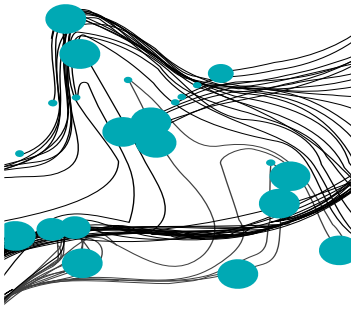

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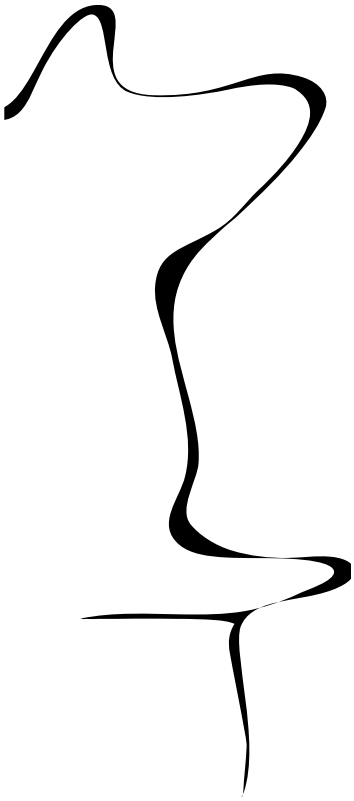

HOW THE SOCIAL CONTEXT AFFECTS SELF-COMPASSION AND ITS ASSOCIATION WITH STRESS – AN EXPERIENCE SAMPLING STUDY.

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Master Thesis Psychology
April 20, 2020

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Abstract

Background. The association between self-compassion and stress has gained increasing attention as it has been shown that people who have higher levels of self-compassion feel less stressed compared to people with lower levels of self-compassion. The social context of people plays a crucial role when examining how people perceive self-compassion and stress. Nevertheless, there is a lack in research on how the association between self-compassion and stress is perceived on a daily basis and whether there is a difference in self-compassion and its association with stress when people are in the company of others compared to when they are alone.

Objective. The current study examined daily feelings of self-compassion when people are in the company of others compared to when they are alone based on their trait self-compassion level. Furthermore, it was investigated whether there is a momentary positive association between daily feelings of self-compassion and stress and whether this association differs based on the social context a person is in.

Method. An online longitudinal experience sampling study with a sample of 35 college students (M_{age} = 21.20) was conducted over a time span of seven days. The Self-Compassion Scale Short-Form (SCS-SF) and the Perceived Stress Scale (PSS) were used to measure trait self-compassion and trait stress. Participants were asked to answer three daily single-item questions regarding state self-compassion, state stress and social context on three timepoints per day.

Results. Results showed that participants scoring higher levels of trait self-compassion compared to participants scoring lower levels tended to also score higher levels of state self-compassion. It was indicated in participants scoring high or average on trait self-compassion that there was no clear association between being alone or in the company of others on their level of state self-compassion. Participants scoring low on trait self-compassion had higher levels of state self-compassion when being alone compared to when being in the company of others. Morevoer, the results support that as expected next to a trait-like negative association, also a momentary negative association was found between self-compassion and stress when people were in the company of others and also when they were alone.

Conclusion. Based on these findings, suggestions for future research are to (1) set up inclusion and exclusion criteria, (2) use a larger sample size and (3) set up new daily measures. Considering the results, it is important to further examine the trait-like and the momentary negative association of self-compassion and stress as well as the specific social contexts people are in to develop interventions for reducing stress by increasing self-compassion.

1. Introduction

The association between self-compassion and stress has become a topic of growing awareness. People with higher levels of self-compassion on average tend to feel less stressed compared to people with lower levels of self-compassion (Lathren, Bluth, & Park, 2019). Nevertheless, less research has been done so far concerning the association of self-compassion and stress in daily life. Furthermore, it was rarely examined how the social context in terms of being alone or in the company of others affects the relationship of self-compassion and stress. As both self-compassion and stress are closely related to the context in which they occur, it is important to assess those constructs repeatedly in the moment they occur as contextual factors may vary from moment to moment (Neff & Dahm, 2015; Lazarus & Folkman, 1984). In addition, since self-compassion exercises are applied in order to help people to be able to effectively cope with their experiences of stress, greater insights into the daily relationship between self-compassion and stress can facilitate the improvement of those exercises and interventions with regard to focusing on specific aspects of people's daily lives. As self-compassion might be experienced in different ways when being in the company of others compared to when being alone, it would be of high value to become aware of those differences in order to improve self-compassion exercises related to stress. Thus, this study investigates how self-compassion is perceived when being in the company of others compared to when being alone as well as how the relationship between self-compassion and stress is experienced in these social contexts based on momentary assessments over a time span of one week.

1.1 Self-Compassion

As the field of positive psychology gained more and more attention during the last years, the concept of self-compassion became a topic of growing interest. Neff (2003a) broadly defines self-compassion as being as kind and caring to ourselves as we are to a close friend, and further distinguishes three factors: (1) self-kindness, encompassing to have a deep understanding of oneself and to treat oneself in a kind and caring way rather than having a high level of self-criticism, (2) common humanity, which entails seeing human suffering and failures not as an isolated and personal experience but rather as an experience which is shared by the common humanity and (3) mindfulness, which involves becoming aware and developing a balanced view of one's own positive as well as negative thoughts and feelings without ignoring these or overidentifying with them (Neff, 2003a).

Being self-compassionate has been shown to have many positive benefits. People with higher levels of self-compassion experience on average more happiness, positive emotions, such as being optimistic and enthusiastic, creativity, curiosity and are less self-critical compared to people low on self-compassion (Neff & Dahm, 2015). This positivity makes people with higher levels of self-compassion better able to overcome times of adversity and personal drawbacks compared to people with lower levels of self-compassion (Miyagawa, Niiya, & Taniguchi, 2019). Therefore, researchers developed self-compassion exercises which should help people to improve their level of self-compassion in order to be better able to overcome times of adversity. When taking into account self-compassion exercises, however, the question comes up to what extent self-compassion is a trait and to what extent self-compassion can be changed. As research on the state aspects of self-compassion is rather limited, it is difficult to find a clear answer to this question. According to Neff and Dahm (2015), self-compassion is learned in part from the experiences made in early childhood. Nevertheless, self-compassion is not a fixed concept as skills of self-compassion can be learned (Neff & Dahm, 2015). As this is the case, the question arises how changeable and context-dependent self-compassion is. Again, as the research regarding this topic is limited, no clear answer can be given. It appears that people high on self-compassion tend to have a balance and kind view of themselves, which holds across time and situations, as they attach their view of themselves to internal characteristics, which promotes a rather trait-like notion of self-compassion (Zessin, Dickhäuser, & Garbade, 2015). Looking at people low on self-compassion, it was shown that these people often link their view of themselves to external sources, such as how other people assess them (Mosewich, Sereda, Chapman, & Berry, 2018). This highlights the potential importance of the social context in relation to self-compassion.

Taking the social context into consideration, it was shown that people with higher levels of self-compassion tend to experience their relationships to other people as more positively compared to people with lower levels of self-compassion as self-compassion appears to improve interpersonal functioning (Neff & Dahm, 2015). Moreover, it was shown that it is easier for people high on self-compassion to have a compassionate attitude towards others and others perceive them as being more connected, accepting and supporting while being less detached, controlling or aggressive compared to people low on self-compassion (Crocker & Canevello, 2008). Furthermore, in a study conducted by Waring and Kelly (2019), it was investigated how trait self-compassion predicts different responses to failure depending on the social context. The results of this study suggest that trait self-compassion predicted more adaptive responses to failure when participants were able to share their experience with a peer

compared to when they experienced the failure alone. Therefore, it appears that the level of trait self-compassion has an influence on the relationships people have but no research has been done so far on how those relationships affect people's level of state self-compassion. Thus, this is a topic worth investigating as this can also help to gain deeper insights into how self-compassion is built and can be changed.

1.2 Stress

Stress is defined by Everly and Lating (2019) as "a physiological response that serves as a mechanism of mediation linking any given stressor to its target-organ effect". This leads the body to activate the stress response, which is perceived subjectively by each person as people experience stress differently and in different situations. This is in line with the model composed by Lazarus and Folkman (1984) which clearly shows that stress is a complex interaction between the requirements of the given situation and how the person involved is reacting to it. Lazarus and Folkman (1984) argued towards a state-notion of stress, showing that people highly differ in their level of stress when confronted with the same stressful situation. They argue for a transactional model where the level of stress perceived per person is modified by how the person evaluates the stressful situation. In that way, stress is portrayed as the evaluation a person makes about the situation and this evaluation can differ each moment depending on the inner interpretation and also on the setting the person is in (Lazarus & Folkman, 1984).

Taking into account the setting the person is in, the social context gets into the focus again and it appears that similar to self-compassion, people are also affected by other people when looking at stress. In a study conducted by Baqutayan (2011), it was found that students who receive less social support experience higher levels of stress. These results are in agreement with another study which highlights that a lack of familial support in adolescence is often related to more distress and lower levels of life satisfaction (Weigel, Devereux, Leigh, & Ballard-Reisch, 1998). Thus, it highlights the importance of taking the social context into consideration when examining how people experience stress.

1.3 Self-compassion and Stress

Relating the concept of self-compassion to stress, two possible associations between both constructs seem to be interesting when taking into account the research that has been conducted so far. Firstly, in a study conducted by Galla (2016), it was shown that increases in self-compassion predicted a decline in perceived stress after a five-day, intensive meditation retreat for young and healthy, but stressed adolescents. Thus, a negative association between self-

compassion and stress was found. Similar was observed in a study conducted by Newsome, Waldo and Gruszka (2012) who examined participants' levels of perceived stress and self-compassion after a six-week mindfulness group work. Again, a negative association between self-compassion and stress was found with declining stress and increasing self-compassion. But both studies only focus on the trait aspects of both self-compassion and stress without taking into account the immediate association between self-compassion and stress, respectively the state aspects of both constructs. Nevertheless, as in both studies it was worked with interventions regarding mindfulness and self-compassion, the findings of both studies highlight the importance of self-compassion exercises as a helpful tool for developing interventions helping people to effectively manage stress.

Secondly, the association of the state aspects of both self-compassion and stress needs to be investigated. Research has shown that self-compassion acts as an adaptive emotion regulation strategy when people experience stressful times. By adaptively regulating the emotions, self-compassionate individuals respond to their difficulties with care and concern, which helps them to actively cope with the stress they experience (Lathren, Bluth, & Park, 2019; Bluth & Eisenlohr-Moul, 2017). Therefore, as the level of stress increases, people with a high level of self-compassion are able to adaptively regulate their emotions and their level of self-compassion increases as they react to stress with care and concern. Thus, there seems to be a positive association between the state aspects of both stress and self-compassion, but no research has been conducted so far to examine the association of the state aspects of both constructs. A positive association was also supported by Allen and Leary (2010) who found that people with a high level of self-compassion treat themselves with kindness and care when they experience a stressful situation. Moreover, Allen and Leary (2010) point out that they did not find clear evidence of whether there are differences in the level of seeking support in stressful times between high and low self-compassionate people. So, the social context the people are in can play an important role when considering the association between self-compassion and stress.

When taking into account the research on self-compassion and stress, it appears that previous studies mostly focus on the trait-like aspects of both self-compassion and stress, but no study yet has focused on this association when taking into account the momentary state aspects of both constructs. Furthermore, no study yet has explored this association in different social contexts on a day-to-day basis. It seems that other people have a high impact in each person's life and thus also have an effect on how they perceive self-compassion and stress (Neff & Dahm, 2015; Baqutayan, 2011). Thus, this study examines the association between self-

compassion and stress when being in the company of others compared to when being alone by making use of momentary assessments.

1.4 Current Study

The aim of this study is to examine how being in the company of others versus being alone has an effect on daily experiences of self-compassion as well as on the association between self-compassion and stress. Firstly, it will be examined how feelings of state self-compassion are experienced when people are in the company of others compared to when they are alone and whether these experiences differ based on a person's level of trait self-compassion. Therefore, the following hypothesis arises:

It is expected that people with higher levels of trait self-compassion unlike people with lower levels of trait self-compassion show less difference in state self-compassion when being in the company of others compared to when being alone, as people with a rather high trait self-compassion tend to have a stable positive attitude towards themselves.

Secondly, the daily relationship between self-compassion and stress when being in the company of others compared to when being alone will be investigated. As self-compassion has been shown to increase as a response to an increase in the level of perceived stress, it will be examined whether there is a trait-like and/or momentary positive association between both constructs. Thus, the following hypothesis arises:

It is expected that a momentary positive association between self-compassion and stress can be found mainly when people are in the company of others because the influence of other people plays an important role in both constructs.

2. Method

This study concerned post-hoc analyses of a previous study performed by students from the University of Twente in the context of their Bachelor thesis. The longitudinal online study was approved by the Behavioral, Management, and Social Sciences ethics committee of the University of Twente (Request-Nr: 191272). The participants took part voluntarily and gave their informed consent online before they participated in the study.

2.1 Design

A one-week experience sampling method (ESM) was used to measure daily real-life experiences of stress and self-compassion since assessing these constructs on a daily basis were too difficult using cross-sectional surveys. ESM allowed researchers to obtain data of different constructs and psychological mechanisms immediately from the participants' everyday lives. Thus, using ESM reduced the reliance on retrospective memory and increased the ecological validity (Verhagen, Hasmi, Drukker, van Os, & Delespaul, 2016). The data was collected during November 2019.

2.2 Participants and Procedure

Participants were recruited by the use of the convenience sampling using the Test Subject Pool BMS (SONA) system of the University of Twente as well as by sharing the survey-subscription link via personal contact and Facebook. Participants who subscribed via the SONA system were compensated with 2.5 research credit points for their effort. No compensation was offered to participants who were recruited outside of the SONA system. In order to take part in the study, the following inclusion criteria for the participants were set up: to be a registered student, aged 18 years or older, proficient knowledge of the English language, and to own either an Apple or Android smartphone in order to be able to download and use The Incredible Intervention Machine (TIIM) application (The BMS lab, n.d.). Further, only participants with a 100% response rate of the state as well as trait questionnaires were included in the final sample. Therefore, the total sample consisted of 35 students.

In total the study took place over a course of nine days. The first day was merely meant to inform the participants about the procedure of the study, so that it was ensured that the participants were prepared to take part in the study for the next eight days. The participants subscribed to the study either via the SONA system or directly via the URL link of TIIM. Through both ways they were taken directly to the subscription page, where they had to register

with a valid email address and password. Next, they had to give information about their demographics in terms of age, gender, and nationality. Furthermore, in order to be able to continue, they had to confirm that they are registered as a student (see Appendix A). Afterwards, the participants were requested to download the TIIM application on their smartphone via a link, which took them to either the Appstore or the Google Play Store.

After downloading the app, the participants were informed that more information would follow in the app in the next morning. The information given to the participants in the next day included facts about the background of the study, how the study is going to be set up over the next week as well as information about their rights and contact details. After reading the information, the participants were asked to give online consent in order to be able to participate in the study. During the next seven days, the participants were asked to answer the same six questions during three time points each day. It was necessary to give an answer to each question in order to proceed to the next question. The ninth day marked the end of the study and the participants were asked to fill in the trait questionnaires. The first questionnaire given to the participants was a gratitude questionnaire, which was then followed by a self-compassion, stress and loneliness questionnaire. In order to get to the next questionnaire, the participants had to again complete each answer of the ongoing questionnaire.

2.4 Materials and Measures

This longitudinal online survey was created via The Incredible Intervention Machine (TIIM), which was developed and is owned by the University of Twente. As this study was a part of an overall research project, the total research contained more measures than those used for this study. In total, it consisted of six daily ESM questions relating to gratitude, self-compassion, stress, loneliness, and social context as well as four trait questionnaires: The Multi-Component Gratitude Measure (MCGM) (Morgan, Gulliford, & Kristjánsson, 2017), the Self-Compassion Scale Short Form (SCS-SF) (Raes, Pommier, Neff, & Van Gucht, 2011), the Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983), and the UCLA Loneliness Scale (Third Version) (Russell, 1996). As this study focused on self-compassion, stress and the social context, only the three daily questions related to self-compassion, stress, and social context as well as the SCS-SF and the PSS were taken into account.

2.4.1 The Incredible Intervention Machine (TIIM)

The TIIM is an intervention and survey tool, which was created by the BMS Lab of the University of Twente and it can be operated as a mobile application on Android as well as iOS

devices. The participants received a push notification which informed them that new questions needed to be answered. In this study, three time spans per day over a period of one week were used. Participants had to answer the daily ESM questions between eight am and ten am, between twelve pm and two pm, and lastly between seven pm and nine pm. It was chosen for these three time spans per day, as the participants were exclusively college students, in order to get data in different social contexts as many students were in classes, met up with friends, lived in a shared flat or alone. Furthermore, it was chosen to let this study last over a time span of one week to also be able to obtain data within the family context due to many students visiting their family on the weekend. In order to ensure an easy usability, individual modules were repeatedly tested and adjusted in the creation phase of the survey and a one-day pilot-test was administered where two participants tested the surface, the timing and the response function of the survey.

In terms of reminders to take part in the survey, the first four participants were asked to set three alarm clocks on their smartphones, so that they answered the questions at eight am, twelve pm, and seven pm in order to compensate for the reminder which should be sent automatically through the TIIM. Nevertheless, this did not work out as intended as the low response rate of these four participants showed due to not setting the alarm clocks or due to ignoring them. Afterwards, the research team sent a reminder to every participant manually through a push notification via the BMS Lab Dashboard and participants immediately responded in return. As the response rate increased through this strategy, the aim regarding the participants to set up reminders by themselves was deleted and they received reminders via push notifications at eight am, twelve pm, and seven am respectively (see Appendix B). In addition, it was monitored by the researcher 30 minutes before the end of each time span whether each participant responded already. If this was not the case, the participant was reminded again.

2.4.2 Daily Questionnaires

In order to prevent any habituation effects in the responding, the daily questions were randomly prompted at each time span.

State Self-Compassion. To measure self-compassion on a daily basis, the participants were asked a single item regarding self-compassion. "On a scale from 0 to 7, how kind do you feel towards yourself right now?". It was chosen for a single item in order to reduce the effort of the participants and in turn to increase the response rate. In this study, it was shown that there is a significant moderate association between the average state self-compassion measures over time and the trait self-compassion measure as bivariate Pearson correlation showed ($r = .337$, n

= 35, p < .000), suggesting that the single self-compassion item was a valid measure of state self-compassion.

State Stress. In order to measure state stress, a single item was chosen as well: "On a scale from 0 to 7 and even being the worst stress possible, what number describes your level of stress right now?". This item represented the stress experienced in the moment and is called the Stress Numerical Rating Scale – 11 (Stress NRS-11). The validation of the SNRS-11 was supported by three different studies (Karvounides et al., 2016). Similar as in the state self-compassion measure, it was chosen for this single item in order to decrease the effort of the participants and in return to enhance the response rate. In this study, bivariate Pearson correlation analysis showed a significant moderate association between the average state stress measure over time and the trait stress measure (r = .382, n = 35, p < .000), indicating that the single stress item was a valid measure of state stress.

Social Context. Even though questions regarding the social context were often asked by using open questions, it was decided in this study in order to have a minimum effort and time to respond for the participants, to take pre-defined categories as answers. Therefore, in order to answer the question 'Which people are you with at the moment?', participants were able to choose between the following categories: 'Family', 'Partner', 'Friends', 'Fellow Students', 'Co-Worker', 'Other', and 'I am alone'. It was also possible for the participants to take multiple categories as an answer, if they were for example with their family and their partner at the same time. Afterwards, the responses were classified into the following two categories: 'alone', and 'company' (which consist of 'Family', 'Partner', 'Friends', 'Fellow Students', 'Co-Worker', and 'Other').

2.4.3 Trait Questionnaires

Self-Compassion Scale Short Form (SCS-SF). In order to determine a person's level of trait self-compassion, the Self-Compassion Scale Short Form (SCS-SF) measure, developed by Raes, Pommier, Neff, & Van Gucht (2011) was used (see Appendix C). It is a twelve-item scale with a five-point Likert rating scale ranging from 1 (almost never) to 5 (almost always). The Scale can be divided into the following six subscales, which are composed of two items each: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-identification. Example questions are "*I try to see my failing as part of the human condition*" for the positive subscales (Self-Kindness, Common Humanity, and Mindfulness) and "*I am disapproving and judgmental about my own flaws and inadequacies*" for the negative subscales (Self-Judgment, Isolation, and Over-identification). In order to compute a total self-

compassion-score the negative subscale items needed to be reverse scored and then a total mean of the twelve items was taken. The higher the score on the SCS-SF, the higher the level of self-compassion. The SCS-SF showed to have a good reliability with Cronbach's alpha of .813 in the current study.

Perceived Stress Scale (PSS). To determine a person's level of trait stress, the Perceived Stress Scale (PSS) by Cohen, Kamarck, & Mermelstein (1983) was used (see Appendix D). The scale consists of ten items with a five-point Likert rating scale ranging from 0 (never) to 4 (very often). The participants had to answer four positively stated items, such as "*In the last month, how often have you felt confident about your ability to handle your personal problems?*" as well as six negatively stated items, such as "*In the last month, how often have you been upset because of something that happened unexpectedly?*". Every item refers to the feelings and emotions the person had during the last month. In order to obtain a total score of perceived stress the four negative items needed to be scored reversely and then all scores were getting summed up. The higher the score on the PSS, the higher the level of the perceived stress. In this study, the PSS showed to have a good reliability with Cronbach's alpha of .889.

2.5 Statistical Analysis

All analyses were performed using SPSS, Statistical Package for the Social Sciences, version 24. Descriptive statistics were used in order to portray the characteristics of the participants in terms of age, gender and nationality as well as to check for distributions and mean scores of trait stress and trait self-compassion across the sample. In order to get an overview of the social context, frequencies of the two categories, which were 'alone' (A) and 'company' (C) were computed for the sample. Furthermore, in order to compare people having a higher level of trait self-compassion with people having an average or lower level of trait self-compassion, trait self-compassion scores were divided into three (low, average, high) groups based on the participants scores on the trait measure of self-compassion. Moreover, in order to get an overview of the average stress and self-compassion level over the time span of one week per participant and to be able to incorporate between-person analyses, person mean scores (PM) were computed. Next to this, person mean-centered scores (PM-centered) were computed per participant for each measurement point of stress and self-compassion in order to get a reflection of the average deviations in stress and self-compassion level over the time span of one week within each participant (Curran & Bauer, 2011).

Next, Linear Mixed Model (LMM) analyses with an autoregressive repeated measurement structure were used in order to be able to control for the dependency between

data. In order to get standardized coefficients, Z-scores were computed for both trait and state self-compassion as well as for trait and state stress and were used for the analyses. Firstly, to analyze the association between trait self-compassion and state self-compassion in terms of person means LMM analysis was used with state self-compassion as dependent variable and trait self-compassion as a fixed independent variable. Secondly, to examine the state level of self-compassion when being alone compared to when being in the company of others a multigroup model was used. State self-compassion was set as the dependent variable while the type of company (1=A, 2=C) was set as a fixed independent categorical variable. In order to separately analyze each trait self-compassion group (high, average, low), split file was used.

Lastly, it was investigated whether there was a momentary (within-person) or trait like (between-person) association between state self-compassion and state stress and whether this differed when people are alone or in the company of other people. As previous studies found a negative association between trait self-compassion and trait stress, it was firstly examined whether this is the case in this sample as well by using LMM analysis with trait stress as dependent variable and trait self-compassion as fixed independent variable. Furthermore, another multigroup LMM analysis was set up with state self-compassion as the dependent variable and each PM stress (between-person) and PM-centered stress (within-person) scores as fixed independent variables. This was done for both being alone or being in the company of others by using split file to check whether there was a difference based on the social context a person was in. Figures and tables were created by using Microsoft Excel 2020 to visually support the findings.

3. Results

3.1 Participants Characteristics and Descriptive Statistics

In total, 35 college students took part in the study. The age range was from 18 to 40 years (M_{age} = 21.20; SD_{age} = 4.51) and participants from different nationalities participated in the study with 48.6% being German, 40% being Dutch, 2.9% being Indian, 2.9% being Bulgarian, 2.9% being Vietnamese, and 2.9% being Indonesian. With regard to the distribution of gender identity, 82.9% of the participants identified as woman, while 11.4% identified as man, 2.9% identified as transgender woman, and 2.9% as gender variant/non-conforming.

As seen in Table 1, an overview of minimum and maximum scores, means and standard deviations of trait self-compassion and trait stress was given. In total, the participants spent 57.7% of their time in the company of others and 42.3% of their time was spent alone. By dividing the participants into three groups of trait self-compassion, twelve participants (34.3%) were assigned to the low trait self-compassion as well as to the average trait self-compassion group, while eleven participants (31.4%) were assigned to the high trait self-compassion group.

Table 1.

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

Variables	Minimum (scale min.)	Maximum (scale max.)	M	SD
Self-Compassion Scale Short Form (SCS-SF)	20 (12)	52 (60)	36.57	8.30
Perceived Stress Scale (PSS)	5 (0)	36 (40)	15.51	6.64

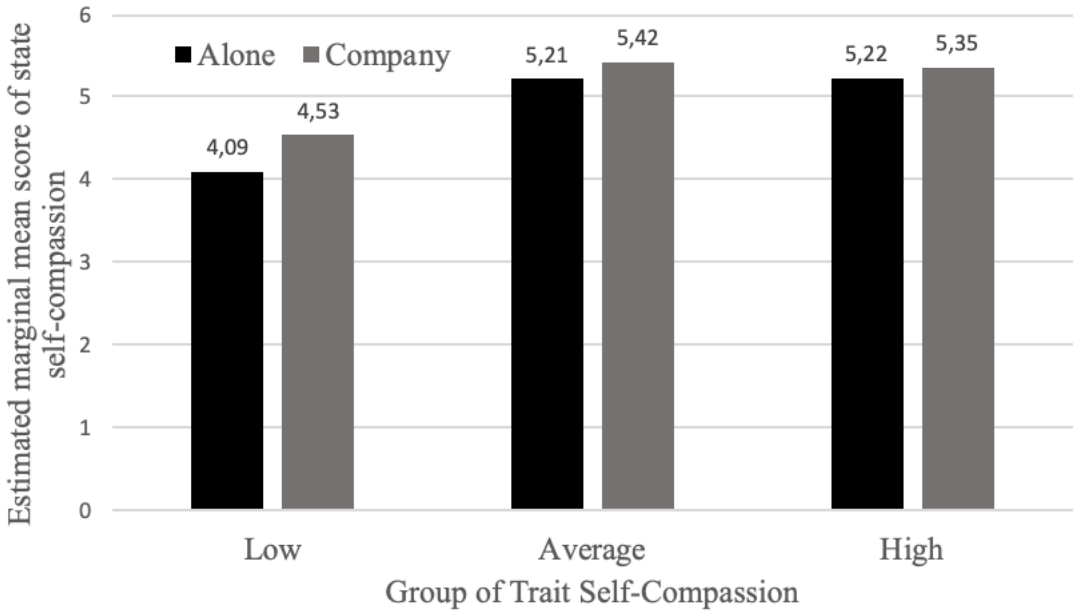
N = 35

3.2 Trait and State Self-Compassion

A significant association was found between the scores of trait self-compassion and the person mean scores of state self-compassion ($\beta = 0.52$, $SE = .03$, $p = .000$). Meaning that people who score higher levels compared to people scoring lower levels on trait self-compassion tended to also score higher levels of state self-compassion as it is displayed in Figure 1. Next to this, results showed that there was a significant association of being in the company of others on state self-compassion for the low trait self-compassion group with company of others as the reference category ($\beta_{low\text{-}self\text{-}comp.} = .32$, $SE_{low\text{-}self\text{-}comp.} = .11$, $p = .004$). The results indicated that low trait self-compassionate people showed a higher level of state self-compassion when they were in the company of others compared to when they were alone. Examining the high and average trait self-compassion groups, no significant difference was found between their levels of state self-compassion when being alone compared to when being in the company of others ($\beta_{average\text{-}self\text{-}comp.} = .12$, $SE_{average\ self\text{-}comp.} = .11$, $p = .276$; $\beta_{high\ self\text{-}comp.} = .10$, $SE_{high\ self\text{-}comp.} = .12$, $p = .465$). In order to illustrate these results, the estimated marginal means of the trait self-compassion groups when they were alone compared to when they were in the company of others were displayed in Figure 1 and the level of trait self-compassion and mean state self-compassion per participant can be found in Figure 5 (see Appendix F).

Figure 1.

Estimated Marginal Means of State Self-compassion per Trait Self-Compassion Group when being alone compared to when being in the company of others.

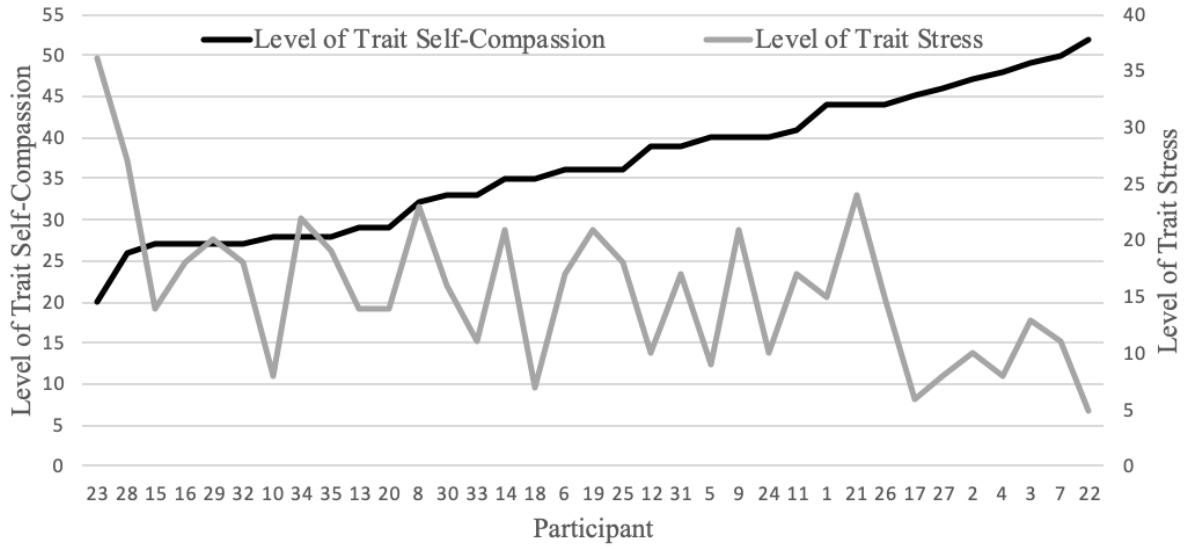


3.3 Trait Self-Compassion and Trait Stress

In order to verify whether there was a negative association between trait self-compassion and trait stress as it was shown in previous studies, LMM analysis was used with trait stress as dependent variable and trait self-compassion as fixed independent variable. As it was expected, a significant negative association was found between trait self-compassion and trait stress (β = -.57, *SE* = .03, *p* = .000). Demonstrating that as the scores on trait self-compassion increased, the scores on trait stress tended to decrease as it is also visible in Figure 2. Similar is observable, when taking into account scores of state self-compassion and state stress per participant and across timepoints. Figure 3 (see Appendix E), displaying the mean scores of state self-compassion and state stress per participant, showed that as the scores of state self-compassion rose, the scores of state stress declined. Considering the means of state self-compassion and state stress across time points, Figure 4 (see Appendix E) indicated that state self-compassion scores were higher than state stress scores at each time point.

Figure 2.

Levels of Trait Self-Compassion and Trait Stress per Participant



Note. The participants (x-axis) were sorted according to their self-compassion score, so self-compassion scores rise from left to right.

3.4 State Stress and State Self-Compassion

Next it was examined whether there was also an association between state self-compassion and state stress based on the social context, alone versus in the company of others, people are in.

Alone. Results showed a significant negative between-person association (β = -.40, *SE* = .08, *p* = .000) as well as a significant, but weaker, negative within-person association (β = -.19, *SE* = .05, *p* = .000). This demonstrates that a person's self-compassion score at a certain point of time is mainly associated with a person's average stress level and less associated with a person's stress score at this specific point.

Company. Results again showed a similar and significant negative between-person association (β = -.35, *SE* = .05, *p* = .000) as well as a significant, but weaker, negative within-person association (β = -.28, *SE* = .04, *p* = .000). Demonstrating that the between-person association was significant and with a standardized estimate of -.35 slightly weaker than the between-person association in the alone condition while the within-person association also was significant with a standardized estimate of -.28 and stronger compared to the alone condition. Again, this indicated that a person's self-compassion score at a certain point of time was mainly associated with a person's stress level and less associated with a person's stress score at this specific point as well as that the between-person association was stronger in the alone condition while the within-person association was stronger when being in the company of others.

4. Discussion

This study aimed to examine how the social context affects daily feelings of self-compassion in students with high, average or low trait self-compassion levels. Next, it was investigated whether the social context affects the association between self-compassion and stress. Firstly, the results of this study showed that not only high trait self-compassionate people show less difference based on the social context they are in; the same also holds for average trait self-compassionate people, while low trait self-compassionate people had higher levels of state self-compassion when they were alone compared to when they were in the company of others. Secondly, the results support that next to a trait-like negative association, also a significant but weaker momentary negative association was found between self-compassion and stress over time both when people were in the company of others and also when they were alone. This means that people with higher levels of state self-compassion show lower levels of state stress regardless of when they are in the company of others or when they are being alone. Surprisingly, this is not in line with the expectation that there is a positive momentary association between state self-compassion and state stress, meaning that people show higher levels of state self-compassion when experiencing more state stress.

4.1 Interpretation of the Results

4.1.1 Self-Compassion

The results regarding self-compassion are in line with findings by Zessin, Dickhäuser, and Garbade (2015) who found that people with higher levels of self-compassion tend to have a balanced and kind attitude towards themselves unlike people with lower levels of self-compassion and that this view is rather stable across time and situations. A possible explanation for these results is that high self-compassionate people tend to attach positive experiences and their positive view about themselves to internal attributes while people with lower levels of self-compassion tend to link their view of themselves to external determinants, such as the evaluations by other people (Mosewich, Sereda, Chapman, & Berry, 2018).

Taking these external determinants into account, such as the evaluations by others, it appears that the source of self-compassion in low trait self-compassionate people comes from an interpersonal level as the results show higher levels of state self-compassion when being alone compared to when being with others in low trait self-compassionate people. Therefore, being in the company of other people, especially when the interaction with the other people is on a positive basis, stimulates low trait self-compassionate people to adopt a kinder and more balanced view of themselves. In that way, low trait self-compassionate people use their

interpersonal relationship with other people in order to be able to appreciate themselves more. As being alone has been shown to be hard for some people to endure and to enjoy, it may make it difficult for low trait self-compassionate people to be kinder towards themselves. This is in line with the study conducted by Akin (2010), who found that the positive subscales of Neff's (2003b) self-compassion scale, such as being kind to oneself, understanding the common humanity and being mindful, are negatively associated with feelings of loneliness while the negative subscales, such as self-judgement, isolation, and over-identification predicted feeling lonely when being alone. Taking into account these findings, this study provides new insights into the daily feelings of self-compassion and how these differ based on a person's level of trait self-compassion.

4.1.2 The Association of Self-Compassion and Stress

Next to investigating self-compassion, it was also explored how the association of self-compassion and stress differs on a daily basis based on different social contexts. It was examined whether the association between self-compassion and stress is a trait-like and/or momentary association and whether there are differences based on the social context a person is in.

Trait-like association. A significant negative trait-like association between self-compassion and stress was found for both being alone as well as for being in the company of others. That means, that people with higher (or lower) state self-compassion scores on average than others show lower (or higher) state stress scores when being alone as well as when being in the company of others. This is partly in line with the results found by Lathren, Bluth and Park (2019) who found a negative trait-like association between high levels of self-compassion and low levels of stress. They argue that self-compassion works as an adaptive emotion regulation system in that self-compassionate individuals are able to respond to stressful situations in that they act with care and concern helping them to effectively cope with the stress they experience. Therefore, this result is also surprising because it could also be expected when taking into account the adaptive emotion regulation theory, that people with higher levels of self-compassion experience even more self-compassion when they perceive stress, so that a positive association between state self-compassion and state stress could be found. Nevertheless, when thinking about alternative explanations for these findings, it could also be argued that high self-compassionate people might tend to avoid stressful situations due to their desire to be kind towards themselves and seeing stress as a threat towards their self-kindness (Neff, Kirkpatrick, & Rude, 2007). When taking into account the social context, it is observable

that the trait-like association was slightly higher when being alone compared to when being in the company of others. This is an interesting finding, which is partly in line with the findings of the study of Allen and Leary (2010) who found that people who are high on self-compassion are not more likely to directly seek social support in times of adversity but indirect reliance on social support was found due to people recognizing the common humanity by showing that they are not alone when facing difficult situations. This again can be explained by the fact that people high on self-compassion greatly rely on their internal characteristics, so that they trust themselves to be able to overcome stressful times by themselves (Zessin, Dickhäuser, & Garbade, 2015).

Momentary Association. Again, also a momentary negative association between self-compassion and stress was found for both being alone and for being in the company of others. That means, that at a particular timepoint where a person shows a higher (or lower) score of self-compassion than their own average, they tend to show a lower (or higher) score of stress at this timepoint as well. Similar as described in the trait-like association between self-compassion and stress, this is surprising as a positive momentary association between state self-compassion and state stress was expected. A possible explanation for these findings could be that people with a high level of self-compassion tend to show greater emotional resilience and stability compared to people with lower levels of self-compassion (Neff, 2011). Therefore, it could be assumed that people high on self-compassion tend to have a stable level of self-compassion due to their emotional resilience and stability across time points as well as across their levels of stress. But again, it could also be argued that people high on self-compassion tend to avoid stressful situations due to seeing stress as a threat to their self-kindness. Taking into account the social context, it was observable that the momentary negative association between self-compassion and stress was slightly stronger when being in the company of others compared to when being alone. Considering the findings of the study of Baqutayan (2011) who found that students experience more stress when they receive less social support during stressful times, these findings could also account for the findings of the current study. This means that the social context of being in the company of others could work as a mediator by reducing the level of stress, which in turn enhances the level of self-compassion.

4.2 Strengths and Limitations

Even though this study yields interesting results, it is important to highlight the strengths as well as the limitations of this study in order to be able to evaluate the generalizability of this study. This study adds to the existing research due to several reasons. Firstly, the biggest

strength of this study is the high ecological validity due to using the experience sampling method. By using this method, it was able to measure feelings of self-compassion and stress in the daily context of people and to directly link these feelings with specific situations, timepoints of the day, or other circumstances. This makes it easier to grasp the daily fluctuations in both constructs. Furthermore, using ESM made it possible to examine both between- and within-person associations, which would have been impossible when using cross-sectional surveys. Secondly, another strength of this study are the trait questionnaires used, which were the Self-Compassion Scale Short-Form (SCS-SF) and the Perceived Stress Scale (PSS), which have been shown to have high reliability and validity.

The generalizability of the results is limited due to several reasons. Firstly, as there were technical problems with regard to the TIIM, meaning that daily questions did not disappear after two hours. In that way, participants were able to answer for example the morning question later during the day based on their memories on how they felt during that morning. This in turn reduces the ecological validity of the present study as people were able to answer the questions later during the day and then relayed on their retrospective memory or even answered the question relying on their current state. Secondly, another limitation of this study concerns the daily question regarding self-compassion. This question only focuses on one of the three aspects setting up self-compassion, which were composed by Neff (2003a). Next to being kind, Neff (2003a) also highlights that common humanity and mindfulness play an important role when considering the concept of self-compassion. Therefore, it is questionable whether the measure of state self-compassion in this study fully represents the whole concept of self-compassion. Thus, this can be a topic of future research to check whether similar results obtained in this study also hold when taking into account the three aspects of self-compassion in a state self-compassion measure. Thirdly, one limitation of this study concerns the generalizability of the results. As the participants of this study were exclusively college students, it is questionable whether these results can be generalized to the major population as due to only including college students the sample shows an overrepresentation of higher educated people as well as an overrepresentation of women (82.9%). When aiming for a broader generalizability of the results of this study, it would be advisable for future research to set up other inclusion and exclusion criteria with regard to the educational background and gender of the participants.

4.3 Conclusion and Implications for Future Research

To conclude, the results of this study demonstrated that not only high trait self-compassionate people, but also average trait self-compassionate people show no difference in their daily

feelings of self-compassion when they are in the company of others compared to when they are alone. It was shown for low trait self-compassionate people that they feel higher levels of self-compassion when they are in the company of others compared to when they are alone. Moreover, it was found that next to a trait-like negative association between self-compassion and stress, there is also a momentary negative association between self-compassion and stress, which was apparent in both social contexts.

As there are several limitations with regard to this study, there are some suggestions for improvement for future research. It is recommended to (1) set up inclusion and exclusion criteria with regard to the educational background and gender of the participants in order to have a sample of a good reflection of the general population, (2) use a larger sample size in order to be able to make stronger predictions about the differences between high, average and low trait self-compassionate individuals and the association between self-compassion and stress, (3) set up a new daily measure for self-compassion as the measure in this study only focuses on the kindness aspect of self-compassion. In that way, it is possible to not only grasp one aspect of the concept of self-compassion but the concept as a whole. Next, it would also be interesting to investigate the association between stress and the three single aspects of self-compassion separately in order to see whether there are differences which could account for the negative association between stress and self-compassion.

A major implication for future research when taking into account the results of this study relates to improving interventions for effectively coping with stress and the important role self-compassion can play in those interventions. As it was observable that the trait-like (between-person) association was stronger than the momentary (within-person) association in both being alone and being in the company of others, it would be advisable to further investigate this trait-like association to be able to gain more insights into the mechanisms of state self-compassion and state stress and how to use these for interventions. Furthermore, it was found that the trait-like association was stronger in the alone condition while the momentary association was stronger when being in the company of others. Therefore, the social context has been shown to play a crucial role when considering the trait-like as well as the momentary association between self-compassion and stress. In order to draw clear conclusions about the social context concerning the association of self-compassion and stress, it would be advisable for future research to further elaborate on the social context. It would be interesting to investigate whether there is a specific company, such as intimate versus non-intimate company, that accounts for a stronger association between self-compassion and stress in the momentary association.

All in all, this study gave a basis for future research to further investigate the trait and especially the state aspects of self-compassion as well as the negative association between self-compassion and stress both based on the social context people are in. Taking these results into account and further elaborating on them is a chance to use the results in order to develop interventions based on improving self-compassion and in turn reducing stress.

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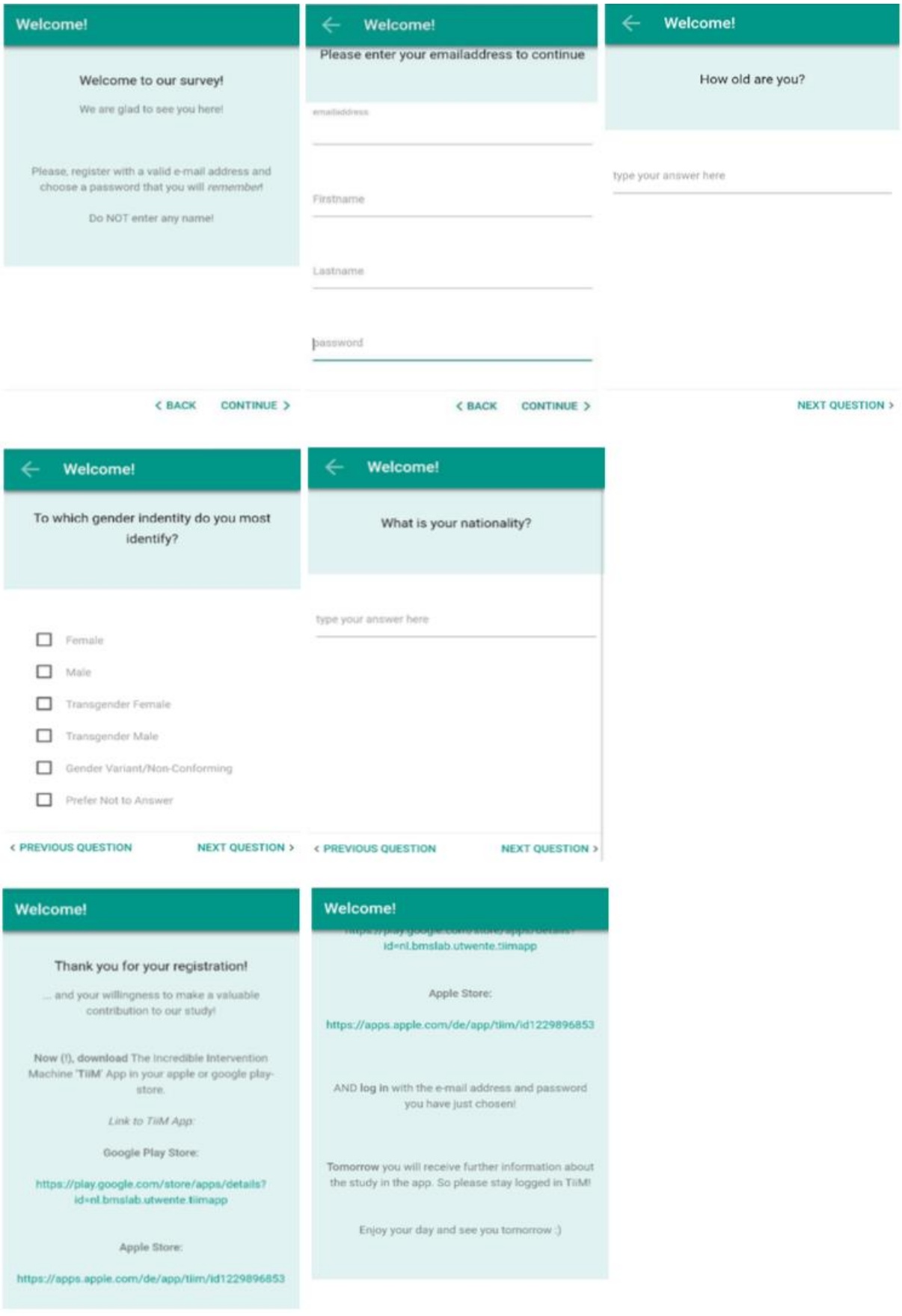
Appendix A

Subscription to the study



Appendix B

Timing of Push Notifications in the TIIM application

Time	Push Notification
After assigning participants to study:	Welcome! Further information will follow tomorrow! :)
Day 1: 08:00:	Thank you for your patience; New information are available!
19:00 (if not done yet):	Have you read all information? We'll start tomorrow morning :)
Day 2 - 8: 08:00:	Good morning :) Tell me how you are feeling!
12:00:	Lunch time :) Tell me how you are feeling!
19:00:	Tell me how you are feeling! And enjoy your evening :)
09:30, 13:30, 20:30 (if not done yet):	Don't forget to tell me how you are feeling :)
To encourage	You are doing great! 4 more days to go! Good morning :) Only 2 more days. You're doing great! A few missed answers are no problem! Keep doing!
Day 8: 21:00:	You've made a great job this week! :) Tomorrow you'll receive the ending questionnaires.
Day 9: 08:00:	Today is your last day! Please fill in the 4 questionnaires.
14:00 (if not done yet):	Great job so far! Don't forget to fill in the last questionnaires! :)
19:00 (if not done yet):	Great job so far! Don't forget to fill in the last questionnaires! :)

Appendix C

Self-Compassion Scale Short-Form by Kristin Neff, Ph. D.

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never **Almost always**

1 **2** **3** **4** **5**

_ 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 feelings down, I tend to feel like most other people are probably happier than I am.

_ 5. I try to see my failing 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.

Appendix D

Perceived Stress Scale (SS) by Sheldon Cohen

The questions in this scale ask you about your feelings and thoughts *during the last month*. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

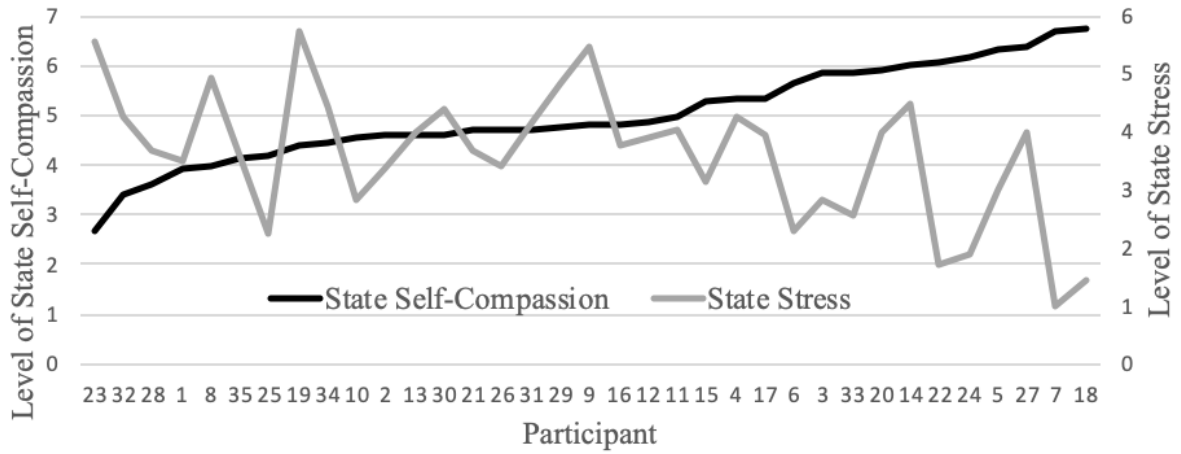
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Appendix E

Illustration state self-compassion and state stress per participant and across timepoints

Figure 3.

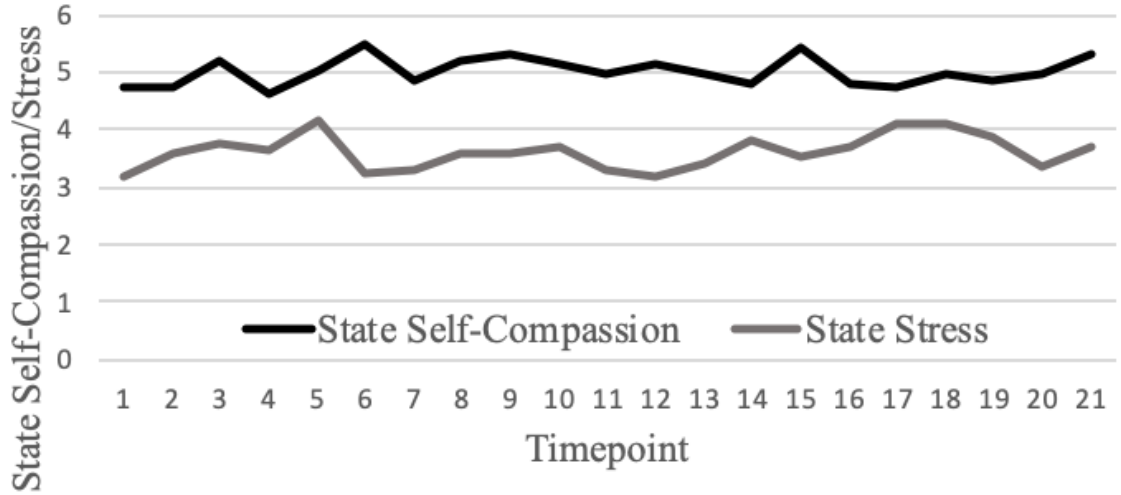
Estimated marginal means of state self-compassion and state stress per participant



Note. The participants (x-axis) were sorted according to their self-compassion score, so self-compassion scores rise from left to right.

Figure 4.

Estimated marginal means of state self-compassion and state stress across time-points

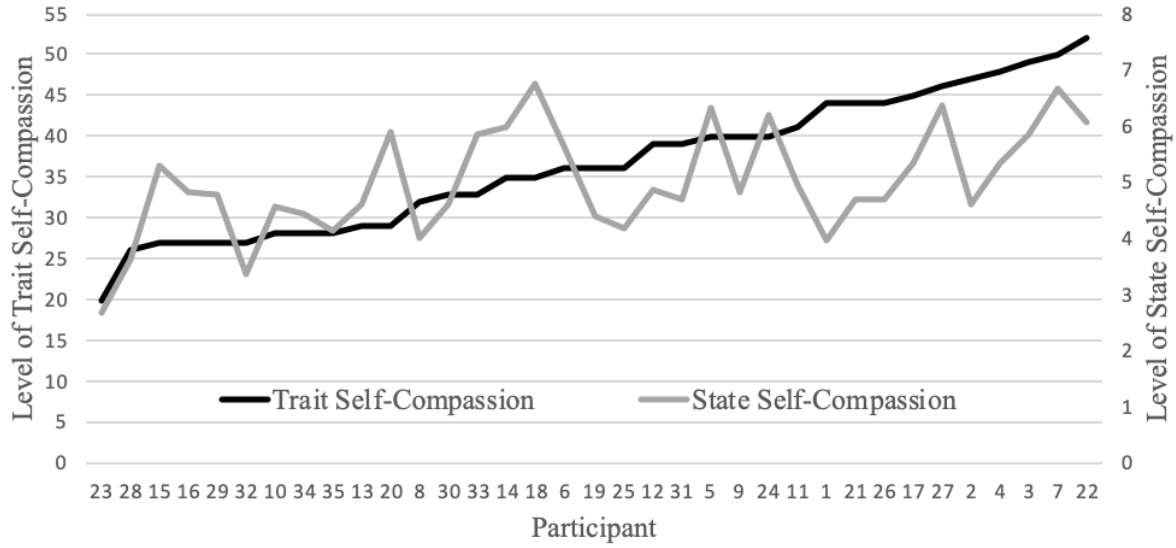


Appendix F

Illustration of the level of trait self-compassion and the mean state self-compassion per participant

Figure 5.

Level of Trait Self-Compassion and Mean State Self-Compassion per Participant



Note. The participants (x-axis) were sorted according to their trait self-compassion score, so trait self-compassion scores rise from left to right.