BACHELOR THESIS

Measuring the Window of Tolerance in Student's Daily Life: Integrating Core Affect and Body Awareness

Jerôme S.A. Löffel

Faculty of Behavioural Management and Social Sciences

University of Twente

1st Supervisor: Matthijs L. Noordzij

2nd Supervisor: Gerko Schaap

July 5, 2022

Abstract

The “Window of Tolerance” (WoT) is a concept that refers to a zone of arousal states in which individuals can function. It is used as an essential concept in clinical practice, especially with trauma-patients. This study is first in measuring this concept empirically, in the context of the daily life of students. Core affect, a measure of arousal and valence, was also measured daily. Additionally, each participant's trait body awareness was measured. In a sample of 19 students, the WoT and core affect were assessed on the smartphone application Ethica, 6 times a day for one week. Participants were asked to give one upper and one lower boundary of their state WoT on a scale of 0-100. The difference between the boundaries represents the width of the state WoT. Body awareness was measured once at the beginning of the week. Linear mixed modelling analyses were conducted to calculate the estimated marginal means of the WoT and core affect. Associations between the WoT, core affect and body awareness were calculated. There were significant differences in the width of state WoT between- and within participants. State arousal was positively associated with the state upper and state lower boundary of the WoT. State valence was positively associated with the upper boundary of the state WoT. Body awareness was negatively associated with the width of the state WoT and state valence. This study introduced a measurement tool for empirically measuring the WoT in everyday life and showed within- and between person differences in a student sample. It concludes that the students of this sample were almost always in their WoT in everyday life. Furthermore, a positive relationship between core affect and the position of the WoT was found, as well as an unexpected negative relationship between body awareness and valence. Future research could use the measurement approach of this study for clinical populations and further establish processes of measuring the WoT. Moreover, measuring the WoT could be used in interventions to provide tailored support to individuals at the right moment.

Keywords: window of tolerance, core affect, body awareness, arousal, valence

Measuring the Window of Tolerance in Student's Daily Life: Integrating Core Affect and Body Awareness

The degree to which individuals can tolerate challenging states of arousal has been conceptualized as the 'Window of Tolerance' (Siegel, 2012). It is often used as an accessible theoretical framework in a clinical context, especially for the treatment of trauma-patients (Langmuir et al., 2012; Lohrasbe & Ogden, 2017; Ogden et al., 2006). Nonetheless, it has not been investigated under what circumstances and in what way the WoT differs between and within individuals. Frequently experiencing arousal states outside of the WoT is hypothesized to be detrimental to the wellbeing and mental health of individuals (Corrigan et al., 2011; Ogden et al., 2006). Thus, it is crucial to gain insight into how the WoT fluctuates in everyday life and to find the factors associated with its characteristics. This is especially important for populations that are already vulnerable to mental health issues and psychological instability, like university students (Pedrelli et al., 2015; Stallman, 2010). This study aimed to operationalize the measurement of the WoT of students in everyday life. Measurements were taken several times a day for several days, in line with the experience sampling methodology (ESM) (Larson & Csikszentmihalyi, 2014). This enabled an empirical measurement of the everyday fluctuations of the WoT in daily life. As such, a concrete measurement of the concept of the WoT was taken for the first time. Moreover, the association between the related factors core affect, body awareness and the WoT were examined. Thus, this study aims to find the differences in the windows of tolerance in a university student sample, based on factors like core affect and body awareness. It makes use of the experience sampling methodology, to find out how the WoT changes in an everyday life context. To our knowledge, this is the first attempt at validating the theory of the WoT in an empirical manner.

The Window of Tolerance

The WoT was first introduced in the book "The Developing Mind" (Siegel, 2012). According to this model, emotions are perceived as tolerable when experienced from arousal levels that remain in a certain zone outside of extremes (Siegel, 2012). This window can be narrow or wide depending on the individual, which means that some individuals have a wider range of arousal states which are considered tolerable (Siegel, 2012). When arousal levels rise too high, hyperarousal occurs. Individuals become chaotic, feel out of control, and experience a range of symptoms like hypervigilance, emotional flooding, and high-risk behaviour (Corrigan et al., 2011). When arousal levels drop too low, hypoarousal occurs. Individuals then experience numbness characterized by flat affect, helplessness, and hopelessness (Corrigan et al., 2011). It follows that when arousal remains in the WoT, emotions may be intense or weak, but they can be tolerated by the individual. The zones of the WoT, hyper- and hypoarousal are illustrated in figure 1.

Figure 1

The Window of Tolerance

Hyperarousal: hypervigilance, emotional flooding, feeling out of control, high-risk behaviour
Window of Tolerance: tolerable zone of arousal, both intense and relaxed emotional states
Hypoarousal: numbness, flat affect, feelings of helplessness and hopelessness

A theoretical suggestion for the WoT as a concept, is that the boundary for too little and too much arousal varies from person to person and can change over time, in response to different

experiences (Siegel, 2012). This is also how the concept of the WoT can be used in a clinical context.

Absence of a Measuring Tool for the WoT in Clinical Practice

Many individuals, like those implicated by trauma, suffer from abnormal states of arousal and dysregulated affect (Ogden et al., 2006). Especially patients suffering from post-traumatic-stress disorder appear to have a low tolerance for unbalanced arousal states leading to dysregulated affect (Ogden et al., 2006). The theory of the WoT has been used in psychotherapy, especially sensorimotor approaches, due to the physiological component of arousal states (Lohrasbe & Ogden, 2017; Ogden et al., 2006). Moreover, research has used the WoT as a theoretical framework to understand autonomic dysregulation (Corrigan et al., 2011). When it comes to the clinical application of this concept, it is often used as a framework to understand the arousal states of patients (Langmuir et al., 2012; Lohrasbe & Ogden, 2017; Ogden et al., 2006). Next to theoretical understanding and its use as a psychoeducational tool, this concept could also be used in a more practical manner. For instance, by using a measuring instrument with which actual scores for the WoT could be obtained and compared between and within individuals. While it can be helpful to have a theoretical understanding of tolerable arousal states, operationalising this concept further by using measurement tools could potentially widen the scope of its application. Despite the presence of the WoT in practice and even in research, to our knowledge, there has been no empirical investigation into the characteristics and differences of the WoT, with the use of a measurement instrument. However, there are other theories relating to arousal states that have been examined in an empirical manner.

Core Affect

Core affect describes an individual's fundamental state in terms of two dimensions: arousal and valence (Russell, 2009). According to Kuppens et al. (2010), core affect is a non-

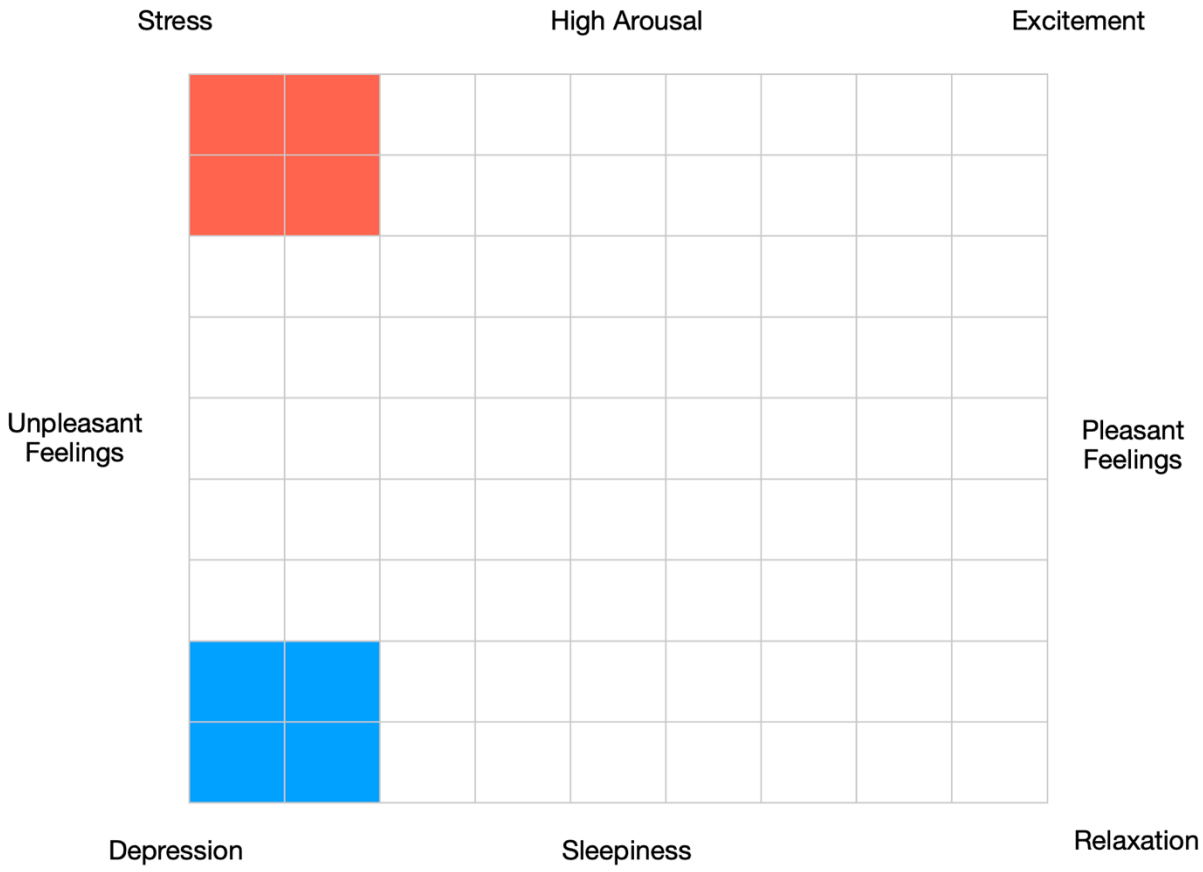
reflective feeling state that is consciously accessible and not necessarily directed towards anything. Arousal refers to the property of subjective feelings appearing active or inactive and valence refers to the pleasantness or unpleasantness of a subjective feeling state (Kuppens et al., 2010). Individuals can have very different levels of arousal and valence at any point in time. For instance, one could be very low on the valence dimension, experiencing a sensation of hopelessness, while simultaneously experiencing regular or low levels of arousal. Similarly, the same high arousal level can account for distinct emotional experiences like stress (low valence) and excitement (high valence), depending on the co-occurring valence level (Russell et al., 1989). There is a benefit in terms of measuring core affect and the WoT alongside each other. Core affect is a combination of two scores, arousal, and valence, but these scores lie on a dimension with no qualitative cut-off points. They can only be characterised as continuously increasing up to the scale maximum. However, the WoT represents a range of tolerable arousal levels between two cut-off points or boundaries beyond which lies either hyper- or hypoarousal. By measuring both a person's arousal and those two boundaries of the WoT, their current arousal level can be interpreted in relation to the WoT. Their arousal level may lie very close to the boundary of hyperarousal, or outside of the WoT altogether. A measurement including both is thus more informative than either one alone. In addition, hyper- and hypoarousal are both characterised by negative emotional states like hopelessness or feelings of loss of control (Corrigan et al., 2011), which indicates that the valence score of core affect could perhaps also serve as an indicator for a person being outside of their WoT.

One way of measuring core affect is with an affect grid, a single item scale on which a subject places a mark somewhere on the grid (Russell et al., 1989). The higher squares of the grid represent higher states of arousal, the squares to the right represent higher states of valence, and vice versa. Figure 2 represents an affect grid based on the one presented by Russell et al. (1989). In addition, it includes what could be conceptualised as the hyper- and hypoarousal

states in the upper and lower left corner. If the theory of the WoT is applied to this affect grid, it could be said that the white squares represent the WoT, the red squares hyperarousal, and the blue states hypoarousal. The relationship between core affect and the WoT remains theoretical, as to our knowledge, these concepts have not been investigated empirically alongside each other.

Figure 2

Affect Grid



Measuring the WoT with the Experience Sampling Method

There is plenty of research on stable traits and characteristics in the field of psychology, but recent interest in measuring daily experience has emerged (Larson & Csikszentmihalyi, 2014). This may be because the use of questionnaires and interviews outside of the context of people's everyday lives can be subject to issues of ecological validity (Willems, 1969, as cited

in Larson and Csikszentmihalyi, 2014). Retrospective data is prone to error, as informants are often unable to accurately recall their past experiences (Bernard et al., 1984; Stone et al., 2004). Additionally, branches of Psychology like Ecological Psychology have argued for studying psychological concepts in the context into which they are embedded, as opposed to studying them in 'unnatural', experimental settings (Lobo et al., 2018). An emerging method which strives to measure psychological properties in daily experience is the Experience Sampling Method (ESM). ESM uses self-report data and relies on frequent momentary assessments of individuals in a real-life context (Larson & Csikszentmihalyi, 2014). As a result, the risk of error in measurement due to depending on reconstructive memory is largely avoided.

ESM has benefits when it comes to assessing the variability of psychological variables, including the one's that this study focused on. Kuppens et al. (2010) state that there are individual differences in how core affect changes throughout time, based on factors like the use of emotional regulation strategies. While the WoT likely varies between people, it is unclear whether it is stable within people. Since even personality traits, which are generally regarded as rather stable, seem to fluctuate within-persons (Fleeson & Law, 2015), it is reasonable to assume that the WoT may be different for people at different times. Such differences can then be investigated with ESM. Previous research investigating the WoT is scarce, but arousal has been included in some studies which also make use of the ESM. A study by Goetz et al. (2013) researched boredom and differentiated it into categories characterized by different profiles of valence and arousal. Moreover, Kuppens et al. (2012) investigated the connection between appraisal and core affect. Examining the WoT in combination with core affect has not been investigated in an everyday context. In addition to observing the WoT in daily life, certain factors that may be associated can be investigated. One factor that likely plays a role in core affect and the WoT is body awareness.

Association between Body Awareness and the Window of Tolerance

There are considerable differences in how aware individuals are of their internal bodily sensations (Garfinkel et al., 2015), which could influence a person's experience and functioning in several ways. Physiological responses, like activation of the sympathetic nervous system for example, are important components of arousal levels and characterise states like hyper- or hypoarousal (Corrigan et al., 2011). Multiple studies have found that awareness of the body through practicing mindfulness is associated with increased wellbeing and positive affect (Brani et al., 2014; Grecucci et al., 2015). Counterintuitively, increased focus on negative physical sensations like pain, as opposed to repressing them, can lead to a *reduction* in perceived pain (Burns, 2006). Similarly, low interoceptive accuracy, which refers to the ability to feel and report one's own heartbeat, is associated with an inability to accurately feel and describe one's own emotions (Murphy et al., 2017). These studies would suggest that body awareness could allow for positive affect and may lead to more emotional regulation in case arousal moves out of the WoT. However, the associations of an individual's level of body awareness with their core affect and WoT have not been examined before.

The Current Study

This study recognised the lack of a measurement approach when it comes to the frequently used concept of the WoT. Therefore, the main goal of this study was to make a first attempt at operationalising this theory. This was done in the context of experience sampling, meaning that multiple daily measurements were taken for several days. The WoT was measured by obtaining the upper and lower limits of the WoT on a scale of arousal. The difference between the two limits was calculated and represents the width of the WoT. The main research question concerned the extent of differences in width of the WoT between and within persons. By obtaining numerical values for the WoT, it was possible to compare the values between the participants. Due to the ESM, it was also possible to derive within-person differences. This study used a sample composed of university students. Because the sample

was not clinical, it was expected that the student's arousal would generally not reach extremely high or low levels. Hence, it was hypothesised that the students of this sample would be within the WoT for the majority of measurements.

In addition to the WoT, daily core affect was measured. This allowed the analysis of associations between state arousal and the width of the state WoT, as well as associations between state valence and the width of the state WoT. Moreover, it was examined whether the state upper and lower boundaries of the WoT were associated with either state arousal or state valence. Another variable that was measured daily was confidence in measurement, showcasing how certain participants were about the answers they were giving to the daily questionnaire items. This measure also indicated whether the questions in the daily surveys made sense to the participants. Since a relation between self-confidence and body awareness has been indicated before (Gyllensten et al., 2010), it was hypothesised that confidence will be positively associated with body awareness. Next to state variables, trait body awareness and trait measurements of all state variables were made. The associations between trait body awareness, mean width of the state WoT and mean state core affect were examined. Because awareness of the body has been associated with more effective emotional regulation (Brani et al., 2014; Grecucci et al., 2015), trait body awareness was expected to be positively associated with the mean width of the state WoT.

Methods

Participants and Design

The present study was conducted from April 2022 to May 2022 and made use of the experience sampling methodology. The study followed a longitudinal study design. Momentary assessments on various state variables were collected. A convenience sampling method was used to recruit participants. The majority of students were recruited from the Test Subject Pool (SONA) of the Behavioural, Management, and Social Science Faculty (BMS) of

the University of Twente. Other participants were recruited through the social network of the researchers. By participating in the study through the test subject pool (SONA), students were rewarded with .75 credits for their participation. To take part in the study, all participants had to give online consent after being informed about the contents of the study and their right to withdraw at any time. Before starting the data collection, the study was submitted for review by the Ethics committee of the BMS faculty and received ethical approval. To meet the inclusion criteria for this study, students needed sufficient proficiency at the English language and be over the age of 18. Moreover, students needed to have access to a smartphone that supported the mobile application "Ethica" for the entire duration of the study. Participants who did not meet these criteria were excluded from the sample.

The intended sample size for this study was 50, to obtain data of at least 30 participants after data filtering. In total 32 participants were recruited and signed up to the study on the Ethica platform before the end of the data collection phase. Due to time constraints, it was not possible to extend the data collection. The participants with a compliance rate of under one third of state questionnaires (i.e. less than 14 filled in state questionnaires) likely only responded to notifications when it was convenient for them, which meddles with the validity of the responses overall (Myin-Germeys & Kuppens, 2021). For this reason, participants with a compliance rate under 33% were excluded. After excluding participants due to missing data or not meeting inclusion criteria, a sample of 19 participants remained. The general demographic information about the 19 remaining participants can be seen in table 1.

Table 1

Means (M), standard deviations (SD), percentages (%) and frequencies (N)

Variables	Category	All Students (N= 19)
Age, M (SD)	Age	23.6 (3.9)
Gender, n (%)	Male	4 (23.8)

	Female	15 (71.4)
Nationality, n (%)	German	15 (76.2)
	Dutch	2 (9.5)
	Chinese	1 (4.8)
	South African	1 (4.8)

Materials

Several measurement tools were used for this study. The daily measurement instrument was a state questionnaire concerning the state levels of core affect, the WoT and confidence in measurement. The trait levels of body awareness, WoT, core affect and confidence in measurement were measured with the use of three separate trait questionnaires. Moreover, a survey was used to ask for online consent and to collect demographic information. Lastly, one trait questionnaire measured the mean WoT, core affect and confidence in measurement of the past week, at the end of the study. The last questionnaire was not used due to a low compliance rate. All questionnaires were created with the online research platform Ethica.

Ethica

The online platform Ethica is a research tool on which questionnaires can be created and administered. There is a webpage version and a mobile version available. Questionnaires can be designed to be triggered at different time points and to expire after certain time frames, which allows for ESM data to be collected. Participants receive notifications at specified time schedules and can respond to the surveys on their smartphone, in the mobile application. After the data collection phase, the desired data can be downloaded based on the selections made concerning surveys and participants.

State Questionnaire

The state questionnaire was designed to measure the WoT and core affect, as well as confidence in given answers. The first two questions "*Is your experience unbearable right*

now?" and *"Do you feel emotionally numb right now, to the point that it is difficult to function?"* were meant to assess whether participants were in their WoT or in a state of hyper- or hypoarousal. They could be answered with "*Yes*", "*No*", or "*Almost*". The sentences were based on descriptions of hyper- and hypoarousal (Contreras, 2015; Corrigan et al., 2011).

Core affect was assessed using two sliding scales that went from 0 to 100. Participants were asked to indicate their current number using the slider, separately for both arousal and valence. Frequently, core affect is measured using a two-dimensional grid (Russell, 2009). For instance, Kuppens et al., (2012) used a 99 x 99 grid for their repeated core affect measurement, allowing participants to choose from a wider range of numbers than a 9 x 9 grid would provide. This study used a similar range, but instead of using a grid, the sliding scale option within Ethica was used. There was one sliding scale for arousal and valence each, both ranging from 0 to 100.

The sliding scale for arousal was used twice again for measuring the upper and lower boundary of the current WoT. Participants were then asked to indicate what number on the scale would feel much too high or much too low, respectively. Together, those measurement points were used to calculate the width of the WoT. Confidence in answers was assessed after every answer using a 5-point Likert scale from 1 ("Not confident"), 2 (Slightly confident), 3 (Somewhat confident), 4 (Fairly confident) to 5 ("Completely confident). Before analysing the data, the state items were tested for their psychometric quality. By comparing the mean state scores of each individual from the first half of the week with the mean scores of the second half of the week, test-retest reliability of the measurements can be determined (Hektner et al., 2007; Larson & Csikszentmihalyi, 2014). The state arousal means of both halves of the week that the study was conducted in were highly correlated ($r = .85$, $p < .001$). The means of the upper boundary of the WoT were moderately correlated ($r = .63$, $p = .005$) and of the lower

boundary highly correlated ($r = .95$, $p < .001$). Mean state valence of both halves showed the weakest moderate correlation ($r = .51$, $p = .027$).

Trait Questionnaires

Body Perception Questionnaire (BPQ).

The body perception questionnaire (BPQ) was created by Porges (1993) and is divided into five subscales. Each subscale concerns a different aspect of body perception, namely body awareness, stress response, autonomous nervous system reactivity, stress style and health history inventory. There are 122 questions in total. The subscales of the short form have proven high reliability and validity (Cabrera et al., 2018). Further, the body awareness subscale has been found to have one underlying factor (Cabrera et al., 2018). There are 45 items in the body awareness subscale, which are all answered on a 5-point Likert scale ranging from 1 (Never), 2 (Occasionally), 3 (Sometimes), 4 (Usually) to 5 (Always) (Porges, 1993). This subscale has also been used in other studies to measure the sensibility of individuals concerning their own internal bodily sensations (Garfinkel et al., 2015). This study found a Cronbach's alpha of .93. Cronbach's alpha was interpreted as >.9 excellent, >0.8 good, >.7 acceptable and >.6 questionable, based on the analysis of Taber (2018), meaning that reliability of the trait body awareness questionnaire in this study has excellent reliability.

General Feelings Questionnaire

This questionnaire was used to measure the trait levels of core affect, the WoT and confidence in measurement. It was almost identical to the state questionnaire. To assess the general feelings, the items were modified to refer to the participant's general state of feeling in their life, not their current state of feeling. To measure core affect in the context of individuals general life, participants were asked to indicate their general arousal and valence level each on a separate sliding scale ranging from 0-100. Moreover, participants were asked to indicate one number between 0-100 on a sliding scale that would represent too much arousal in general, and

one number that would be too low in general. Each item was followed by a confidence assessment ("How confident are you of the answer you just gave?") measured on a Likert-scale ranging from 1 (Not confident), 2 (Slightly confident), 3 (Somewhat confident), 4 (Fairly confident) to 5 (Completely confident).

Past Week Questionnaire

This questionnaire was administered at the end of the study and represents a combined measurement of the levels of core affect, the WoT and confidence in measurement of the past week. For this reason, it was nearly identical to the state questionnaire. To measure core affect in the context of the past week, participants were asked to indicate their past week arousal and valence level each on a separate sliding scale ranging from 0-100. Additionally, participants were asked to indicate one number between 0-100 on a sliding scale that would have been too much arousal in the past week, and one number that would have been too little in the past week. Each item was followed by a confidence assessment ("How confident are you of the answer you just gave?") measured on a Likert-scale ranging from 1 (Not confident), 2 (Slightly confident), 3 (Somewhat confident), 4 (Fairly confident) to 5 (Completely confident).

Procedure and Design

Upon receiving ethical approval, data collection began in April and ended in May. The study had a duration of 8 days for each participant. To participate, the app "Ethica" had to be downloaded, and the study code 2428 had to be entered. On the first day, participants had to consent to continue the study and could start with the demographic questions and trait questionnaires, except for the feelings of the week questionnaire. The trait questionnaires expired after 16 hours. On the next day after signing up, participants received 6 notifications between 9 and 20 o'clock, reminding them to fill in a state questionnaire at that time. Each state questionnaire was triggered randomly in a set time frame of one hour and expired after 30 minutes. The time frames were 9-10, 11-12, 13-14, 15-16, 17-18 and 19-20 o'clock.

Participants automatically received a reminder notification 15 minutes after the first notification, if they have not yet filled in the survey. After 7 days of daily questionnaires, participants were notified to answer the "Past Week" questionnaire, which expired after 16 hours. At the end of this last questionnaire, participants were thanked for their participation in the study and were again provided with the contact information of the researchers, in case any questions or remarks came up.

Data Analysis

The data analysis was conducted with the statistical software IBM SPSS Statistics 28. The data was downloaded in different data sets in csv file format, one for each survey. The csv files were imported into SPSS. After filtering participants based on compliance rate and inclusion criteria, descriptive statistics of the demographic information were analysed. The mean and standard deviation for age, gender and nationality were obtained. Next, Cronbach's alpha was calculated for the trait body awareness. The reliability of the state variables was assessed by calculating the split-half reliability (Larson & Csikszentmihalyi, 2014). In addition to reliability analyses, all the sum and mean scores of trait body awareness were calculated for each participant. The mean body awareness trait scores for each participant were merged with the ESM data on the state variables.

To answer the research questions, multiple linear mixed model analyses with autoregressive covariance structure (AR1) were conducted. To use the linear mixed model, a timepoint variable was computed which counted each momentary assessment, 43 per participant. Additionally, the width of the state WoT was computed by subtracting the state measure for the upper boundary of the WoT with the respective state measure of the lower boundary of the WoT. Thus, a state width measure was computed for each momentary assessments in which the participants have indicated the boundaries of their WoT.

In the linear mixed model analyses, "participants" were the subject's variable and "timepoint" was the repeated variable. The estimated marginal means per participant were calculated for the repeated measures of state arousal. State arousal was the dependent (outcome) variable and either “participant” or “timepoint” was the fixed independent factor. The same procedure was followed for the variables state upper boundary of the WoT, state lower boundary of the WoT, width of the state WoT, state confidence and state valence. Using the chart builder function of SPSS, the estimated means per participant were visualized for the scale state measurements with box plots and bar chart graphs.

Separate linear mixed models were conducted to analyse the associations between the different state variables. For instance, one linear mixed model was conducted with the width of the state WoT as the dependent (outcome) variable and state arousal as the covariate variable with an estimated fixed effect. Further, the associations between state width, state valence, state upper boundary and state lower boundary were assessed using further linear mixed model analyses. Moreover, several separate linear mixed model analyses were conducted to assess the association between trait body awareness and each mean state variable. For this, trait body awareness was the covariate variable with an estimated fixed effect.

Results

The response rate to the daily state questionnaires was 65.04% (M = 27.4, SD = 9.7). The minimum, maximum, mean and standard deviation of the scores of the trait body awareness and state variables are displayed in table 2. The data from the body awareness questionnaire was normally distributed, as assessed by the Shapiro Wilk Test (W = .95, p = .39). The mean of this sample, displayed in table 2, was slightly below the mean of the norms for this subscale (M = 3.02, SD = .79).

Table 2

Minimum, maximum, mean and standard deviation of body awareness, state arousal, state valence, WoT upper boundary, WoT lower boundary and WoT width

Variables	Minimum	Maximum	Mean	Std. Deviation
Body Awareness	1.5	4.4	2.7	.1
State Arousal	38	78.9	60.1	13.1
State Valence	32.4	82.9	59.4	12.1
WoT - Ub	68.5	99.3	87.3	8
WoT - Lb	.08	51.5	22.1	13.5
WoT - Width	33	99.2	65.2	15.5

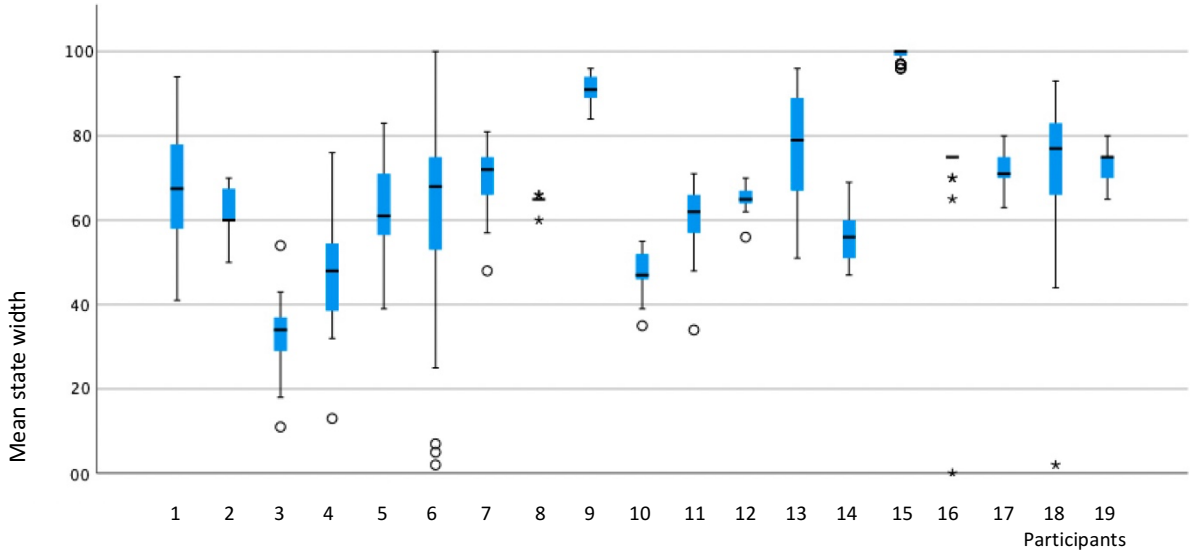
Note. WoT = Window of Tolerance, Lb = Lower boundary, Ub = Upper boundary.

Window of Tolerance - Variability

Participants indicated in 95.2 % of momentary assessments that they were in their window of tolerance. Linear mixed modelling analysis was used to calculate the estimated marginal means of the width of the state WoT for each assessment moment per person. There were significant differences between participants, as the factor "participant" had a significant fixed effect (F = 152.6, p < .001). Figure 3 shows the variability between participants. Participant 3 had the narrowest window overall, with a person mean of 33.11. In contrast, participant 15 had the largest window, with a person mean of 99.26. Figure 3 also shows within-person differences. The interquartile range of most participants is very wide, showing that most individuals indicated very different levels of width of their state WoT at different times. Moreover, several of the upper and lower whiskers of the plots are very long, which indicates a wide range of values that participants specified.

Figure 3

Variability of width of the state WoT for each participant



The fixed effect of measurement timepoint on the estimated means of state width per person was not significant (F = .39, p = .99), which means there is no time trend in the data (see Appendix C for a graphical presentation).

Core Affect Variability

Further mixed modelling analyses were conducted to calculate the estimated marginal means of state arousal and state valence. The factor "Participant" had a significant effect on mean state arousal (F = 22.52, p < .001) and mean state valence (F = 14.39, p < .001). The variability of mean state arousal per participant can be seen in figure 4, for mean state valence in figure 5. As the figures illustrate, there are both considerable between and within-person differences in mean core affect. The factor "measurement timepoint" had a nonsignificant fixed effect on state arousal (F = 1.04, p = .40) and state valence (F = 1.0, p = .47).

Figure 4

Mean state arousal per participant

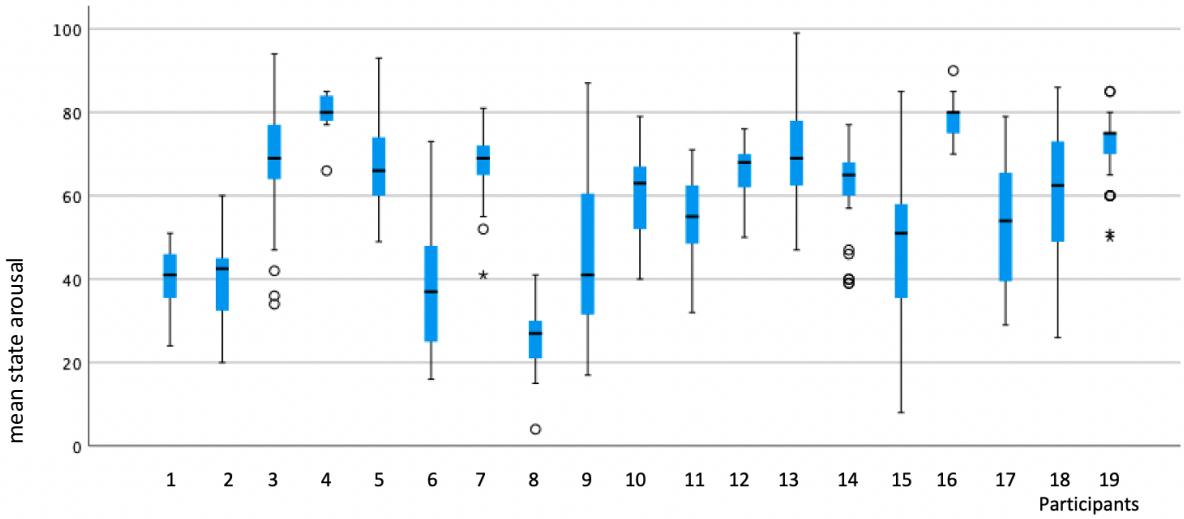
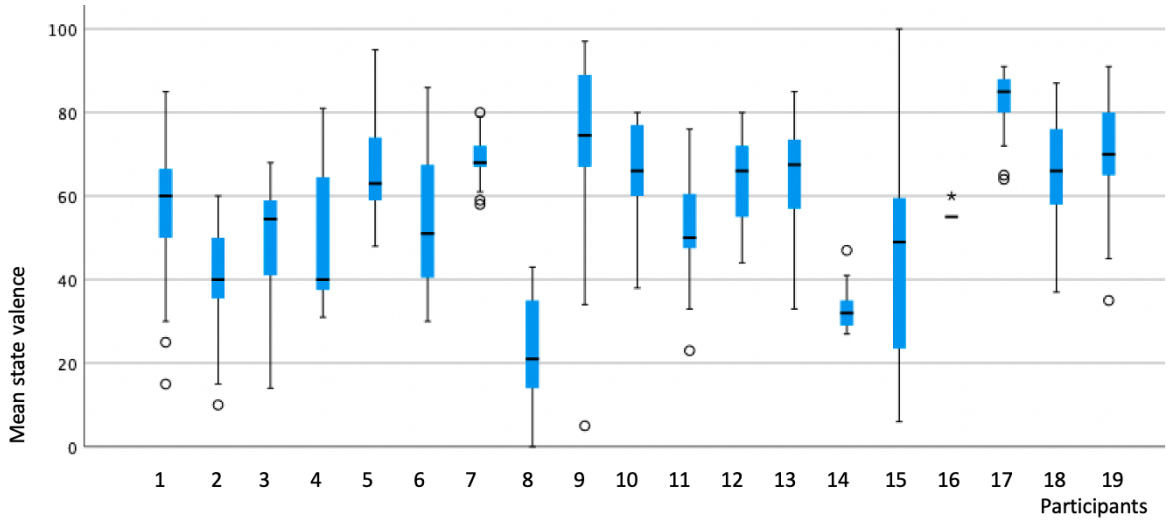


Figure 5

Mean state valence per participant



Confidence Descriptive Statistics

There was little variation when it comes to state confidence scores. Participants indicated similar state confidence in their answers about their arousal, valence and the boundaries of their current WoT. Across measurements, no participant indicated “Completely confident”. For most momentary assessments, participants indicated that they were “Fairly confident” about their answers to the questions. The percentages can be viewed in table 3.

Table 3

Percentages of confidence scores across measurement types

Confidence score	Arousal	Valence	Upper boundary	Lower Boundary
Not confident %	0.8	0.2	1.2	.8
Slightly confident %	12.5	12.4	11.8	15.5
Somewhat confident %	12.7	10	13.7	11.4
Fairly confident %	74	77.4	73.2	72.3
Completely confident %	0	0	0	0

Associations between State Variables

Multiple linear mixed model analyses were conducted to determine the associations between the different state variables. There was no association between width of the state WoT with state arousal ($\beta = .04$, $p = .21$, 95% Cl [-.02, .12]), state valence ($\beta = .04$, $p = .34$, 95% Cl [-.04, 12) and state confidence ($\beta = -.06$, $p = .35$, 95% Cl [-.19, .06]).

There was a very weak positive significant association between state arousal and both the state upper ($\beta = .17$, $p < .001$, 95% Cl [.09, 0.25]) and state lower boundary of the WoT ($\beta = .06$, $p = .03$, 95% Cl [.00, .12]). Additionally, the state upper boundary showed a weak, positive significant association with state valence ($\beta = .11$, $p = .01$, 95% Cl [.02, .20]). This suggests that the location of the state WoT on the arousal scale of 0-100 is associated with state core affect, although the correlation is very weak.

Further mixed model analyses showed that the state confidence was non-significantly associated with state arousal ($\beta = .08$, $p = .14$, 95% Cl [-.19, .12]), but significantly positively associated with valence ($\beta = .15$, $p = .00$, 95% Cl [.05, .26]). The relationship is weak, but this might suggest an association between pleasant feeling states and confidence states.

Trait Body Awareness

Multiple linear mixed model analyses were conducted to ascertain the association between trait body awareness, mean state arousal, mean width of the state WoT, mean state valence and mean state confidence. There was a moderate to weak positive significant association between mean state arousal and trait body awareness ($\beta = .20$, $p < .001$, 95% Cl [.08, .33]. Trait body awareness was also moderately, significantly negatively related to the width of the state WoT ($\beta = -.18$, $p = .006$, 95% Cl [-.31, -.05]. There was a moderate to strong negative significant association between body awareness and mean state valence ($\beta = -.57$, $p < .001$, 95% Cl [-.71, -.44]). Moreover, there was a non-significant positive association between mean state confidence and trait body awareness ($\beta = .32$, $p = .14$, 95% Cl [.11, .75]).

Discussion

The main purpose of this study was to measure the width of the WoT in the daily life of students. In order to determine the between- and within person differences, the ESM was used. The results show that there were indeed considerable between- and within person differences in the width of the state WoT. Furthermore, students were in their WoT for the majority of measurements. Core affect was also measured in daily life, in order to find its associations with the WoT. The findings show that state arousal and state valence were not associated with the width of the state WoT. However, state arousal was weakly associated with the state upper and state lower boundary of the WoT, while state valence was only associated with the state upper boundary of the WoT. A further research question pertained to the extent of confidence individuals have in their answers to daily questions on their WoT and core affect. Confidence in measurement was neither associated with any of the state measurements, nor with trait body awareness, as was hypothesised. Confidence items, across all measurement points, were answered with “Fairly high” in 70-80% of cases, meaning that the students of this sample were quite confident of their answers. Further, this study attempted to find associations between trait body awareness, width of the state WoT and state core affect. It was hypothesised

that body awareness would be associated with wider windows of tolerance. Trait body awareness was negatively associated with the mean width of the state WoT, meaning that unexpectedly, higher scores of body awareness were associated with a narrower WoT. Moreover, trait body awareness was negatively associated with mean state arousal and most unexpected, there was a relatively strong negative correlation between trait body awareness and mean state valence.

The Window of Tolerance - Variability

The students of this sample were in their WoT for almost all the measurements. This was expected, because the sample was not clinical, and students were not specifically chosen based on mental health issues. There were considerable differences in the width of the state WoT between the students of this sample. These findings align with the conceptualisations of the WoT as it was originally conceived by Siegel (2012), as he presumed that the window differs between people. Furthermore, it aligns with the general view of the WoT. For instance, clinical accounts assert that experiences like trauma can affect a person's ability to tolerate extreme arousal states (Lohrasbe & Ogden, 2017; Ogden et al., 2006). This suggests that different experiences in life can shape a person's WoT, which can account for some of the differences in the WoT between individuals. In addition to the differences between people that the clinical view asserts, the findings of this study suggest that the WoT is also subject to intra-individual variability. The findings show transient, within-person differences in the width of the state WoT. As such, each individual's limits of tolerance for extreme arousal states fluctuated between the measurements.

The differences in the findings should also be viewed regarding the sample composition. All participants in this study were university students who were very close in age. Students have been found to be a population group that is highly vulnerable to stress (Deasy et al., 2014), for instance due to academic workload and changes in lifestyle upon entering the

academic setting (Deasy et al., 2014; Kausar, 2010; Weber et al., 2019). However, there are also differences in stress response and stress tolerance in students, based on the coping strategies they employ (Welle & Graf, 2011). It is reasonable to assume that coping strategies will also affect arousal levels in a more general sense. For instance, Kuppens et al. (2010) found that regulation strategies, like cognitive reappraisal of emotion-eliciting stimuli, play an important role in stabilising arousal levels. Differences in coping and regulation strategies could also account for within-person differences, as well as the general tendency of affect-related experiences to fluctuate within individuals (Kuppens et al., 2010). Thus, student's tolerance towards stressful experiences and their affinity to healthy coping and emotion-regulation strategies could explain some of the differences in the width of their windows of tolerance.

The Window of Tolerance and Core Affect

Besides the general variability of the WoT, the results also suggest an association with state core affect. The location of the state WoT was associated with the state arousal level. Arousal level represents one point on the scale of 0-100, while the window represents a range. A range which, to a certain extent, moved on the scale with the arousal level. Still, it is not clear whether the position of the window itself influenced the current arousal level, or vice versa. Next to state arousal, state valence was also associated with the window of tolerance. In terms of position, it correlated with the upper boundary of the state WoT. A review by Garland et al. (2010) describes how positive emotions can counteract negative states and build up resilience against stress. Furthermore, it has been found that positive emotions are used by resilient individuals as a means of emotional regulation, allowing recovery from negative arousal states (Tugade & Fredrickson, 2004). This ties in with the findings that emotional regulation plays a crucial role in returning arousal to baseline levels (Kuppens et al., 2010). Hence, an association of higher levels of state valence and higher state tolerance for arousal is

consistent with these previous findings. Still, it is unclear if higher state valence levels have an influence on the WoT as a whole, since state valence was not associated with the width of the state WoT.

Trait Body Awareness

Body awareness is an essential component of mindfulness, which is associated with emotional regulation and wellbeing (Brani et al., 2014). For this reason, it was initially hypothesised that higher trait levels of body awareness would be related to a wider window of tolerance. Additionally, emotional regulation strategies have been shown to lead to stabilized arousal levels (Kuppens et al., 2010). Since intentional use of regulation strategies first requires awareness of the problem, it was hypothesized that body awareness is associated with stable arousal levels and thus wider windows of tolerance. However, the results of this study show that body awareness was negatively associated with mean width of the state WoT. There are multiple possible reasons for this negative correlation. First, the association between body awareness and mindfulness is not as clear as previously assumed. A meta-analysis by Treves et al. (2019) shows that mindfulness is only weakly associated with objective measures of body awareness accuracy, suggesting that body awareness on its own may not lead to the positive benefits attributed to mindfulness practices. Additionally, Garfinkel et al. (2015) distinguish between different types of interoception, a term that refers to sensing internal bodily sensations in general. For instance, they distinguish between interoception that is measured with objective instruments like heartbeat detectors (interoceptive accuracy), and interoception measured with subjective measures like questionnaires (interoceptive sensibility). There are issues with relying on the accuracy of the individual's self-assessment, as apparently, scores of interoceptive accuracy and interoceptive sensibility are not necessarily associated (Garfinkel et al., 2015). Body awareness as it was measured in this study would represent interoceptive sensibility and may therefore not be associated with previously assumed benefits of

interoception. Future studies on body awareness may want to make use of interoceptive accuracy as a measure instead to be certain about the nature of body awareness scores.

A strong negative correlation was found between trait body awareness and mean state valence. Based on the reviewed literature, which highlighted the positive effects of body awareness and mindfulness on wellbeing (Brani et al., 2014), this was an unexpected result. The sample also showed a mean body awareness score that was within the standard deviation of the body awareness scale norms, which means unusual scores cannot explain the unexpected findings. The results may suggest that the individuals in this study who were occupied with their pleasant feelings were less inclined to become aware of their body. Outside of the context that body awareness plays in mindfulness interventions, awareness of bodily sensations has been shown to negatively influence individuals under certain circumstances. For instance, patients suffering from panic disorder are prone to misinterpreting autonomic sensations as malignant and worrisome (Clark et al., 1997). Similarly, persons suffering from health anxiety tend to interpret ambiguous bodily sensations as signals of serious diseases, which strongly impacts the well-being of these individuals (Asmundson et al., 2010).

Strengths and Limitations

There are several strengths to this study. Most importantly, to our knowledge, there has been no study before that measured the WoT in the daily life of individuals. Therefore, this has been the first attempt to empirically answer the question whether, and to what extent, the WoT fluctuates between and within individuals in everyday life. Furthermore, widening the WoT is often an important practice in therapy, especially for patients suffering from trauma (Langmuir et al., 2012; Lohrasbe & Ogden, 2017; Ogden et al., 2006), and with the current study a first opportunity has been provided to track possible change in the WoT over time. Moreover, the use of the experience sampling methodology on core affect and the WoT indicates a high level of ecological validity to the measurement. This is because measurements are taken repeatedly

in a natural context, as opposed to at a single time point in possibly unnatural settings (Larson & Csikszentmihalyi, 2014). In addition, the split-half reliability turned out to be very high for most of the state items, which means that the state questionnaire was a reliable measurement in this study.

Regardless of the novelty of the findings, there are some limitations to consider when interpreting the results of this study. Most of the significant associations that were found were very weak. Associations of near negligible power may not be meaningful enough to base any strong conclusions upon. The findings must therefore be viewed with caution. Furthermore, some difficulties in the data collection arose, likely due to the setup of the study on Ethica. The last questionnaire at the end of the study, which was designed to measure the WoT, core affect and confidence in measurement, was only answered by two of the eligible participants. Participants were notified about this survey on the last day after the last of the daily questionnaires, at 20 o'clock. There were 16 hours for completion of this last survey, but no follow up notifications were set up. It is possible that participants forgot that there was another questionnaire to fill out on the last day, apart from the daily questionnaires. Some participants might not have used their phone so late in the evening anymore, and thought that the study ended that day, therefore missing the 16-hour window. The last questionnaire was not essential to the main research questions, but it would have been interesting to see the differences and similarities between the mean state scores and end of the week scores. Future researchers obtaining ESM data should be aware of the perspective of participants when designing their studies, to avoid similar issues of data loss. A solution would be to set up more reminders for participants to fill in the one-time questionnaires. Another issue was the compliance rate for the state questionnaires. Due to a low compliance rate overall, many participants had to be removed from the data set. This led to the study having less participants available than previously planned. Even though 19 participants are the median number of participants in ESM

studies (van Berkel et al., 2017), it would have been interesting to analyse the data of a more substantial sample.

Implications and Conclusion

Despite some limitations, this study contributes a first attempt at measuring the WoT in an empirical manner, in a way where scores can be compared and analysed among individuals. Due to this operationalisation, it was possible to analyse between and within person differences. This provides a practical dimension to the theoretical concept of the WoT. Future research should focus on further specifying a reliable and valid measure of the WoT. Measuring the WoT alongside core affect on a 0-100 arousal scale is one of many possibilities for measurement strategies. Other measurement approaches could include Likert scales or scales with different numerical dimensions. Prospective studies could extend the scope of this study by using different samples and including other variables. Next to body awareness, other variables which can be assumed to influence the WoT, for instance different coping strategies, could be incorporated. Conducting larger studies with clinically relevant samples, like trauma patients, could provide further insights into the factors influencing the WoT. Moreover, interventions could use measurement tools for the WoT to provide psychological support at the right moments, whenever individuals experience extreme arousal states outside of their WoT. Just-in-time adaptive interventions (JITAI) use sensory technologies like smartphones and mobile apps as a means of providing tailored support at the proper moment and have proven effectiveness (Wang & Miller, 2020). As such, a JITAI could help individuals based on the fluctuations of their arousal level and WoT. Thus, beyond serving as a theoretical concept and psychoeducational tool, the WoT and its measurements could be applied in an even more practical way. Future studies could use and build on the measurement approach in this study and further extend the usage of this concept.

References

Asmundson, G. J. G., Abramowitz, J. S., Richter, A. A., & Whedon, M. (2010). Health anxiety: Current perspectives and future directions. In *Current Psychiatry Reports* (Vol. 12, Issue 4, pp. 306–312). https://doi.org/10.1007/s11920-010-0123-9

Bernard, H. R., Killworth, P., Kronenfeld, D., & Sailer, L. (1984). The Problem of Informant Accuracy: The Validity of Retrospective Data. *Annual Review of Anthropology*, *13*(1), 495–517. https://doi.org/10.1146/annurev.an.13.100184.002431

Brani, O., Hefferon, K., Lomas, T., Ivtzan, I., & Painter, J. (2014). The impact of body awareness on subjective wellbeing: The role of mindfulness. *International Body Psychotherapy Journal*, *13*(1), 95–107.

Burns, J. W. (2006). The role of attentional strategies in moderating links between acute pain induction and subsequent psychological stress: Evidence for symptom-specific reactivity among patients with chronic pain versus healthy nonpatients. *Emotion*, *6*(2), 180–192. https://doi.org/10.1037/1528-3542.6.2.180

Cabrera, A., Kolacz, J., Pailhez, G., Bulbena-Cabre, A., Bulbena, A., & Porges, S. W. (2018). Assessing body awareness and autonomic reactivity: Factor structure and psychometric properties of the Body Perception Questionnaire-Short Form (BPQ-SF). *International Journal of Methods in Psychiatric Research*, *27*(2), e1596–e1596. https://doi.org/10.1002/mpr.1596

Clark, D. M., Salkovskis, P. M., Goran, L.-, Breitholtz, E., Koehler, K. A., Westling, B. E., Jeavons, A., & Gelder, M. (1997). Misinterpretation of Body Sensations in Panic Disorder. In *Journal of Consulting and Clinical Psychology* (Vol. 65, Issue 2).

Contreras, C. (2015). *LIVE WITHIN YOUR WINDOW OF TOLERANCE*. www.laurakkerr.com

Corrigan, F. M., Fisher, J. J., & Nutt, D. J. (2011). Autonomic dysregulation and the Window of Tolerance model of the effects of complex emotional trauma. In *Journal of Psychopharmacology* (Vol. 25, Issue 1, pp. 17–25). https://doi.org/10.1177/0269881109354930

Deasy, C., Coughlan, B., Pironom, J., Jourdan, D., & Mannix-McNamara, P. (2014). Psychological Distress and Coping amongst Higher Education Students: A Mixed Method Enquiry. *PLOS ONE*, *9*(12), e115193-. https://doi.org/10.1371/journal.pone.0115193

Fleeson, W., & Law, M. K. (2015). Trait enactments as density distributions: The role of actors, situations, and observers in explaining stability and variability. *Journal of Personality and Social Psychology*, *109*(6).

Garfinkel, S. N., Seth, A. K., Barrett, A. B., Suzuki, K., & Critchley, H. D. (2015). Knowing your own heart: Distinguishing interoceptive accuracy from interoceptive awareness. *Biological Psychology*, *104*, 65–74. https://doi.org/10.1016/j.biopsycho.2014.11.004

Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: insights from the broaden-and-build theory and affective neuroscience on the treatment of emotion dysfunctions and deficits in psychopathology. *Clinical Psychology Review*, *30*(7), 849–864. https://doi.org/10.1016/j.cpr.2010.03.002

Goetz, T., Frenzel, A. C., Hall, N. C., Nett, U. E., Pekrun, R., & Lipnevich, A. A. (n.d.). *Types of boredom: An experience sampling approach*. https://doi.org/10.1026/0049-8637.38.4

Grecucci, A., Pappaianni, E., Siugzdaite, R., Theuninck, A., & Job, R. (2015). Mindful Emotion Regulation: Exploring the Neurocognitive Mechanisms behind Mindfulness. *BioMed Research International*, *2015*, 670724. https://doi.org/10.1155/2015/670724

Gyllensten, A. L., Skär, L., Miller, M., & Gard, G. (2010). Embodied identity—A deeper understanding of body awareness. *Physiotherapy Theory and Practice*, *26*(7), 439–446. https://doi.org/10.3109/09593980903422956

Hektner, J., Schmidt, J., & Csikszentmihalyi, M. (2007). *Experience sampling method.*

Kausar, R. (2010). Perceived Stress, Academic Workloads and Use of Coping Strategies by University Students. In *Journal of Behavioural Sciences* (Vol. 20).

Kuppens, P., Champagne, D., & Tuerlinckx, F. (2012). The Dynamic Interplay between Appraisal and Core Affect in Daily Life. *Frontiers in Psychology*, *3*. https://www.frontiersin.org/article/10.3389/fpsyg.2012.00380

Kuppens, P., Oravecz, Z., & Tuerlinckx, F. (2010). Feelings Change: Accounting for Individual Differences in the Temporal Dynamics of Affect. *Journal of Personality and Social Psychology*, *99*(6), 1042–1060. https://doi.org/10.1037/a0020962

Langmuir, J. I., Kirsh, S. G., & Classen, C. C. (2012). A pilot study of body-oriented group psychotherapy: Adapting sensorimotor psychotherapy for the group treatment of trauma. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(2), 214–220. https://doi.org/10.1037/a0025588

Larson, R., & Csikszentmihalyi, M. (2014). The experience sampling method. In *Flow and the foundations of positive psychology* (pp. 21–34). Springer, Dordrecht.

Lobo, L., Heras-Escribano, M., & Travieso, D. (2018). The History and Philosophy of Ecological Psychology. *Frontiers in Psychology*, *9*. https://www.frontiersin.org/article/10.3389/fpsyg.2018.02228

Lohrasbe, R. S., & Ogden, P. (2017). Somatic Resources: Sensorimotor Psychotherapy Approach to Stabilising Arousal in Child and Family Treatment. *Australian and New Zealand Journal of Family Therapy*, *38*(4), 573–581. https://doi.org/10.1002/anzf.1270

Murphy, J., Brewer, R., Catmur, C., & Bird, G. (2017). Interoception and psychopathology: A developmental neuroscience perspective. *Developmental Cognitive Neuroscience*, *23*, 45–56. https://doi.org/https://doi.org/10.1016/j.dcn.2016.12.006

Myin-Germeys, I., & Kuppens, P. (2021). Data checks and preparation. In *The open handbook of experience sampling methodology: A step-by-step guide to designing, conducting, and analyzing ESM Studies* (pp. 146–147). The Center for Research on Experience Sampling and Ambulatory Methods Leuven (REAL).

Ogden, P., Pain, C., & Fisher, J. (2006). A sensorimotor approach to the treatment of trauma and dissociation. In *Psychiatric Clinics of North America* (Vol. 29, Issue 1, pp. 263–279). https://doi.org/10.1016/j.psc.2005.10.012

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College Students: Mental Health Problems and Treatment Considerations. *Academic Psychiatry*, *39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Porges, S. (1993). Body perception questionnaire: Laboratory of development assessment. In *University of Maryland.*

Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition and Emotion*, *23*(7), 1259–1283. https://doi.org/10.1080/02699930902809375

Russell, J. A., Weiss, A., & Mendelsohn, G. A. (1989). Affect Grid: A Single-Item Scale of Pleasure and Arousal. In *Journal of Personality and Social Psychology* (Vol. 57, Issue 3).

Siegel, D. J. (2012). *The Developing Mind* (2nd ed.). The Guilford Press.

Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist*, *45*(4), 249–257. https://doi.org/10.1080/00050067.2010.482109

Stone, A. A., Broderick, J. E., Shiffman, S. S., & Schwartz, J. E. (2004). Understanding recall of weekly pain from a momentary assessment perspective: absolute agreement, between- and within-person consistency, and judged change in weekly pain. *Pain*, *107*(1), 61–69. https://doi.org/https://doi.org/10.1016/j.pain.2003.09.020

Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Treves, I. N., Tello, L. Y., Davidson, R. J., & Goldberg, S. B. (2019). The relationship between mindfulness and objective measures of body awareness: A meta-analysis. *Scientific Reports*, *9*(1), 17386. https://doi.org/10.1038/s41598-019-53978-6

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, *86*(2), 320–333. https://doi.org/10.1037/0022-3514.86.2.320

van Berkel, N., Ferreira, D., & Kostakos, V. (2017). The experience sampling method on mobile devices. *ACM Computing Surveys*, *50*(6). https://doi.org/10.1145/3123988

Wang, L., & Miller, L. C. (2020). Just-in-the-Moment Adaptive Interventions (JITAI): A Meta-Analytical Review. *Health Communication*, *35*(12), 1531–1544. https://doi.org/10.1080/10410236.2019.1652388

Weber, J., Skodda, S., Muth, T., Angerer, P., & Loerbroks, A. (2019). Stressors and resources related to academic studies and improvements suggested by medical students: a qualitative study. *BMC Medical Education*, *19*(1), 312. https://doi.org/10.1186/s12909-019-1747-z

Welle, P. D., & Graf, H. M. (2011). Effective lifestyle habits and coping strategies for stress tolerance among college students. *American Journal of Health Education*, *42*(2), 96–105. https://doi.org/10.1080/19325037.2011.10599177

Appendix A

Body Perception Questionnaire. Subscale I.: Body Awareness

1. Swallowing frequently.

2. A ringing in my ears.

3. An urge to cough to clear my throat. 4. My body swaying when I am standing. 5. My mouth being dry.

6. How fast I am breathing.

7. Watering or tearing of my eyes.

8. My skin itching.

9. Noises associated with my digestion.

10. Eye fatigue or pain.

11. Muscle tension in my back and neck.

12. A swelling of my body or parts of my body.

13. An urge to urinate.

14. A tremor in my hands.

15. An urge to defecate.

16. Muscle tension in my arms and legs.

17. A bloated feeling because of water retention.

18. Muscle tension in my face.

19. Goose bumps.

20. Facial twitches.

21. Being exhausted.

22. Stomach and gut pains.

23. Rolling or fluttering my eyes.

24. Stomach distension or bloatedness.

25. Palms sweating.

26. Sweat on my forehead.

27. Clumsiness or bumping into people.

28. Tremor in my lips.

29. Sweat in my armpits.

30. Sensations of prickling, tingling, or numbness in my body. 31. The temperature of my face (especially my ears).

32. Grinding my teeth.

33. General jitteriness.

34. Muscle pain.

35. Joint pain.

36. Fullness of my bladder.

37. My eye movements.

38. Back pain.

39. My nose itching.

40. The hair on the back of my neck “standing up.”

41. Needing to rest.

42. Difficulty in focusing.

43. An urge to swallow.

44. How hard my heart is beating.

45. Feeling constipated.

Appendix B

Daily State Questionnaire

1. Is your experience bearable right now?

2. Do you feel emotionally numb right now, to the point that it is difficult to function?

3. Arousal refers to how awake, alert or activated a person feels. Let's say we have a scale of arousal from 0 to 100. This includes extremely high and intense levels of arousal, as well as extremely low levels of arousal. The higher the number, the higher the arousal.
What number on this scale is your arousal level right now?

4. How confident are you of the answer you just gave?

5. Imagine there was a level of arousal on that same scale that would feel like too much for you, to the point of being unbearable. What could be that number for you right now?

6. How confident are you of the answer you just gave?

7. Imagine there was a number on that same scale that would start to feel so low that you would feel emotionally numb and could not function anymore. What could be that number for you right now?

8. How confident are you of the answer you just gave?

On a scale from 0, feeling very unpleasant, to 100, feeling very pleasant.

9. What number would you be at right now?

Appendix C

Figure 6

Mean state width of the WoT per measurement point over one week.