"I will do it later.": The association between momentary procrastination and state personality.

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Abstract

Background. Procrastination is a common phenomenon in students and personality seems to be an associated factor. Previous studies have investigated the association between academic procrastination and personality. So far, most of this research is based on trait measurements, but recent approaches highlight the importance of understanding short-term fluctuations in monetary procrastination and personality. **Objective.** The present study aims to investigate the fluctuation and association between traits and states of academic procrastination behaviour and personality (neuroticism and conscientiousness) in the daily life of university students. **Method.** An online experience sampling method study with 26 university students (*M age* = 20.4) was conducted over two weeks. The NEO-FFI-3 and the API were utilized to measure trait neuroticism, trait conscientiousness and trait academic procrastination. For state measurements, a questionnaire composed of six adapted items of the NEO-FFI-3 and one adapted item of the API was completed three times per day over 14 days by the participants. **Results.** *Trait associations:* A moderate positive (r = .438) association was found between trait procrastination and trait neuroticism and a strong negative (r = -.762) association between trait procrastination and trait conscientiousness. *State associations:* The results of Linear Mixed Model (LMM) analyses revealed a weak positive (β = .26) association between state procrastination and state neuroticism as well as a weak negative (β = -.17) association between state procrastination and state conscientiousness at the between-person level. Further LMM revealed a moderate positive (β = .35) association between state procrastination and state neuroticism as well as a weak negative (β = -.18) association between state procrastination and state conscientiousness at the within-person level. Additional analysis showed high variability in state procrastination, neuroticism and conscientiousness within individuals. **Conclusion.** The present study revealed that in general

participants higher on neuroticism showed higher procrastination behaviour and participants higher on conscientiousness tend to procrastinate less. Similar associations in direction but weaker in magnitude on the state between-person level were found in the study period of 14 days. Further, this study gave insight into how procrastination, neuroticism and conscientiousness fluctuate over two weeks. Revealing that especially procrastination behaviour fluctuated widely within a person. The current study underlines the importance of knowing the differences between trait and state measurements and that variability between and within persons are two independent sources of variability that show different things. Hence, to expand the theoretical knowledge and to gain a holistic understanding of procrastination and personality, it is necessary to consult measurements on all three levels (trait level, between-person state level and within-person state level).

“I will do it later.”: The association between momentary procrastination and state personality.

“I will do it tomorrow”. Who does not know that intention? Sometimes there are tasks that we tend to put off. Maybe because they are uncomfortable, seem too difficult or simply boring. To get around those tasks we tend to do other things which seem to be much more important. For example, it occurs to us that it is time to tidy up the basement which we wanted to do for a while now or that we could of course visit grandma again. This behaviour is called procrastination.

Procrastination appears to be a common phenomenon among students, but research shows that procrastination is more than an inefficient time management problem and therefore should not be underestimated (Closson and Boutilier, 2017; Gort, Marcusson-Clavertz and Kuehner, 2020). For example, research has shown that procrastinatory behaviour in students can have serious consequences such as poor academic performance including lower grades, course withdrawals, delay in completing assignments, and failure (Lee, Kelly and Edwards, 2006; Steel, 2007; Bobo, Whitaker and Strunk, 2013; Ljubin-Golub, Petricevic and Rovan 2019; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). There is also evidence that procrastination increases negative affect and stress levels in students (Pychyl, Lee, Thibodeau and Blunt, 2000; Steel, 2007; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). Based on that, academic procrastination represents a serious threat to subjective well-being and has even been linked to increased health risk due to chronic stress (Steel, 2007; Steel and Klingsieck, 2016).

Various studies have investigated which facets of personality traits might predict or are related to procrastination. Mostly, these studies are based on retrospective assessments of the big-five personality traits. Although this is the most widely used summary of personality facets,

it should be viewed with caution because, in this model, personality has been considered only as something that remains stable over time, which is only one point of view (Debusscher, Hofmans and Fruyt, 2016; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). As many studies as there are about personality, most of them are based on trait measurements and therefore the relationship between personality and procrastination has rarely been examined in daily life. However, recent approaches highlight that it is important to also understand the short-term fluctuations in personality (Hadden, Smith, Osborne and Webster, 2017). This underlines the necessity of assessing personality from moment to moment. The same goes for procrastination. The challenge in that research field is that often a coherent, theoretical explanation of the behaviour is missing, which has made it difficult to fully understand procrastination (Hailikari, Katajavuori and Askainen, 2021).

Procrastination

Procrastination has been defined as the 'voluntary delay of intended actions' (Lee, Kelly and Edwards, 2006; Kim, Fernandez and Terrier, 2017; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). It belongs to the category of self-handicapping behaviour and can be seen as diffusion of self-responsibility to have better excuses for failing (Pychyl, Lee, Thibodeau and Blunt, 2000; Ross, Canada, Rausch, 2002; Lee, Kelly and Edwards, 2006). In an academic context, procrastinatory behaviour involves doing assignments just before the deadline, returning library books late, putting off starting with research and writing papers, or intentionally getting distracted while preparing for exams (Schouwenburg and Lay, 1995).

Although procrastination has many negative consequences, research shows that roughly

between 70% and 95% of the student population regularly procrastinate (Ellis and Knaus 1977; Pychyl, Lee, Thibodeau and Blunt, 2000; Moon and Illingworth, 2005; Gort, Marcusson-Clavertz and Kuehner, 2020). The review by Steel (2007) indicated that around 80%–95% of college students engage in procrastination behaviour, whereby approximately 75% of them consider themselves as procrastinators, and again almost 50% of them do consistently procrastinate and in a problematic manner. All these studies imply that procrastination is a common and endemic phenomenon in the academic context.

As already mentioned, the consequences of procrastinatory behaviour can be quite severe and yet so many students procrastinate during their studies. Research examining the possible causes of procrastination indicates that procrastinatory behaviour is related to various factors from the personality domains neuroticism and conscientiousness. For example, Watson (2001) mentioned that persistent delays in academic assignments are related to feelings of anxiety. Steel and Klingsieck (2016) also found that both anxiety and depression, which are both factors of neuroticism, are associated with procrastination. In addition, studies that investigated the connection between affect and procrastination have shown that negative affects, and especially depression and anxiety, correlate with procrastination (Pychyl, Lee, Thibodeau and Blunt, 2000; Watson, 2001; Canada, Rausch, 2002; Lee, Kelly and Edwards, 2006; Ross, Steel and Klingsieck, 2016). Furthermore, studies mentioning factors of conscientiousness concerning procrastination suggested failures in self-regulation to be the core of academic procrastination (Steel and Klingsieck, 2016; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). Moreover, many studies have linked the consequences of procrastination to lower self-efficacy and poorer self-regulated learning (Ljubin-Golub, Petricevic and Rovan, 2019).

Many empirical studies, such as described above, measured procrastination using

questionnaires relying on retrospective assessments (e.g., in the past week or month). In these questionnaires, procrastination is thus mostly seen as stable over time and in different situations. An alternative research approach is to view procrastination as a behaviour-related, situation-specific, and dynamic phenomenon (Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). Since the existing questionnaires usually do not allow adequate consideration of these aspects, other alternative assessment methods are required.

Personality and the Whole Trait Theory

The Big-Five Model of Personality Traits

Neuroticism and conscientiousness are two of the five personality domains that are included in the big-five model of personality. It is the most well-known and most used summary of personality factors (Chapman and Goldberg, 2017; Lazarus, Sened and Rafaeli, 2020) with strong cross-questionnaire and cross-cultural reliability (Jayawickreme, Zachry and Fleeson, 2019). Personality factors of neuroticism are for example anxiety, anger, hostility, depression, self-consciousness, impulsiveness, and vulnerability (Lee, Kelly and Edwards, 2006; Ross, Canada, Rausch, 2002; Pychyl, Lee, Thibodeau and Blunt, 2000). Individuals high on neuroticism tend to feel negative emotions and psychological distress (Lee, Kelly and Edwards, 2006; Debusscher, Hofmans and Fruyt, 2016; Closson and Boutilier, 2017). Individuals low on neuroticism are rather calm, even-tempered and feeling secure. On the other hand, personality factors of conscientiousness are for instance dutifulness, achievement striving, self-discipline, and deliberation (Lay, Kovacs and Danto, 1998; Watson, 2001; Debusscher, Hofmans and Fruyt, 2016; Ljubin-Golub, Petricevic and Rovan 2019). Individuals high on conscientiousness have the

tendency to be organized, persistent, and goal-directed across various situations (Watson, 2001; Lee, Kelly and Edwards, 2006; Closson and Boutilier, 2017; Ljubin-Golub, Petricevic and Rovan 2019). However, individuals low on conscientiousness tend to be rather impulsive, careless, and disorganized.

Personality Traits and States

Traits are the building blocks of personality. It is a way of behaving that can be used to describe a person as well as to compare them to others. Traditionally, personality traits have been viewed as relatively stable over time and consistent across situations (Debusscher, Hofmans and Fruyt, 2016; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). In contrast, studies on the personality state are still relatively rare. State personalities in contrast are the momentary presentations of personality (Debusscher, Hofmans and Fruyt, 2016; Hadden, Smith, Osborne and Webster, 2017). They have the same affective, behavioural, and cognitive content as their corresponding traits (Schouwenburg and Lay, 1995; Debusscher, Hofmans and Fruyt, 2016; Hadden, Smith, Osborne and Webster, 2017). However, they are viewed as temporally unstable, inconsistent across situations, responsive to changes in the environment and showing fluctuations in personality within-persons (Debusscher, Hofmans and Fruyt, 2016; Hadden, Smith, Osborne and Webster, 2017).

Although classic models of personality have focused on trait-level assessment, recent approaches highlight the importance of understanding short-term fluctuations in state personality (Hadden, Smith, Osborne and Webster, 2017). For example, Porter, Stone and Schwartz (1999), compared trait and state measures of anger expression and asked 100 college students to complete state and trait versions of the anger expression scale by Spielberger. Over seven days, state measures were completed in response to specific anger-provoking situations as they

occurred. Results showed only moderate correlations between trait and state anger expression. Furthermore, significant associations were found between several situational variables and state anger expression scales. This study highlights that trait and state measures of anger expression are not equivalent. Porter, Stone and Schwartz (1999) concluded that situational factors play an important role in anger expression and that the variability of a situation might be an important factor in determining health consequences of anger expression. This study also shows that conclusions on personality should not only be based on trait measurements but also integrate state measurements. By combining both measurements one can gain a holistic understanding of a certain factor of personality and thus, for example, interventions can be better adapted to the individual.

The Whole Trait Theory

A theory that has taken on this approach is the Whole Trait Theory (WTT). The WTT is an integrative model of traits that incorporates the social cognitive approach and the trait approach to personality. Substantiation of the social cognitive approach is that behaviour seems to be inconsistent and therefore is an indicator of individual differences. People differ in how they evaluate a situation according to their expectancies, competencies, and goals which are responsible for behaviour. The trait approach provides evidence for the existence of traits and has a valid research base of identifying their factors, as represented in the big-five personality model (Fleeson, Zachny and Jayawickreme, 2015; McCabe, 2020).

WTT differentiates between descriptive and explanatory aspects of personality traits, which are separate aspects but together create the *whole trait*. Summarized, “The explanatory aspect of a trait involves the cognitive-affective–motivational system that shapes information processing in specific situations and, subsequently, causes the patterns of emotion and behaviour

captured by the descriptive aspect of the trait. The descriptive aspect of traits is defined here as momentary enactments of a specific personality trait density distribution of those personality states over time." (Fleeson, Zachny and Jayawickreme, 2015, p.1).

Procrastination and Personality

Several studies on the big five personality traits and procrastination show in fact that personality aspects are associated with an individual's procrastination behaviour. More specifically, neuroticism and conscientiousness seem to be the two personality domains that are most strongly related to procrastination (Debusscher, Hofmans and Fruyt, 2016). For example, a study with undergraduate students who completed a questionnaire on personality and academic procrastination showed that conscientiousness accounted for a significant amount of the variance in procrastination scores. Furthermore, these scores were negatively related to conscientiousness and positively correlated with neuroticism. Factors of extraversion, openness to experience, and agreeableness were not significantly correlated with procrastination scores (Johnson and Bloom, 1995).

In a meta-analysis by van Eerde (2004), she stated that in various studies notable associations were found on factors of neuroticism with procrastination and that the relationship between procrastinatory behaviour and conscientiousness seemed to be the most prominent one. However, for extraversion, agreeableness, and openness only weak to no relationships were noted with procrastination. In another study, students of an undergraduate introductory psychology course filled out a Big Five Inventory and wrote a short essay including the reason they thought was causing them to procrastinate, and what activities they pursued while

procrastinating. The results of this study revealed that procrastination was strongest correlated with facets of Conscientiousness. Also, regression analyses showed that the other personality traits did not incrementally predict procrastination (Steel and Klingsieck, 2016).

Procrastination and Neuroticism

Various studies have found significant associations between different underlying aspects of neuroticism (including a low level of self-esteem, and feelings of depression, and anxiety) and procrastination (Pychyl, Lee, Thibodeau and Blunt, 2000; Lee, Kelly and Edwards, 2006). For example, Closson and Boutilier, (2017) mentioned in their article that people who are emotionally unstable and prone to depressed moods tend to be less likely to initiate or perform daily tasks and therefore are more prone to procrastination behaviour. It is also said that people with high levels of neuroticism tend to be more prone to stress. Stress, in turn, makes a person more prone to procrastinatory behaviour (Ross, Canada, Rausch, 2002; Steel, 2007; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). Additionally, it was found that very anxious people tend to postpone unpleasant tasks as a sort of avoidant behaviour. Besides, the threat to one's self-esteem can also lead to the use of self-limiting behaviour like procrastination (Ross, Canada, Rausch, 2002; Lee, Kelly and Edwards, 2006; Bobo, Whitaker and Strunk, 2013). People who suffer from negative affect are less likely to initiate or to complete daily tasks, making procrastination a common problem.

More studies on procrastination behaviour and personality traits that have focused on specific aspects of neuroticism (e.g., self-esteem, depression, and anxiety) support the hypothesis that people with higher procrastination levels attain lower levels of academic achievement and tend to rely on avoidant coping strategies of withdrawal and negative focus (Pychyl, Lee, Thibodeau and Blunt, 2000; Ross, Canada, Rausch, 2002; Lee, Kelly and Edwards, 2006). When

under stress, they tend to focus on the most negative aspects of the stress-provoking situation and withdraw from the challenge it represents. When their self-esteem seems to be threatened, they are often triggered to step back. Based on that, researchers hypothesized that instability in self-esteem may be related to greater use in people with a higher procrastination level, indicating that higher feelings of neuroticism predict a higher level of procrastination (Pychyl, Lee, Thibodeau and Blunt, 2000; Ross, Canada, Rausch, 2002; Bobo, Whitaker and Strunk, 2013).

Procrastination and Conscientiousness

Several studies have found a significant relationship between procrastination and conscientiousness (Schouwenburg and Lay, 1995; Watson, 2001; Lay, Kovacs and Danto, 1998). For example, in the study by Kim, Fernandez and Terrier (2017) they asked 178 students at a hospitality management school to complete a personality questionnaire as part of an assignment in an Organizational Behavior course and to fill out the procrastination surveys. The results of their study showed that conscientiousness is negatively associated with procrastination. Furthermore, they assume that students who scored high on conscientiousness seem to be rather dependable and goal-oriented individuals and therefore might not procrastinate. Additionally, they found that conscientiousness correlates strongly with the sub-dimension ‘ability to meet deadlines’, which means that voluntary procrastination occurs when conscientious students expect to achieve their goals.

Further research that has focused on specific aspects of conscientiousness shows that many factors of conscientiousness were inversely related to trait procrastination (Lay, Kovacs and Danto, 1998; Ljubin-Golub, Petricevic and Rovan 2019; Pychyl, Lee, Thibodeau and Blunt, 2000; Watson, 2001; Steel, 2007). In the study by Schouwenburg and Lay (1995) with university students of various departments, the results showed that all six factors of conscientiousness were

negatively related to trait procrastination, implying that people who procrastinate might lack qualities like self-discipline, dutifulness, and commitment to their goals.

Experience sampling Method

Most of this previously mentioned research is based on cross-sectional, trait assessments of both personality and procrastination. In this kind of research, (trait) measurements are collected from multiple individuals at a single time point. The resulting data then only provides information about the between-person association. In other study approaches, a set of (state) measurements are collected at multiple time points from several individuals. The resulting data then provides not only information about between-person but also within-person differences (Curran and Bauer, 2011). Both types of associations can have an important impact on the theory. However, it seems to be routinely and systematically overlooked by researchers that variability between and within persons are two independent sources of variability. This is problematic since associations on the between-person level are not easily transferable to the within-person level.

An example by Curran and Bauer (2011) shows how important the disaggregation of those levels can be. For instance, while it is more likely for a person to experience a heart attack while exercising (within-person effect), simultaneously, individuals who exercise more than others seem to have a lower risk of a heart attack (between-person effect). Both findings are valid and relevant for public health. However, it would be incorrect to transfer the between-person effect to the individual (the more a person exercises the higher is the risk of a heart attack). Since both findings, within- and between-persons provide relevant information, it would limit the development of the holistic understanding of these associations if only assessing one effect level

(Curran and Bauer, 2011).

Similarly, the association between state neuroticism, state conscientiousness and momentary procrastination cannot be inferred based on studies that only examined their trait counterparts (Debusscher, Hofmans and Fruyt, 2016). A study by Beckmann, Wood and Minbashian (2010) illustrates the controversy of results on the between-person level and within-person level of conscientiousness and neuroticism. With the experience sampling method, they assessed the relationship between neuroticism and conscientiousness in managers from large companies. Their findings indicate that information gathered through personality analyses on a within-person level are not captured well by the trait approach. In line with their expectation, the results showed on the within-person level that neuroticism positively predicted conscientiousness while on the between-person level neuroticism negatively predicted conscientiousness (Beckmann, Wood and Minbashian, 2010). Indicating that on average people who are higher on neuroticism tend to be lower on conscientiousness (between-person effect). However, when a person is higher on neuroticism than usual at one moment (s)he also tends to be higher on conscientiousness at the same time (within-person effect). One method that follows this relatively new approach to gathering information not only on the between-person level but also on the within-person level is the Experience Sampling Method (ESM). ESM is a longitudinal intensive research method that examines people's feelings, thoughts, and behaviour in their daily life and context. Thereby, participants are asked to fill in self-reports multiple times throughout the day over an extended period (Larson and Csikszentmihalyi, 2014).

The Present Study

The present study aims to investigate the variability and association of procrastination behaviour and personality in a daily context. For the current study, only two of the big-five personality domains are explored, neuroticism and conscientiousness, which seem to be most related to procrastination as shown in previous studies. As mentioned before, research has shown that trait conscientiousness is negatively associated with trait procrastination and trait neuroticism is positively associated with trait procrastination. Therefore, first of all, it will be investigated whether this also applies to the sample of the present study to have a basis for comparison with other research. Furthermore, it will be examined how momentary procrastination, state neuroticism and state conscientiousness fluctuate over two weeks. Lastly, it will be examined how levels of momentary procrastination and state neuroticism, as well as momentary procrastination and state conscientiousness, are associated over time.

Research Questions

1.1 Is there a positive association between trait procrastination and trait neuroticism?

1.2 Is there a negative association between trait procrastination and trait conscientiousness?

2. To what extent do momentary procrastination, state neuroticism and state conscientiousness fluctuate over two weeks?

3.1 How are levels of momentary procrastination and state neuroticism associated over time?

3.2 How are levels of momentary procrastination and state conscientiousness associated over time?

Method

Participant Characteristics and Inclusion Criteria

All participants in the current study were bachelor students of Psychology, registered at the University of Twente. Their age range was between 18 and 23 (*M age*=20.4; *SD age*=1.63). 88% of the participants identified as female, 12% as male and 4% identified as other. The participants were of different nationalities including 76% German, 20% Dutch and 4% other. Inclusion criteria for the participants were that they had to be a registered student, at least 18 years old and owner of a smartphone.

Sampling Procedure

Participants entered the study via a survey-subscription link which was provided on the website of the psychology test subject pool BMS. First, the participants downloaded the Ethica Data App on their smartphones. Then, they completed two trait questionnaires. One was about their general procrastination behaviour (API) and the other one referred to their personality traits (NEO-FFI-3). Thereafter, three times a day for 14 ongoing days they filled in a short questionnaire with seven state questions. For these state measurements, signal-contingent and fixed-time sampling were used - in that way participants received notifications for new assessments at set points in time each day (Myin-Germeys et al., 2018). The notification triggers were randomly chosen in the time slots between 09:00-10:30 pm, 14:00-15:30, and 19:00-20:30. They also received a reminder after 30 minutes and after one hour in case they missed a notification. After two hours the state questionnaire expired, and that time slot was labelled as a missing value. In total 40 participants registered for the study and 95% of them participated in

the study. With the participation, participants gained 0.75 credit points by the test subject pool BMS. The study was ethically approved by the Behavioral, Management and Social Sciences Ethics Committee of the University of Twente on January 18th, 2021 (Request-Nr: 201516).

Data Collection

To measure the daily real-life experience of procrastination, neuroticism, and conscientiousness the experience sampling method (ESM) was used. The ESM measures feelings, thoughts, and behaviour on a subjective level (within-person variability), in context and the moment. It, therefore, has high ecological validity and minimizes biases and inaccuracy of retrospective reports (Ellison, Trahan, Prinzon, Gillespie, Simmons and King, 2020; Horstmann and Ziegler, 2020; Csikszentmihalyi and Larson, 2014).

Instrumentation and Psychometrics

This online study was created with the Ethica Data App. It consisted of two trait questionnaires and seven daily state questions. Trait questionnaires that have been used were the NEO Five-Factor Inventory-3, S-Adult in short form (NEO-FFI-3) for trait neuroticism and conscientiousness and the Aitken Procrastination Inventory (API) for trait procrastination. For the daily questions to measure state procrastination a single item was used derived from the API. To measure state conscientiousness and state neuroticism six items were derived from the Big Five Inventory (BFI) (John, Donahue, and Kentle, 1991), three items per trait. Items were selected and adapted by using the criteria of ease and appropriateness for daily administration.

Ethica Data

For the present study, the survey was created via the Ethica website whilst participants used the Ethical Data App with their smartphones to take part in the survey. In this study, version 460 of the Ethica Data App was used. Ethica is an end-to-end research platform where researchers can quantitatively measure human behaviour (web address https://ethicadata.com). It can be used via the website or App with any iOS and Android device. Researchers can define various parameters such as participant period and consent form materials and create various questionnaires within Ethica. While using the App on their smartphones the participants were guided through the study steps, from eligibility screening and informed consent to data collection and other activities (Appendix A and B). The researcher can adjust and modify any part of the study as needed. Participant's devices will be updated automatically. Push notifications can be set for the participants as a reminder to fill in the next questionnaire as well as expiration times to ensure that measurements take place in the intended timeframe (Ethica Data, 2020).

Trait Questionnaire

The NEO Five-Factor Inventory-3, S-Adult in short form (NEO-FFI-3). The NEO-FFI-3 assesses the five basic personality domains (Costa and McCrae, 1989, 1992). It is the short form of the original NEO-PI inventory and contains 60 items. For this study only items for the personality domains, neuroticism and conscientiousness were used. For each domain, there were 12 items, of which eight were reverse-scored (Appendix C). An example of neuroticism is 'I often get angry at the way people treat me.' and for conscientiousness, an example is "I work hard to accomplish my goals.". The 24 items were used with a 5-point-Likert-scale (ranging from strongly disagree [0], disagree [1], neutral [2], agree [3] to strongly agree [4]). The total scoring

range for neuroticism and conscientiousness is from 0-60 (very low to very high). The NEO-FFI-3 shows good reliability with a Cronbach's Alpha of .78 to .86. (Reyes et.al., 2018). For the current sample, the NEO-FFI-3 showed good reliability for both neuroticism (α=.89) and conscientiousness (α=.89).

The Aitken Procrastination Inventory (API). The API is used to measure procrastination behaviour in an academic setting among students (Aitken, 1982). It contains 19 items (of which eight were reverse-scored) such as 'I delay starting things until the last minute.' (Appendix D). The answer possibilities were given on a 5-point-Likert-scale (ranging from false [1] mostly false [2], sometimes false/sometimes true [3], mostly true [4] to true [5]). The total score range goes from 19-95 whereby high scores were associated with high procrastination behaviour. The API shows good internal consistency with a coefficient alpha of .82 (Aitken, 1982; Pychyl, Lee, Thibodeau and Blunt, 2000; Harrison, 2014). For the current sample, the API showed good reliability with Cronbach's Alpha .86.

Daily Questionnaire

All items started with the sentence 'To what degree do the following statements apply to you at this point in time?'. The answer possibilities were given on a 7-point Likert scale (ranging from strongly agree [1], agree [2], somewhat agree [3], neutral [4], somewhat disagree [5], disagree [6] to strongly disagree [7]). In total there were seven items, one for state procrastination 'Right now, I am putting off doing something study related that needs to get done.' and three for state conscientiousness: ' Right now, I am feeling organized.', 'Right now, I am feeling self-disciplined.' and 'Right now, I am feeling goal-oriented.' as well as for state neuroticism 'Right now, I am feeling tense.', 'Right now, I am feeling upset.' and 'Right now, I

am feeling self-conscious.'. The total score ranged from 1-7 for state procrastination and 3-21 for state neuroticism and conscientiousness whereby a high score suggests being high on state procrastination, neuroticism, and conscientiousness.

Data Diagnostics

The analysis of the data was conducted with the program IBM SPSS (version 26). Only participants with a 50% response rate or higher were included in the data analysis (van Berkel, et.al., 2019). Descriptive statistics were calculated for the participant's gender, age, nationality, study program and university also for a minimum score, maximum score, mean scores and standard deviation for trait questionnaires. Person means (PM) were computed for state procrastination, state neuroticism and state conscientiousness which shows the average level of procrastination, neuroticism and conscientiousness over two weeks per participant and to run a between-person analysis. Additionally, for each participant, the person-mean-centred scores (PM-centred) for all measurement points of procrastination, conscientiousness and neuroticism was calculated. These scores show at each measurement point how much a person differs from their person mean and to run within-person analysis. To compare participants with a low, average and high-level trait procrastination score the sample was divided by ~25, ~50 and ~75 percentiles. Furthermore, to assess the reliability of the API and NEO-FFI-3 within the present sample Cronbach's alpha was calculated.

Analytical Strategy

To explore the association between trait procrastination and trait neuroticism as between trait procrastination and trait conscientiousness, Pearson correlation analysis was conducted. Furthermore, several Linear Mixed Model (LMM) analyses were performed. LMM are an extension of simple linear models and is particularly used for analyzing data that are non-independent, multilevel and longitudinal or correlated. When there are multiple levels, the variability of the result can either be assigned to be within-person or between-person (Bruin, 2006). First-order autoregressive (AR1) covariance matrix with homogeneous variances was incorporated to account for the dependency of the longitudinal data and missing measurement points (Curran & Bauer, 2011). For these analyses the variables were standardized and therefore Z-scores were computed for state procrastination, state conscientiousness and state neuroticism to get standardized coefficients. To test the association between state procrastination and state neuroticism on the between- and within-person level, an LMM analysis was conducted with state procrastination as the dependent variable and both PM neuroticism (between-person) and PM-centered neuroticism (within-person) as the fixed independent variables (Curran & Bauer, 2011). Similarly, to test the association between state procrastination and state conscientiousness on the between- and within-person level, an LMM was conducted with state procrastination as the dependent variable and both PM conscientiousness (between-person) and PM-centered conscientiousness (within-person) as the fixed independent variables. Finally, to obtain more precise insight into the fluctuation and association pattern of state procrastination, state neuroticism and state conscientiousness on a within-person level, individual case analyses were conducted. To support the findings of the study, figures and tables have been created with IBM SPSS (version 26) and Microsoft Excel 2020.

Results

Participants Flow

Participants could register for the study from 14.01.2021 to 14.02.2021. In total, 40 participants registered for the study, of which two did not take part in the study and 12 did not reach the required response rate of 50% and therefore have not been included in the data analysis.

Descriptive Statistics

Table 1 provides an overview of the mean scores of trait procrastination, trait neuroticism and trait conscientiousness as well as the associated minimum and maximum scores and standard deviation of all participants. All three trait variables were normally distributed, ranging from low to high. In total, 60.4% of the sample scored high in trait neuroticism, 49.6% low in trait conscientiousness and 47.1% average in trait procrastination (Costa and McCrae, 2013). Simple correlation analysis showed a moderate association between state procrastination (person mean) and API (trait procrastination) ($r=.336$, $p<.01$). There is also a weak-to-moderate association between state neuroticism (person mean) and NEO-FFI-3 (trait neuroticism) ($r=.280$, $p<.01$) and a weak-to-moderate association between state conscientiousness (person mean) and NEO-FFI-3 (trait conscientiousness) ($r=.667$, $p<.01$).

Table 1

Minimum and Maximum Scores, Means (M) and Standard Deviations (SD) of Trait Procrastination, Trait Conscientiousness and Trait Neuroticism

Variables	Minimum (scale minimum)	Maximum (scale maximum)	M	SD

Academic Procrastination Inventory (API)	31 (19)	72 (95)	52.58	11.14
NEO-FFI-3 Neuroticism	8 (0)	41 (60)	25.92	9.00
NEO-FFI-3 Conscientiousness	13 (0)	45 (60)	28.62	7.80

N=26

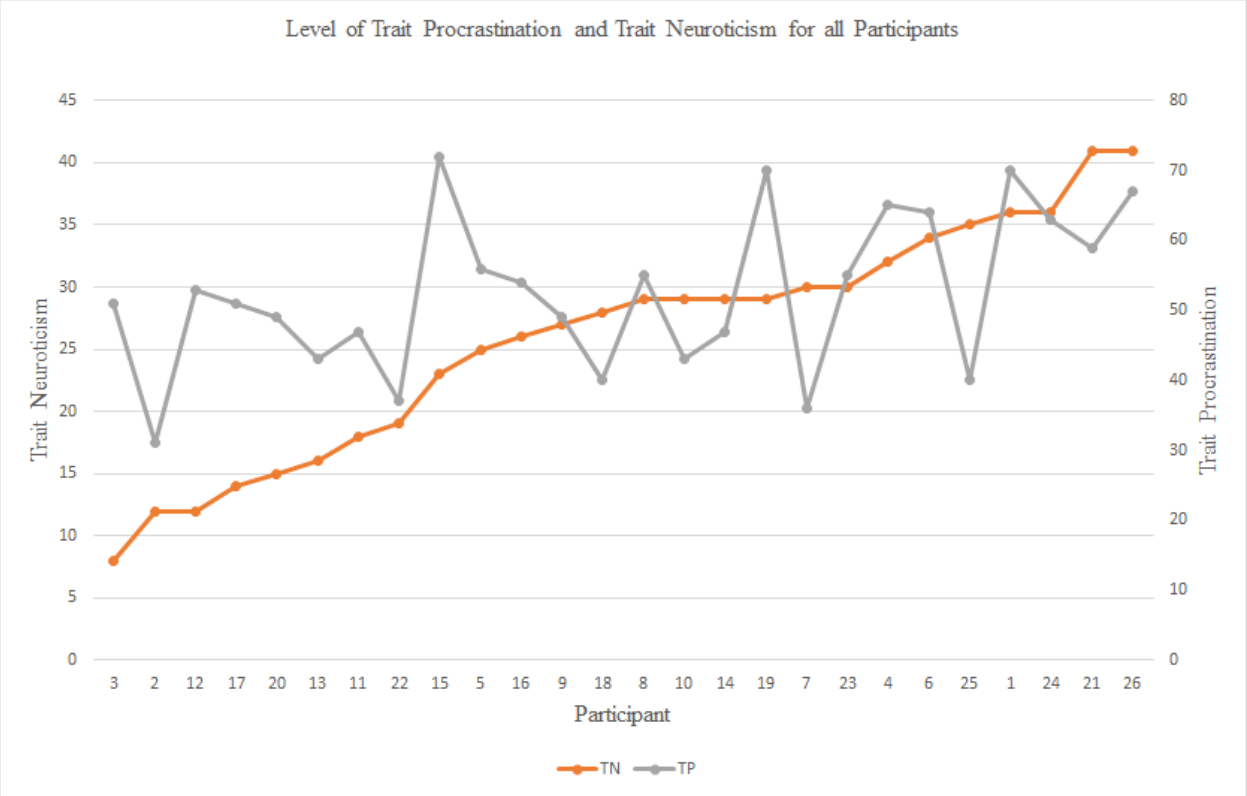
Statistics and Data Analysis

Trait Procrastination and Trait Neuroticism

To test whether the current sample is comparable to other samples from other studies and confirm the positive association between trait procrastination and trait neuroticism other studies have found, a Bivariate Pearson Analysis was made. As expected, a significant moderate positive correlation was found between trait procrastination and trait neuroticism ($r = .438$, $n = 26$, $p < .05$). In this context, it means that participants with higher scores on trait neuroticism tend to have higher scores on trait procrastination as well. This can be seen in Figure 1.

Figure 1

Level of Trait Procrastination and Trait Neuroticism of all Participants



Note: The score range for trait procrastination goes from 19 to 95 and for trait neuroticism from 0 to 60. The participants were sorted according to their trait neuroticism score, these scores rise from left to right.

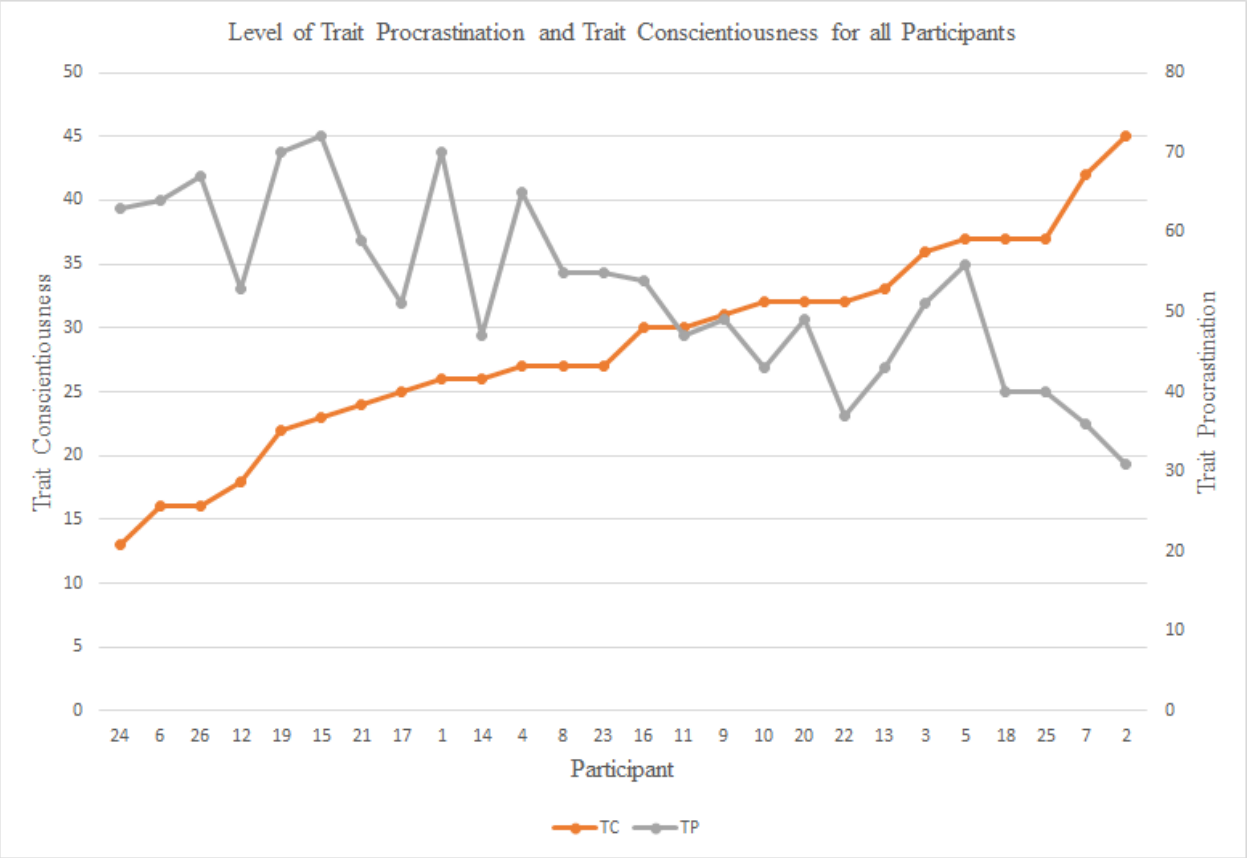
Trait Procrastination and Trait Conscientiousness

To test whether the current sample is comparable to other samples from other studies and to confirm the negative association between trait procrastination and trait conscientiousness other studies have found, a bivariate Pearson analysis was made. As expected, a significant strong negative correlation was found between trait procrastination and trait conscientiousness (r =

-.762, $n = 26$, $p < .01$). Meaning as the scores of trait conscientiousness increases the scores of trait procrastination decreases as shown in Figure 2.

Figure 2

Level of Trait Procrastination and Trait Conscientiousness of all Participants



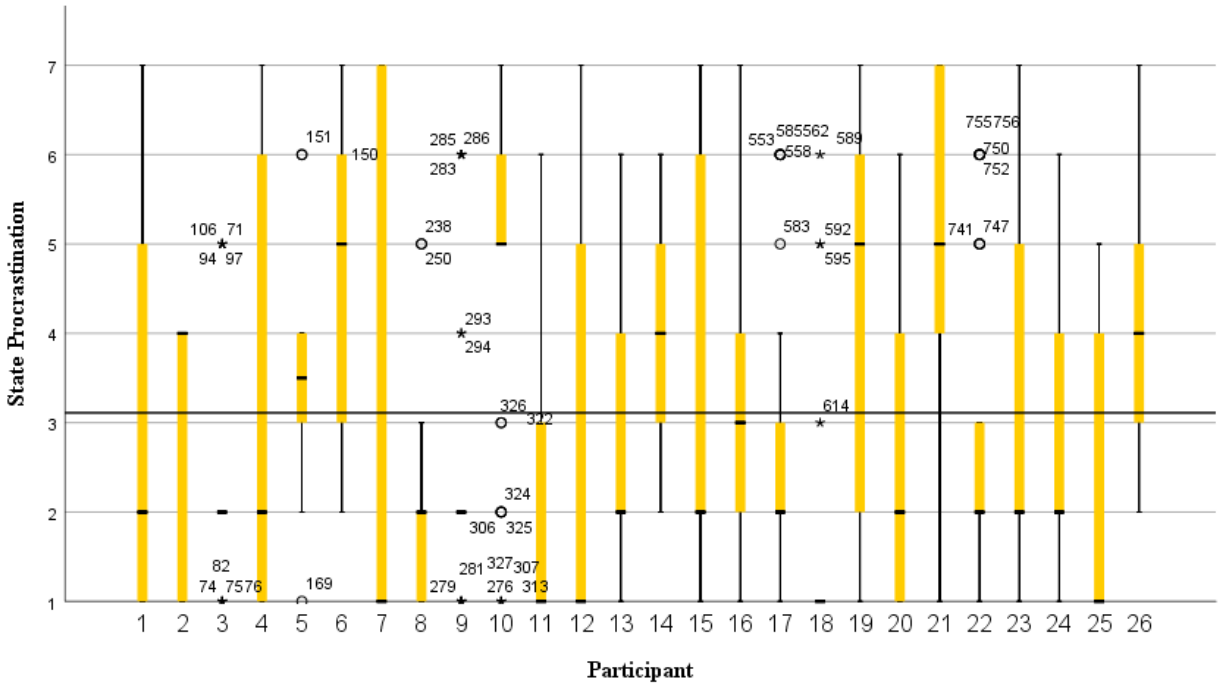
Note: The score range for trait procrastination goes from 19 to 95 and for trait conscientiousness from 0 to 60. The participants were sorted according to their trait conscientiousness score, these scores rise from left to right.

State Procrastination, State Neuroticism and State Conscientiousness

During the period of this study, the participants encountered considerable variability in their levels of state procrastination, state neuroticism and state conscientiousness, which can be seen in Figures 3, 4 and 5. As shown in these figures, there was substantial fluctuation both within-persons and between-persons in state procrastination, state neuroticism and state conscientiousness. Especially with state procrastination, the participants indicated a wide within-person variability over the two weeks (Figure 3).

Figure 3

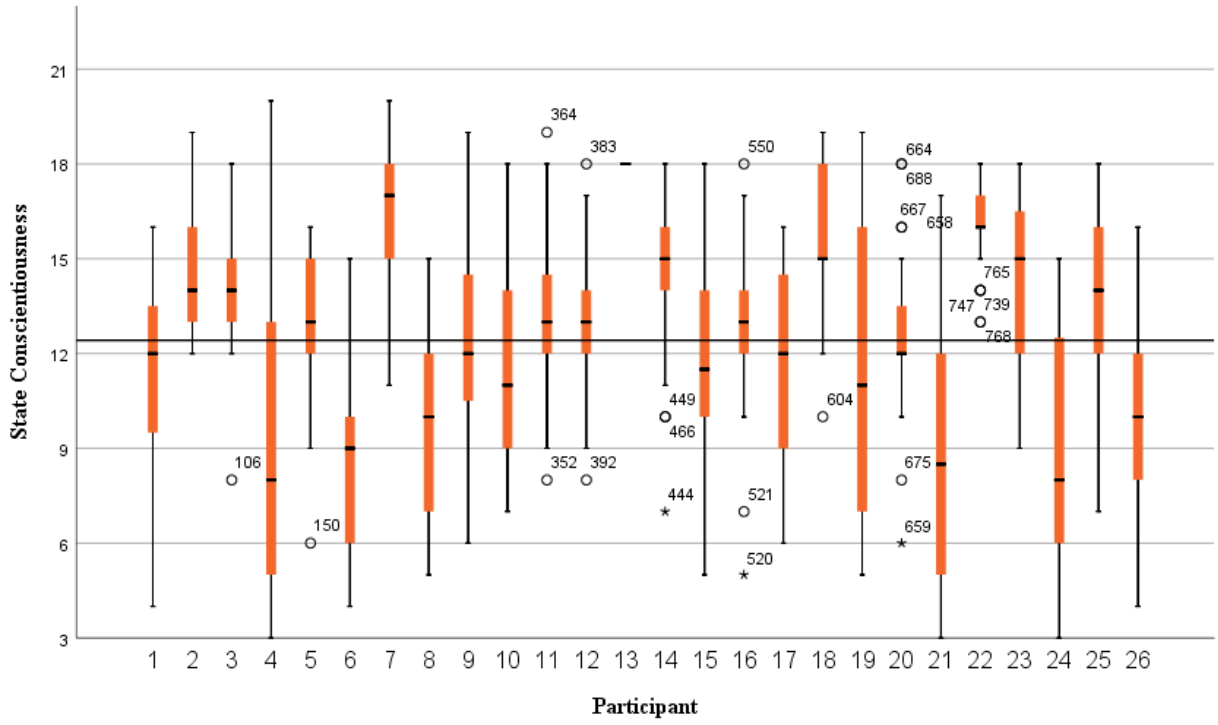
Variations of State Procrastination for each Participant with a Reference Line of the Mean of all Participants



Note: The score range for state procrastination goes from 1 to 7.

Figure 4

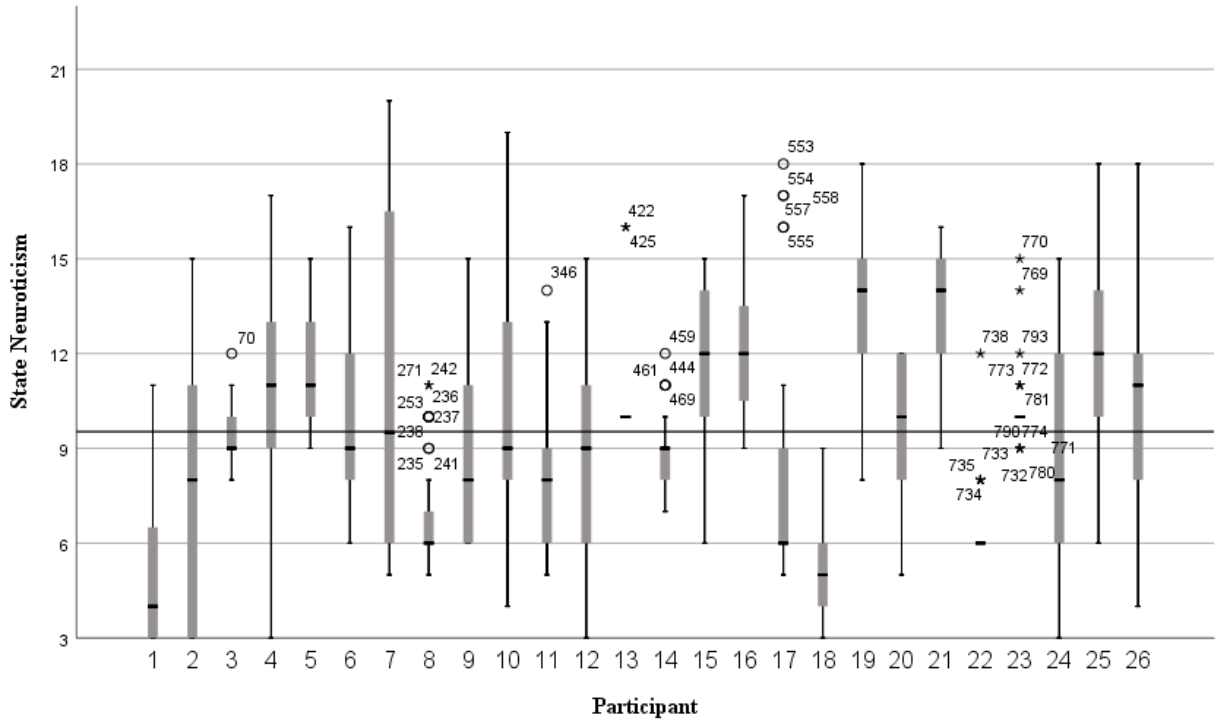
Variations of State Conscientiousness for each Participant with a Reference Line of the Mean of all Participants



Note: The score range for state conscientiousness goes from 3 to 21.

Figure 5

Variations of State Neuroticism for each Participant with a Reference Line of the Mean of all Participants



Note: The score range for state neuroticism goes from 3 to 21.

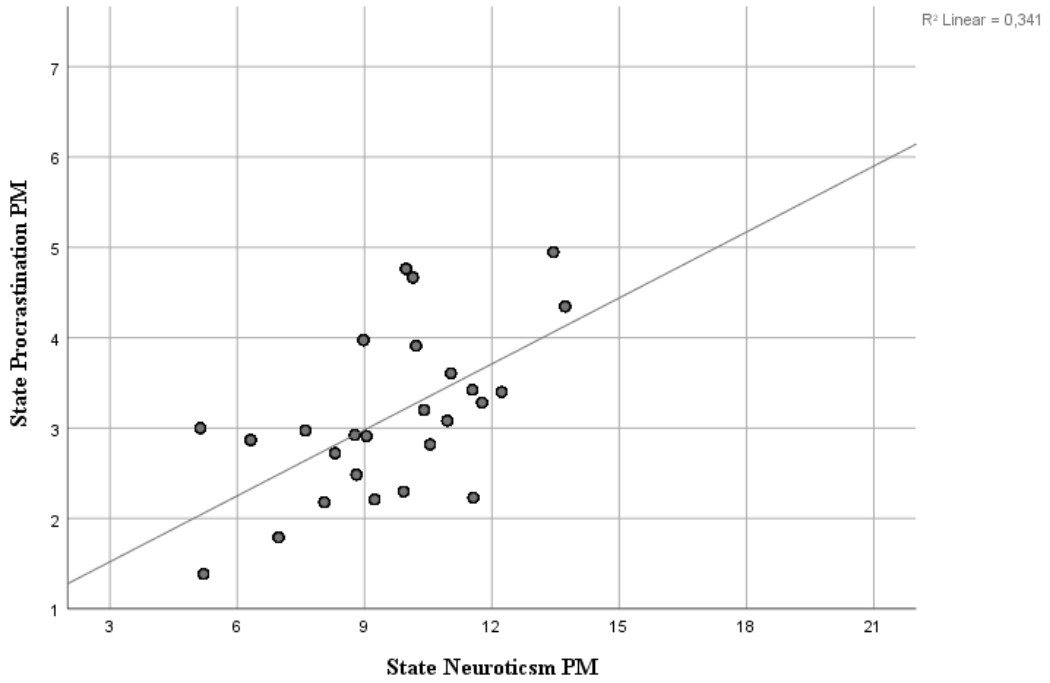
State Procrastination and State Neuroticism

To see how levels of state procrastination and state neuroticism are associated, LMM analysis was used with state procrastination as the dependent variable and both PM neuroticism (between-person) and PM-centered neuroticism (within-person) as the fixed independent variables. The between-person association between state procrastination (PM) and state neuroticism (PM) is significantly weak positive ($\beta = .26$, $SE = .04$, $p < .000$) (Figure 6) with a 95% confidence interval of .18 and .34. The he within-person association between state

procrastination (PMC) and state neuroticism (PMC) is also significantly positive, but stronger (β = .35, SE = .02, p < .000) with a 95% confidence interval of .29 and .41.

Figure 6

Between-Person Association of State Procrastination and State Neuroticism of all Participants



Note: The score range for state procrastination goes from 1 to 7 and for state neuroticism from 3 to 21.

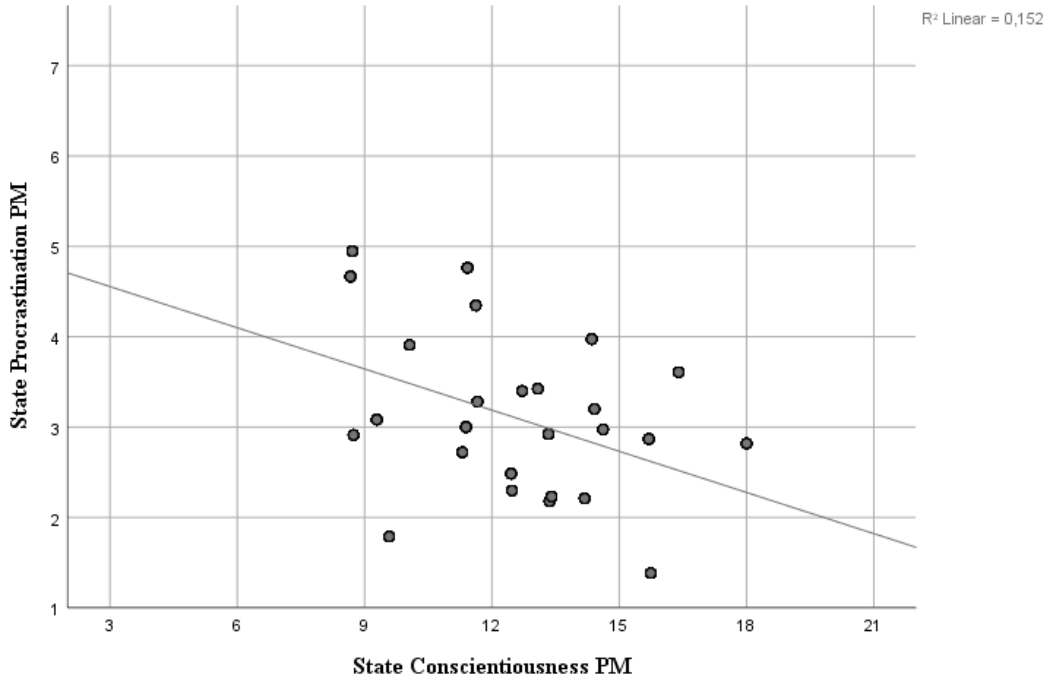
State Procrastination and State Conscientiousness

To see how levels of state procrastination and state conscientiousness are associated, LMM analysis was used with state procrastination as the dependent variable and both PM conscientiousness (between-person) and PM-centered conscientiousness (within-person) as the fixed independent variables There is a significantly weak negative association between state

procrastination (PM) and state conscientiousness (PM) (β = -.17, *SE* = .04, $p < .000$) (Figure 7) with a 95% confidence interval of -.26 and -.08. Results on the within-person level showed a significant, and similarly weak, negative association (β = -.18, *SE* = .02, $p < .000$) between state procrastination (PMC) and state conscientiousness (PMC) with a 95% confidence interval of -.24 and -.12.

Figure 7

Between-Person Association of State Procrastination and State Conscientiousness of all Participants



Note: The score range for state procrastination goes from 1 to 7 and for state conscientiousness from 3 to 21.

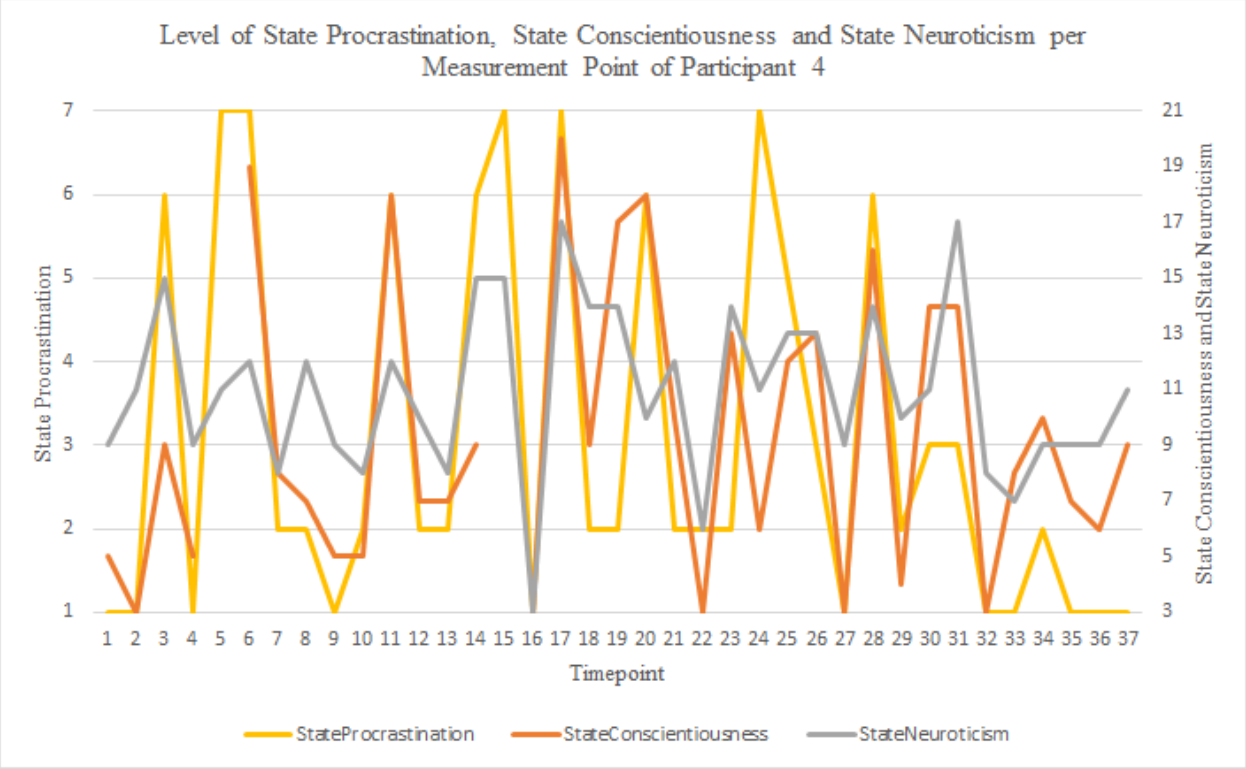
Visual Analysis of Individual Cases. The data of two participants have been illustrated in

individual figures to get a more precise picture of differences within individuals.

Participant 4. Participant 4 is an example of a person who experienced exceptionally large fluctuations in state procrastination, state neuroticism and state consciousness throughout this study (Figure 8). For participant 4 the person-mean (PM) for state procrastination is *PM* = 3, for state neuroticism *PM* = 11 and for conscientiousness *PM* = 9. Against expectations, at most measurement points, state procrastination and state conscientiousness go up and down together.

Figure 8

Level of State Procrastination, State Conscientiousness and State Neuroticism per Measurement Point of Participant 4

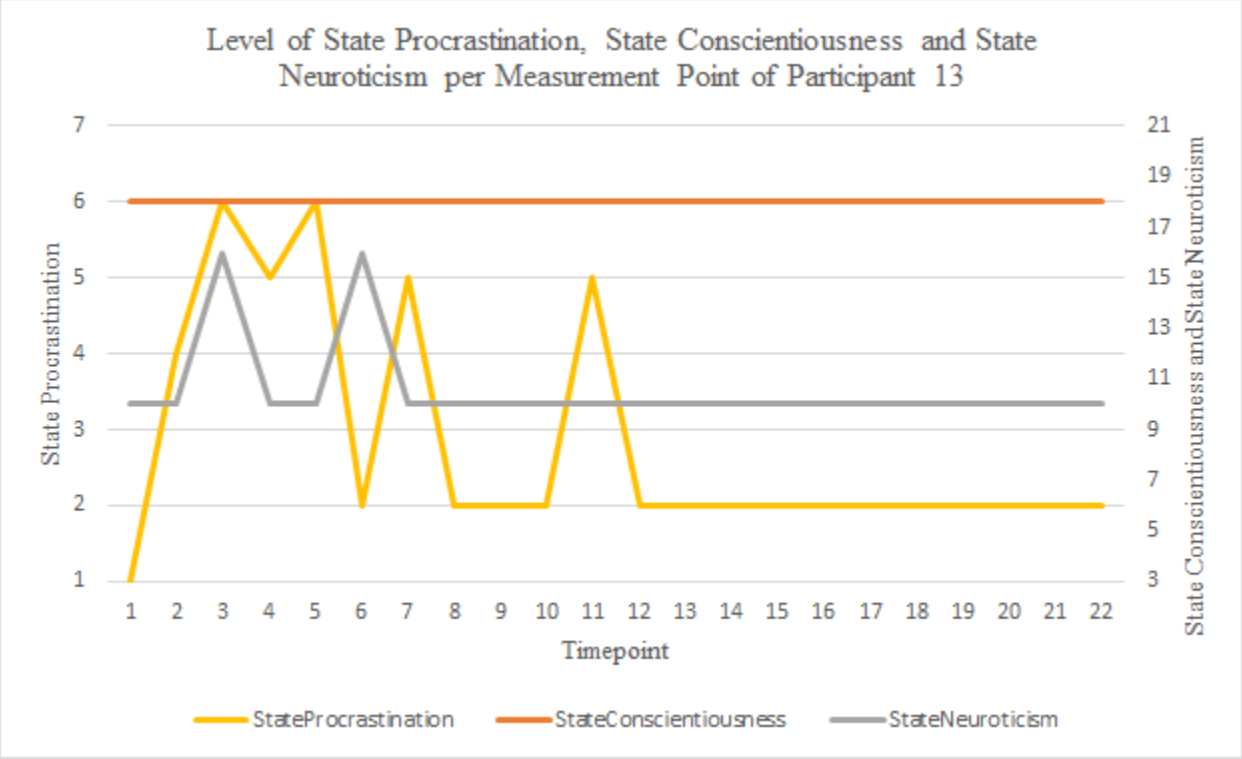


Note: The score range for state procrastination goes from 1 to 7 and for state conscientiousness and state neuroticism from 3 to 21.

Participant 13. In contrast to participant 4, participant 13 is an example of someone who experienced exceptionally small fluctuations in state procrastination, state neuroticism and state consciousness throughout the present study (Figure 9). Participant 13 has a person-mean (PM) of *PM* = 3 for state procrastination, *PM* = 11 for state neuroticism and *PM* = 18 for state conscientiousness. The person-mean-centred of state procrastination is at most measurement points *PMC* = -.48573, for state conscientiousness, it is *PMC* = -.20540 with an exception at two measurement points and for state neuroticism, there is no deviation from the person mean *PMC* = .0000. These PMC show that there is very low to no variation throughout this study.

Figure 9

Level of State Procrastination, State Conscientiousness and State Neuroticism per Measurement Point of Participant 13



Note: The score range for state procrastination goes from 1 to 7 and for state conscientiousness and state neuroticism from 3 to 21.

Discussion

The purpose of the present study was to determine whether there is a positive association between general feelings of procrastination and neuroticism as well as a negative association between trait procrastination and trait conscientiousness. Furthermore, it was investigated how daily feelings of procrastination, neuroticism and conscientiousness fluctuate over two weeks. Finally, the association between state levels of procrastination and neuroticism as well as between state levels of procrastination and conscientiousness over time was examined.

As expected, and in line with previous research the present study shows that there is a positive association between trait procrastination and trait neuroticism and a negative association between procrastination and conscientiousness. Furthermore, it is confirmed that procrastination, conscientiousness, and neuroticism highly fluctuate from moment to moment in daily life. The most noticeable fluctuation was found in daily procrastination behaviour within individuals. Moreover, momentary associations between state procrastination and state neuroticism on the between-person level were positive while the association between state procrastination and state conscientiousness was a negative one. Overall, on a trait-like level, it appears that when participants had higher feelings of state neuroticism, they also tended to report a higher level of state procrastination. On the other hand, when they were on a higher level of state conscientiousness, they appeared to be on a lower level of state procrastination.

The Similarity of Results and Interpretation

Trait Procrastination

The present study confirms that procrastination is a common phenomenon among students (Ellis and Knaus, 1977; Pychyl, Lee, Thibodeau and Blunt, 2000; Moon and Illingworth, 2005; Closson and Boutilier, 2017; Gort, Marcusson-Clavertz and Kuehner, 2020). Without exception, all participants showed at least to some degree procrastination behaviour over the past two weeks. Based on the trait assessment, almost half of the participants (46%) are on an average procrastination level. This is similar to what was found in the paper by Kim, Fernandez and Terrier (2016), that academic procrastination seems to affect over 50% of the students.

Trait Procrastination and Trait Neuroticism

The present study provides further evidence that trait procrastination and trait neuroticism are positively associated. In line with this, Zhou (2019) and other researchers have reported that increased trait procrastination is also associated with increased trait neuroticism (Lee, Kelly and Edwards, 2006). These results propose that people who tend to have more negative emotions also tend to procrastinate more often. Or the other way around, when people tend to procrastinate a lot, they also have stronger negative emotions. As explained by several researchers, due to the constant delay in academic tasks, academic procrastination involves experiencing feelings of stress and anxiety (Watson, 2001, Ross, Canada, Rausch, 2002; Steel, 2007).

Trait Procrastination and Trait Conscientiousness

The current study provides further evidence that trait procrastination and trait conscientiousness are negatively associated. According to Watson (2001), conscientiousness is composed of different facets such as goal-orientation, organization, self-discipline, and many studies have established that all facets of trait conscientiousness are strongly related to trait

procrastination (Schouwenburg and Lay, 1995; Johnson and Bloom, 1995; Lee, Kelly and Edwards, 2006). In the present study, also a strong negative association was found between trait procrastination and trait conscientiousness. Based on these results, it can be concluded that people who feel well organized and disciplined tend to procrastinate less. Or the other way around, people who show less procrastination behaviour tend to feel more organized and goal-oriented.

State Procrastination, State Neuroticism and State Conscientiousness

On the between-person level. Over the study period of 14 days, the sample tended to be on an average level of procrastination which is similar to the trait scores but on a higher level of conscientiousness and on a lower level of neuroticism which is in contrast to the trait scores (Costa and McCrae, 1989, 1992). Furthermore, in this study, similar associations in direction on the trait level and state between-person level was found. More specifically, the results on the state level between the participants showed that state procrastination and state neuroticism are positively associated. That means, individuals with higher state neuroticism scores on average than others also show more state procrastination behaviour over the two weeks. On the other hand, state procrastination and state conscientiousness between persons were negatively associated. Hence, over the study period participants with a higher conscientious state level on average to other participants, tended to be on a lower state procrastination level.

This is similar to the results by Beckmann, Wood and Minbashian (2010). They have investigated the relationship between conscientiousness and neuroticism. On the trait level, they have found a negative relationship between neuroticism and conscientiousness. When they analysed the between-person level using average state neuroticism and average state

conscientiousness, they found a similar association in direction and strength as for their trait measurements.

On the within-person level. On the within-person level, a negative association was found between state procrastination and state conscientiousness and a positive association between state procrastination and state neuroticism. Indicating for example, that at a certain time point where a person shows a higher neuroticism score than their average, they tend to show more procrastination behaviour at this time point as well, or lower neuroticism and less procrastination behaviour. Furthermore, it can be seen that state procrastination, state neuroticism and state conscientiousness highly fluctuate from moment to moment. This is especially noticeable for state procrastination. Most participants have a broad range in their level of state procrastination in the two weeks of the study.

A traditional assumption of personality is that it is seen as traits that are relatively stable over time and consistent across situations (Debusscher, Hofmans and Fruyt, 2016; Loeffler, Stumpp, Grund, Limberger and Ebner-Priemer, 2019). However, in this study, when measured daily and in context, it shows that state procrastination, state neuroticism and state conscientiousness highly fluctuate across the study period. This indicates that the participants' feelings of procrastination, conscientiousness and neuroticism vary greatly from moment to moment. If, for example, an individual felt very tense or upset in the morning, it was possible that this feeling had decreased significantly in the evening or the next day. This shows that procrastination, conscientiousness and neuroticism are not stable and not unchangeable over a certain period, but rather flexible and context-dependent (Psychyl, Lee, Thibodeau, and Blunt, 2000; Debusscher, Hofmans, and Fruyt, 2016; Hadden, Smith, Osborne, and Webster, 2017). This is also according to Fleeson, Zachny and Jayawickreme (2015), who stated in their paper

that personality traits are also flexible in that kind, that there is substantial within-person variability in an individual's behaviour depending on the context of a situation.

Between- and within-person comparison. In the present study, a set of measurements were collected three times a day over two weeks from several individuals. The resulting data thus provided information about both the between-person and within-person differences. Both types of associations are relevant to the theory. It is important to understand that the variability between and within the person are two independent sources of variability hence, assumptions on associations on the between-person level are not simply transferable to the within-person level (Curran and Bauer, 2011).

In the present study, as mentioned earlier, the sample shows the tendency that if they are feeling well organized and self-disciplined in general, they tend to procrastinate less (trait effect). On average, this tendency can also be seen in the two weeks of the study between the participants (state between-person effect). In comparison, however, on the within-person level results show that within an individual the association between procrastination and conscientiousness does not show the same pattern in every moment throughout the day (within-person effect). This is also reflected in the strength of the standardized estimates. For example, state procrastination and state conscientiousness are showing a weak negative association, which means that a person is not always low on a procrastination level while high on a conscientious level. Although, there is a tendency in the sample that when their level of conscientiousness increases, their level of procrastination decreases. However, zooming in, as seen for some participants, they do not show this pattern in every moment. For example, there are in fact moments, where participants are high in conscientiousness while also high in procrastination. This might be a buffering effect. According to Kuhn and Brule (2019), a

buffering effect is a process and, in this process, the impact of stress on psychological well-being will be reduced by a psychosocial resource. For example, a person may procrastinate, and this behaviour is triggering for this person to change their behaviour and to be more diligent. Accordingly, the level of conscientiousness increases. Simultaneously, however, the person is still high on procrastination because their procrastination level might only drop later in the next measurement point. This underlines that conclusions about how conscientious a person is in a specific moment and how this level of conscientiousness is associated with the person's procrastination behaviour at every moment in daily life, cannot be drawn from their trait scores nor the state scores between the individuals.

The Whole Trait Theory

According to the Whole Trait Theory (Fleeson, Zachny and Jayawickreme, 2015; McCabe, 2020), a student goes through many different situations related to his learning behaviour in his everyday study. Such a situation can be an upcoming exam. The student then takes in all the information (s)he receives in that situation to process. This information process then causes different (states) emotions and behaviours (explanatory part). The information of an upcoming exam can cause negative emotions and procrastination behaviour in one moment, however, in another moment it causes high levels of conscientiousness but also high levels of procrastination behaviour. Certain patterns of emotions and behaviours can emerge. Such as, if an exam is imminent, in most moments throughout the day, that student is on a higher level of conscientiousness and tends to procrastinate less. Over a longer period and with occurring frequency, these states are the momentary enactment of a specific trait (descriptive part). For example, in general, when this student is on a higher level of conscientiousness (s)he tends to be on a lower level of procrastination.

Generalizability, Strengths and Limitations

A major strength of this study is its high ecological validity by using the method of experience sampling (ESM), which enables the measurement of the participant's levels of procrastination, neuroticism and conscientiousness in everyday life (Csikszentmihalyi and Larson, 2014). A potential limitation of the current study is that causality of the procrastination-neuroticism and procrastination-conscientiousness relationship can still not be established. However, the focus of this study was to gain insight into how procrastination, neuroticism and conscientiousness fluctuate over time and how these variables are associated. This study therefore initially is a kind of basis on which future studies can build.

Another limitation of the present study is that for state measurements, a questionnaire was composed of adapted items of the traits questionnaires to keep the uniformity of analysis, as the aim of this study was to examine the trait association as well as the state association (between- and within-persons) between procrastination and personality. However, as already discussed in the literature, within-person effects might be different in content from the between-person effect (Cervone, 2005). As stated in the example by Beckmann, Wood, and Minbashian (2010) based on the construct of intelligence, it is suspected that there is no state concept like ‘general intelligence’ that explains differences in trait intelligence. Rather concepts like perception, working memory, and long-term memory, have been established to explain intellectual behaviour on the individual level. This could also apply to personality domains in that there might be no state concept like e.g., ‘general conscientiousness’. Instead, the different factors such as goal orientation, self-discipline, organization etc. might explain conscientiousness on the individual level.

Conclusion, Implications and Future Research

The present study revealed that in general participants higher on neuroticism showed higher procrastination behaviour and participants higher on conscientiousness tend to procrastinate less. Similar associations in direction on the state between-person level were found in the study period of 14 days. Further, this study gave insight into how procrastination, neuroticism and conscientiousness fluctuate over two weeks. Revealing that especially procrastination behaviour fluctuated widely within persons. The current study underlines the importance of knowing the differences between trait and state measurements and that variability between and within persons are two independent sources of variability. Hence, to gain a holistic understanding of procrastination and personality, it is necessary to consult measurements on all three levels (trait level, between-person state level and within-person state level).

The experience sampling method gives a better understanding of how constructs fluctuate and inter-relate over time, which is important information for the theory. Taking on a within-person perspective to the study of personality gives more insight into the structure and processes that operate at the individual level instead of only describing differences between people. Information about this will be useful for theory development since many psychological theories are based on trait level information. Additionally, it may have practical implications, such as for developing an intervention e.g., motivation and behaviour change in students to reduce procrastination. Moreover, studying personality in daily contexts might present some new and different insights. For example, instead of only looking at particular levels of conscientiousness people display concerning others, additional analyses can be established on the behaviours people display when experiencing high levels of conscientiousness, and whether these are adaptive for a specific situation or particular environment.

Furthermore, it is recommended to add another item that assesses whether the participant has to do an academic task during the study period or not. For example, before starting with the daily questions an item like ‘In the next 14 days, is there an exam coming up, a submission or another study related deadline that has to be adhered to?’ could be inserted. Based on that, more specific assumptions can be tested on the associations between procrastination and personality. For example, if a person does not show procrastination behaviour but is still higher on neuroticism, then it could also be because the (s)he had no task to do.

Finally, as mentioned above, this study did not establish causality between the variables. Therefore, an option for future studies is a further exploration of the temporal nature of associations, by doing (cross-lagged) analyses. The cross-lagged panel design can give some insight into the relationship between the variables to better understand the causal relationships by measuring two different variables at two points in time (Kearney, 2017). For example, following the present study, measuring the level of procrastination and the level of conscientiousness during two different points in time could give more insight into the causality of those variables.

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Appendices

Appendix A: Informed Consent

Participation in this study is completely voluntary and all responses are treated anonymously. Nothing will be connected to identifying information or shared with a third party. The data collected will only be used for statistical analyses. You can withdraw from this study at any time by simply stopping answering the daily questionnaires. No reason needs to be given for that.

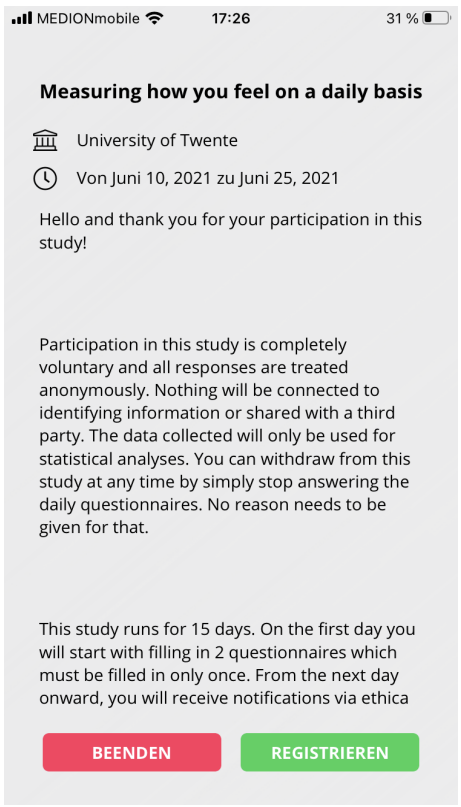
If any questions are arising or further information is needed about the research, please do not hesitate to contact me, Laura Arndt at l.arndt@student.utwente.nl

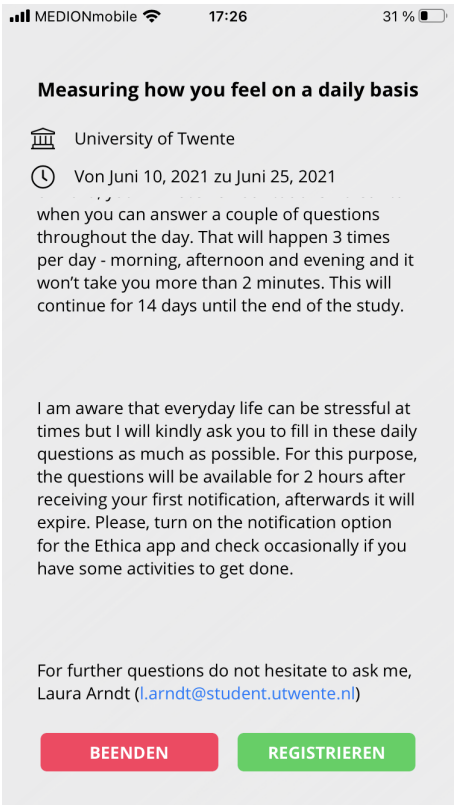
If there are any complaints about this research, please direct them to the secretary of the Ethics Committee of the Faculty of Behavioral Science at the University of Twente via telephone: +31 (0)53 489 3399 or email: l.j.m.blikman@utwente.nl

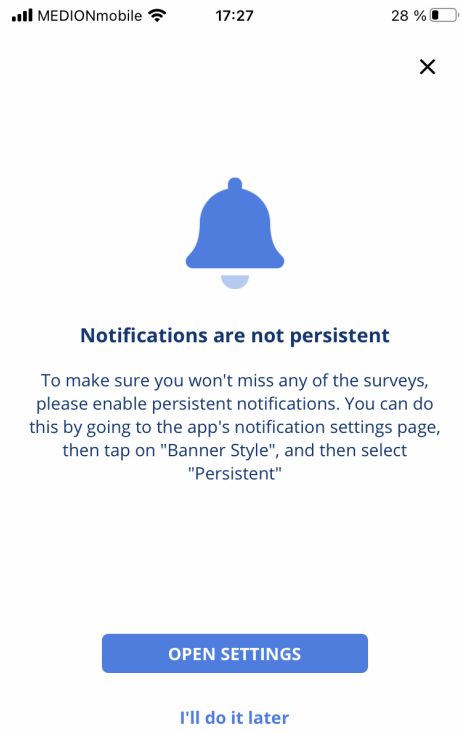
A ID: 1

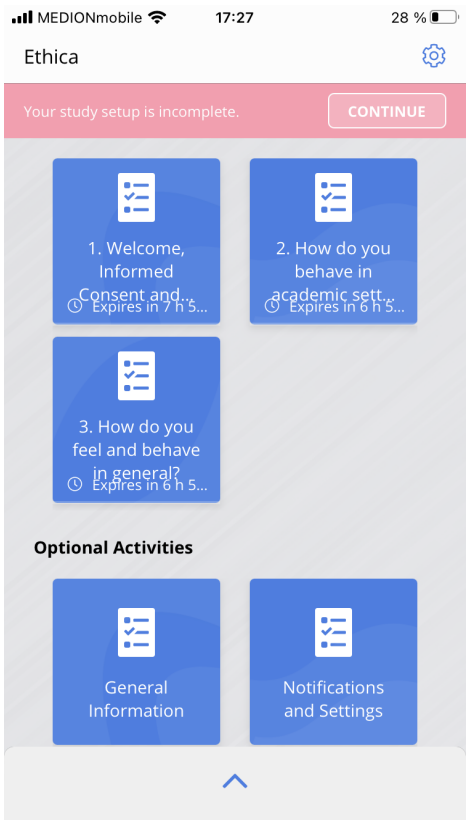
I understand the statement above and agree to participate in this study.

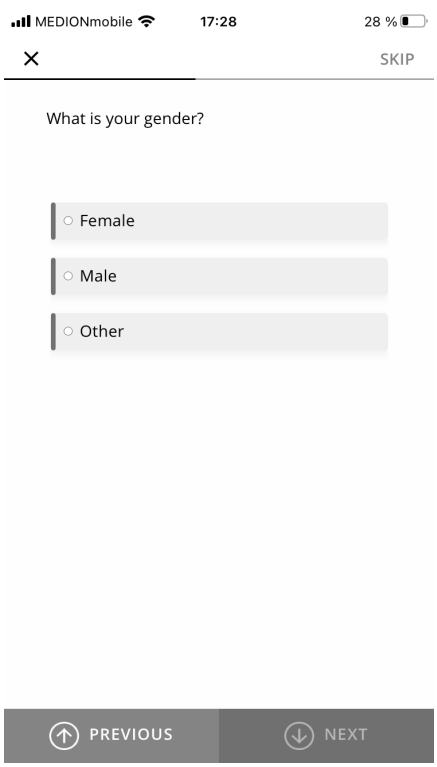
Appendix B: Ethica Data App

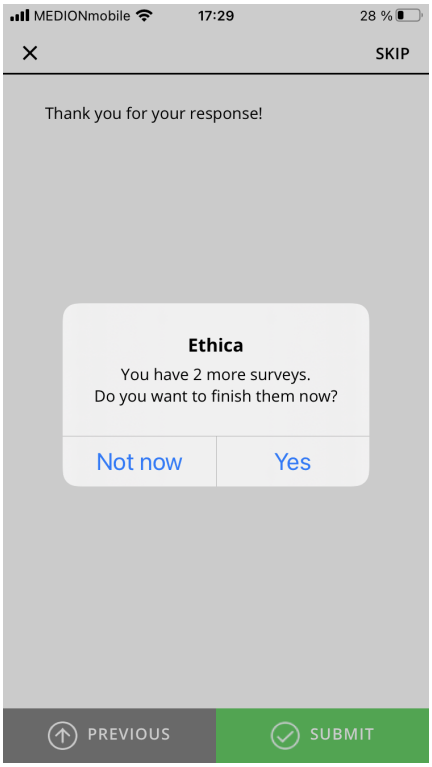




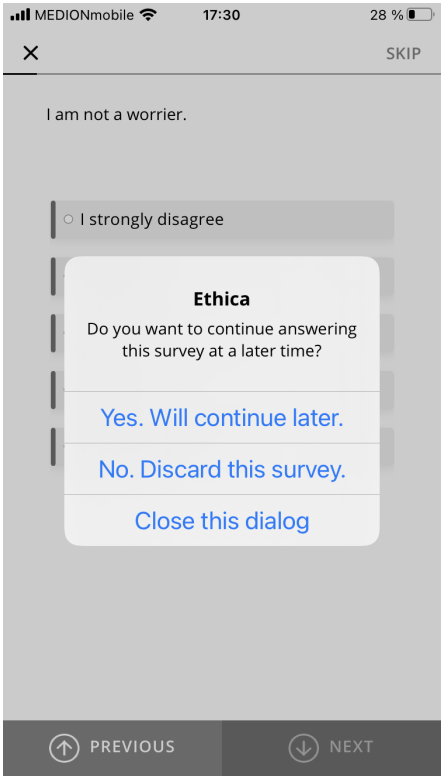





MEDIONmobile
17:28
28 %
SKIP
What is your gender?
Female
Male
Other
PREVIOUS
NEXT


MEDIONmobile
17:29
28 %
SKIP
Thank you for your response!
Ethica
You have 2 more surveys.
Do you want to finish them now?
Not now
Yes
PREVIOUS
SUBMIT


MEDIONmobile
17:29
28 %
SKIP
I delay starting things until the last minute.
False
Mostly false
Sometimes false/ sometimes true
Mostly true
True
PREVIOUS
NEXT


MEDIONmobile
17:30
28 %
SKIP
I am not a worrier.
I strongly disagree
Ethica
Do you want to continue answering this survey at a later time?
Yes. Will continue later.
No. Discard this survey.
Close this dialog
PREVIOUS
NEXT

Appendix C: The NEO Five-Factor Inventory-3, S-Adult (NEO-FFI-3)

** Items with reversed scoring*

Items that measure Neuroticism

1. (1) I am not a worrier. *
2. (6) At times I have felt bitter and resentful.
3. (11) When I am under a great deal of stress, sometimes I feel like I'm going to pieces.
4. (16) I rarely feel lonely or blue. *
5. (21) I often feel tense and jittery.
6. (26) Sometimes I feel completely worthless.
7. (31) I rarely feel fearful or anxious. *
8. (36) I often get angry at the way people treat me.
9. (41) Too often, when things go wrong, I get discouraged and feel like giving up.
10. (46) I am seldom sad or depressed. *
11. (51) I often feel helpless and want someone else to solve my problems.
12. (56) At times I have been so ashamed I just wanted to hide.

Items that measure Conscientiousness

1. (5) I keep my belonging neat and clean
2. (10) I am pretty good about pacing myself so as to get things done on time.
3. (15) I often come into situations without being fully prepared. *
4. (20) I try to perform all the tasks assigned to me conscientiously.
5. (25) I have a clear set of goals and work towards them in an orderly fashion.
6. (30) I waste a lot of time before settling down to work. *
7. (35) I work hard to accomplish my goals.
8. (40) When I make a commitment, I can always be counted on to follow through.
9. (45) Sometimes I am not as dependable or reliable as I should be. *
10. (50) I am a productive person who always gets the job done.
11. (55) I never seem to be able to get organized. *
12. (60) I strive for excellence in everything I do.

Appendix D: The Academic Procrastination Inventory

1. I delay starting things until the last minute.
2. I am careful to return library books on time.
3. Even when I know a job needs to be done, I never want to start it straight away.
4. I keep my assignments up to date by doing my work regularly from day today.
5. If there were a workshop offered that would help me learn not to put off starting my work, I would go.
6. I am often late for my appointments and meetings.
7. I use the vacant hours between classes to get started on my evening's work.
8. I delay starting things so long I do not get them done by the deadline.
9. I am often frantically rushing to meet deadlines.
10. It often takes me a long time to get started on something.
11. I do not delay when I know I really need to get the job done.
12. If I had an important project to do, I would get started on it as quickly as possible.
13. When I have a test scheduled soon, I often find myself working on other jobs when a deadline is near.
14. I often finish my work before it is due.
15. I get the right to work at jobs that need to be done.
16. If I have an important appointment, I make sure the clothes I want to wear are ready the day before.
17. I arrive at college appointments with plenty of time to spare.
18. I generally arrive on time to class.
19. I overestimate the amount of work I can do in a given amount of time.

Appendix E: State Questions

Please indicate to what extent the following statements apply to you at this point in time.

1. Right now, I am putting off doing something study related that needs to get done.
2. Right now, I am feeling goal oriented.
3. Right now, I am feeling tense.
4. Right now, I am feeling self-disciplined.
5. Right now, I am feeling upset.
6. Right now, I am feeling organized.
7. Right now, I am feeling self-conscious.