Master's Thesis

Video game playtime and distress- and wellbeing-related associations over time: an experience sampling method study

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July 2021

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Abstract

Background. Playing video games is an increasingly popular phenomenon especially among children and young adults. Past cross-sectional research has mainly examined the negative mental effects of gaming, whereas recent research also suggests potential positive wellbeing-related outcomes gained through gaming. Also, less emphasis has been put on exploring longitudinal within-person associations between video game playtime and distress- and wellbeing-related constructs over time. **Objective.** The study examined the relationship between video game playtime and distress- as well as wellbeing-related variables, such as depression, (social) anxiety, loneliness, drug use, self-efficacy, and mastery, over time. Furthermore, the potential moderating role of the idiosyncratic psycho-structural features of specific gaming contexts (type of game played, and online-/offline-play) was explored. **Method.** The experience sampling method was used to collect momentary self-reports for 14 consecutive days. Twenty-seven German gamers (M_{age} = 22.8, SD_{age} = 6.3) were recruited through social media and asked to respond to three daily questionnaires on each of the 14 consecutive days. Using a smartphone app, participants were prompted to indicate their current state levels of distress- and wellbeing-related variables. Furthermore, questions on drug use and gaming behaviour on the preceding day were asked. Before and after the 2-week period, participants were asked to fill out a pre- and post-test consisting of trait measurements of the constructs of interest. **Results.** Linear mixed model (LMM) analysis revealed a weak within-person main effect of higher video game playtime on more depression on the same day and a weak within-person main effect of gameplay (played/not played) on lower feelings of mastery on the same day over time. A within-person interaction effect of offline play was found for depression, anxiety, and loneliness. When playing offline, playing more than usual was significantly associated with higher depression, anxiety, and loneliness on the same day over time. Within-person interaction effects were also found for massively multiplayer online role-playing games (MMORPG) and first-person shooters (FPS). When an MMORPG was played, playing more than usual tended to be associated with lower depression, anxiety, and general efficacy and higher social phobia. When an FPS was played, playing more than usual tended to be associated with lower depression and loneliness, and higher feelings of mastery. **Conclusion.** Results of the present study highlight the relevance of distinguishing between between-person and within-person effects and the importance of examining time-varying contextual factors of gaming. Specific types of games or gaming populations might benefit or suffer from different kinds of distress- or wellbeing-related outcomes of gaming.

Introduction

Playing games is an activity that has always been part of human history. Since the technological advances of better computers, consoles, and smartphones that offer easy access to the internet, playing video games has become increasingly popular especially among children and young adults. Of German individuals aged between 16 to 29 years, 75% indicate to play video games at least occasionally in their free time in 2020 (Statista, 2020). 7.8% of the video gamers indicated that they spent more than 20 hours a week on playing video games (Statista, 2020).

Whether the effects of video games are harmful or beneficial to the player is still discussed by researchers (Kuss & Griffiths, 2012; Sublette & Mullan, 2012). One of the commonly reported harmful outcomes that are associated with gaming are higher levels of distress-related variables such as depression, anxiety, social phobia, loneliness, and substance use (Caplan, 2002; Lemola et al., 2011; Van Rooij et al., 2014). Among the reported beneficial outcomes of gaming are higher levels of wellbeing-related variables such as self-efficacy and feelings of mastery (Klimmt & Hartmann, 2006; Chen, 2007). Recent studies found that lower video game playtime is associated with more positive health-related outcomes whereas more excessive video game playtime is associated with more negative health-related outcomes (Przybylski, 2014; Turel & Bechara, 2019).

Past research on the effects of gaming has mainly focused on distress-related outcomes (Caplan, 2002; Lemola et al., 2011; Van Rooij et al., 2014). These studies were generally cross-sectional in their design and were thus limited in their ability to examine the temporal nature of the associations between these variables and gaming intensity. Hence, researchers called for more longitudinal studies on the effects of gaming (Turel & Bechara, 2019; Van Rooij et al., 2014). Additionally, there is a potential limitation concerning the accuracy of retrospective recall in cross-sectional measurements of feelings and behaviour because it seems to be influenced by biased thinking and random recall errors (Myin-Germeys et al., 2018). Also, although cross-sectional designs may give an accurate description of between-person associations, they are limited in their capacity to examine within-person effects (McDonald, Vieira, & Johnston, 2020), which refers to how a deviation in one's feelings or behaviour from the own average is associated with another variable. Finally, they are restricted in their capability to consider contextual factors of gaming, which themselves may fluctuate over time, thus limiting their ecological validity and generalizability to the natural environment (Araujo,

Davids, & Passos, 2007). Intensive longitudinal methods, such as the experience sampling method (ESM), can potentially overcome these limitations. No study to date has examined video game playtime in relation to distress- and wellbeing-related variables in an ESM study. The present study utilises this longitudinal approach of the ESM that enables to measure temporal associations between gaming intensity and distress-related variables such as depression, loneliness, (social) anxiety, and substance use, and wellbeing-related variables such as self-efficacy and mastery as they occur in a natural context.

Distress-related constructs associated with video game playtime

The *cognitive-behavioural model* of Davis (2001) implies that psychological problems (e.g., depression, loneliness, anxiety, and substance use) represent antecedents of excessive use of video games (Kuss & Griffiths, 2012; Milani et. al, 2018) and that this in turn exacerbates these psychological problems (Davis, 2001; Gentile et al., 2011). Supporting the cognitive-behavioural model, cross-sectional studies have indeed associated the amount of time spent on video games with higher levels of depression, (social) anxiety, and loneliness (Caplan, 2002; Lemola et al., 2011; Van Rooij et al., 2014). The *displacement hypothesis* explains this phenomenon by highlighting that time spent on recreational video game play displaces the time spent on activities and socialization in the real world (Weis & Cerankosky, 2010). Thus, less time is spent for experiencing life outside of the gaming context which results in reduced performance and perceived efficacy in the everyday life (Chappell, Eatough, Davies, & Griffiths, 2006; Kim et al, 2008; Weis & Cerankosky, 2010; Williams, 2006; Hussain & Griffiths, 2008). Accordingly, that leads to a vicious cycle in which the individual's perceived self-efficacy deteriorates and a need for efficacious belonging to a community is compensated in the online world at the expense of neglecting everyday life (Jeong & Kim, 2011). This can result in reduced mastery experiences in the real world (Bandura, 1997) which can cause higher levels of depression and anxiety (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999).

Cross-sectional studies show that, as the amount of time spent on video games increases, the severity of social anxiety also heightens (Lo, Wang, & Fang, 2005; Van Rooij et al., 2014). The perceived self-efficacy in interacting in 'real' offline interpersonal relationships reduces (Jeong & Kim, 2011) and is then, at least partially, responsible for the maintenance of the social anxiety arousal (Bandura, 1988). Despite a heightened sense of belonging and connectedness to online peers, increased feelings of social isolation, loneliness and (social) anxiety persist,

suggesting that online relationships cannot replace face-to-face contacts for reducing those feelings (Stockdale & Coyne, 2018).

Temporary and context-dependent distress-related states, such as feelings of depression, (social) anxiety, and loneliness, may be pursued by gamers to be decreased by making use of excessive gaming as a coping strategy (Griffiths, 2005; Mehroof & Griffiths, 2010). Excessive gaming behaviour is reported to function as a maladaptive emotional regulation strategy (Burleigh Stavropoulos, Liew, Adams, & Griffiths, 2018; Yen et al., 2018) utilized for experiencing self-gratifying positive feelings resulting from the gaming experience that enables gamers to recuperate or escape from depression, (social) anxiety, and loneliness, and satisfy competence needs (Kazakova, Cauberghe, Pandelaere, & De Pelsmacker, 2014; Reinecke, 2009; Marino et al., 2020).

Another maladaptive emotional regulation strategy of coping with these emotions besides excessive video gaming is the use of drugs (Griffiths, 2005; Smith & Book, 2008). Research implies that addictive behaviours often co-exist (Barnes, Welte, Tidwell, & Hoffman, 2015; Griffiths, Parke, & Wood, 2002; Petry, 2007), suggesting a general vulnerability of the individual to diverse addictive behaviours (Ko et al., 2009). Concurrent with this assumption, previous cross-sectional studies associated problematic video gaming with higher substance use (Van Rooij et al., 2014) and identified excessive video gaming as a risk factor for substance use, whereas little video gaming was a protective factor (Turel & Bechara, 2019).

Wellbeing-related constructs associated with video game playtime

Despite the predominant focus on negative outcomes of gaming in past research, studies also suggested potential positive outcomes (Turel & Bechara, 2019; Przybylski, 2014). Among the other positive outcomes of gaming could be self-efficacy or feelings of mastery. Perceived self-efficacy was defined by Bandura (1997) as “the beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p.3). Although one’s perceived self-efficacy is seen as a situation-specific construct, factor analysis yielded two different components, namely general self-efficacy, and social self-efficacy (Sherer et al., 1982). Cross-sectional research suggests that problematic video gaming is associated with both low real-life social self-efficacy and low general self-efficacy (Chappell et al., 2006; Jeong & Kim, 2011; Kim et al., 2008). The low self-efficacy levels in real life of problematic gamers might then be compensated through playing video games which are specifically designed to

facilitate and reward the gamer after succeeding at challenges in the video game (King, Delfabbro, & Griffiths, 2010). This offers them an encouraging terrain that enables them to foster needs of competence that, in turn, boost their self-efficacy levels, at least in the virtual world.

Wellbeing-related associations with gaming intensity support to examine positive constructs (Turel & Bechara, 2019; Przybylski, 2014), like psychological well-being which is found to have a buffering effect for developing mental illness (Keyes, Dhingra, & Simoes, 2010). Psychometric work on the assessment of wellbeing such as the Mental Health Continuum Scale (Keyes, 2002) follows the notion that there are six distinct dimensions of psychological wellbeing, one of them being Environmental Mastery (Ryff & Keyes, 1995). Environmental mastery has been defined as the capacity to manage one's life and surrounding world effectively (Ryff & Keyes, 1995). Most popular video games are specifically designed so that accomplishments are neither too easy nor too difficult to attain, hence, providing an appropriate balance of the gamer's skills and challenges taken in a user-oriented way (Chen, 2007; King, Delfabbro, & Griffiths, 2010). Thus, the gaming context might serve as a convenient tool to inflate feelings of mastery when there is a compensatory need to feel empowered (King & Delfabbro, 2009).

Moderating role of contextual factors of gaming

Besides the effects of gaming in general, there might also be so-called psycho-structural features of the game itself that make it more likely to be played (for high amounts of time) (Wood, Griffiths, Chappell, & Davies, 2004). A conceptualization of Gentile (2011) mentions that the content and context of play might moderate the psychological effects of gaming. For instance, whereas in online games there is a highly social context involved, in offline games there is less emphasis on socializing. Online video games (and specific types of games) were also found to be more addictive than offline video games (Thomas & Martin, 2010; Na et al., 2017; Van Rooij et al., 2014). Furthermore, there is a difference in the setting and content of the world that the game plays in (Gentile, 2011). To date however no studies have examined the role of contextual factors of video game playtime in a longitudinal experience sampling method design.

Present study

The aim of the current study is to gain more detailed insight into the temporal associations between gaming intensity and both psychological distress- and wellbeing-related variables. The research question under examination is: How is gameplay and playtime related to distress-related variables such as depression, (social) anxiety, substance use and wellbeing-related variables such as mastery and self-efficacy over time. Furthermore, the aim is to examine whether the relationship between playtime and the distress- and wellbeing-related variables is moderated by specific time-varying gaming contexts such as the type of game play, and online-/offline-play.

Method

Design

The present study used the experience sampling method (ESM) which is based on the principle of ecological psychology that behaviour is radically situated and, hence, can only be understood in relation to the context in which it occurs (Barker, 1968). ESM is a structured self-report diary technique which assesses moods, behaviours, and contexts thereof in momentary questionnaires. It is a longitudinal approach with situational and momentary assessments that can increase the ecological validity as respondents are observed in the context of their natural environment and daily life (Araujo et al., 2007). ESM possesses several favourable features for research, including: 1) it offers a deeper understanding of psychopathological phenomena, 2) it is able to capture within-person variability over time, 3) it helps in identifying internal and situational determinants of variability in symptomatology 4) it facilitates a thorough investigation of the interaction between persons and their environment of real-life social interactions, and 5) it is able to provide insight into temporal (unidirectional or bidirectional) effects (Myin-Germeys, 2018).

A web-based smartphone App, called Ethica, was used to design the study and collect the data. Ethica is specifically designed for studies with a repeated measures design like the ESM (Ethica Data Services, n.d.). The study was approved by the Ethical Committee of the Faculty of Behavioural Sciences of the University of Twente (Request number.: 210179).

Participants and Procedure

German participants (N = 37) were recruited through social media websites like Instagram and Facebook and other online gaming forums like Reddit by a blog post that informed about the nature of the study. Studies with an ESM design usually recruit smaller numbers of participants due to the longitudinal intensive design with a median number of 19 participants found in a literature review (Van Berkel, Ferreira, & Kostakos, 2017). Only individuals, who were at least 16 years old and occasionally played video games, were eligible to participate in the study. Of those 37 participants, two dropped out of the study, one of them dropped out before the first questionnaire and the other one dropped out after day 5. Eight additional participants were excluded because of insufficient response rates (defined as more than one standard deviation below the mean response rate and less than 50% responses to the daily behavioural questionnaires) (Conner & Lehman, 2012; Van Berkel et al., 2017). Therefore, 27 participants were included for data analysis. The final sample was comprised of 26 males and 1 female (M_{age} = 22.8, SD_{age} = 6.3). Of those participants, 8 indicated that they graduated at a lower school, 14 did their 'A' levels (Abitur) or an equivalent graduation, one achieved a bachelor's degree, two a master's degree, and two indicated that they have no graduation yet.

The participants were asked to download the Ethica application on their own mobile phone device with an internet connection and to use it during the next two weeks for the purpose of the study. After successful registration to the study on 14th of March, participants received a first pre-test questionnaire which gathered demographical data and baseline measurements of the distress- and wellbeing-related variables which had to be filled out before the 15th of March. From the 15th of March, the repeated measures procedure started in which one questionnaire was sent within the next two weeks on each day to the participant via Ethica, in the morning, afternoon and evening, respectively (see Appendix A for questionnaires). Morning and evening questionnaires asked about momentary states of the distress- and wellbeing-related variables whereas the afternoon questionnaires asked about gaming and drug use behaviour.

Daily measurements were collected for 14 consecutive days, since ESM literature suggests that a minimum of one week yields a representative sample and after two weeks the quality of data tends to deteriorate (Hektner, Schmidt, & Csikszentmihalyi, 2007; Stone, Kessler, & Haythomthwatte, 1991). A median number of 14 days was also reported by an ESM literature review (Van Berkel et al., 2017). According to research, surveying participants five

to eight times a day might yield an optimal balance of recall and annoyance (Klasnja et al., 2008). However, because the present study used somewhat longer questionnaires comprised of 20-25 items, it was decided to reduce the frequency to three times a day.

Pre- and post-test measurements

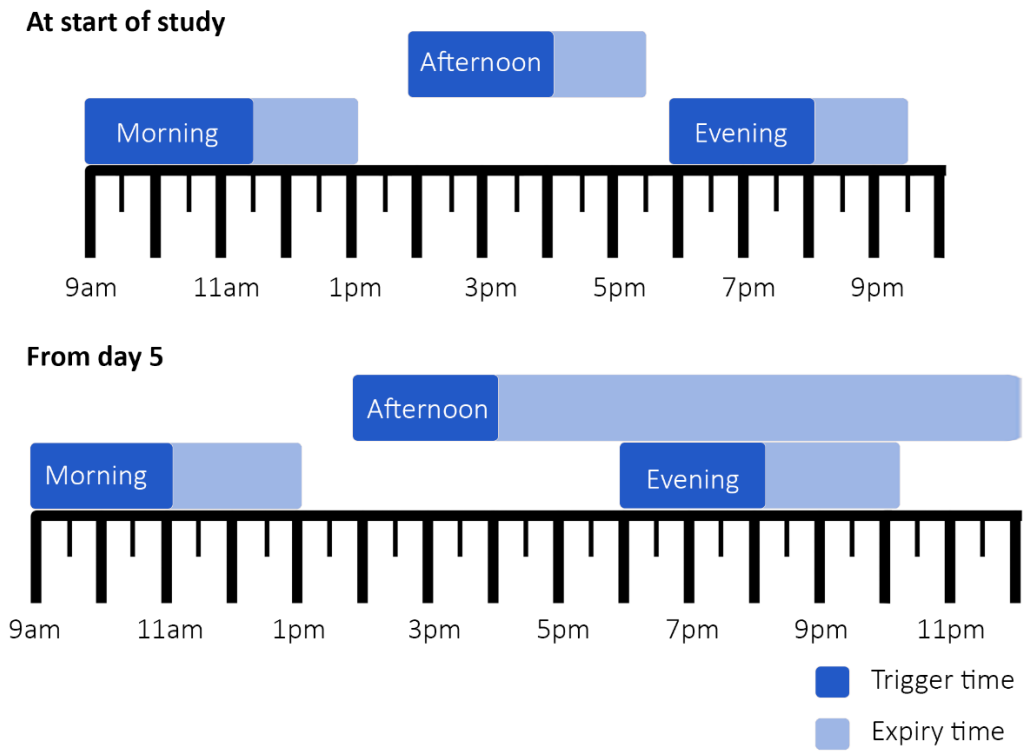
The first pre-test questionnaire on the 14th of March asked demographical questions on gender, age, education and whether the participants play video games at least occasionally and additionally contained validated questionnaires assessing their trait levels on the constructs of interest. After the 2-week period, participants received a last post-test questionnaire on the 28th of March which contained the same validated trait questionnaires as the first one and one additional question about the participant's estimation of how many hours they spent on playing video games within the last 14 days.

Repeated state and behaviour measurements

In Figure 1, the overview of the administration procedure of the questionnaires can be seen. Within the 2-week study period, the morning questionnaire was first sent between 09.00 and 11.30 AM daily and after day 5 from 09.00 AM to 11.00 AM daily. The evening questionnaire was administered between 06.00 PM and 08.00 PM daily for all 14 days. The afternoon questionnaire was sent between 02.00 PM and 04.00 PM daily with an expiry time of 90 minutes at the beginning of the study and after day 5 with an expiry time of 8 hours. Morning and evening expiry time was also changed after day 5 from 90 minutes to 120 minutes. After day 5, it was decided to use different notification and expiry triggers to enrich the amount of collected data during the study. Interval contingent sampling was used (Van Berkel et al., 2017) and the exact time of delivery of the questionnaires was random within these fixed time ranges. Morning and evening questionnaires were basically the same, however the evening questionnaire asked 10 additional questions when respondents indicated that they were interrupted by the questionnaire in their gaming activity. As soon as the questionnaires were made available for the participant, he or she received a notification on the smartphone. If the participant did not complete the questionnaires after 60 minutes, he or she received a second notification as a reminder. If the participant did not complete the afternoon questionnaire after 6 hours, a third reminder was sent.

Figure 1

The daily procedure of triggering repeated measurements for participants including their time of expiry until day 5 and from then on



In the repeated behaviour measurements, the participants were asked to indicate if they had played a video game yesterday (in the questionnaire specified as the period between yesterday 6 AM and today 6 AM). Depending on their answer they either skipped or received an additional set of questions. If they answered 'Yes', then they were asked about when, how many hours, on what device, and what type of game they played and if they played online and/or offline and whether with friends through voice over Internet Protocol applications like TeamSpeak, Discord or Skype, or with friends physically present or alone. If they answered 'No', the questions concerning video games were skipped and they were forwarded to substance-related questions. In that section they were asked if they took one of the listed drugs within 06.00 AM yesterday and 06.00 AM today and when they took a drug, they received one additional question if the drugs were taken before, during, or after game play. Since constantly asking participants about their behaviour and how long they are engaged in it intrudes into the daily life of the individual too much, it was considered more convenient to ask them once a day to recall their behaviours of the previous day.

Measures

Trait measurements at baseline and post-test

Trait Depression and Anxiety. For assessing depression as a trait, the German version of the Patient Health Questionnaire (PHQ-9) was used. Previous psychometric analysis has shown a good internal consistency of .89 (Kroenke, Spitzer, & Williams, 2001). The questionnaire asks how often the respondent was bothered by problems indicative of depressive symptoms such as little interest or pleasure in activities or feeling down, depressed, or hopeless over the last two weeks. In the current study the Cronbach's α was .80 in the pre-test and .45 in the post-test. Trait anxiety was measured by the Generalized Anxiety Disorder Scale (GAD-7). The internal consistency of this scale was found to be excellent (α = .92) (Spitzer, Kroenke, Williams & Löwe, 2006). This scale contains seven items in total and asks about how often anxiety complaints were present over the last two weeks. In the current study the Cronbach's α was however low with .48 in the pre-test and .61 in the post-test. All questions were answered on a 4-point Likert Scale (0 = *Not at all*, 1 = *Several Days*, 2 = *More than half the days*, 3 = *Nearly every day*).

Trait Social anxiety. For assessing trait social anxiety, the German adaptation of the mini-SPIN with three items was used (Wiltink et. al, 2017). Previously reported internal consistencies ranged from .80 to .83 (Wiltink et. al, 2017) and in the present study a Cronbach's α of .69 was found in the pre-test and .80 in the post-test. Items were rated on a 5-point Likert scale (0 = *Not at all*, 1 = *Little*, 2 = *Moderately*, 3 = *Strongly*, 4 = *Extremely*).

Trait General Self-efficacy and Social Self-efficacy. The German version of the General Self-Efficacy Scale (GSE) was used (Schwarzer & Jerusalem, 1999). The scale contains ten questions on the general perceived self-efficacy and optimistic perceived competence and to what extent own success is attributed internally. The GSE has shown good internal consistency in a sample reached through the internet (α = .87) and satisfactory internal consistency collected in a German population (α = .79) (Schwarzer & Jerusalem, 1999; Schwarzer, Mueller, & Greenglass, 1999). In the current study the Cronbach's α was .81 in the pre-test and .72 in the post-test. Additionally, an English subscale measuring social self-efficacy comprised of six items was also used (Sherer et al., 1982). The subscale was also proven to be satisfactory in terms of its internal consistency (α = .71) (Sherer et al., 1982). The items were translated for the current study into German through a forward-backward method by two independent proficient English speakers. In this study the internal consistency of this subscale was somewhat

low in the pre-test (α = .63) and in the post-test (α = .66). Statements could be answered on a 4-point Likert Scale (1 = *Not at all true*, 2 = *Barely True*, 3 = *Moderately True*, 4 = *Exactly true*).

Trait Environmental mastery. A subscale of the Psychological Well-Being Scale of Keyes (2002) namely environmental mastery was used, comprising of three items. Internal consistency in the current study was adequate in the pre-test (α = .74) and somewhat lower in the post-test (α = .67). Statements could be answered on a 7-point Likert Scale (1 = *Strongly Disagree*, 2 = *Somewhat disagree*, 3 = *A little disagree*, 4 = *Neither agree nor disagree*, 5 = *A little agree*, 6 = *Somewhat agree*, 7 = *Strongly agree*).

Daily State measurements

In all daily state measures, participants were asked to indicate to which extent they experience the following feelings at the moment based on a 5-point Likert scale (1 = *Not at all*, 2 = *Slightly*, 3 = *Moderately*, 4 = *Strongly*, 5 = *Extremely*).

State Depression, Anxiety and Loneliness. The items for state depression and anxiety were derived from the criteria for a major depressive disorder and generalized anxiety disorder in the DSM-5 manual (American Psychiatric Association, 2013). It was asked about the basic symptoms of a depression and anxiety such as depressed/down feelings, lack of energy/fatigue, concentration problems, feelings of worthlessness, loss of interest or pleasure, perceived anxiety in general and restlessness. In previous studies, the suitability of measuring both depression and anxiety as a state have been demonstrated (Spaderna, Schmukle, & Krohne, 2002; Spielberger, 1983). Additionally, because it has been shown that loneliness is highly correlated with depression (Caplan, 2002), an item asking about feelings of loneliness was also included.

State Social Anxiety. Two of the state social anxiety items were also derived from DSM-5 symptoms of a social phobia and asked about a feeling to avoid social situations and a fear of being negatively judged by others.

State General Self-efficacy and Social Self-efficacy. General and social self-efficacy items were developed based on previous ecological momentary assessment work assessing state self-efficacy levels specific to drinking (Kuerbis, Armeli, Muench, & Morgenstern, 2013). Items were reformulated in a broader sense for general self-efficacy ("Confident in coping with

general challenges/problems") and in a social-specific sense for social self-efficacy ("Confident in coping with *social* challenges/problems").

State Mastery. No previous studies were found which examined mastery as a state and therefore the item assessing this was developed specifically for this study. This was a one-single item in form a statement (translated in English: "A feeling of success/progress").

Data analysis

Data were processed and analysed with the statistical program IBM SPSS Statistics 26. All analyses were carried out with two-tailed tests using a p-value of $< .05$ as the significant threshold. Mean scores of the baseline trait measurements were merged into the dataset of state measurements and were matched for each participant. After that, standardized beta estimates were computed using Linear Mixed Model (LMM) analyses with first-order autoregressive (AR1) repeated covariance type with homogenous analyses to examine the association between all baseline trait and state measurements. Recall in the post-test of how many hours were played during the last two weeks was compared with the 14 accumulated daily reports of how much participants played in the last day using a LMM to examine the association between daily reports and recall reports. The recall of the post-test was set as a fixed covariate and the daily measurements as the dependent variable to examine the standardized association and interpret the strength. Additionally, a paired t-test was conducted between the mean of playtime derived from recall and mean of playtime derived from 14 accumulated daily questionnaires.

Frequencies and descriptive statistics about gaming context and drug use were computed. Boxplots for all states and playtime across all timepoints were examined to check for the between-person and within-person variability of these states. To fit the analysis, data was merged into one file by matching the data on gaming behaviour on the previous day and data on state variables of the next day on the same row (day) for each participant. Mean state values for the day were calculated by averaging the measurements in the morning and the evening on the same day for each timepoint and participant.

A series of linear mixed modelling analyses with first-order autoregressive repeated covariance type with homogeneous analyses were used as a tool to analyse the multi-level and longitudinal data. LMM can adequately deal with the nested nature of repeated measures data and missing data values and allows for disaggregating between-person and within-person level

associations (Connor & Lehman, 2012; Verhagen, Hasmi, Drukker, van Os, & Delespaul, 2016; Curran & Bauer, 2011).

In the first series of LMMs, the state measurements were the dependent variables whereas in one model playtime in hours was the fixed covariate and in the other model gaming (yes/no) was the fixed covariate. Between-person and within-person effects were disaggregated by computing Person-mean (PM) scores of playtime and Person-mean-centred (PMC) scores of playtime. While PM scores reflect the average state of all timepoints per participant, PMC scores reflect deviations of participants from their average state per timepoint. Between-person effects reflect that, when an individual has a higher average playtime score than others, this is associated with lower or higher state levels than others. Within-person effects reflect that, when an individual has a higher playtime score than his/her own average, this is associated with lower or higher state scores. Additional LMM analyses were conducted in which the interaction terms between the amount of gaming and gaming context such as the type of game, and online/offline play were included in addition to their main effects to examine moderation effects of different gaming contexts.

In all LMM analyses, variables were z-transformed to obtain standardized regression coefficients between the variables in the models. The cut-offs for interpreting the strength of the associations were based on the guideline of Cohen (1988) that indicates a small effect when beta >.1 (.1), a moderate association when beta >.3 (-.3) and a strong association when beta >.5 (-.5).

Results

Association between trait and state measurements

Baseline trait depression was found to be significantly, but only weakly associated with state depression over time (β = .29, *SE* = .10, p = .006). Trait anxiety was found to be significantly and moderately associated with state anxiety (β = .41, *SE* = .10, $p < .001$) and trait social phobia was significantly and strongly associated with state social phobia (β = .51, *SE* = .08, $p < .001$). Trait social efficacy was significantly and moderately associated with state social efficacy (β = .42, *SE* = .09, $p < .001$). However, trait general efficacy (β = -.04, *SE* = .11, p = .732) and trait mastery (β = -.05, *SE* = .07, p = .506) were not found to be significant covariates of their respective state measurements.

Playtime scores derived from recall and from daily reports

Mean playtime derived from the daily reports was in general higher (M = 27.92, SD = 19.70) than mean playtime from recall reports after the 2-week period (M = 24.40, SD = 22.15), however the difference was not significant ($t(24) = 1.2$, $p = .250$) The LMM revealed that playtime recall was a significant covariate of mean scores derived from daily reports with moderate strength ($\beta = .45$, $SE = .07$, $p < .001$).

Gaming and drug use behaviour

Participants completed 877 out of 1188 possible daily questionnaires during the study amounting to an average completion rate of 74%. The average amount of daily playtime of the participants was 2.1 hours (SD = 2.3). 220 of the daily behavioural reports (68.8%) indicated that participants played a game on the previous day. In Figure 2, sample means of daily gaming hours, drug use, and states across timepoints can be seen. On average, participants played the most on Sundays and tended to play less during the weekdays. A lot of shifts in the same directions can be seen in the first week from first Friday to first Sunday for playtime, anxiety, mastery, social phobia, and depression scores with drops from Friday to Saturday followed by increases from Saturday to Sunday. Sports games were played most often followed by massively multiplayer online role-playing games (MMORPG), first-person shooters (FPS), and multiplayer online battle arena (MOBA) games (Figure 3).

In general, the frequency of drug use tended to fluctuate between the individuals (see Appendix). There were 87 (29% of the time) drug use occurrences by 22 unique participants documented during the study.

Variability of measurements

Among the measured variables there was a considerable amount of variability within persons and between persons of the state measurements scores and playtime (see Appendix B for boxplots). Affective as well as cognitive states (like self-efficacy) tended to fluctuate across time on both a within-person and a between-person level.

Figure 2

Sample Mean of daily playtime and state scores across all timepoints

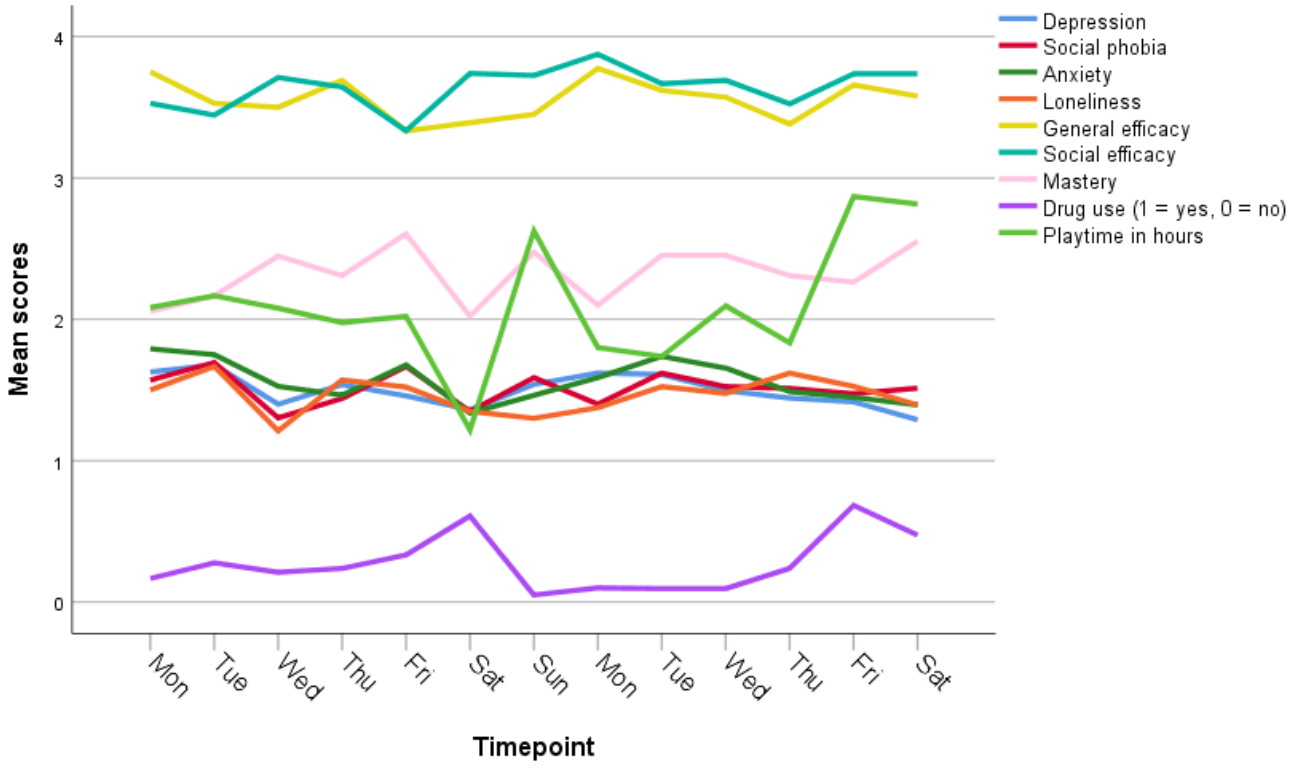
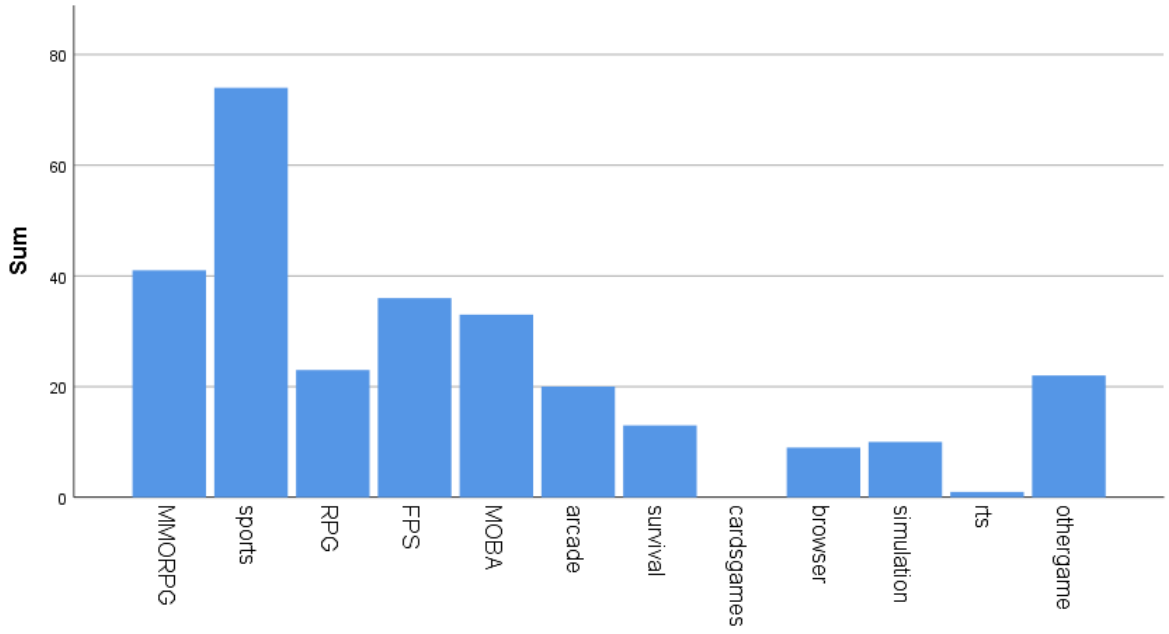


Figure 3

Frequency numbers of specific game types that were played



Overall association between states and gameplay

In Table 1 the standardized beta estimates between gameplay (yes/no-variable) and all states are shown. There was a tendency for a positive association between depression and gameplay on the same day, however the overall association failed to reach the significance threshold (β = .21, *SE* = .11, *p* = .062). Gameplay was significantly but weakly associated with lower levels of feelings of mastery (β = -.27, *SE* = .13, *p* = .042). The other variables were not associated with the occurrence of gameplay. Figure 4 illustrates that mastery scores indeed tended to be higher on days without gaming than on days with gaming.

Table 1

Standardized coefficients of Linear mixed modelling with current states as the dependent variables game play (yes/no) on the same day as the covariate variable

Dependent variable	β estimate (SE)	[df1, df2] = F	p
Depression	.21 (.11)	[1, 238.93] = 3.52	.062
Anxiety	-.04 (.10)	[1, 225.47] = 0.22	.643
Social phobia	-.09 (.11)	[1, 239.16] = 0.62	.433
Loneliness	.01 (.11)	[1, 244.87] = 0.03	.864
General efficacy	.17 (.11)	[1, 234.13] = 2.61	.108
Social efficacy	.14 (.10)	[1, 232.40] = 1.90	.170
Mastery	**-.27 (.13)**	**[1, 234.87] = 4.17**	**.042**
Drug use	.01 (.06)	[1, 290.65] = 0.40	.843

Note. Independent variable: gameplay (yes/no)

Disaggregating within-person effects and between-person effects

Overall, no between-person effects of playtime on any of the dependent state variables were found (see Table 2). A weak within-person effect of playtime on higher levels of depression was observed (β = .09, *SE* = .04, *p* = .038). When participant played longer than usual, they experienced slightly more depression.

Figure 4

Bar plot of mean scores of mastery scores on days without gaming and mastery scores on days with gaming.

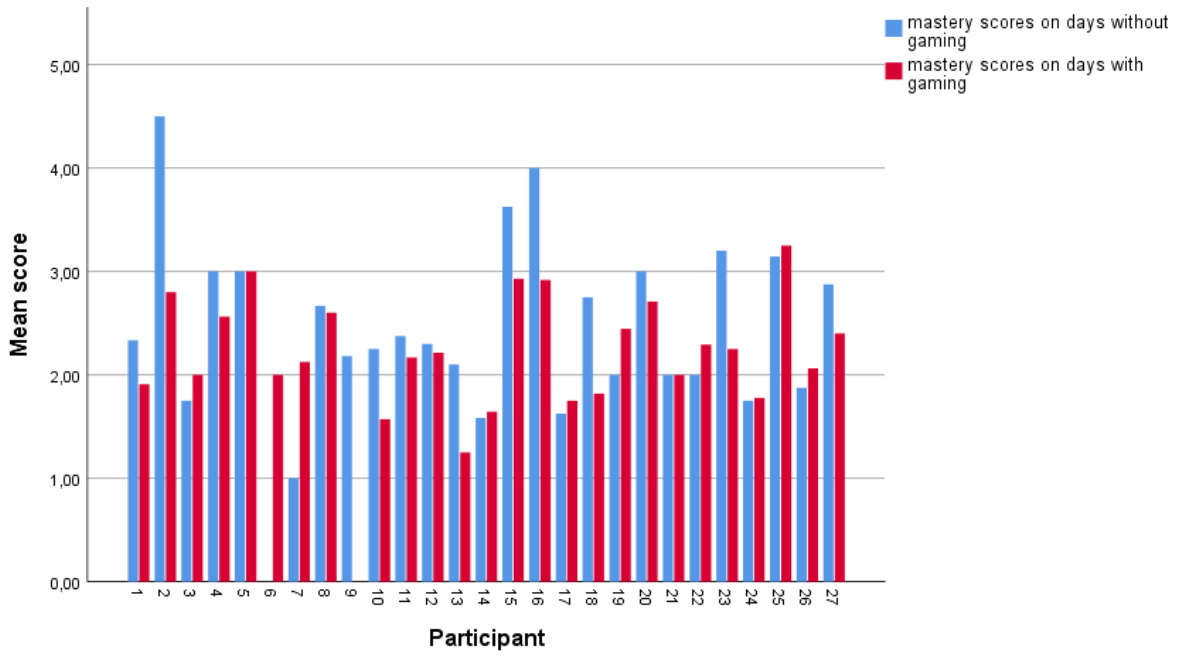


Table 2

Standardized beta coefficients, standard error and p-value of between-person and within-person effects of the measured variables and within-person playtime as independent variable

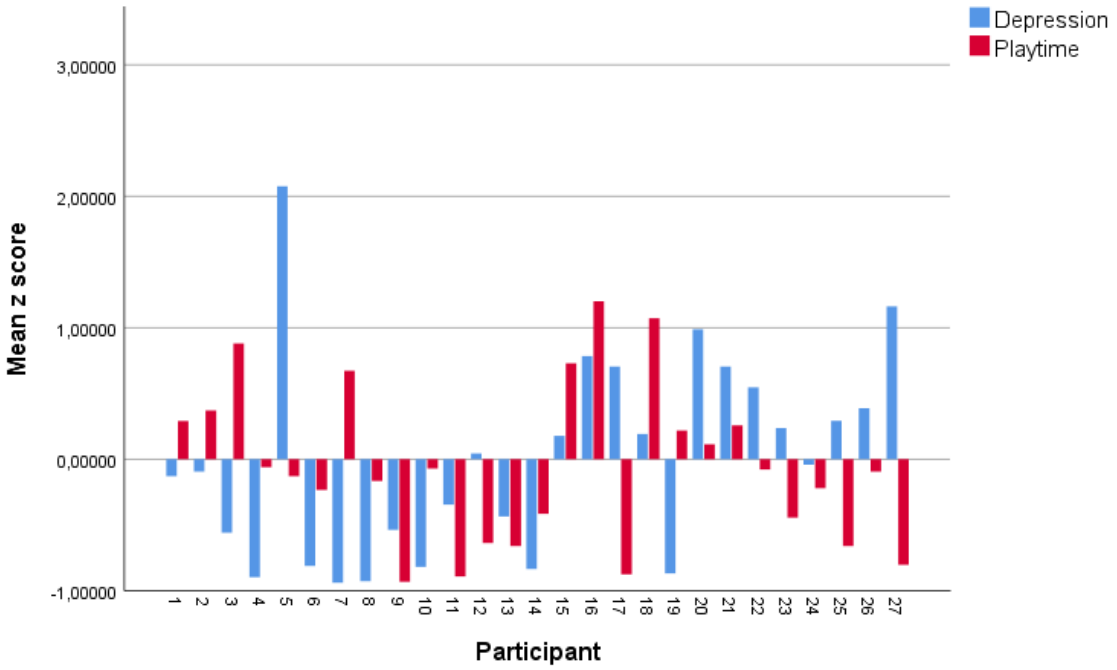
	Between-person effect		Within-person effect	
Dependent variable	β (SE)	p	β (SE)	p
Depression	-.01 (.11)	.956	**.09 (.04)**	**.038**
Anxiety	.05 (.12)	.686	.01 (.04)	.790
Social phobia	-.05 (.11)	.641	.06 (.04)	.168
Loneliness	-.07 (.10)	.487	.03 (.05)	.564
General efficacy	.21 (.11)	.068	-.00 (.04)	.501
Social efficacy	.08 (.11)	.477	-.01 (.04)	.849
Mastery	.05 (.07)	.472	-.03 (.06)	.607
Drug use	-.09 (.08)	.256	.03 (.06)	.643

Note. Independent variable: within-person playtime on the same day.

In Figure 5 most of the time standardized z scores of playtime and depression are both either positive or negative at the same time, which indicates an association. Extreme discrepancies between depression and playtime were only observed in participant 5, 7, 17, and 27.

Figure 5

Bar plot of mean z scores of playtime and depression for each participant



Moderation effects of offline, MMORPG, and FPS play

Moderating roles of context on within-person effects were further examined (Table 3). Several interaction effects could be found for offline, MMORPG and FPS play. Within-person effects of playtime on depression (β = -.53, *SE* = .11, $p < .001$), anxiety (β = -.41, *SE* = .10, $p < .001$) and loneliness (β = -.32, *SE* = .13, p = .014) were moderated by offline play. Within-person effects of playtime on depression (β = .46, *SE* = .13, p = .001), anxiety (β = .32, *SE* = .12, p = .008), social phobia (β = -.30, *SE* = .12, p = .014), and general efficacy (β = .30, *SE* = .13, p = .023) were moderated by MMORPG play. Within-person effects of playtime on

depression (β = .44, *SE* = .16, *p* = .008), loneliness (β = .37, *SE* = .17, *p* = .034) and mastery (β = -.44, *SE* = .20, *p* = .030) were moderated by FPS play.

Table 3

Summary of standardized coefficients of scores on depression, anxiety, social phobia, loneliness, general efficacy, social efficacy and mastery moderated by type of games and online/offline play

Dependent variable	Online	Offline	MMORPG	Sports	FPS	MOBA
Depression	.25	**-.53****	**.46****	-.16	**.44****	-.21
Anxiety	.26	**-.41****	**.32****	.07	.24	-.16
Social phobia	.00	.06	**-.30***	.05	.03	.07
Loneliness	.23	**-.32***	.15	.06	**.37***	-.13
General efficacy	.06	-.01	**.30***	-.13	-.15	-.15
Social efficacy	.04	.04	.16	-.14	-.07	-.14
Mastery	-.10	.22	-.05	.18	**-.44***	.16
Drug use	-.08	-.01	.06	.03	.04	-.05

Note. *p < 0.05, **p < 0.01. Values are interaction terms. Independent variable: within-person playtime on the same day.

Beta estimates of separate dummy coded contexts

In Table 4 beta estimates of the separate dummy coded contexts are shown. When participants played offline, higher playtime than usual was significantly associated with higher levels of depression (β = .28, *SE* = .08, *p* = .001), anxiety (β = .20, *SE* = .08, *p* = .017), and loneliness (β = .20, *SE* = .09, *p* = .029). When an MMORPG was played and there was a higher playtime than usual, this was significantly associated with lower levels of general efficacy (β = -.28, *SE* = .12, *p* = .030) and tended to be associated with lower levels of depression (β = -.32, *SE* = .16, *p* = .052), anxiety (β = -.24, *SE* = .13, *p* = .072) but higher social phobia (β = .30, *SE* = .16, *p* = .080), however these associations in the separate subgroupings failed to reach the significance threshold. When an FPS game was played, higher playtime than usual tended to be associated with lower levels of depression (β = -.29, *SE* = .18, *p* = .127) and loneliness (β = -.27, *SE* = .25, *p* = .295) but higher levels of mastery (β = .49, *SE* = .24, *p* = .059).

Table 4

Summary of standardized coefficients of scores on depression, anxiety, social phobia, loneliness, general efficacy, social efficacy and mastery in relation to gaming intensity in separate dummy coded gaming contexts

Dependent variable	Online	Offline	MMORPG	Sports	FPS	MOBA
Depression	-.02	**.28****	-.32	.02	-.29	.13
Anxiety	-.04	**.20***	-.24	-.04	-.14	**.08***
Social phobia	**.12***	.07	.30	.16	.14	.02
Loneliness	-.01	**.20***	-.10	.06	-.27	.04
General efficacy	-.05	-.04	**-.28***	.06	.00	.07
Social efficacy	.01	-.03	-.09	.09	-.04	.14
Mastery	.07	-.06	-.08	-.04	.49	-.03
Drug use	-.06	.02	-.06	-.10	.02	.04

Note. *p < 0.05, **p < 0.01. Independent variable: within-person playtime on the same day

Discussion

The purpose of this study was to thoroughly examine state levels of distress- and wellbeing-related variables in relation to gameplay and video game playtime on a within-person level over time. Furthermore, gaming contexts that might moderate the relationship to video game playtime were aimed to be identified. No clear or only weak linear associations between video game playtime and distress- and wellbeing-related variables were found at the group level. However, there were several indications for the important role of specific gaming contexts on these associations.

Besides the weak effects of gameplay on lower feelings of mastery and within-person playtime on higher levels of depression, there were no other main effects found in the study. However, multiple significant interaction effects on the within-person level were found which confirm the need to consider specific psycho-structural gaming contexts that might moderate the association between within-person playtime and distress- and wellbeing-related variables (Gentile, 2011).

The within-person effects of playtime on depression, anxiety, and loneliness were significantly moderated by offline play. When an individual had a higher playtime score than usual and played offline, this was significantly associated with increased levels of depression,

anxiety, and loneliness. No significant associations were found when it was played online. In a cross-sectional study no substantial differences in psychosocial problems were found between online and offline gameplay (Van Rooij et al., 2014). In the current study, however, it appeared that time spent on video gaming covaries with psychosocial problems such as loneliness when played offline. When played online, there seems to be no relationship between playtime and psychosocial problems. Whereas the online gaming context enables the interaction and connection with others, the offline gaming context is less restricted in such activities (Gentile, 2011) which might lead to more feelings of depression, anxiety and loneliness when played for a longer time (Stockdale & Coyne, 2018).

Still, online play can be differentiated into further unique online contexts. For example, it was found that playing MMORPG (i.e., an online game) moderated the within-person effect of playtime on depression, anxiety, general efficacy, and social phobia. Separate dummy coded contexts revealed that, when an MMORPG was played, higher playtime than usual was significantly associated with lower levels of general efficacy and tended to be associated with lower levels of depression, anxiety, and higher levels of social phobia.

Adding to the work of Van Rooij et al. (2014), the current findings suggest that not online gaming itself is necessarily associated with problems but instead more specific types of gaming (i.e., MMORPG) are associated with these problems. This might be due to the specific social context of MMORPGs that Gentile (2011) referred to. While even a lot of online games might be played predominantly alone and/or with less emphasis on a social context, MMORPGs represent a highly connected world in which individuals can meet, socialize, and escape from their usual social day-to-day activities. While playing MMORPG for extended periods of time seems to benefit the psychological state of the individual by lowering depression and anxiety levels in the short run, it however seems to also debilitate their psychological state in terms of higher social phobia and lower general efficacy levels at the same time. This is in line with earlier explanations which postulate that online gaming is used as an emotional regulation strategy for individuals to eliminate feelings of depression or anxiety (Burleigh et al., 2018; Reinecke, 2009; Yen et al., 2018). Accordingly, this strategy can be seen as an attempt to self-regulate negative mood and feelings by replacing them with more positive ones (Kazakova et al, 2014; Reinecke, 2009; Marino et al., 2020) which seems to be achieved over playtime when playing an MMORPG.

Despite the momentary positive benefits gained from high playtime and playing an MMORPG, contrary to Kazakova et. al (2014), gamers did not appear to be able to satisfy their competence needs with increasing playtime but felt even less self-efficacious in general. It could be due to the negligence of the general daily life, that gamers felt also less able to succeed in this domain (Weis & Cerankosky, 2010). Additionally, social anxiety worsened over playtime (Lo et al., 2005; Van Rooij et al., 2014) possibly also due to neglecting and sacrificing time in face-to-face contact (Stockdale & Coyne, 2018; Weis & Cerankosky, 2010). *Self-determination theory* (SDT) might also explain why MMORPGs are so intrinsically motivating, since the three basic needs competence, autonomy but especially relatedness might be satisfied by playing MMORPGs (Deci & Ryan, 2008). Accordingly, socially anxious individuals might not find their need of relatedness met in the real world, but this need might be satisfied in the online world. How this need could be met in MMORPGs explains the *Hyperpersonal Model* of Walther (1996). Because computer-mediated communication (CMC) in MMORPGs offer a greater ability to control, edit, and inflate one's self-presentation, as a result more intimate relationships might be developed among socially anxious individuals (Walther, 1996). Consequently, socially anxious individuals might be able to present an idealized self of oneself to their gaming companions (Higgins, 1989), which might alleviate depression and anxiety. Nevertheless, because the intimacy to their online peers might then be attributed to the affordances of the online game, this consequently may feed their social anxiety in real life interactions.

One could also suspect that social efficacy would be affected by gaming hours when an MMORPG was played because this might explain the higher levels of social phobia (Bandura, 1988; Jeong & Kim, 2011). Surprisingly, this was not the case. Levels of social efficacy were unaffected by within-person playtime when an MMORPG was played which is contrary to what Jeong & Kim (2011) found. However, state social efficacy was measured with a global one-item measure which might have missed some important dimensions of social efficacy. Furthermore, the item on social efficacy could be interpreted ambiguously because it did not ask specifically if respondents felt efficacious in their interaction in the online or offline world. This is also underscored by the only moderate correlation found between state social efficacy and the validated trait measurement in this study.

Similarly, it was found that FPS (also mostly played online), moderated the within-person effect of playtime on depression, loneliness, and mastery. Within-person playtime tends to be associated with lower levels of depression and loneliness. This appears to be a maladaptive

emotional regulation strategy pattern like in MMORPGs (Burleigh et al., 2018; Reinecke, 2009; Yen et al., 2018) which is supported by Na et al. (2017) that indicated MMORPG and FPS games as more addicting. Interestingly, within-person playtime when playing an FPS game tended to be associated with higher feelings of mastery. It could be that FPS games are more empowering in this respect than other types of games.

Furthermore, no main and interaction effects were found on drug use which is contrary to previous findings showing an association between playtime and drug use (Van Rooij et al., 2014; Turel & Bechara, 2019). When following the displacement hypothesis, one would expect higher playtime to be associated with less drug use, since playtime might displace the time available for other activities such as drug use (Weis & Cerankosky, 2010). However, this was not the case. This suggests that playtime is not an indicator of drug use. Again, this might be due to the non-clinical sample. As playtime gets more problematic this might reflect similar results as in those previous studies. Furthermore, the present study operationalized drug use on a dichotomous scale (drug taken or not), and therefore, lacks a detailed quantification of how much was taken during the day. Quantifying both playtime and drug use could shed light on associations between playtime and dose of drugs.

Strengths and Limitations

The study's major asset is that it is the first that explored both distress- and wellbeing-related variables in relation to gaming intensity over time in a natural context by means of the ESM. Measuring in this natural context increases the ecological validity of the study and enables it to be more representative and generalizable to the daily life of gamers (Araujo et al., 2007). Furthermore, by means of the ESM, recall bias is minimized in contrast to the cross-sectional studies (Myin-Germeys et al., 2018). Furthermore, ESM allows disaggregating between- and within-person effects and can give a much more detailed description of associations over time (Curran & Bauer, 2011). This made it possible to gain insight into within-person fluctuations of playtime and how those result in changes in the individuals' states (McDonald et al., 2020).

However, ESM also comes with limitations. The high demand placed on the participants by repeatedly administering questionnaires to them might lead to a biased sample towards individuals high on conscientiousness and thus impair the representativeness of the study (Scollon, Prieto, & Diener, 2009). Furthermore, because of the obtrusive observation of

participants' states and behaviour, it is likely that participants changed their behaviour or the way they responded to questions in response to knowing that they are being observed (Myin-Germeys et al., 2018). In fact, it could be that repeatedly asking about particular thoughts and behaviours might induce these thoughts or alter the behaviour (Myin-Germeys et al., 2009; Scollon et al., 2009).

Another limitation concerns the specificity of the study. The study design and its research questions were mainly exploratory in nature and, therefore, assessed a broad spectrum of type of games played. Therefore, results potentially contained a lot of confounding effects which could be reduced partly by moderation analysis in the present study. However, due to the small sample size of the separate subgroups of FPS and MMORPG play, this probably led to Type II errors (Cohen, 1988). An ESM study that assesses a specific target group, for example MMORPG or FPS players, in isolation might come to more conclusive findings.

Also, although the state questionnaires assessed the feelings at the very moment, the behaviour questionnaire still asked the participants to recall the gaming time of their previous day which might have still resulted in recollection bias and error. According to survey data, participants' reports of time tend to be influenced by underestimation or wishful thinking (The Guardian, 2013). This might have systematically affected the findings since heavy gamers might underreport their gaming intensities and therefore distort the picture. Another constraint that can be identified is the completion rate of participants which might have been deteriorated partly due to technical issues since occasionally participants reported that they did not receive questionnaires which might lead to poor data quality (Van Berkel et al., 2017).

Future research

Future research could address these limitations by targeting specific groups of gamers such as offline, MMORPG or FPS players and examine if findings and trends can be replicated in a new study. Examining both non-clinical and clinical samples in which people are clinically diagnosed as problematic gamers in an ESM study might also shed light on the within-person differences between clinical and non-clinical individuals. Furthermore, it might be beneficial to explore techniques that enable an objective measure of playtime so that self-report bias can be ruled out. Circumventing the self-report bias problem can be achieved through applications that are installed on participants' gaming devices that objectively measure the uptime of a game. It is also common that video game digital distribution services like Steam constantly track the

playtime of their players. Therefore, collaboratively working with the gaming industry that keeps track of gaming hours would be a perfect fit for measuring playtime objectively. This would not only increase objectivity but also either reduce participants' burden or make room for collecting additional data on momentary states (Myin-Germeys et al., 2018). Furthermore, to solve the problem of completion rates, technical constraints can be eliminated and other technical possibilities by working closely with software engineers. For instance, the Ethica application was not able to randomize the order of items for each new questionnaire and therefore, it is also likely that participants were adopting a learning bias because of the strict order of the items. Then, offering micro-incentives for participants per response proposed by Van Berkel et al. (2017) can also enhance the motivation and adherence to the study.

Conclusion

The present study contributed to previous cross-sectional studies and examined distress- and wellbeing-related variables in relation to playtime in detail over time. The current study was able to shed light on the within-person effects of playtime on distress- and wellbeing-related variables and on the moderating role of time-varying contextual characteristics of games such as offline, FPS and MMORPG play. The current study highlights the importance of considering contextual factors of gaming with its idiosyncratic psycho-structural features which might have different psychological effects within gamers.

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Appendix A

Informed consent

Willkommen zu meiner Studie über Videospielverhalten! Vielen Dank für Deine Zeit und Unterstützung.

Ich bitte Dich die folgenden Informationen sorgfältig durchzulesen.

Das Ziel der Studie ist es, das Videospielverhalten und dessen Ursachen und Effekte zu untersuchen. Mit Deiner Teilnahme wirst du einen Teil zum wissenschaftlichen Verständnis im Bereich Videospielverhalten beitragen.

Du kannst an der Studie teilnehmen, wenn Du mindestens 16 Jahre oder älter bist und zumindest gelegentlich Videospiele spielst. Die App Ethica wird für einen Zeitraum von 2 Wochen genutzt. In diesen 2 Wochen bitte ich Dich, auf tägliche Fragebögen zu antworten. Im Sinne der Studie ist es wichtig, dass Du Fragen in einem gewissen Zeitrahmen beantwortest. Daher solltest Du sichergehen, dass die Mitteilungsfunktion an Deinem Smartphone für die Ethica-App eingeschaltet ist, da die Mitteilungen auf Deinem Gerät innerhalb des Zeitrahmens Dich über die zu erledigenden Fragebögen informieren und erinnern.

Als erstes wirst Du einen Fragebogen erhalten, der unbedingt ausgefüllt werden sollte, bevor die richtige Studie beginnt. Dieser heißt "Erster Fragebogen", den Du direkt, nachdem Du auf teilnehmen gedrückt hast, erhälst. Ab morgen, dem 15. März, wirst Du drei kurze Fragebögen bestehend aus 10-20 Fragen täglich über den Zeitraum von 2 Wochen morgens, mittags und abends ausfüllen. Jeder Fragebogen wird Dich im Schnitt ungefähr 2-4 Minuten kosten. Die täglichen Fragen fokussieren sich auf Dein Verhalten, Deine Stimmung, Deine Gefühle, Dein Drogenkonsum und Dein Videospielverhalten. Nach den zwei Wochen erhälst Du zum Abschluss einen finalen Fragebogen.

Außer der investierten Zeit und der minimalen Störung in Deinen Alltag, erwarte ich keinerlei Nachteile von dieser Studie für Dich. Die Teilnahme ist freiwillig und falls Du wünschst aus der Studie auszusteigen, kannst Du dies jederzeit ohne einen Grund zu nennen tun.

Die Studie wurde von der Ethikkommission der Universität Twente genehmigt. Deine Antworten werden vertraulich behandelt. Alle persönlichen Daten (E-mail, Alter, Geschlecht, Name usw.) werden anonymisiert und können nicht zurückverfolgt werden. Natürlich werden diese auch nicht veröffentlicht oder an Dritte weitergegeben. Die Teilnahme der Studie erfolgt auf freiwilliger Basis.

Wenn Du Fragen über die Studie hast, es Missverständnisse gibt oder Du Bedenken hast, kannst Du mich unter der Email-Adresse: dennisgawlick2509@gmail.com kontaktieren.

Vielen Dank für Deine Unterstützung!

English translation:

Welcome to my study about video gaming behaviour! Thank you for your time and support.

I ask you to read the following information carefully.

The aim of the study it to investigate the causes and effects of video gaming behaviour. With your participation, you will contribute a part to the understanding in the field of video gaming behaviour.

You can participate in the study when you are 16 years or older and at least occasionally play video games. The app Ethica will be used in the period of 2 weeks. In these 2 weeks I ask you to answer to daily questionnaires. For the purpose of the study it is important that you answer questions within certain time ranges. Therefore you should make sure that the notification function of your smartphone is switched on for the Ethica-App because these notifications remind and inform you withing these time period about the to-do questionnaires.

First you will receive one questionnaire that should be filled out necessarily before the actual study begins. This questionnaire is called "Erster Fragebogen" which you will immediately receive after you pressed on participate. From tomorrow on, April the 15th, you will get three short questionnaires consisting of 10-20 questions daily over the time period of 2 weeks in the morning, afternoon and evening. Each questionnaire will take you 2-4 minutes on average. The daily questions focus on your behaviour, your mood, your feelings, your drug intake and you video gaming behaviour. After these 2 weeks you will receive in conclusion a final questionnaire.

Except for the invested time and the minimal disruption of your daily life, I do not expect any further disadvantages of this study for you. The participation is voluntary and if you wish to drop out of the study, you can do so any time without mentioning a reason.

The study was approved by the ethics committee of the University of Twente. Your answers will be treated confidentially. All personal data (E-mail, age, gender, name, etc.) will be anonymised and can not be traced back. Of course will these also not be published and passed on to third parties. The participation of the study is on a voluntary basis.

If you have questions about the study, or if there are misunderstanding or if you have any concerns, you can contact me under the email-address: dennisgawlick2509@gmail.com.

Thank you for your support

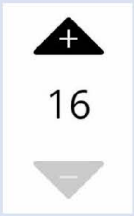
Erster Fragebogen/*First questionnaire*

Vielen Dank, dass Du an meiner Studie teilnimmst! Zuerst möchte ich Dich gerne bitten, einige generelle Informationen über Dich auszufüllen./*Thanks that you take part in my study! First I would like to ask you to fill in some general information about you.*

Was ist dein Geschlecht?/*What is your gender?*

- Männlich/*Male*
- Weiblich/*Female*
- Anderes/*Other*

Wie alt bist Du?/*How old are you?*



Was ist dein höchster Schul- oder Hochschulabschluss?/*What is your highest graduation?*

- Unterer Schulabschluss/*lower graduation*
- Abitur oder gleichwertiger Abschluss/*A-level or equivalent graduation*
- Bachelor-Abschluss/*Bachelor's degree*
- Master-Abschluss/*Master's degree*
- Doktor-Grad/*Doctorate*
- Ich habe keinen Abschluss/*I have not graduated*

Spielst du gelegentlich Videospiele? (am PC, auf der Konsole, am Smartphone etc.?)/*Do you play video games occasionally? (on PC, console, smartphone etc.?)*

- Ja/*Yes*
- Nein/*No*

Die Studie beschäftigt sich mit den Ursachen und Effekten von Videospielverhalten (Spielen von PC-Spielen, Konsolenspielen, Browserspielen, Smartphonespielen etc.). Zuerst möchte ich Dir Fragen über deine Persönlichkeit stellen. Bitte gib an, zu welchem Grad Du den folgenden Aussagen zustimmst./*The study deals with the causes and effects of video gaming behaviour (Playing of PC-games, console-games, browser-games, smartphone-games etc.) First, I would like to ask you about your personality. Please indicate to which degree you agree to the following statements.*

Wenn sich Widerstände auftun, finde ich Mittel und Wege, mich durchzusetzen./*If obstacles occur, I can find the ways and means to get what I want.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Die Lösung schwieriger Probleme gelingt mir immer, wenn ich mich darum bemühe./*The solution of difficult problems succeeds if I try hard enough.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Es bereitet mir keine Schwierigkeiten, meine Absichten und Ziele zu verwirklichen./*It causes me no difficulties to accomplish my purposes and goals.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

In unerwarteten Situationen weiß ich immer, wie ich mich verhalten soll./*I always know in unforeseen situations how to behave.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Auch bei überraschenden Ereignissen glaube ich, dass ich gut mit ihnen zurechtkommen kann./*Even in unexpected events, I believe that I could deal efficiently with them.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Schwierigkeiten sehe ich gelassen entgegen, weil ich meinen Fähigkeiten immer vertrauen kann./*I remain calm when facing difficulties because I can rely on my coping abilities.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Was auch immer passiert, ich werde schon klarkommen./*I can handle whatever comes my way*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Für jedes Problem kann ich eine Lösung finden./*For every problem I can find a solution.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn eine neue Sache auf mich zukommt, weiß ich, wie ich damit umgehen kann./*If a new situation comes up to me, I know how to handle it.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ein Problem auftaucht, kann ich es aus eigener Kraft meistern./*If a problem occurs, I can master it by my own efforts.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Es ist schwierig für mich, neue Freunde zu finden./*It is difficult for me to make new friends.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich jemanden sehe, den ich gerne treffen würde, gehe ich zu der Person, anstatt darauf zu warten, dass er oder sie zu mir kommt./*If I see someone I would like to mett, I go tot hat person instead of waiting for him or her to come to me.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich jemand Interessantes treffe, mit dem es schwierig ist, Freundschaft zu schließen, werde ich zeitnah aufhören zu versuchen, Freundschaft mit der Person zu schließen./*If I meet someone interesting who is hard to make friends with, I'll soon stop trying to make friends with that person.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich versuche mich mit jemandem, der zunächst uninteressiert scheint, anzufreunden, gebe ich nicht leicht auf./*When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Ich komme in sozialen Ansammlungen nicht gut zurecht./*I do not handle myself well in social gatherings.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Ich habe mir meine Freunde durch meine persönlichen Fähigkeiten, Freundschaften zu schließen, angeeignet./*I have acquired my friends through my personal abilities at making friends.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Danke Dir schonmal für das Ausfüllen der Fragen! Noch ein paar weitere Fragen und Du bist fertig!

Die Anforderungen des Alltags ziehen mich runter./*The demands of everyday life often get me down.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Allgemein fühle ich, über die Situation, in der ich lebe, das Kommando zu haben./*In general, I feel I am in charge of the situation in which I live.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Ich bin gut darin, mit den Verantwortungen des Alltags zurechtzukommen./*I am good at managing the responsibilities of daily life.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Bitte gib an, wie sehr Dich die folgenden Probleme **während der letzten Woche** beschäftigt haben./*Please indicate how much the following problems troubled you* ***wihtin the last week.***

Aus Angst vor Verlegenheit vermeide ich es, bestimmte Dinge zu tun oder Personen anzusprechen/*Fear of embarrassment causes me to avoid doing things or speaking to people*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ich vermeide Aktivitäten, durch die ich im Mittelpunkt der Aufmerksamkeit stehe/ *I avoid activities in which I am the centre of attention*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Sich zu schämen oder dumm zu wirken, gehört zu meinen schlimmsten Ängsten/*Being embarrassed or looking stupid are among my worst fears*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Wie oft fühltest Du Dich im Verlauf der **letzten 2 Wochen** durch die folgenden Beschwerden beeinträchtigt?/*How often did you feel troubled through the following complaints* ***in the last 2 weeks?***

Nervosität, Ängstlichkeit oder Anspannung/*Feeling nervous, anxious or on edge*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Nicht in der Lage sein, Sorgen zu stoppen oder zu kontrollieren/*Not being able to stop or control worrying*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Übermäßige Sorgen bezüglich verschiedener Angelegenheiten/*Worrying too much about different things*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten zu entspannen/*Trouble relaxing*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Rastlosigkeit, so dass Stillsitzen schwer fällt/*Being so restless that it is hard to sit still*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schnelle Verärgerung oder Gereiztheit/*Becoming easily annoyed or irritable*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Gefühl der Angst, so als würde etwas Schlimmes passieren/*Feeling afraid as if something awful might happen*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Wenig Interesse oder Freude an Deinen Tätigkeiten/*Little interest or pleasure in doing things?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Niedergeschlagenheit, Schwermut oder Hoffnungslosigkeit/*Feeling down, depressed, or hopeless?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten ein- oder durchzuschlafen oder vermehrter Schlaf/*Trouble falling or staying asleep, or sleeping too much?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Müdigkeit oder Gefühl, keine Energie zu haben/*Feeling tired or having little energy?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Verminderter Appetit oder übermäßiges Bedürfnis zu essen/*Poor appetite or overeating?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schlechte Meinung von sich selbst; Gefühl, ein Versager zu sein oder die Familie enttäuscht zu haben/*Feeling bad about yourself - or that you are a failure or have let yourself or your family down?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten, sich auf etwas zu konzentrieren, z.B. beim Zeitunglesen oder Fernsehen/*Trouble concentrating on things, such as reading the newspaper or watching television?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Waren Deine Bewegungen oder Deine Sprache so verlangsamt, dass es auch anderen auffallen würde? Oder warst Du im Gegenteil "zappelig" oder ruhelos und hattest Du dadurch einen stärkeren Bewegungsdrang als sonst?/*Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Gedanken, dass Du lieber tot wärst oder Dir Leid zufügen möchtest/*Thoughts that you would be better off dead, or of hurting yourself in some way?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Vielen Dank für Deine Unterstützung! :) Du bist hiermit für heute fertig. Ab morgen bekommst Du täglich morgens, mittags und abends deutlich kürzere Fragebögen gestellt. Ich möchte Dich noch einmal kurz daran erinnern, an Deinem Smartphone die Mitteilungsfunktion für die App Ethica zu erlauben, damit Du keine der Fragebögen in den nächsten 2 Wochen verpasst./*Thank you very much for your support! :) You are done for today. From tomorrow on you get daily in the morning, evening and afternoon significantly shorter questionnaires. I want to remind you to allow the notification function on your*

smartphone for the app Ethica so that you do not miss any questionnaires during the next 2 weeks.

Notifications

Notification after reception of questionnaire:

Willkommen! Du kannst deine Teilnahme in dem Fragebogen jetzt beginnen/ *Welcome! You can start your participation now in the questionnaire*

Reminding notification 90 minutes after reception of the questionnaire:

Hey! Du hast deinen Fragebogen noch nicht ausgefüllt. Jetzt hast du noch die Chance dazu :)/ Hey! You did not fill out your questionnaire yet. Now you still have the chance to do so :)

Fragen am Morgen/*Questions in the morning*

Guten Morgen! Heute würde ich Dir gerne ein paar Fragen zu Deiner Stimmung und Deinen Gefühlen stellen./*Good morning! Today I would like to ask you a few questions about your mood and feelings*

Bitte gib an, bis zu welchem Grad du die folgenden Gefühle/Stimmungen **in diesem Moment** erlebst./ *Please indicate to which degree you experience the following feelings/moods* ***at the moment.***

Traurig oder niedergeschlagene Stimmung, *english: Sad or low mood*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Erschöpfung/niedrige Energie, *english: Fatigue/low energy*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Konzentrationsprobleme, *english: Concentration difficulties*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, wertlos zu sein, *english: A feeling of worthlesness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Wenig Interesse oder Freude an Deinen Aktivitäten, *englisch: Little interest or pleasure in your activities*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, alleine zu sein, *english: A feeling of loneliness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Angst oder Sorge, *english: Fear or worry*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Unruhe, *english: Restlessness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, soziale Situationen zu vermeiden, *english: A feeling of avoiding social situations*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Angst, von anderen Menschen negativ beurteilt zu werden, *english: Fear of being judged negatively by other humans*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Zuversichtlich, *allgemein* Herausforderungen/Probleme zu bewältigen, *english: confident to cope with general challenges/problems*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Zuversichtlich, *soziale* Herausforderungen/Probleme zu bewältigen, *english: confident to cope with social challenges/problems*

- Überhaupt nicht*/Not at all*
- Wenig*/Little*
- Mittelmäßig*/Moderately*
- Stark*/Strongly*
- Extrem*/Extremely*

Ein Gefühl von Erfolg/Fortschritt, *english: A feeling of success/progress*

- Überhaupt nicht*/Not at all*
- Wenig*/Little*
- Mittelmäßig*/Moderately*
- Stark*/Strongly*
- Extrem*/Extremely*

Vielen Dank für Deine Teilnahme! Ich wünsche Dir einen schönen Tag./*Thank you very much for your participation! Have a nice day.*

Notifications

Notification after reception of questionnaire:

Guten Morgen! Kannst Du mir ein paar Fragen beantworten?/ *Good morning! Can you answer me a few questions?*

Reminding notification one hour after reception of the questionnaire:

Hey bist Du da? Du hast noch eine Stunde Zeit, um die Fragen zu beantworten./ *Hey, are you there? You have one our left to answer the questions.*

Fragen am Mittag/*Questions in the afternoon*

Hey ich würde Dir gerne einige Fragen über dein Videospielverhalten von **gestern** stellen./*Good afternoon! Today I would like to ask you a few questions about your gaming behaviour of* ***yesterday***.

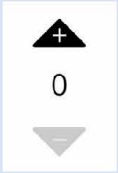
Hast du ein Videospiel im Zeitraum zwischen gestern 06.00 Uhr morgens und heute 06.00 Uhr morgens gespielt?/ *Did you play a video game in the period between yesterday 6AM and today 6AM?*

- Ja/*Yes* (if yes was selected then the normal chronological order of questions was presented)
- Nein/*No* (if no was selected then the next ten questions were skipped)

Zu welcher Zeit hast Du das/die Videospiel(e) gespielt? Mehrere Antworten sind möglich. Dies sind nur grobe Richtwerte. Wenn du also zum Beispiel um 17.55 Uhr angefangen hast zu spielen, wähle "Abends" und nicht „Mittags" aus./*At which Time have you played (a) video game(s)? Multiple answers are possible. Those are just approximate values. So, if you, for example started playing at 05.55 PM, choose "Evening" and not "Afternoon".*

- Morgens (06.00 Uhr bis 12.00 Uhr)/*Morning (6 AM to 12 AM)*
- Mittags (12.00 Uhr bis 18.00 Uhr)/*Afternoon (12AM to 6PM)*
- Abends (18.00 Uhr bis 22.00 Uhr)/*Evening (6PM to 10PM)*
- Nachts (22.00 Uhr bis 06.00Uhr)/*Night (10PM to 6AM)*

Bitte gib an, wieviele Stunden du **im Zeitraum zwischen gestern 06.00 Uhr morgens und heute 06.00 Uhr morgens** Videospiele gespielt hast. *Please indicate how many hours you played* ***in the time period between 6AM yesterday and 6AM today***.



(*increment of 0.5 possible until 24****)***

Mit welchem Gerät hast Du gespielt? Mehrere Antworten sind möglich./ *On which device have you played? Multiple answers are possible.*

- Konsole (z.B. Playstation, Xbox oder Nintendo)/*Console (e.g. Playstation, Xbox or Nintendo)*
- PC/Laptop
- Smartphone
- Anderes Gerät/*Other device*

Was für eine Art von Spiel hast Du gespielt? Mehrere Antworten sind möglich./*What type of game did you play. Multiple answers are possible.*

- MMORPG (z.B. World of Warcraft, Guild Wars 2)
- FPS (z.B. Fortnite, Counterstrike, Call of Duty)
- RPG (z.B.. Assassin's Creed, Skyrim)
- Arcade (Spiele mit simplen Regeln, häufig auch Smartphone oder Nintendospiele)
- MOBA (z.B. League of Legends, Dota 2)
- Survival (z.B. DayZ, Rust)
- Browsergames (wird auf Websites gespielt und erfordert keinen Download)
- Sports games (z.B. FIFA, NBA 2k)
- RTS (z.B. Starcraft, Command & Conquer)
- Simulation (z.B. Landwirtschaftssimulator, Flugsimulator)
- Kartenspiel (Kartenspiel (z.B. Hearthstone, Magic: The Gathering Arena)
- Kann ich den oben genannten Spieletypen nicht zuordnen

Hast Du online und/oder offline gespielt? Beide Antworten sind möglich./*Have you played online and/or offline? Both answers are possible.*

- Online
- Offline

Hast Du mit Freunden gespielt? Mehrere Antworten sind möglich./*Have you played with friends? Multiple answers are possible.*

- Ja (und zwar über eine voice-over Anwendung wie z.B. Teamspeak, Discord etc.
- Ja (und zwar ohne voice-over Anwendung und meine Freunde waren körperlich anwesend)
- Ich habe alleine gespielt

Bitte gib an, falls Du einer dieser Drogen **im Zeitraum zwischen gestern 06.00 Uhr morgens und heute 06.00 Uhr morgens** konsumiert hast. Mehrere Anworten sind möglich./*Please indicate if you took one of these drugs* ***within the period of 6AM yesterday and 6AM today****. Multiple answers are possible.*

- Alkohol/*Alcohol*
- Niktoin/*Nicotine*
- Cannabis
- Ecstasy
- Heroin/*Heroine*
- Kokain/*Cocaine*
- LSD
- Andere Drogen/*Other drugs*
- Ich habe keine dieser Drogen innerhalb der letzten 24 Stunden genommen./*I did not take any of these drugs within the last 24 hours.*(if this was selected, the next question was skipped)

Hast Du die Droge(n) vor, während (mit "Während" ist auch zwischendurch gemeint, also wenn Du z.B. gespielt und eine kurze Raucherpause gemacht hast und danach wieder angefangen hast zu spielen, bitte "Während" auswählen) oder nach dem Spielen von Videospielen genommen? Mehrere Antworten sind möglich./*Did you take the drug(s), before, during (with „During" is also inbetween meant, so if you, for example played and then took a cigarette break and after that began to play again, please choose "During") or after playing of video games? Multiple answers are possible.*

- Vorher/*Before*
- Während (zwischendurch)/*During (inbetween)*
- Nachher/*After*
- Nicht zutreffend/*Not applicable*

Vielen Dank für Deine Teilnahme. Reiche bitte zum Schluss Deine Antworten durch den Button unten rechts ein.

Notifications

Notification after reception of questionnaire:

Hey! Es gibt wieder Fragen zu beantworten! :)/ *Hey! There are questions to be answered again! :)*

Reminding notification one hour after reception of the questionnaire:

Fragen am Mittag. Du hast Deine Fragen am Mittag noch nicht ausgefüllt! Könntest Du das noch tun?./*Questions in the afternoon. You did not fill out your questions at afternoon yet. Could you still do that?*

Reminding notification six hours after reception of the questionnaire:

Fragen am Mittag. Hey, es wäre nett, wenn du die Fragen am Mittag noch nachholen könntest :)./*Questions in the afternoon. Hey, it would be nice, if you could catch up on the questions at afternoon*

Fragen am Abend/*Questions in the evening*

Guten Abend! Heute würde ich Dir gerne ein paar Fragen zu Deiner Stimmung und Deinen Gefühlen stellen./*Good evening! Today I would like to ask you a few questions about your mood and feelings.*

Zuerst möchte ich aber wissen, ob Du durch den Fragebogen beim Videospielen unterbrochen wurdest bzw. ob Du unmittelbar vorher gespielt hast./ *But first I would like to know if you were interrupted in gaming by the questionnaire or if you played just before.*

- Ja/*Yes* (if yes was selected then the normal chronological order of questions was presented)
- Nein/*No* (if no was selected then the next ten questions were skipped)

Bitte gib an, wie sehr die folgenden Aussagen zutreffen bzw. nicht zutreffen. Da Du gerade gespielt hast, beziehe Dich **in den nächsten 10 Fragen** auf dein **Spielerlebnis**./*Please indicate how much the following statements apply or do not apply. Because you have just played, refter in the next 10 questions to your gaming experience.*

1.Ich fühle mich optimal beansprucht./*I feel just the right amount of challenge*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

2. Meine Gedanken bzw. Aktivitäten laufen flüssig und glatt./ *My thoughts/activities run fluidly and smoothly*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

3. Ich merke gar nicht, wie die Zeit vergeht./*I do not notice time passing*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

4. Ich habe keine Mühe, mich zu konzentrieren./*I have no difficulty concentrating*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

5. Mein Kopf ist völlig klar./*My mind is completely clear*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

6. Ich bin ganz vertieft in das, was ich gerade mache./*I am totally absorbed in what I am doing*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

7. Die richtigen Gedanken/Bewegungen kommen wie von selbst./*The right thoughts/movements occur of their own accord*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

8. Ich weiß bei jedem Schritt, was ich zu tun habe./*I know what I have to do each step of the way*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

9. Ich habe das Gefühl, den Ablauf unter Kontrolle zu haben./*I feel that I have everything under control*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

10. Ich bin völlig selbstvergessen./*I am completely lost in thought*

Trifft nicht zu (*Does not apply)* O-O-O-O-O-O-O Trifft zu (*Does apply*)

Vielen Dank! Jetzt geht es mit Deiner allgemeinen Stimmung weiter. /*Thank you! Now it goes on with your general mood.*

Bitte gib an, bis zu welchem Grad du die folgenden Gefühle/Stimmungen **in diesem Moment** erlebst./ *Please indicate to which degree you experience the following feelings/moods* ***at the moment.***

Traurig oder niedergeschlagene Stimmung, *english: Sad or low mood*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Erschöpfung/niedrige Energie, *english: Fatigue/low energy*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Konzentrationsprobleme, *english: Concentration difficulties*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, wertlos zu sein, *english: A feeling of worthlesness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Wenig Interesse oder Freude an Deinen Aktivitäten, *englisch: Little interest or pleasure in your activities*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, alleine zu sein, *english: A feeling of loneliness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Angst oder Sorge, *english: Fear or worry*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Unruhe, *english: Restlessness*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl, soziale Situationen zu vermeiden, *english: A feeling of avoiding social situations*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Angst, von anderen Menschen negativ beurteilt zu werden, *english: Fear of being judged negatively by other humans*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Zuversichtlich, *allgemein* Herausforderungen/Probleme zu bewältigen, *english: confident to cope with general challenges/problems*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Zuversichtlich, *soziale* Herausforderungen/Probleme zu bewältigen, *english: confident to cope with social challenges/problems*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ein Gefühl von Erfolg/Fortschritt, *english: A feeling of success/progress*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Vielen Dank für Deine Teilnahme! Ich wünsche Dir einen schönen Tag./*Thank you very much for your participation! Have a nice day.*

Notifications

Notification after reception of questionnaire:

Guten Abend! Kannst Du mir kurz was beantworten??/ *Good evening! Can you shortly answer me something?*

Reminding notification one hour after reception of the questionnaire:

Hey du! Du hast noch 1 Stunde Zeit, um die Fragen zu beantworten./ *Hey you! You have 1 hour left to answer the questions*

Finaler Fragebogen/*Final questionnaire*

Vielen Dank, dass Du an meiner Studie teilgenommen hast! Zum Abschluss möchte ich Dich gerne bitten, letzte Fragen über Dich zu beantworten./*Thank that you took part in my study! In conclusion I would like to ask you to answer some last questions about you.*

Was schätzt Du, wieviele Stunden Du insgesamt in den letzten 2 Wochen gespielt hast?/*What do you think how many hours you played in the last 2 weeks?*

increment of 0.5 possible

Bitte gib an, zu welchem Grad Du den folgenden Aussagen zustimmst./*Please indicate to which degree you agree to the following statements.*

Wenn sich Widerstände auftun, finde ich Mittel und Wege, mich durchzusetzen./*If obstacles occur, I can find the ways and means to get what I want.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Die Lösung schwieriger Probleme gelingt mir immer, wenn ich mich darum bemühe./*The solution of difficult problems succeeds if I try hard enough.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Es bereitet mir keine Schwierigkeiten, meine Absichten und Ziele zu verwirklichen./*It causes me no difficulties to accomplish my purposes and goals.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

In unerwarteten Situationen weiß ich immer, wie ich mich verhalten soll./*I always know in unforeseen situations how to behave.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Auch bei überraschenden Ereignissen glaube ich, dass ich gut mit ihnen zurechtkommen kann./*Even in unexpected events, I believe that I could deal efficiently with them.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Schwierigkeiten sehe ich gelassen entgegen, weil ich meinen Fähigkeiten immer vertrauen kann./*I remain calm when facing difficulties because I can rely on my coping abilities.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Was auch immer passiert, ich werde schon klarkommen./*I can handle whatever comes my way*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Für jedes Problem kann ich eine Lösung finden./*For every problem I can find a solution.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn eine neue Sache auf mich zukommt, weiß ich, wie ich damit umgehen kann./*If a new situation comes up to me, I know how to handle it.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ein Problem auftaucht, kann ich es aus eigener Kraft meistern./*If a problem occurs, I can master it by my own efforts.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Es ist schwierig für mich, neue Freunde zu finden./*It is difficult for me to make new friends.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich jemanden sehe, den ich gerne treffen würde, gehe ich zu der Person, anstatt darauf zu warten, dass er oder sie zu mir kommt./*If I see someone I would like to mett, I go tot hat person instead of waiting for him or her to come to me.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich jemand Interessantes treffe, mit dem es schwierig ist, Freundschaft zu schließen, werde ich zeitnah aufhören zu versuchen, Freundschaft mit der Person zu schließen./*If I meet someone interesting who is hard to make friends with, I'll soon stop trying to make friends with that person.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Wenn ich versuche mich mit jemandem, der zunächst uninteressiert scheint, anzufreunden, gebe ich nicht leicht auf./*When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Ich komme in sozialen Ansammlungen nicht gut zurecht./*I do not handle myself well in social gatherings.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Ich habe mir meine Freunde durch meine persönlichen Fähigkeiten, Freundschaften zu schließen, angeeignet./*I have acquired my friends through my personal abilities at making friends.*

- Stimmt nicht/*Not at all true*
- Stimmt kaum/*Barely true*
- Stimmt eher/*Moderately true*
- Stimmt genau/*Exactly true*

Du bist fast fertig! Nur noch ein paar Fragen./*You are almost finished. Just a few more questions.*

Die Anforderungen des Alltags ziehen mich runter./*The demands of everyday life often get me down.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Allgemein fühle ich, über die Situation, in der ich lebe, das Kommando zu haben./*In general, I feel I am in charge of the situation in which I live.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Ich bin gut darin, mit den Verantwortungen des Alltags zurechtzukommen./*I am good at managing the responsibilities of daily life.*

- Stimme überhaupt nicht zu/*Strongly disagree*
- Stimme überwiegend nicht zu/*Somewhat disagree*
- Stimme eher nicht zu/*A little disagree*
- Weiß ich nicht/*Neither agree or disagree*
- Stimme gerade noch zu/*A little agree*
- Stimme überwiegend zu/*Somewhat agree*
- Stimme voll zu/*Strongly agree*

Bitte gib an, wie sehr Dich die folgenden Probleme **während der letzten Woche** beschäftigt haben./*Please indicate how much the following problems troubled you **wihtin the last week.***

Aus Angst vor Verlegenheit vermeide ich es, bestimmte Dinge zu tun oder Personen anzusprechen/*Fear of embarrassment causes me to avoid doing things or speaking to people*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Ich vermeide Aktivitäten, durch die ich im Mittelpunkt der Aufmerksamkeit stehe/ *I avoid activities in which I am the centre of attention*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Sich zu schämen oder dumm zu wirken, gehört zu meinen schlimmsten Ängsten/*Being embarrassed or looking stupid are among my worst fears*

- Überhaupt nicht/*Not at all*
- Wenig/*Little*
- Mittelmäßig/*Moderately*
- Stark/*Strongly*
- Extrem/*Extremely*

Wie oft fühltest Du Dich im Verlauf der **letzten 2 Wochen** durch die folgenden Beschwerden beeinträchtigt?/ *How often did you feel troubled through the following complaints* ***in the last 2 weeks?***

Nervosität, Ängstlichkeit oder Anspannung/*Feeling nervous, anxious or on edge*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Nicht in der Lage sein, Sorgen zu stoppen oder zu kontrollieren/*Not being able to stop or control worrying*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Übermäßige Sorgen bezüglich verschiedener Angelegenheiten/*Worrying too much about different things*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten zu entspannen/*Trouble relaxing*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Rastlosigkeit, so dass Stillsitzen schwer fällt/*Being so restless that it is hard to sit still*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schnelle Verärgerung oder Gereiztheit/*Becoming easily annoyed or irritable*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Gefühl der Angst, so als würde etwas Schlimmes passieren/*Feeling afraid as if something awful might happen*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Wenig Interesse oder Freude an Deinen Tätigkeiten/*Little interest or pleasure in doing things?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Niedergeschlagenheit, Schwermut oder Hoffnungslosigkeit/*Feeling down, depressed, or hopeless?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten ein- oder durchzuschlafen oder vermehrter Schlaf/*Trouble falling or staying asleep, or sleeping too much?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Müdigkeit oder Gefühl, keine Energie zu haben/*Feeling tired or having little energy?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Verminderter Appetit oder übermäßiges Bedürfnis zu essen/*Poor appetite or overeating?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schlechte Meinung von sich selbst; Gefühl, ein Versager zu sein oder die Familie enttäuscht zu haben/*Feeling bad about yourself - or that you are a failure or have let yourself or your family down?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Schwierigkeiten, sich auf etwas zu konzentrieren, z.B. beim Zeitunglesen oder Fernsehen/*Trouble concentrating on things, such as reading the newspaper or watching television?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Waren Deine Bewegungen oder Deine Sprache so verlangsamt, dass es auch anderen auffallen würde? Oder warst Du im Gegenteil "zappelig" oder ruhelos und hattest Du dadurch einen stärkeren Bewegungsdrang als sonst?/*Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Gedanken, dass Du lieber tot wärst oder Dir Leid zufügen möchtest/*Thoughts that you would be better off dead, or of hurting yourself in some way?*

- Überhaupt nicht/*Not at all*
- An einzelnen Tagen/*Several days*
- An mehr als der Hälfte der Tage/*More than half the days*
- Beinahe jeden Tag/*Nearly every day*

Vielen Dank für Deine Unterstützung! :) Du hast hiermit Deine Teilnahme an meiner Studie abgeschlossen. Reiche Deine Fragen bitte zum letzten Mal unten rechts ein./*Thank you very much for your support! :) You have completed your participation in my study now. Please submit your questions for the last time below on the right*

Notifications

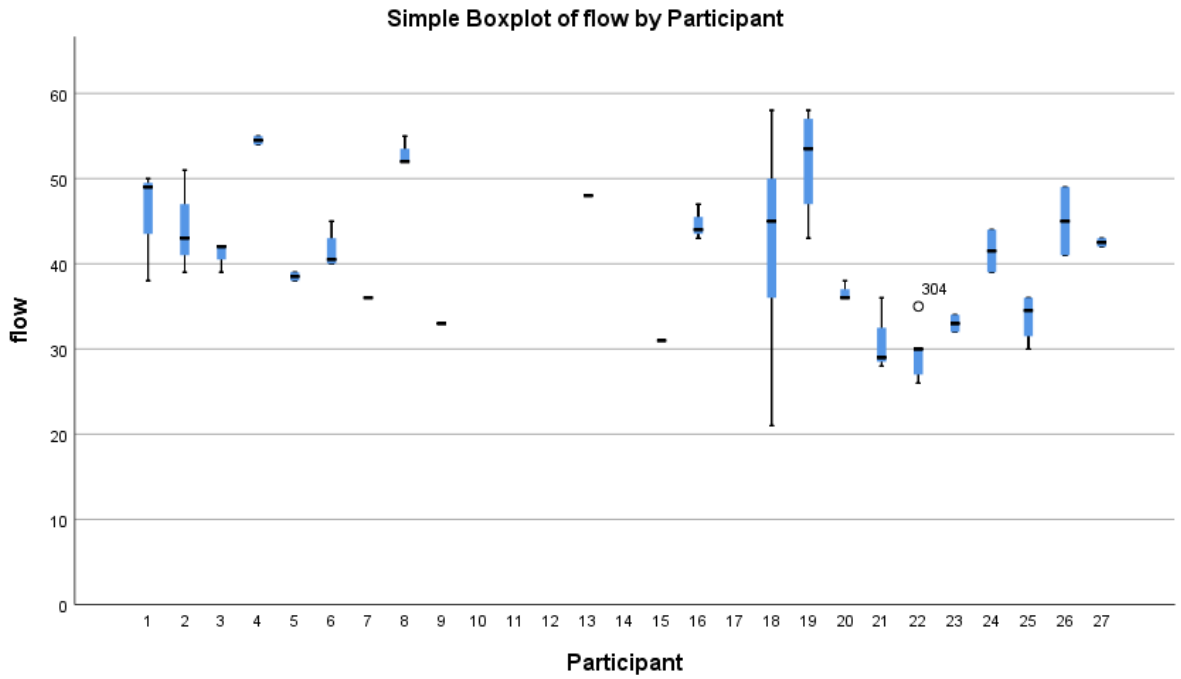
Notification after reception of questionnaire:

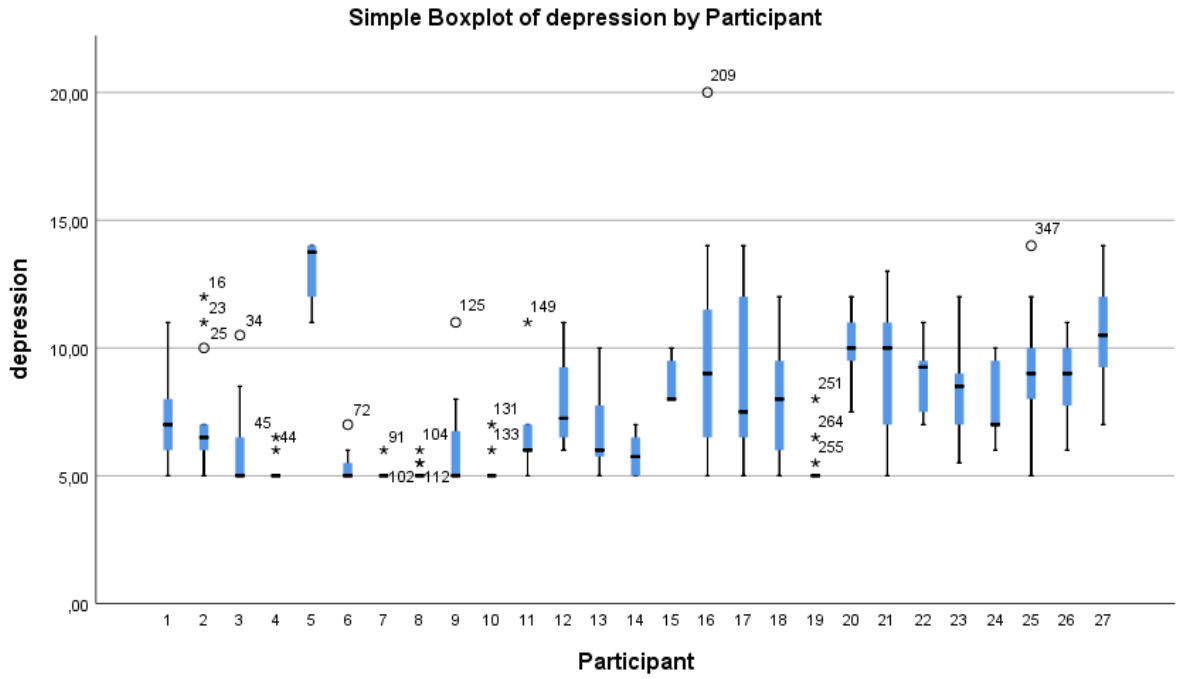
Willkommen! Du kannst deine Teilnahme in dem Fragebogen jetzt beginnen/ *Welcome! You can start your participation now in the questionnaire*

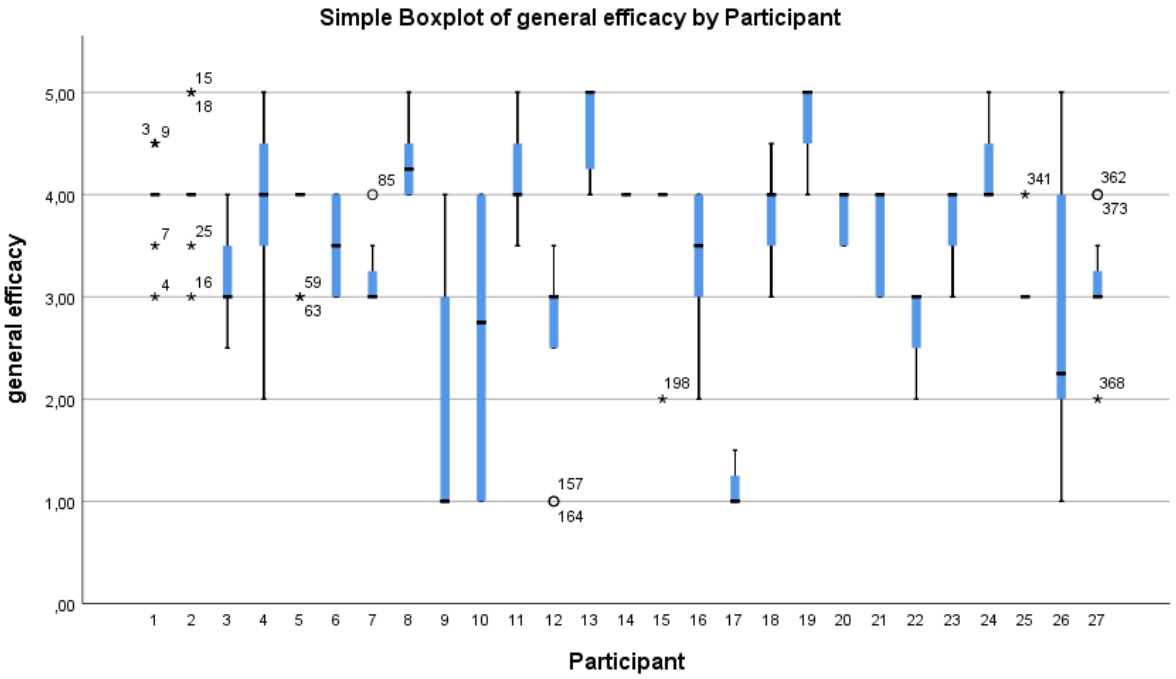
Reminding notification 90 minutes after reception of the questionnaire:

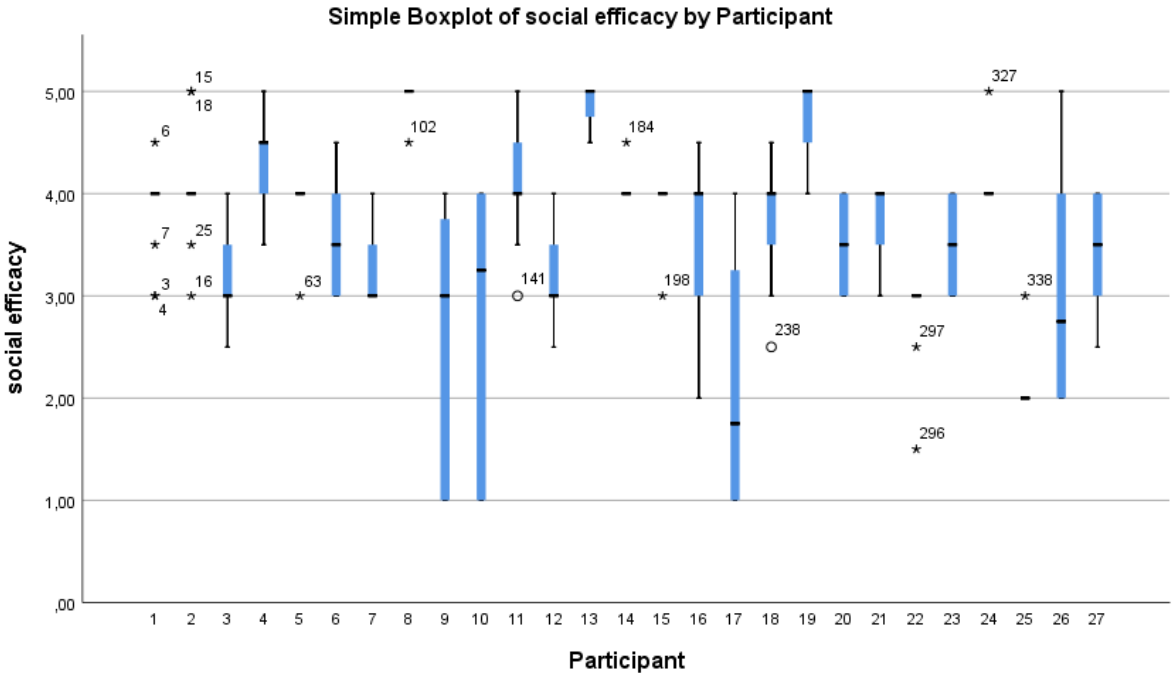
Hey! Du hast deinen Fragebogen noch nicht ausgefüllt. Jetzt hast du noch die Chance dazu :)/ Hey! You did not fill out your questionnaire yet. Now you still have the chance to do so :)

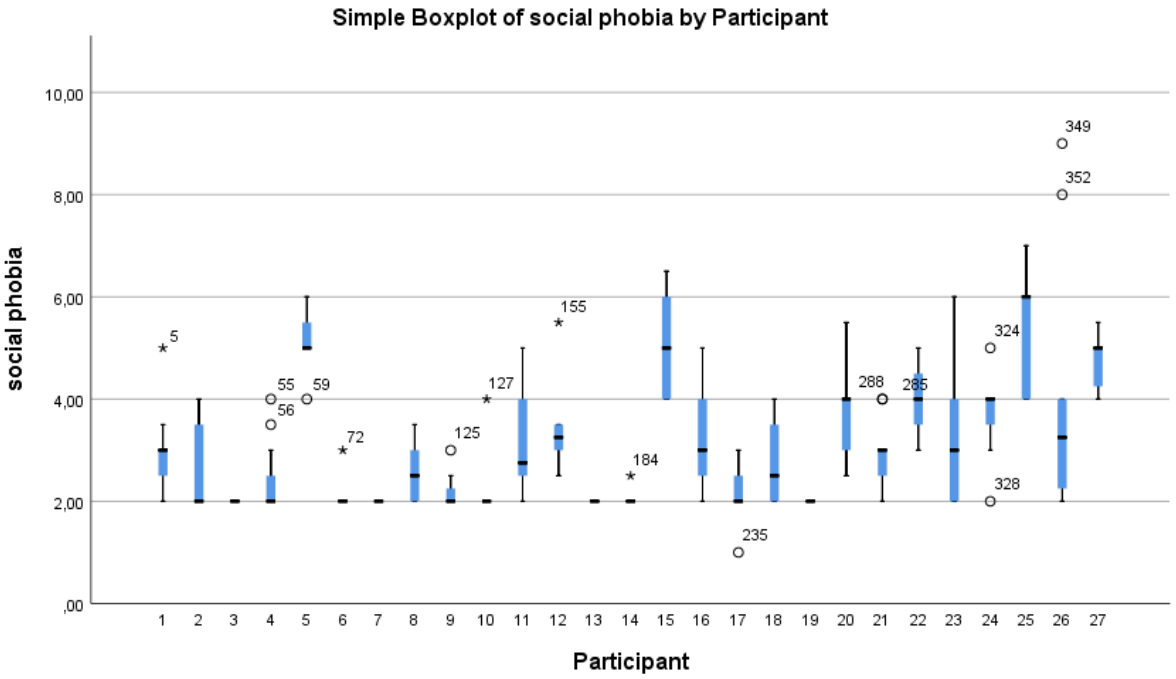
Appendix B

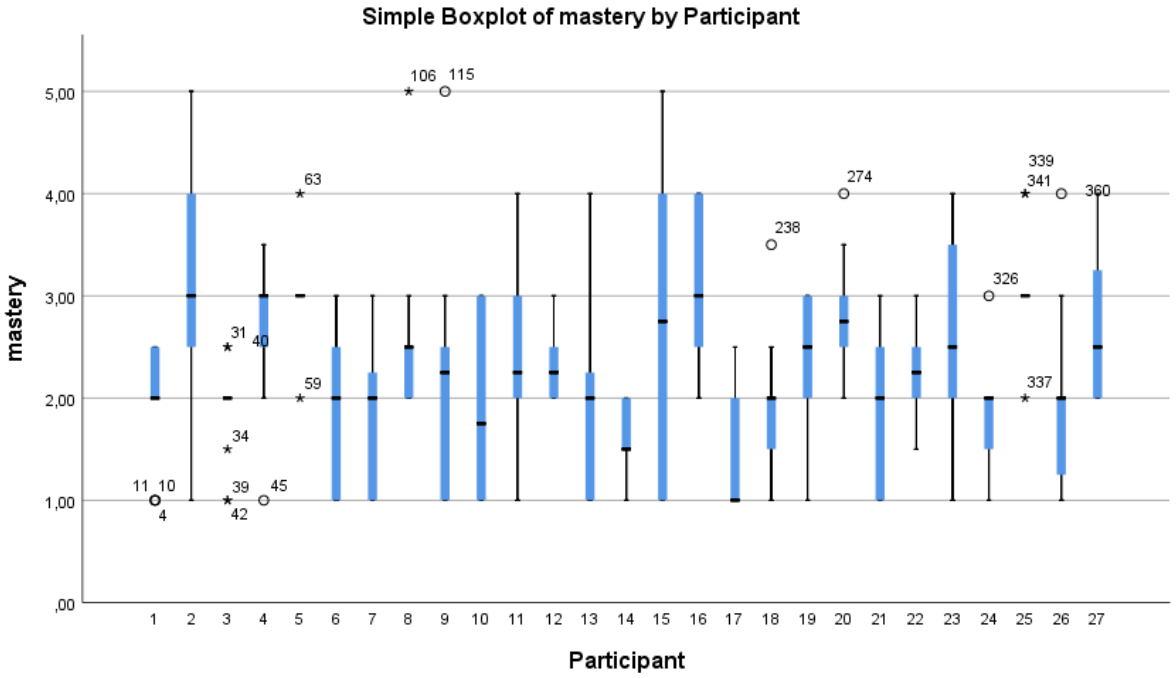

Simple Boxplot of flow by Participant
flow
Participant
304

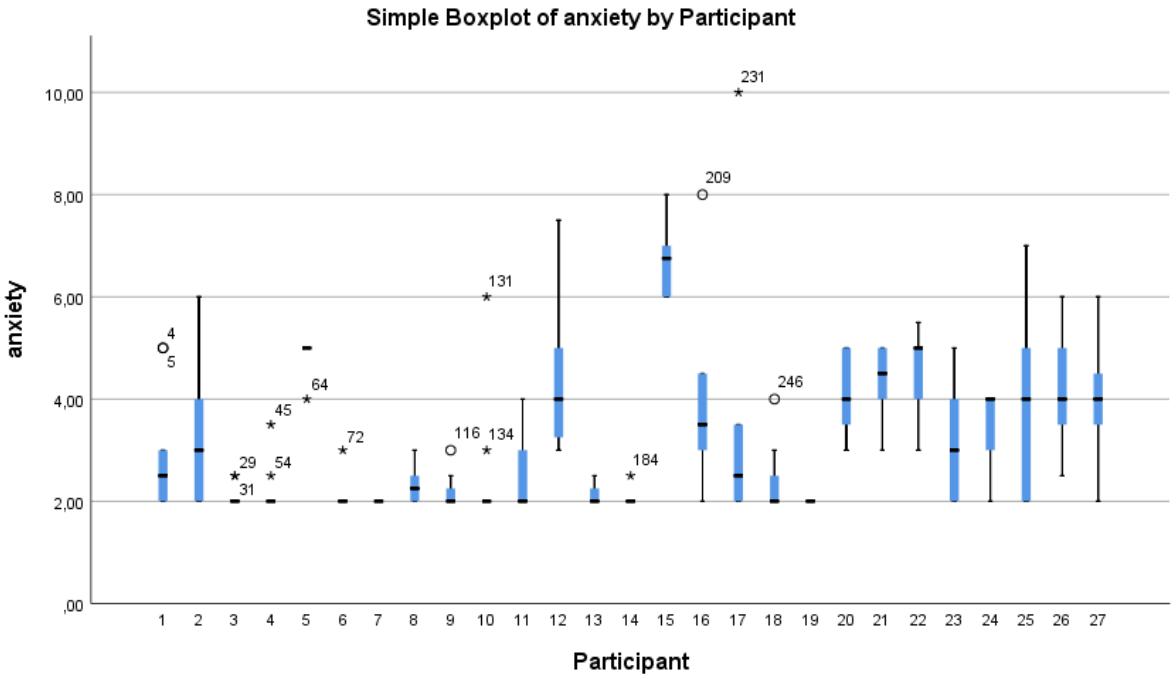

Simple Boxplot of depression by Participant
depression
Participant
209
347
125
149
72
131
251
264

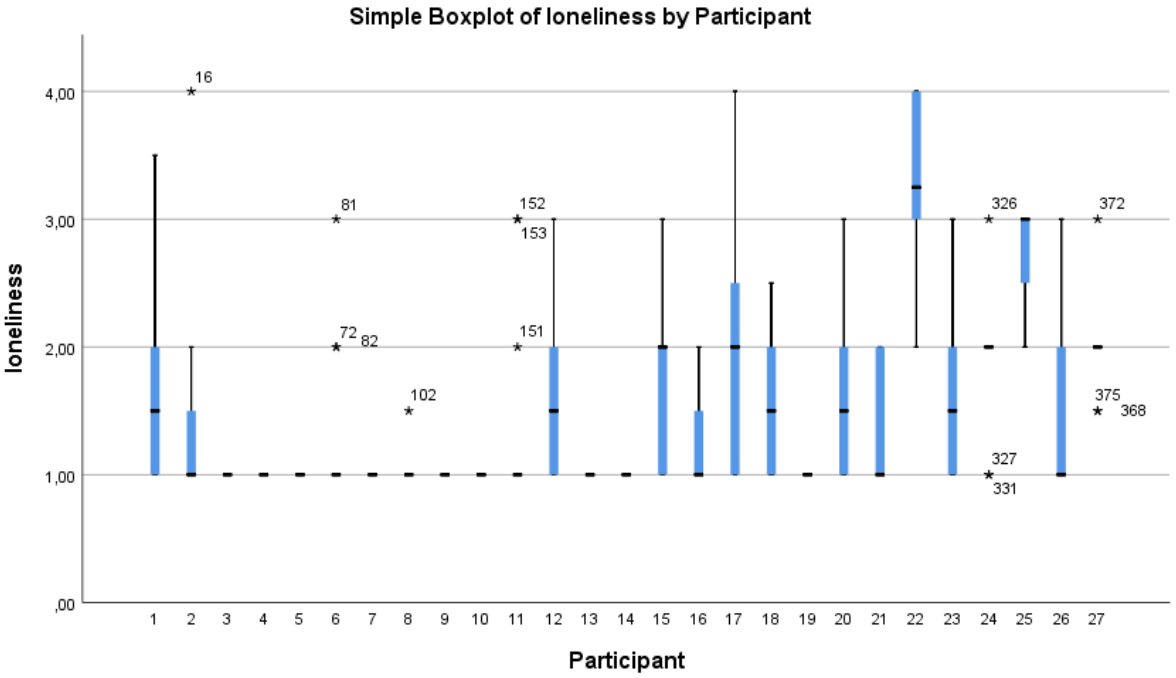

Simple Boxplot of general efficacy by Participant
general efficacy
5,00
4,00
3,00
2,00
1,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Participant

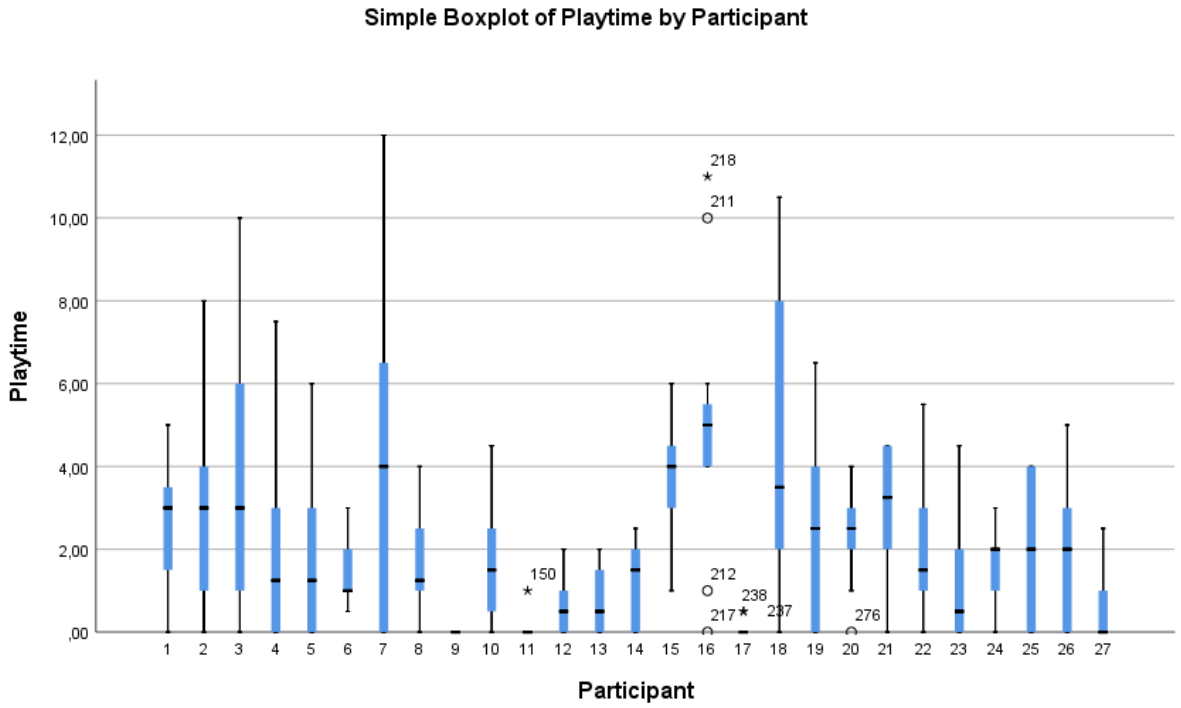

Simple Boxplot of social efficacy by Participant
social efficacy
5,00
4,00
3,00
2,00
1,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Participant

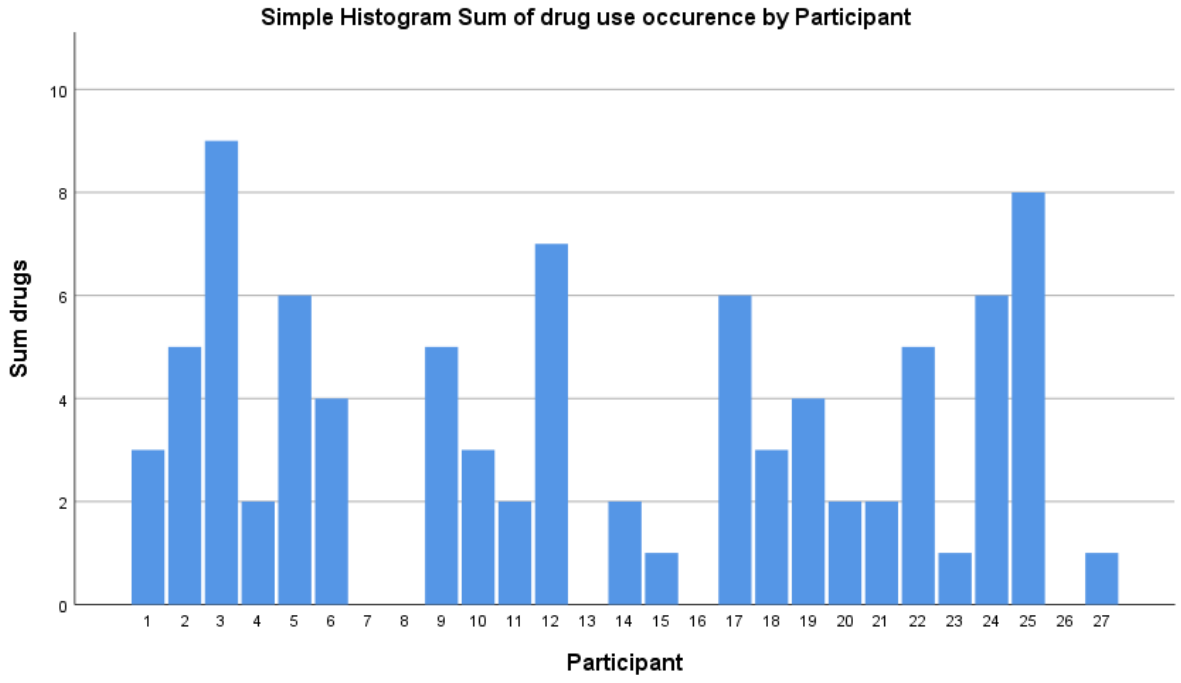

Simple Boxplot of social phobia by Participant
social phobia
10,00
8,00
6,00
4,00
2,00
,00
Participant
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27


Simple Boxplot of mastery by Participant
mastery
5,00
4,00
3,00
2,00
1,00
,00
Participant
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27


Simple Boxplot of anxiety by Participant
anxiety
Participant
10,00
8,00
6,00
4,00
2,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
231
209
131
4
5
64
45
72
116
134
246
29
31
54
184


Simple Boxplot of loneliness by Participant
loneliness
Participant
4,00
3,00
2,00
1,00
,00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
16
81
152
153
326
372
72
82
151
102
375
368
327
331


Simple Boxplot of Playtime by Participant
Playtime
12,00
10,00
8,00
6,00
4,00
2,00
,00
218
211
150
212
238
217
237
276
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Participant


Simple Histogram Sum of drug use occurence by Participant
Sum drugs
10
8
6
4
2
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Participant