link between self-compassion and stress is insightful. Broadly speaking, in most findings, self-compassion plays a role in which it is associated with fewer adverse psychological outcomes in the subjects like depression, anxiety, and stress and facilitates constructive coping mechanisms to deal with the hardships people experience (Fong & Loi, 2016; Kelly & Stephen, 2016; MacBeth & Gumley, 2012; Westphal et al., 2015).

However, what is missing in the research on self-compassion and stress is the measuring of the day-to-day levels of the constructs. Although buffering effects of self-compassion on stress levels have been found, these findings were mainly based on measurements of trait levels of the two constructs and not on state levels. Relying solely on trait scores cannot adequately capture the dynamic nature of stress and self-compassion, which fluctuate throughout the day (Breines et al., 2014; Li et al., 2020; Schnepfer et al., 2020; Stutts et al., 2018; Zhang et al., 2016). While there is barely research on the relationship between momentary levels of stress, self-compassion and buffering, there is still research into daily variations of stress through the use of momentary assessment techniques.

One study showed that "minor stressful daily events are associated with changes in mood, in that positive affect decreases, whereas negative affect and agitation increase in relation to stress." (Jacobs et al., 2007). Moreover, Myin-Germeys et al. (2003) found that people who are emotionally more reactive to daily life stressors are more vulnerable to severe mental illnesses like psychoses. Apart from mental illnesses, a significant association was discovered between daily stress and the occurrence of physical health issues like the flu, a sore throat, headaches and backaches (DeLongis et al., 1998). Lastly, Smyth et al. (2007) provided evidence of a link between the experience of daily stress and occurrences of binge eating and vomiting in females with bulimia nervosa.

Compared to the research on daily stress, the research on momentary measurements of self-compassion seems to be less extensive. Nevertheless, Kelly and Stephen (2016) showed

that higher daily self-compassion is associated with a more constructive daily body appreciation and body image and lower levels of restrained eating. More evidence is provided by Krieger et al. (2015), who highlighted a positive relation between self-compassion and positive affect and a negative relation between self-compassion and negative affect. Lastly, it is worth mentioning that Li et al. (2019) provided evidence about the usefulness of self-compassion interventions in increasing daily self-compassion and hence decreasing perceived stress and improving eating behaviour

Current Study

To conclude, there is existing research on momentary self-compassion and momentary stress when regarded separately from each other. Though, it remains unclear whether the buffering effects of self-compassion in relation to stress, which were reported in longitudinal studies, can also be found in the study of momentary assessments of self-compassion and stress (Krieger et al., 2015; Miller et al., 2015; Waters et al., 2020). At the same time, the lack of research in this field represents a new possibility to delve deeper into the momentary relations between the abovementioned constructs.

For that reason, this work will attempt to inquire about the association between state self-compassion and momentary stress levels and whether self-compassion plays a buffering role in the presence of daily stressors. Most importantly, the focus will lie in investigating the within-individual variation of self-compassion and stress by momentarily assessing it and finding out whether or not self-compassion plays a potential buffering role in relation to the intensity of the stress responses of individuals. To deduce, the following research questions are being answered throughout this paper:

1. What is the association between trait self-compassion and trait stress?
2. How is state stress associated with state self-compassion?
3. How is state stress associated with state buffering?

4. Is state stress better predicted through the weekly average of state self-compassion or through momentary self-compassion?

5. Is state stress better predicted through the weekly average of state buffering or through momentary buffering?

Methods

Participants

This study utilised the convenience sampling method and collected the participants through the researcher's social network and through SONA Systems. It comprised 50 undergraduate students from the University of Twente who participated voluntarily and gave their consent prior to the start of the study. Participants need to have a response rate of 50 % or higher in order to be included in the dataset (Conner & Lehman, 2012). Further requirements for participation were to be at least 18 years or older, to be a student, proficiency in the English language and the possession of a mobile device in order to make use of the app "Ethica", which is required for the study. Applying the inclusion criteria led to a final participant count of 27 participants for the baseline questionnaire and 31 participants for the state questionnaire. There were 3 participants who did not fill out the baseline questionnaire, which is why demographical data is limited to 28 participants. The individuals in the sample range from 19 to 27 years of age ($M_{age} = 21.5$, $SD_{age} = 1.6$), out of which 12 are male (44.5%), and 15 are female (55.5%). The research was approved by the BMS Ethics Committee of the University of Twente (request number: 220268).

Materials

In total, the study consists of two trait questionnaires and three state questionnaires. The questionnaires were administered using the app "Ethica" version 562, which is available for download on iOS and Android, or it can be accessed via the internet on "ethicadata.com".

This app is being used because it aligns with the Experience Sampling Methodology (ESM), which is utilised in this study. To statistically analyse the data, the statistical software "SPSS" is used.

Baseline Questionnaires

Demographics. The participants were asked to provide their age, gender, study programme, nationality and employment status.

State Self-Compassion Scale Long Form (SSCS-L). State self-compassion was measured using the State Self-Compassion Scale Long Form (SSCS-L), consisting of 18 items with answering options on a 5-point Likert Scale ranging from 1 = "not at all true for me" to 5 = "very true for me". After reversing the subscales self-judgment, isolation and over-identification, the self-compassion score can be calculated by adding up all the scores of the single items together, with a higher score indicating higher levels of self-compassion. Low scores range from 1.0-2.49, moderate scores range from 2.5-3.5, and high scores range from 3.51-5.0, respectively. According to Neff et al. (2021), the 18-item SSCS-L had an excellent model fit. The reliability in their sample proved to be very high ($\alpha = .94$). The Confirmatory Factor Analysis found an adequate model fit for a single factor of SCS, and the Short-Form had an excellent correlation with the Long-Form ($r = .96$). Lastly, associating the SSCS-L with the PANAS further proved the construct validity of the SSCS-L. Calculating the reliability in the current study, the estimate proved to be very high with a Cronbach's alpha of .90.

Perceived Stress Scale (PSS-10). To measure the trait levels of stress, the Perceived Stress Scale (PSS) was utilised. In total, it comprises ten items with five answering options from 0-4. 0 = „never“, 1 = „almost never“, 2 = „sometimes“, 3 = „fairly often“, and 4 = „very often“. The scoring is done by adding up all the scores and reversing the scores for questions 4, 5, 7, and 8. Scores from 0 -13 indicate low stress, scores from 14 – 26 indicate moderate

stress, while scores from 27 – 40 indicate high perceived stress. According to the review from Lee (2012), the psychometric properties of the PSS-10 proved to be superior to the PSS-14 and the PSS-4, with a Cronbach's Alpha of $>.74$ and higher in 12 studies in which it was tested. The test-retest reliability showed values of $>.70$ in four studies for which it was tested. The exploratory factor analysis for the PSS-10 illustrated "that a two-factor structure was more dominant than a one-factor structure." (Lee, 2012). Lastly, validity was tested through hypothesis testing and criterion validity, which revealed that PSS stands either moderately or strongly in correlation to emotional variables such as depression or anxiety, measured through various health questionnaires. However, after correlating the PSS with criterion questionnaires, the correlation turned out to be weak to moderate. In a similar way, the internal consistency of the PSS in this target group proves to be good, with a value of $.79$.

State Questionnaires

State Self-Compassion Scale Short Form (SSCS-S). State Self-Compassion was measured using the State Self-Compassion Scale Short Form (SSCS-S) and was modified in order to have an adequate measurement for the momentary levels of self-compassion. The scale consists of 6 items that range on a 5-point Likert Scale from 1 = "Not at all true for me" to 5 = "Very true for me". According to Raes et al. (2011), the internal consistency of the SSCS-S proved to be good, with $\alpha \geq .86$ across three different samples. After performing a confirmatory factor analysis, the same six-factor structure that is present in the SSCS-L was found for the SSCS-S. Additionally, the SSCS-S showed a robust correlation of $.92$ or higher with the SSCS-L across different samples (Neff et al., 2021; Raes et al., 2011). Lastly, analysing the split-half reliability of the SSCS-S in the current sample, the value proves to be high, with an estimate of $.93$.

Stress Numeric Rating Scale (SNRS-11). Besides asking the participants for the kind of stressor that they experienced, they were instructed to report the intensity of their stress

response on a scale from 0 = "not stressed at all to" 10 = "extremely stressed". If they scored a 0, then no follow-up questions were posed. According to Karvounides et al. (2016), the construct validity of the SNRS-11 proves to be strong, while the concurrent validity of the single-item scale turns out moderate. Furthermore, the SNRS-11 illustrated good discriminate and convergent validity with the PSS. In this sample, the SNRS-11 proved to be high, with a value of .94. When analysing the reliability in this study, the internal consistency of the SNRS-11 turns out to be high, with a value of .94.

Measurement of Buffering. In order to investigate a potential buffering role of self-compassion on stress, two items were self-constructed. The first buffering item that is displayed in "Ethica" is: "Right now / the past few hours, I try/tried to lower my experienced stress by being kind to myself.", which ranges from 1 = "Not at all true for me" to 5 = "Very true for me" on a 5-point Likert Scale. The second item that the participants responded to is: "Right now / the past few hours, through being kind to myself, I protected myself from feeling distressed.", which also ranges from 1 = "Not at all true for me" to 5 = "Very true for me". Regarding the two-item version of the buffering scale, the reliability proves to be good, with a value of .82. Considering the 1-item version, which excludes the item "Right now / the past few hours, I try/tried to lower my experienced stress by being kind to myself.", the reliability turned out lower but still sufficient with a value of .76.

Design & Procedure

The study is categorised as a longitudinal online study that makes use of the Experience Sampling Methodology (Myin-Germeys et al., 2018). There was only one condition since there is no manipulated condition, as the study is observational in nature. For their participation, the students were incentivised with 2 SONA credits. For the participants to take part in the study, they needed to register on SONA Systems and then download the app

"Ethica" on their mobile devices from the Google Play Store or AppStore. The participants were then sent an E-Mail with the invitation code to the study, which is, in this case: 2414. On "Ethica", two activities were created. One activity comprised the demographic data, a second consent form and two trait-level questionnaires: the Perceived Stress Scale (PSS) and the Self-Compassion Scale – Long Form (SSCS-L). These were filled out first by the participants. The second activity in "Ethica" contained the daily state questionnaires for the assessment of the momentary levels of self-compassion (SSCS-S), stress and buffering. This needs to be filled out by the participants after finishing the baseline questionnaire with the trait surveys. While the trait levels were only being administered once, the daily state questionnaires were being administered five times a day for a period of 7 days. This required the researchers to set up triggering logics, so that the participants gain a notification five times a day as soon as the daily state questionnaires need to be answered again. The first trigger was at 9 am the second one at 12 noon, the third one at 3 pm, the fourth one at 6 pm and the fifth one at 9 pm. The state questionnaires were available until the next trigger occurred. After the last measurement on the seventh day, the participants of the study received an e-mail that the study had ended and that they will receive their SONA Credits soon.

Data Analysis

Firstly, descriptive statistics were calculated to gain information on the distribution of age, gender, nationality, study programme, employment status and the means of trait self-compassion, trait stress levels, state stress, state buffering and state self-compassion, respectively. Afterwards, the reliability was analysed for all of the abovementioned scales. This was done by calculating the Cronbach's Alpha for the trait scales particularly and the split-half reliabilities for the state scales. To follow, the values for the person-mean (pm) and the person-mean centring (pmc) were calculated in SPSS. The pm is the weekly state average score of a person for one particular construct. The pmc is the deviation of the momentary

level of a construct for an individual from the pm of that same person. Hence, the pm is subtracted from the momentary value, e.g. when the momentary level of stress is five and the pm for stress is at 3 for one specific person, then the pmc would be 2 for that one particular timepoint. To put it in other words, the pm can be utilised to differentiate between groups, while the pmc is utilised to observe differences on an intra-individual level. The pm was used to run a correlation between state self-compassion (pm) and state stress (pm) and between state buffering (PM) and state stress (pm).

To analyse the within-person associations between state self-compassion and state stress, a linear mixed-effects model (LMM) was constructed in order to see how the momentary levels of self-compassion are associated with the momentary levels of stress. The LMM was helpful here in order to study the within- and across-person variability of the sample and because there are repeated measurements per participant. The covariance structure is AR(1), and the analysis was run with standardised as well as unstandardised values. In the final analysis, the between-persons measurements (pm) and the within-person measurements (pmc) were disaggregated from each other in an LMM, enabling the researcher to see whether the current state levels of a construct are more strongly predicted by the momentary levels of another construct or by the weekly average of that construct (Curran et al., 2011).

Results

Descriptives

In total, there were 47 individuals who participated in the Experience Sampling Study. After modifying the data and applying the inclusion/exclusion criteria, the participant count was effectively reduced to 31 participants. Among these, the participants with a response rate below 50 % were excluded (Conner & Lehman, 2012).

Table 1

Minimum and Maximum Scores, Means and Standard Deviations of Trait Stress, Trait Self-Compassion, State Stress, State Self-Compassion and State Buffering with 1 & 2 items

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
Trait Stress (PSS-10)	27	8	33	20.19	5.57
Trait Self-Compassion (SSCS-L)	27	2	5	3.42	.63
State Stress (SNRS-11)	31	0	10	2.70	2.32
State Self-Compassion (SSCS-S)	31	1	5	3.46	.71
State Buffering (two items)	31	1	5	3.21	.92

Note. N is lower for trait scales, for some participants did not fill in the trait questionnaires, while they still filled in the state questionnaires.

Table 1 above illustrates the mean, minimum and maximum scores of trait perceived stress, trait self-compassion, state stress, state self-compassion and state buffering.

Calculating the Pearson correlation in SPSS, a strong negative association between trait stress and trait self-compassion is displayed: $r(27) = .72, p < .001$. This indicates that individuals, who scored high in trait self-compassion, tended to score lower in the trait stress questionnaires.

The next step included analysing the reliability of the State Self-Compassion Scale Long Form (SSCS-L), the Perceived Stress Scale (PSS) and the State Self-Compassion Scale Short Form (SSCS-S). The reliability for the SSCS-L was strong, with a Cronbach's alpha of .90. The Cronbach's alpha of the PSS was good, with a value of .79. With a reliability estimate of .86, the internal consistency of the two momentary buffering items proved to be high as well. Lastly, the reliability value of the SSCS-S ranges near the value of the PSS with a Cronbach's alpha of .77. To test the reliability of the state scales, the split-half reliability

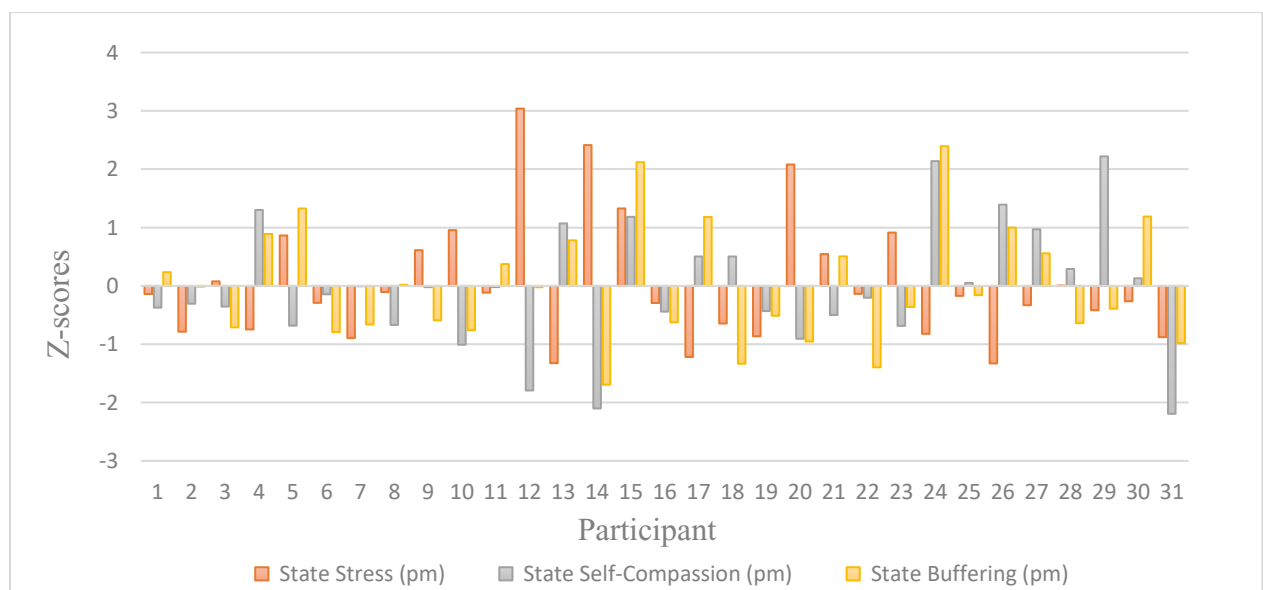
was calculated for each of the scales, respectively. The reliability analysis revealed a value of .82 for the self-constructed buffering scale consisting of two items and a value of .76 for the one-item version of the buffering scale. Next, the split-half reliability for the SSCS-S displayed a reliability estimate of .93, which is considered desirable (Salkind, 2010). Lastly, the internal consistency of the SNRS-11 proved to be high, with a value of .94.

State Stress (pm), State Self-Compassion (pm) and State Buffering (pm)

Firstly, the correlation between state self-compassion (pm) and state stress (pm) was calculated, which showed a significant negative and moderate association between the two scales ($r = -.55, p < .001$). On top of that, the output displayed a weak to moderate negative and significant correlation between state stress (pm) and state buffering (pm) ($r = -.26, p < .001$). These findings indicate that individuals who were high in average state self-compassion tended to have lower average state stress levels. Moreover, it implies that participants who exhibited higher average state buffering tended to exhibit lower average state stress levels on a 7-day basis.

Figure 1

Weekly average levels of State Stress (pm), State Self-Compassion (pm) and State Buffering (pm) per participant



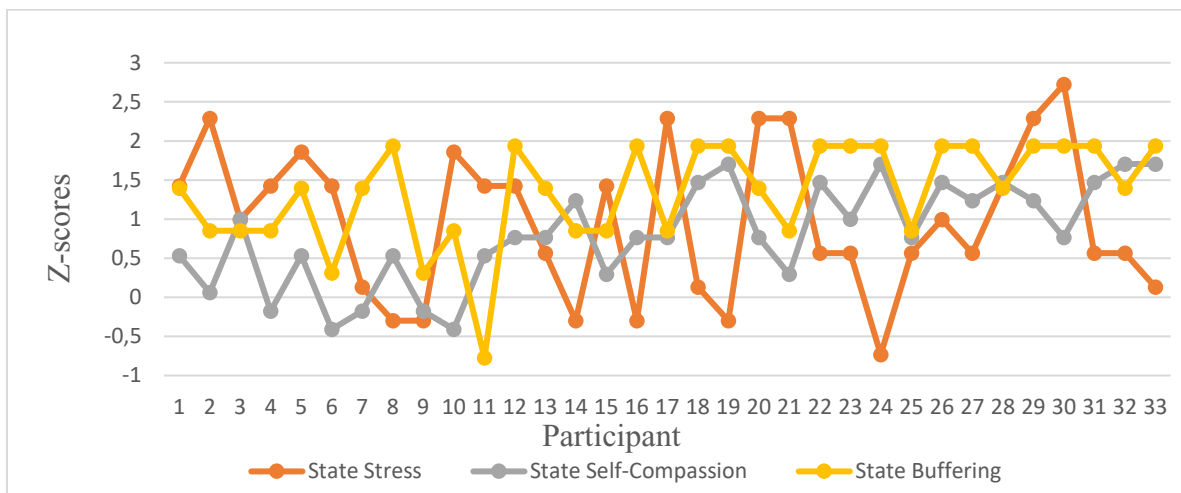
Note. pm = person-mean (weekly average score of one participant)

To inspect the weekly average state scores per participant, the illustration above was added (see Figure 1). It can be noticed that the scores for stress were low on average, as they mainly range from values of -0.8 to 0.9. The maximum score of stress lies at 3.03, while the minimum lies at -1.32. Regarding self-compassion and buffering levels, it can be deduced that their respective graphs behave similarly with minor deviations. The values mainly range around -0.9 and around 1.2, with a maximum score of 2.39 for buffering, 2.2 for self-compassion and a minimum score of -1.69 for buffering and -2.1 for self-compassion.

Visualisation of Within-Person Fluctuations. To precisely examine the within-individual variations, graphs were constructed for two individuals.

Figure 2

State Self-Compassion, State Stress and State Buffering across time for participant 52923



Note. Scales were standardised to meaningfully compare them, as they were different.

Participant 52923. Firstly, looking at the average state scores (pm) for this participant, the stress score is moderate, with a value of 4.94. However, it could be considered high when putting it into relation to the scores of the remaining participants (see Figure 1). Similarly, the scores for self-compassion and buffering are high, with a value of 4.03 for the former and a value of 4.45 for the latter. Analysing the general structure of the graph, the magnitude of change for stress throughout the week was large. This is in contrast to the shift in state levels for buffering and self-compassion, which were lower than the variations in

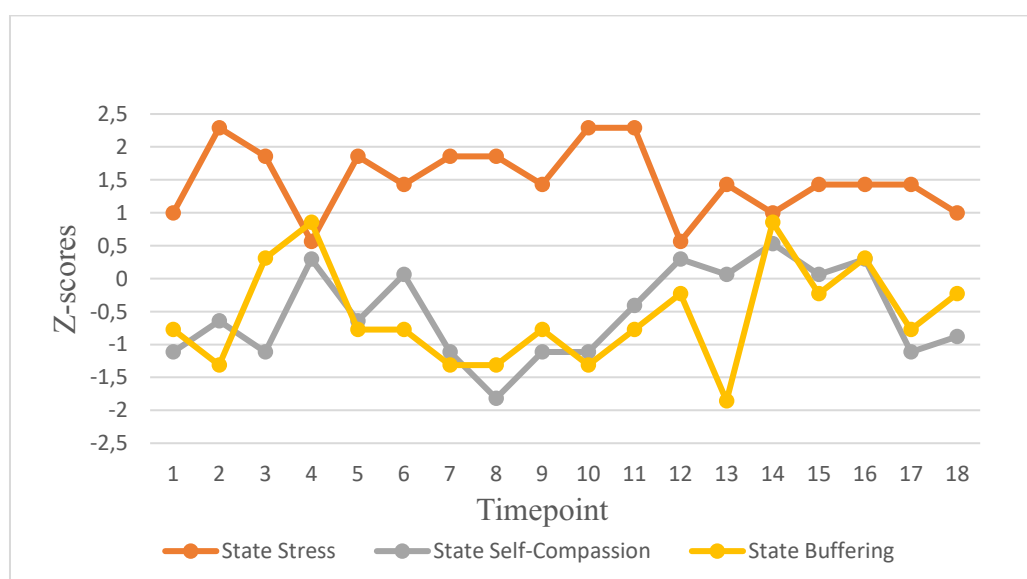
momentary stress on a weekly basis. On top of that, self-compassion and buffering behaved similarly as the figure illustrates that they lie close together with several overlaps.

Particularly, timepoints 2, 5, 10, 17, 20, 21, 29, and 30 demonstrate that in moments in which the participant reported high levels of stress ranging from values of 1.85 to 2.72, he/she also reported high levels of buffering with values ranging from 0.85 to 1.93.

Participant 53029. For this participant, the analyses revealed average state scores (pm) of 6.17 for stress, 3.08 for self-compassion and 2.69 for buffering. Like the previous participant, this individual also experienced fluctuations in stress levels, however with more minor variations. In the first half of the week, the person reported higher levels of stress, while from timepoint 12 onwards, the person experienced less stress. This becomes clear when looking at Figure 3, which illustrates that when the individual experienced higher levels of stress, for instance, at timepoints 2, 3, 5, 7, 8, 10 and 11, then the reported buffering was low with values ranging from -1.3 to -0.77. The self-compassion levels largely overlap with momentary buffering levels.

Figure 3

State Self-Compassion, State Stress and State Buffering across time for participant 53029



Note. Scales were standardised to meaningfully compare them, as they were different.

Linear Mixed Model Analyses

Besides the person-mean observations, the associations between the different constructs were analysed on a within-individual level, respectively. Using a Linear Mixed Model (LMM), the analysis revealed a significant negative and moderate association between state stress and state buffering ($b = -.47, p < .001; \beta = -.2, p < .001$). This means that high momentary buffering levels are associated with low momentary levels of perceived stress in the individuals. Lastly, the relation between state self-compassion and state stress is significant, strong and negative ($b = -1.459, p < .001; \beta = -.45, p < .001$; see Appendix for unstandardised table). This shows that higher momentary values in self-compassion predict lower momentary values in the intensity of the perceived stress of the individual.

Disaggregation of the Between-Persons Measurements (pm) and the Within-Person Associations (pmc)

In order to analyse whether state stress levels are predicted more accurately by the average state buffering (between-person PM) or the momentary level of state buffering (within-person PM-centred), another Linear Mixed Model was performed, using standardised as well as unstandardised scores for the respective variables (for unstandardised version, see Appendix). First, the association between state stress and the 1-item version of buffering will be investigated. Similarly, the disaggregation of the between-persons and within-person measurements was applied to state self-compassion and state stress. The results indicate that the momentary levels of stress are weakly to moderately predicted by the momentary levels of self-compassion ($\beta = -.35, p < .001, 95\% \text{ CI } [-0.40, -0.30]$) and weakly predicted by the average levels of state self-compassion ($\beta = -.25, p < .001, 95\% \text{ CI } [-0.35, -0.15]$).

First, the association between state stress and the 1-item version of buffering will be investigated. The outcome illustrates that the momentary stress levels are significantly

predicted by the momentary buffering levels ($\beta = -.18, p < .001, 95\% \text{ CI } [-0.24, -0.12]$), as compared to the average buffering levels ($\beta = -.04, p = .44, 95\% \text{ CI } [-0.15, 0.07]$), which are not significantly predicting the momentary stress levels. What follows is the disaggregation of the between- and within-person measurements of the 2-item version of buffering in relation to momentary stress. Here, the analysis revealed that the momentary stress levels are significantly predicted by the momentary buffering levels ($\beta = -.21, p < .001, 95\% \text{ CI } [-.27, -.16]$), as compared to the average buffering levels ($\beta = -.02, p = .77, \text{ CI } [-.12, .09]$), which are not significantly predicting the momentary stress levels.

Table 2

Estimated Fixed Effects of State Self-Compassion on State Stress (standardised values)

Parameter	β	SE	df	t	Sig.	95% LL	95% UL
State Self-Compassion	-.45	.03	592.18	-14.37	<.001	-.51	-.39
State Self-Compassion between persons (pm)	-.25	.05	120.85	-5.02	<.001	-.35	-.15
State Self-Compassion within-person (pmc)	-.35	.02	500.81	-13.49	<.001	-.40	-.30

Note. Total N = 31; *standardised coefficient* (β); *unstandardised coefficient* (*b*); *degrees of freedom* (*df*); *Significance* (*Sig.*); *person mean* (*pm*); *person mean-centred* (*pmc*); *standard error* (*SE*); *lower limit* (*LL*); *upper limit* (*UL*).

Table 3*Estimated Fixed Effects of State Buffering on State Stress (standardised values)*

Parameter	β	SE	df	t	Sig.	95% LL	95% UL
State	-.20	.03	585.64	-5.93	<.001	-.30	-.17
Buffering 1 item / 2 items	-.24		588.48	-7.00		-.27	-.13
State	-.04	.06	133.11	-.77	.44	-.15	.07
Buffering between- persons (pm) 1 item / 2 items	-.02		128.95	-.29	.77	-.12	.09
State	-.18	.03	512.73	-6.07	<.001	-.24	-.12
Buffering within-person (pmc) 1 item / 2 items	-.21		509.53	-7.45		-.27	-.16

Note. Total N = 31; *standardised coefficient* (β); *unstandardised coefficient* (*b*); *degrees of freedom* (*df*); *Significance* (*Sig.*); *person mean* (*pm*); *person mean-centred* (*pmc*); *standard error* (*SE*); *lower limit* (*LL*); *upper limit* (*UL*).

Discussion

The objective of this study is to investigate whether there is an indication that self-compassion plays a buffering role for individuals that experience momentary stress. Therefore, the general associations between the variables were analysed, followed by the disaggregation of the average levels (pm) of the respective constructs from the momentary levels (pmc).

To start, there is a strong negative correlation between stress and self-compassion measured on a trait level. Next, a strong and negative correlation was found between momentary stress and momentary self-compassion. To continue, momentary stress and momentary buffering were negatively related to each other, holding true for the single item and the combined item version.

Besides, momentary stress was weakly predicted by momentary and weekly levels of

self-compassion. Lastly, momentary stress is predicted through buffering on a within-individual level and not on a between-person level, applying to both versions of buffering. However, the 2-item version is a slightly stronger predictor of momentary stress than the single-item scale. Notably, the momentary buffering effect on momentary stress was statistically different from the average buffering effect on momentary stress for the 2-item version but not for the 1-item version.

Interpretation and Similarities of Results from Different Studies

Considering the negative relationship between the two trait scales, the results are in alignment with the discovery made by MacBeth and Gumley (2012), who showed that individuals with elevated levels of self-compassion tend to experience less stress, and anxiety and depression. This also closely ties into the findings made by Stutts et al. (2018), who illustrated the beneficial role of self-compassion in alleviating the consequences of perceived stress.

Regarding the negative association between state stress and state self-compassion and state stress and state buffering, the findings in this paper are consistent with the findings of Krieger et al. (2015). In a daily smartphone study, they were able to provide evidence that heightened levels of self-compassion are correlated with lower levels of negative affect and, importantly, with less perceived daily stress. Similarly, the study by Li et al. (2019) demonstrated that "on days when individuals treated themselves more self-compassionately than what's typical for them, they experienced less perceived stress [..]."

However, these outcomes have to be viewed with precision. From these insights, it cannot be inferred that there is a causal relationship between momentary self-compassion and perceived stress. On top of that, it can be added that the need to buffer against stress is limited when the momentary stress levels are low. In order for buffering to occur, there needs to be something to buffer against. This is implied in the definition provided by Waters et al. (2020),

which emphasises that buffering takes place during a “crisis“. Opposingly, in the findings above, the “crisis“ seems to be absent as the perceived stress levels are mostly low when the self-compassion and buffering levels are high. Similarly, the overall state stress levels in this sample are considerably low on average, which makes it difficult to find indications of buffering. Therefore, it can be argued that in order to ascribe a buffering role to self-compassion, it is not sufficient for buffering and self-compassion levels to be high; the levels of perceived stress need to show high values as well.

In this context, it is also crucial to consider the findings made by Karvounides et al. (2016) regarding the validation of the SRNS-11. Notably, they state that the scale is impacted by cultural, situational and cognitive influences. More specifically, the item is denoted by the term stress. However, reviewing the literature, it becomes evident that stress is an ambiguous concept. For instance, Kemeny (2003) argued that “[..] stress is used [..] in a vague and inconsistent way and is rarely defined.” Referring back to the beginning of this paper, the conceptualisation of stress included the distinction between a stressor and a stress response and that it should be viewed as a “biosocial-psychological“ complex, which cannot merely be reduced to the biological or psychological dimension. Instead, it should be viewed as a web in which one dimension stands in significant relation to another dimension (Kelso et al., 2005; Koolhaas et al., 2011; Lazarus, 1984; Lazarus, 2000). With this multi-faceted view on stress, the challenge is that participants have their own subjective definition of the concept of stress, on the basis of which they respond to the item. For example, a participant might equalise the term stress with a stressor and disregard the stress response. Hence he/she would report a low level of stress as there was no exposure to a considerable stressor.

Now, shifting to the disaggregation of the between- and within-persons measurements of buffering in association with stress. Connecting it to the reasoning above, it can be argued that buffering is indicated when the state stress and buffering scores are high. Following this line of reasoning, there would be no sign of buffering in this study. For, the outcome revealed

a weak negative prediction of state stress through momentary buffering. Hence, when buffering levels are high, stress levels are low, and when stress levels are high, the buffering levels are accordingly low. According to this logic, there would be a higher need for buffering with increasing stress levels. However, this explanation must not necessarily hold true.

An alternative interpretation could be that individuals reported low levels of stress because by being kind to themselves, they were actually buffering against their stress. Reviewing figure 2, both explanations seem tenable for participant 52923. At several timepoints, this person experienced high stress while also reporting relatively high buffering levels. The alternative explanation can be applied here, too, as the buffering levels were high right after the stress levels spiked, and with the increase in buffering levels, the stress levels dropped significantly. This might possibly imply that through self-kindness, this person was able to reduce the intensity of his/her experienced stress.

Moreover, the stronger predictability of stress through the 2-item buffering scale, as opposed to the average buffering, is consistent with the discoveries made by Curran et al. (2011) and Neff et al. (2021), who elucidated that the mere consideration of trait levels is limiting. Specifically, when attempting to predict a momentary state construct through the weekly or monthly average, the within-person fluctuations in specific moments are disregarded. Referring to figure 2, the weekly average score of stress for the person does not adequately reflect the stress spikes that he/she experienced in a specific instance. This is further proof of why it is crucial to closely observe the within-individual variations of dynamic constructs like perceived stress and self-compassion (Breines et al., 2014; Kelly et al., 2016; Smyth et al., 2009). Otherwise, the fluctuating character of the said constructs would be dismissed.

It is interesting to note that in association with state stress, the 2-item scale for buffering shows a marginally stronger effect than the single-item version of buffering in association with state stress. In brief, the 2-item buffering scale included as the first item the

attempt to buffer and as the second item whether or not the individual was actually buffering against their experienced stress. The single-item version of buffering merely included the item about actual buffering and excluded the item about the attempt to buffer. Based on the abovementioned outcome, the speculation can be made that participants reported higher values for the attempt to buffer than for actual success in buffering against their experienced stress. This would explain why the 2-item scale showed a more substantial effect than the single-item scale. Furthermore, it could mean that while individuals were trying to be self-compassionate to themselves, they were not successful in buffering against their experienced stress.

At last, reviewing the results of the disaggregation of self-compassion in relation to stress. These findings are in alignment with the outcomes of the study by Galla (2016), in which individuals were participating in an intensive meditation retreat. The within-person changes in mindfulness and self-compassion predicted enhanced emotional well-being as well as reductions in perceived stress, rumination and depressive symptoms. However, in this study, current self-compassion and person-means of self-compassion are not statistically different in their predictability of momentary stress, which points to the fact that self-compassion levels were more stable over time with a lesser variation.

Strength, Limitations and Future Research

A potential strength is that the self-constructed buffering scale builds a bridge between the self-compassion scale and the momentary stress measure. As it can be seen in Neff et al. (2020), the items in the SSCS-S asked the participant whether he/she was kind to him/herself. But none of these items actually implemented a buffering element. In contrast, the self-constructed item on buffering addressed this issue and directly asked the participant whether being kind to oneself actually lessened the intensity of their experienced stress.

Additionally, this study stresses the importance of considering momentary fluctuations of particular constructs. While average scores might reveal insightful information about a sample on a between-person level, they do not adequately mirror the dynamic nature of stress, self-compassion and other variables (Curran et al., 2011; Kelly et al., 2016; Neff et al., 2021). Especially inspecting the momentary levels of particular individuals in this sample gave notable insights into how they experienced their daily life and whether there were indications of a protective role that self-compassion plays in association with perceived stress.

Indeed, there are also limiting factors that underlie this study. Participants had to do the study over seven days and had to fill in 5 questionnaires per day. This was likely the reason that out of 50 initial participants, in the end, there were 31 remaining who had a response rate of 50% or higher. This is already a low response rate, but setting this cut-off was a necessary precaution to take because otherwise, the actual usable data would have been less.

On top of that, it is difficult to generalise the findings from this study when regarding the demographics of this sample. Firstly, the age merely ranges from 19 to 27 years, excluding other age ranges that most likely report different answers to the questionnaires. Secondly, this sample entirely consists of young, highly educated individuals. Therefore, the conclusions made here should take into account this one-sided characteristic of the sample.

As aforementioned, due to the observational nature of this study, no causal inferences can be made based on the insights that were generated. On top of that, there is no extensive research in this domain. The general scarcity of experience sampling research in regards to self-compassion and stress makes it more challenging to validate new findings. However, this should not undermine the practicality of this study, which can still give future directions for other experience sampling studies.

In future studies, the buffering item which asked the participant whether he/she attempted to buffer against his/her experienced stress should not be included in the LMM, for it does not provide evidence whether or not state self-compassion may play a buffering role in

association with state stress. It solely informs about whether or not the participant tried to buffer against the stress through self-compassion. However, this item may give a better insight into why people, although they tried to lower their experience of stress, were not able to do so. Practically, this item can be followed up by a qualitative question that asks the participant why they were not able to buffer against their stress. This has clinical implications as well because if the reasons are known for why individuals were not able to buffer against their perceived stress through being kind to themselves, interventions might target the obstacles that people experience in the utilisation of self-compassion skills and help them to turn the obstacles into opportunities to improve their well-being.

Considering the fact that the momentary stress levels were relatively low in this study, it might be insightful to choose a different sampling method than convenience sampling in order to have more generalisable results but also potentially different effects. Especially when considering the definition of buffering, which implies the reduction of psychological distress through self-compassion "during a crisis". While there were individuals in the sample who experienced high levels of momentary stress, the majority did not. There will most likely be a higher average of experienced stress in a clinical sample as compared to this academic sample, in which the use of self-compassion skills and buffering will have high relevancy. Tied into that, the stress item should be revised as it might be too broad. The participants might have had a hard time indicating their stress levels, as there might have been uncertainty about the meaning of stress. Future studies could clarify the term stress and/or be more precise in phrasing the item by asking about a specific emotion (Lazarus, 2000).

At last, the research could be further extended by giving the sample self-compassion training. Ideally, this is done with a target group that has, on average higher levels of momentary and trait stress. The constructs could then be measured on a trait level and on a state level before the self-compassion training and then again after the training. Perhaps, this would be an adequate setting to inquire into a buffering role and find more apparent effects.

To conclude, the current study was able to replicate previous findings by illustrating significant negative associations between state stress and state self-compassion and buffering. However, the study also highlighted how various perspectives can be taken when interpreting these negative associations. It is not necessarily true that self-compassion buffers against stress. It might also be that more stress implies less self-compassion. This ambiguity in the interpretation of the findings also translates into the content of the items. Specifically, the SRNS-11 and buffering might have been too general in order for participants to adequately respond to the items. In addition to item adjustment, exploring why individuals were not able to buffer might prove useful in designing interventions so that these obstacles can be addressed. Lastly, working with, e.g. a clinical sample in which momentary and trait levels of stress are generally higher would give further insights into a potential buffering role that self-compassion might play in the momentary experience of stress.

References

- Breines, J., Toole, A., Tu, C., & Chen, S. (2013). Self-compassion, body image, and self-reported disordered eating. *Self and Identity, 13*(4), 432–448.
<https://doi.org/10.1080/15298868.2013.838992>
- Conner, T. S., & Lehman, B. J. (2012). Getting started: Launching a study in daily life. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 89–107). The Guilford Press
- Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual review of psychology, 62*, 583. Doi: 10.1146/annurev.psych.093008.100356
- Fong, M., & Loi, N. M. (2016). The mediating role of self-compassion in student psychological health. *Australian Psychologist, 51*(6), 431-441.
<https://doi.org/10.1111/ap.12185>
- Fuschia M. Sirois, Danielle S. Molnar & Jameson K. Hirsch (2015) Self-Compassion, Stress, and Coping in the Context of Chronic Illness, *Self and Identity, 14*:3, 334-347, DOI: 10.1080/15298868.2014.996249
- Galla, B. M. (2016). Within-person changes in mindfulness and self-compassion predict enhanced emotional well-being in healthy, but stressed adolescents. *Journal of Adolescence, 49*(1), 204–217. <https://doi.org/10.1016/j.adolescence.2016.03.016>
- Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *Journal of clinical psychology, 69*(8), 856-867. <https://doi.org/10.1002/jclp.22021>
- Hollis-Walker, L., & Colosimo, K. (2011). Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. *Personality and Individual Differences, 50*, 222–227. <https://doi.org/10.1016/j.paid.2010.09.033>
- Joshua M. Smyth; Stephen A. Wonderlich; Martin J. Sliwinski; Ross D. Crosby; Scott G. Engel; James E. Mitchell; Rachel M. Calogero (2009). *Ecological momentary assessment of affect, stress, and binge-purge behaviors: Day of week and time of day effects in the natural environment.* , 42(5), 429–436. doi:10.1002/eat.20623
- Jacobs, N., Myin-Germeys, I., Derom, C., Delespaul, P., van Os, J., & Nicolson, N. A. (2007). A momentary assessment study of the relationship between affective and

- adrenocortical stress responses in daily life. *Biological Psychology*, 74(1), 60–66.
<https://doi.org/10.1016/j.biopsycho.2006.07.002>
- Krieger, T., Hermann, H., Zimmermann, J., & grosse Holtforth, M. (2015). Associations of self-compassion and global self-esteem with positive and negative affect and stress reactivity in daily life: Findings from a smart phone study. *Personality and Individual Differences*, 87, 288–292. <https://doi.org/10.1016/j.paid.2015.08.009>
- Kelso, T., French, D., & Fernandez, M. (2005). Stress and coping in primary caregivers of children with a disability: a qualitative study using the Lazarus and Folkman Process Model of Coping. *Journal of Research in Special Educational Needs*, 5(1), 3-10.
<https://doi.org/10.1111/j.1471-3802.2005.00033.x>
- Kelly, A. C., & Stephen, E. (2016). A daily diary study of self-compassion, body image, and eating behavior in female college students. *Body Image*, 17, 152–160.
<https://doi.org/10.1016/j.bodyim.2016.03.006>
- Lazarus, R. S. (1984). Puzzles in the study of Daily Hassles. *Journal of Behavioral Medicine*, 7(4), 375–389. <https://doi.org/10.1007/bf00845271>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist*, 55(6), 665–673. <https://doi.org/10.1037/0003-066x.55.6.665>
- Lee, E.-H. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research*, 6(4), 121–127. <https://doi.org/10.1016/j.anr.2012.08.004>
- Lin, S.-H.; Huang, Y.-C. (2014). Life stress and academic burnout. *Active Learning in Higher Education*, 15(1), 77–90. doi:10.1177/1469787413514651
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical psychology review*, 32(6), 545-552. <https://doi.org/10.1016/j.cpr.2012.06.003>
- Miller, Jonas G.; Kahle, Sarah; Lopez, Monica; Hastings, Paul D. (2015). *Compassionate love buffers stress-reactive mothers from fight-or-flight parenting.. Developmental Psychology*, 51(1), 36–43. doi:10.1037/a0038236

- Morrison R and O'Conner R (2005) Predicting psychological distress in college students: The role of rumination and stress. *Journal of Clinical Psychology* 61(4): 447–60.
<https://doi.org/10.1002/jclp.20021>
- Myin-Germeys, I., Peeters, F., Havermans, R., Nicolson, N. A., DeVries, M. W., Delespaul, P., & Van Os, J. (2003). Emotional reactivity to daily life stress in psychosis and affective disorder: An experience sampling study. *Acta Psychiatrica Scandinavica*, 107(2), 124–131. <https://doi.org/10.1034/j.1600-0447.2003.02025.x>
- 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, 123-132.
<https://doi.org/10.1002/wps.20513>
- Neff, K. D., Tóth-Király, I., Knox, M. C., Kuchar, A., & Davidson, O. (2021). The development and validation of the state self-compassion scale (long-and short form). *Mindfulness*, 12(1), 121-140. Doi: 10.1007/s12671-020-01505-4
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and identity*, 2(3), 223-250. <https://doi.org/10.1080/15298860309027>
- Neff, K. (2003). Self-compassion: An alternative conceptualisation of a healthy attitude toward oneself. *Self and identity*, 2(2), 85-101.
<https://doi.org/10.1080/15298860309032>
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomised controlled trial of the mindful self-compassion program. *Journal of clinical psychology*, 69(1), 28-44.
<https://doi.org/10.1002/jclp.21923>
- Neff, K. D. (2011). Self-compassion, self-esteem, and well-being. *Social and personality psychology compass*, 5(1), 1-12. <https://doi.org/10.1111/j.1751-9004.2010.00330.x>
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2010). Construction and factorial validation of a short form of the self-compassion scale. *Clinical Psychology & Psychotherapy*, 18(3), 250–255. <https://doi.org/10.1002/cpp.702>
- Ryan, M. L., Shochet, I. M., & Stallman, H. M. (2010). Universal online interventions might engage psychologically distressed university students who are unlikely to seek formal help. *Advances in Mental Health*, 9(1), 73-83. <https://doi.org/10.5172/jamh.9.1.73>

- Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist*, 45(4), 286–294.
doi:10.1080/00050067.2010.482109
- Schnepper, R., Reichenberger, J., & Blechert, J. (2020). Being my own companion in times of social isolation—A 14-day mobile self-compassion intervention improves stress levels and Eating Behavior. *Frontiers in Psychology*, 11, 2645.
<https://doi.org/10.3389/fpsyg.2020.595806>
- Stutts, L. A., Leary, M. R., Zeveney, A. S., & Hufnagle, A. S. (2018). A longitudinal analysis of the relationship between self-compassion and the psychological effects of perceived stress. *Self and Identity*, 17(6), 609-626. Doi:
<https://doi.org/10.1080/15298868.2017.1422537>
- Salkind, N. J. (2010). Split-Half Reliability. In *Encyclopedia of Research Design*. essay, SAGE.
- The psychobiology of stress - Margaret E. Kemeny, 2003 - sage journals*. (n.d.). Retrieved July 4, 2022, from <https://journals.sagepub.com/doi/10.1111/1467-8721.01246>
- Waters, L., Algoe, S. B., Dutton, J., Emmons, R., Fredrickson, B. L., Heaphy, E., ... & Steger, M. (2022). Positive psychology in a pandemic: Buffering, bolstering, and building mental health. *The Journal of Positive Psychology*, 17(3), 303-323.
<https://doi.org/10.1080/17439760.2021.1871945>
- Westphal, M., Bingisser, M.-B., Feng, T., Wall, M., Blakley, E., Bingisser, R., & Kleim, B. (2015). Protective benefits of mindfulness in emergency room personnel. *Journal of Affective Disorders*, 175, 79–85. <https://doi.org/10.1016/j.jad.2014.12.038>
- Zhang, Y., Luo, X., Che, X., & Duan, W. (2016). Protective effect of self-compassion to emotional response among students with chronic academic stress. *Frontiers in psychology*, 7, 1802. Doi: <https://doi.org/10.3389/fpsyg.2016.01802>

Appendix

Table 4

Estimated Fixed Effects of State Buffering on State Stress (unstandardised values)

Parameter	b	SE	df	t	Sig.	95 % LL	95% UL
State	-.47	.08	585.64	-5.93	<.001	-.62	-.31
Buffering 1 item / 2 items	-.59		588.48	-7.00		-.76	-.43
State	-.17	.22	133.11	-.77	.44	-.60	.26
Buffering between- persons (pm) 1 item / 2 items	-.06		128.95	-.29	.77	-.50	.37
State	-.51	.08	512.73	-6.07	<.001	-.67	-.34
Buffering within-person (pmc) 1 item / 2 items	-.68	.09	509.53	-7.45		-.85	-.50

Note. Total N = 31; standardized coefficient (β); unstandardized coefficient (b); degrees of freedom (df); Significance (Sig.); person mean (pm); person mean-centred (pmc); standard error (SE); lower limit (LL); upper limit (UL).

Table 5

Estimated Fixed Effects of State Self-Compassion on State Stress (unstandardised values)

Parameter	b	SE	df	t	Sig.	95 % LL	95% UL
State Self- Compassion	-1.46	.10	592.18	-14.37	<.001	-1.66	-1.26
State Self- Compassion between- person (pm)	-1.30	.26	120.85	-5.02	<.001	-1.81	-.78
State Self- Compassion within-person (pmc)	-1.49	.11	500.81	-13.49	<.001	-1.71	-1.27

Note. Total N = 31; standardized coefficient (β); unstandardized coefficient (b); degrees of freedom (df); Significance (Sig.); person mean (pm); person mean-centred (pmc); standard error (SE); lower limit (LL); upper limit (UL).

