Daily Fluctuations of Prolonged Grief Disorder Symptoms in Recently Bereaved People: An Experience Sampling Study

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Abstract

Introduction: Prolonged Grief Disorder (PGD) has been newly added to the DSM-5-TR and has much overlap with symptoms of depression. Previous research has shown that fluctuations in symptoms of depression relate to the overall severity of this disorder. Most research on PGD has been done through interviews and surveys, meaning that fluctuations have not been researched before. This study investigates whether PGD symptoms fluctuate in the daily lives of recently bereaved people and if these fluctuations are related to the overall severity of PGD.

Methods: Experience Sampling Methodology (ESM) was used to measure the 11 ESM-PGD items. For the ESM, participants had to complete 5 questionnaires every day for 14 consecutive days. Interviews containing the Traumatic Grief Inventory (TGI-CA) were used to measure the overall severity of PGD. These interviews were held before and after the ESM phase. Data were collected from 74 participants, 27 were removed due to not completing more than 50% of the ESM measurements or not completing the T2 interview. Leaving 47 participants in the analysed sample. To measure fluctuations Root Mean Square of Successive Difference (RMSSD) was calculated for each of the 11 ESM-PGD items in the ESM measurements. Pearson's correlation was calculated between the mean RMSSD scores of the ESM-PGD items and the mean sum score of the TGI-CA at T1 and T2.

Results: RMSSD values for each of the 11 ESM-PGD items range from 1.91 to 2.64. Pearson's correlations found positive significant correlations for all ESM-PGD items (ranged between $r(45) = .35$ and $r(45) = .61$ at T1, and $r(45) = .36$ and $r(45) = .57$ at T2, all $p < .05$), except for Yearning and Sadness which associations were non-significant.

Discussion: The findings that there were fluctuations in ESM-PGD items and that these were associated with the severity of PGD show that, with limitations in mind, fluctuations in ESM-PGD items could be used as a tool to predict PGD severity. This could lead to recently

bereaved people being able to seek help at an earlier stage for their debilitating grief symptoms.

Keywords: Prolonged Grief Disorder, recently bereaved people, Experience Sampling Methodology, daily fluctuations.

Daily Fluctuations of Prolonged Grief Disorder Symptoms in Recently Bereaved People: An Experience Sampling Study

Most people will experience the death of a loved one in their life time. This can be an incredibly difficult period of time, but most people are able to cope with a loss of a loved one without professional support (Nielsen et al., 2019). Some people still intensely long for their loved one, and are still preoccupied with thoughts about their loved one a year after they have passed (American Psychiatric Association, 2022). When these grief reactions are still very intense and disrupts a person's daily life at least one year after their loved one has passed this person could be diagnosed with a Prolonged Grief Disorder (PGD) according to the text revision of the fifth Diagnostic and Statistical Manual for Mental Disorders (DSM-5-TR) (American Psychiatric Association, 2022).

Most research on PGD has been conducted by interviews and surveys to examine the severity of PGD symptoms (Treml et al. 2020). These methods often ask participants to recall their symptoms over a long span of time, such as a week or a month. Therefore, these methods do not always provide the most accurate data, as the participants might have a bias to recalling either negative or positive events and feelings (Ben-Zeev & Young, 2010). Next to this recall bias, these methods also do not account for changes in symptoms throughout the day (Ben-Zeev & Young, 2010). In their study, Schoevers et al. (2021) found that there are indeed changes in symptoms of depression and anxiety throughout the day. They found that these daily fluctuations of symptoms were positively associated with the overall severity of the symptoms of depression and anxiety disorders.

Fluctuations in symptoms during the day can be measured through Experience Sampling Methodology (ESM) (Ben-Zeev & Young, 2010; Schoevers et al., 2021). In ESM studies, participants usually have to complete questionnaires multiple times a day, so they can describe how they feel and what they are doing at that moment in time. (Myin-Germeys &

Kuppens, 2022). This is in contrast with more traditional interviews and surveying methods, as there the participants have to describe what they did, thought, and felt over a longer period of time. Therefore, ESM data is less prone to recall bias, more accurate in describing the participants' symptoms, and is able to measure fluctuations in the participants' daily lives. In the aforementioned study by Schoevers et al. (2021) ESM was used to measure fluctuations of depression and anxiety symptoms. This shows that ESM could be a useful tool in early detection of depression and anxiety, and that there is a need for more research into the use of ESM for other psychological disorders.

As of writing this paper, there has been no published study examining the daily fluctuations of PGD symptoms. However there has been a study examining the use of ESM for measuring PGD symptoms. In the study by Lenferink et al. (2022b), the authors evaluate the feasibility and acceptability of using ESM to assess PGD symptoms in daily life of bereaved people. They compared PGD symptom severity measured through retrospective recall (based on interviews) to symptom severity measured through aggregated moment-to-moment recall (using ESM-items). They found that symptom severity was lower when measured with ESM compared to retrospective recall based on interviews. The study concluded that, despite challenges with compliance and retention rate, using ESM to study PGD symptoms in daily life might be useful, and that more research is needed. These limitations are important problems that ESM studies face, however at this moment there is no other method to measure daily fluctuations besides ESM. Therefore, the use of ESM for measuring daily fluctuations in PGD symptoms can provide new insights into this topic.

One theory that supports the existence of fluctuations in grief symptoms is the dual processing model of coping with bereavement. This model proposed by Stroebe and Schut (1999) suggests that there are two types of coping with bereavement, loss-oriented and restoration-oriented. Loss-oriented coping refers to concentrating on processing aspects of

loss, this includes yearning for the deceased and ruminating about the deceased. Restoration-oriented coping refers to adjusting to the changes that are apparent after loss. The dynamic process called oscillation happens when people switch between loss-orientation and restoration-orientation, and between the confrontation and avoidance of different stressors regarding the loss. The oscillation mentioned in this model could be related to fluctuations in grief symptoms. Thus, this study might find supportive evidence for this theoretical model.

According to the DSM-5-TR PGD symptoms need to be present one year after the loss of a loved one to qualify for a PGD diagnosis (American Psychiatric Association, 2022). In order to predict a future diagnosis, the fluctuations and severity of symptoms need to be examined in an earlier stage. Therefore, it is of interest to examine recently bereaved individuals. Thus, this study aims to explore the fluctuations of grief symptoms in recently bereaved people and whether those fluctuations are related to the severity of PGD.

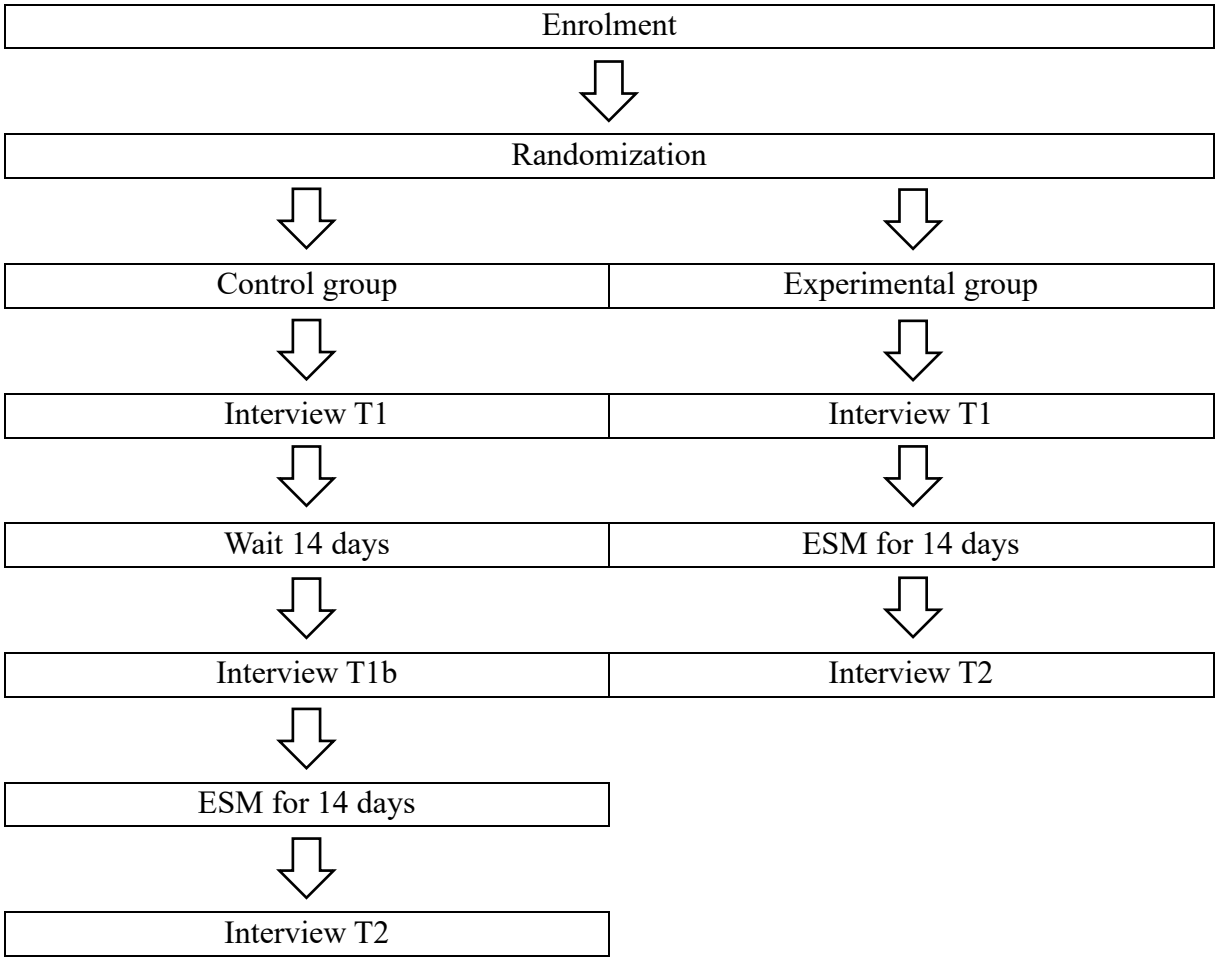
Methods

Design

The design of this study is a randomized controlled trial. The participants were randomly assigned to either the experimental or the control group. The control group had to wait for two weeks after the first interview before starting the ESM questionnaires, while the experimental group started immediately. There were three different types of interviews: T1, T1b, and T2. T1 and T2 were completed by both the experimental group and the control group as the first and final interview, while interview T1b was only completed by the control group after their waiting period. After T1 for the experimental group, and T1b for the control group, participants had to complete 14 days of ESM questionnaires. An overview of the design of this study can be found in Figure 1 This study was approved by the ethics committee of the University of Twente (ID:221328).

Figure 1

Overview study design



Participants

There were several criteria for people to join this study. Firstly, the participant needed to be older than 18 years old. Secondly, the passing of their loved one had to be three to six months before the invitation email was sent. Additionally, the participant could not be highly suicidal, as participating in this study might burden them too much. Moreover, the participant had to not be diagnosed with a psychotic disorder, as this could cause negative reactions or emotions for the participant. Lastly, the participant had to speak Dutch or German fluently in order to partake in the study. Participants were gathered through a Dutch website on which information about grief can be found (www.rouwbehandeling.nl). On this website people can fill out the TGI-SR+ to gain insights into the intensity of their bereavement. After filling out

this survey, people were asked if they consented to being approached for research. The people who consented to this and met the inclusion criteria for the study were sent an invitation email.

Procedure

Invitation emails were sent out to people who fulfilled the inclusion criteria. This email included the informed consent the participants needed to consent to in order to partake in the study. After a participant consented to participating in the study they were called on the phone number they submitted in order the schedule the first interview. People who did not respond to the invitation email were sent one reminder email a week after they received the first invitation email.

Participants were randomly assigned to either the experimental group or the control group. The experimental group would start with the first interview, then start with the ESM immediately afterwards for 14 days, and then have the final interview. The control group would start with the first interview as well, then the participants had to wait 14 days for the second interview. After this interview they could immediately start with the ESM for 14 days, and after this they would have their final interview.

The interviews consisted of various questionnaires, namely: the Patient Health Questionnaire (PHQ-9), the suicidal risk protocol, the Traumatic Grief Inventory (TGI-CA), the Posttraumatic Stress Disorder Checklist (PCL-5), the Work and Social Adjustment Scale (WSAS), and the Self-Reflection and Insight Scale (SRIS). Each questionnaire was included in all three interviews, except for the WSAS, this questionnaire was only included in T1.

The ESM part of the study consisted out of the same questionnaire. For fourteen consecutive days every three hours for a total of 5 times a day, the participants received a notification at semi-random time intervals to measure their PGD symptoms. Participants were

given 60 minutes to complete each questionnaire. If the participants missed the notification, they would receive a two reminders 10 and 20 minutes later.

Measures

Background and loss-related characteristics

At T1, various questions were asked to assess the background and loss-related characteristics of the participants. The questions related to background characteristics consisted of: gender (0 = male, 1 = female, 2 = other), date and country of birth, and highest obtained educational level (0 = primary school, 1 = high school, 2 = vocational education, 3 = university). Furthermore, the participants were asked whether they had received support from a therapist, psychologist, or psychiatrist related to the death of their loved one (0 = no, 1 = yes) and if so, whether they were currently still receiving this support (0 = no, 1 = yes). Questions related to loss-related characteristics consisted of: date of death, relationship to the deceased (0 = partner, 1 = child, 2 = parent, 3 = sibling, 4 = grandparent, 5 = grandchild, 6 = friend, 7 = other, namely), cause of death (0 = physical illness, 1 = accident, 2 = suicide, 3 = homicide/manslaughter, 4 = other, namely), and the unexpectedness of the death (from 1 = completely expected to 5= completely unexpected).

Overall interview-based PGD severity

To measure overall interview-based PGD severity the TGI-CA was used. The TGI-CA measures the PGD symptoms as defined by the DSM-5-TR. The TGI-CA is the interview version of the Traumatic Grief Inventory-Self Report (TGI-SR+). The TGI-CA consists out of 22 questions in which respondents have to rate their PGD symptoms over the last 2 weeks (e.g. “In the past two weeks, did you feel alone or detached from others?”). To answer these questions respondents can rate their symptoms on a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = always). The TGI-CA was proven to be reliable and valid

for assessing DSM-5-TR PGD criteria (Lenferink et al., 2022a). Cronbach's alpha for this sample was calculated to be 0.85 at T1 and 0.90 at T2. To meet PGD criteria according to the DSM-5-TR, at least one out of two symptoms of the B criterion should be met, at least three out of eight symptoms of the C criterion should be met, and the D criterion should be met (American Psychiatric Association, 2022). A symptom is met when it is rated with either a 4 or a 5 on the TCI-CA.

ESM-PGD items

The ESM measurement questionnaires consisted of a modified version TGI-SR+ that was designed by Lenferink et al. (2022b). This modified version consists of 11 questions from the TGI-SR+ that match the PGD criteria as defined by the DSM-5-TR. The questions ask the respondents to rate their PGD symptoms over the past 3 hours. To answer these questions respondents can answer on a 7-point Likert scale, ranging from 0 (not at all) through 6 (very much). The questions measure 11 different ESM-PGD items: Yearning, Preoccupation, Part of self died, Unrealness, Avoidance, Sadness, Anger, Difficulty moving on, Numbness, Life is empty, and Loneliness. An overview of the ESM-PGD items and the corresponding ESM measurement questions can be found in Table 1. Additionally, there are questions asking where the client was, and whether they were with somebody or alone.

Table 1

The ESM-PGD items and their corresponding ESM measurement question

ESM-PGD item	ESM measurement question
Yearning	In the past three hours, I found myself yearning for him/her.
Preoccupation	In the past three hours, I had intrusive thoughts or images related to the person who died.

Part of self died	In the past three hours, it felt as if a part of me has died along with the deceased.
Unrealness	In the past three hours, it felt unreal that he/she is dead.
Avoidance	In the past three hours, I avoided places, objects, or thoughts that reminded me that he/she is dead.
Sadness	In the past three hours, I felt sad because of his/her death.
Anger	In the past three hours, I felt bitterness or anger because of his/her death.
Difficulty moving on	In the past three hours, it was difficult for me to do something (e.g., social activities, studying, working, sports, hobbies) because of his/her death.
Numbness	In the past three hours, I felt emotionally numb because of his/her death.
Life is empty	In the past three hours, I felt that life is unfulfilling or meaningless without him/her.
Loneliness	In the past three hours, I felt alone or detached from other individuals because of his/her death.

Statistical analyses

Data cleaning was done by removing participants that did not fill in at least 50% of the ESM measurements and had completed both T1 and T2 interviews. Before the data cleaning there were 74 participants in the sample. After data cleaning, 27 participants were removed from the data set and 47 participants were used for the analyses.

Furthermore, descriptive statistics were conducted to gain more understanding into the characteristics of the participants. Additionally, the TGI-CA was analysed to see how many participants would meet the criteria for a PGD diagnosis.

To quantify fluctuations of the 11 ESM-PGD items the Root Mean Square of Successive Difference (RMSSD) was calculated from the ESM measurements (Jahng et al., 2008; Schoevers et al., 2021). RMSSD captures two components, variability and temporal dependency, to measure within- and between-day instability (Jahng et al., 2008). This means that the RMSSD score reflects the fluctuation of ESM-PGD items within a day and over the span of multiple days.

To test whether the fluctuations in ESM-PGD items correlates to the overall interview-based PGD severity, Pearson's correlation was used. With this, the relationship between the RMSSD scores of the ESM-PGD items and the total PGD scores of the baseline and final interview measured by the TGI-CA was examined. A Pearson's correlation coefficient can range between -1 and 1. -1 meaning a perfect negative linear relation, 1 a perfect positive linear relation, and 0 indicates no linear relation between two variables (Cohen, 1988). The guideline for the social sciences by Cohen (1988) states that, $r \geq 0.30$ indicates a moderate positive correlation and $r \geq 0.50$ indicates a strong positive correlation. The same is true for the negative coefficient, where $r \leq -0.30$ indicates a moderate negative correlation and $r \leq -0.50$ indicates a strong negative correlation.

Results

Participant characteristics

The sample consists mostly out of female participants (76.6%) from the Netherlands (93.6%). The age of the participants ranges from 25 to 78 years old, with a mean age of 55.7 and a median of 58. Most of the participants have lost their partner (59.6%) and most of the people that passed away did so from physical illness (78.7%). More information on the characteristics of the participants can be found in Table 2.

Table 2

Characteristics of the participants (N=47)

	Frequency	%
Age		
18-29	3	6.4
30-39	3	6.4
40-49	6	12.8
50-59	17	36.2
60-69	11	23.4
70-79	7	14.9
Days since loss		
76-99	3	6.4
100-129	1	2.1
130-159	14	29.8
160-189	22	46.8
190-221	7	14.9
Gender		
Female	36	76.6

Male	11	23.4
Other	0	0
Country of birth		
The Netherlands	44	93.6
Germany	3	6.4
Education		
University	28	59.6
Vocational	14	29.8
High school	5	10.6
Primary education	0	0
Kinship		
Partner	28	59.6
Parent	10	21.3
Child	3	6.4
Friend	2	4.3
Sibling	1	2.1
Grandchild	1	2.1
Grandparent	0	0
Other	2	4.3
Cause of death		
Physical illness	37	78.7
Suicide	3	6.4
Accident	2	4.3
Homicide or manslaughter	0	0
Other	5	10.6

TGI-CA and ESM-PGD item scores

At T1 the minimum sum score of the TGI-CA was 33 and the maximum sum score was 84, with a mean sum score of 55. At T2 the minimum sum score was 30 and the maximum sum score was 74, with a mean sum score of 50. Out of the 47 participants 7 (14.9%) met the criteria for a PGD diagnosis at T1, and 8 participants (17.0%) met the criteria at T2. The mean scores for the ESM-PGD items, can be found in Table 3.

Table 3

Mean score of all participants per ESM-PGD item (N=47)

ESM-PGD item	Mean score (SD)
Yearning	2.41 (1.90)
Preoccupation	1.92 (1.76)
Part of self died	1.61 (1.68)
Unrealness	2.10 (1.78)
Avoidance	0.84 (1.21)
Sadness	2.86 (1.91)
Anger	0.91 (1.07)
Difficulty moving on	1.36 (1.47)
Numbness	1.35 (1.62)
Life is empty	1.98 (1.77)
Loneliness	1.78 (1.58)

Fluctuations of ESM-PGD items with RMSSD

In Table 4 the mean RMSSD scores per ESM-PGD item can be found. The items with the highest average fluctuations were Preoccupation (RMSSD = 1.29), Yearning (RMSSD =

1.20), and Sadness (RMSSD = 1.20). The items with the lowest average fluctuations were Avoidance (RMSSD = 0.51), Anger (RMSSD = 0.60), and Numbness (RMSSD = 0.66).

Table 4

RMSSD scores of ESM-PGD items

Items	Min	Max	Mean RMSSD (SD)
Yearning	0.18	2.63	1.20 (0.56)
Preoccupation	0.00	2.64	1.29 (0.65)
Part of self died	0.00	2.32	0.89 (0.63)
Unrealness	0.00	2.42	0.98 (0.52)
Avoidance	0.00	2.10	0.51 (0.50)
Sadness	0.00	2.41	1.20 (0.51)
Anger	0.00	1.92	0.60 (0.50)
Difficulty moving on	0.00	2.12	0.97 (0.58)
Numbness	0.00	1.91	0.66 (0.49)
Life is empty	0.00	2.34	0.91 (0.50)
Loneliness	0.00	2.27	1.10 (0.52)

Figure 2 shows a line plot containing the mean scores of ESM-PGD items per ESM measurement to visualize the fluctuations and compare the items to one another. To further examine the data, in Figure 3 a heat map of the ESM-PGD item Yearning is shown to visualize the fluctuations in ESM measurements per participant. Heat maps of the other ESM-PGD items can be found in the Appendix.

Figure 2

Mean score of ESM-PGD items per ESM measurement

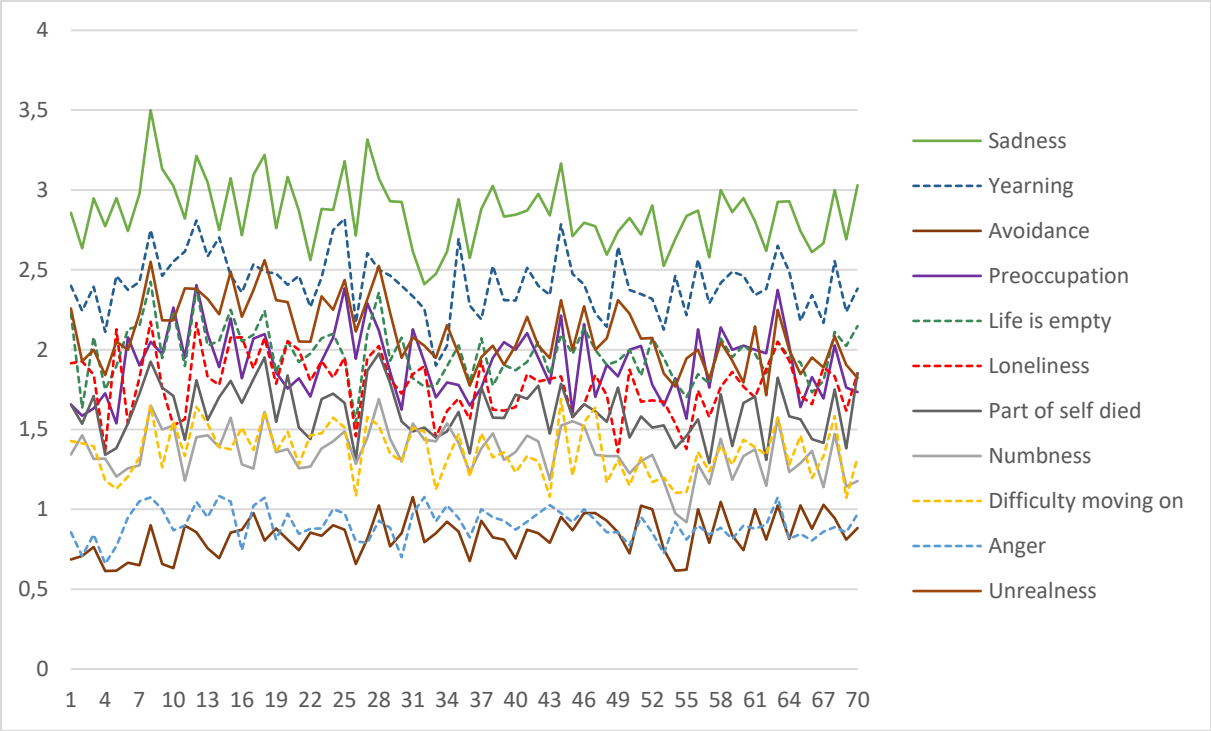
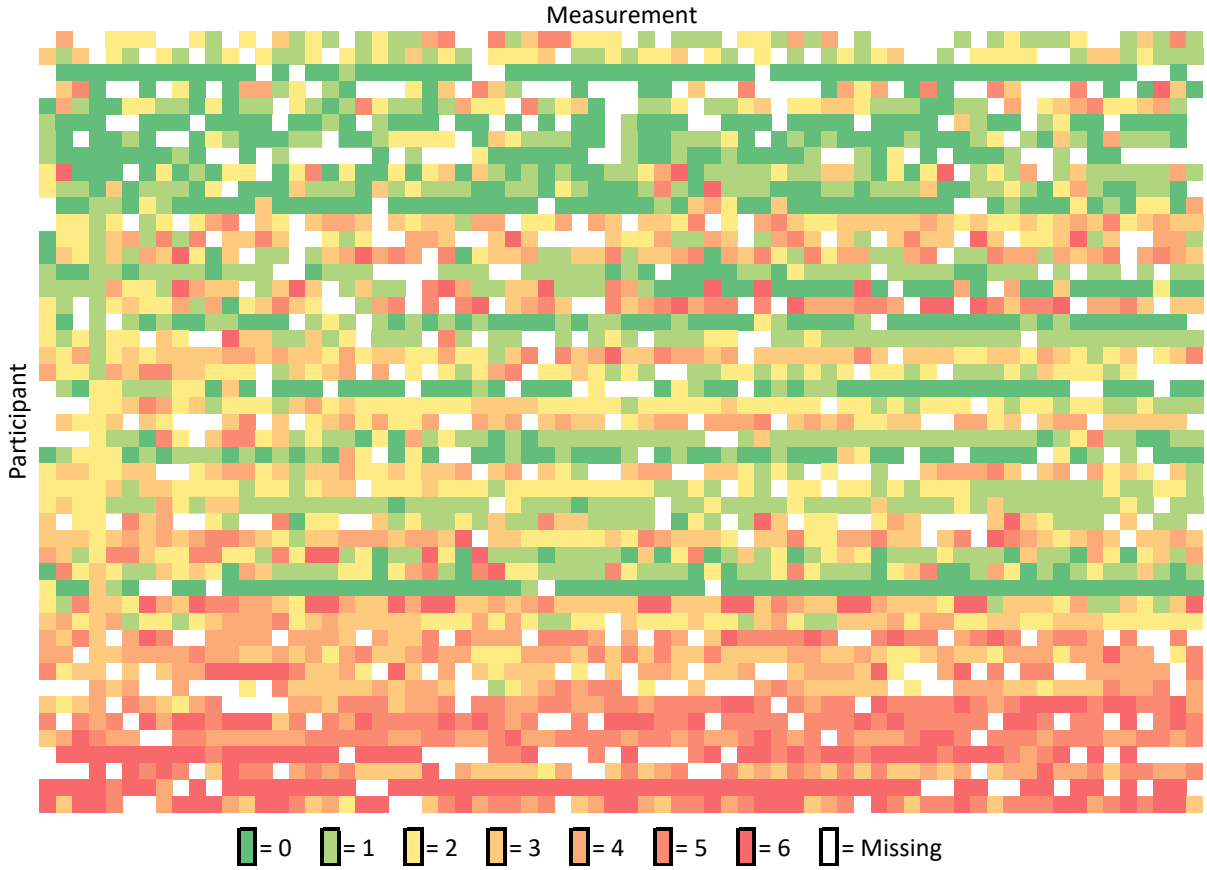


Figure 3

Yearning heat map



Note. This figure shows the answers of the participants per ESM measurement ranging from green to red. Green is 0 (not at all) and red is 6 (very much). White is a missing value, meaning that the participant did not answer that measurement.

Correlational analysis

Table 5 shows the Pearson's correlations between the mean RMSSD scores of the ESM-PGD items and the mean sum score of the TGI-CA at T1 and T2. The ESM-PGD items, were significantly moderately or strongly positively related to the sum scores of the TGI-CA at T1, except for Yearning ($r(45) = .18$, $p = .220$), Unrealness ($r(45) = .26$, $p = .077$), and Sadness ($r(45) = .13$, $p = .372$). The highest correlations between the ESM-PGD items and the sum scores of the TGI-CA at T1 were Part of self died ($r(45) = .61$, $p < .001$), and Preoccupation ($r(45) = .54$, $p < .001$). The significant correlations ranged between $r(45) = .35$ and $r(45) = .61$, all $p < .05$. At T2 all ESM-PGD items were significantly moderately or strongly positively correlated to the sum scores of the TGI-CA, except for Yearning ($r(45) = .20$, $p = .187$), and Sadness ($r(45) = .01$, $p = .937$). The highest correlations between the ESM-PGD items and the sum scores of the TGI-CA at T2 were Part of self died ($r(45) = 0.57$, $p < .001$) and Avoidance ($r(45) = 0.55$, $p < .001$). The significant correlations ranged between $r(45) = .36$ and $r(45) = .57$, all $p < 0.05$.

Table 5

Pearson's correlation between the mean RMSSD scores of the ESM-PGD items and the sum score of the TGI-CA at T1 and T2.

Items	TGI-CA at T1	TGI-CA at T2
Yearning	.18	.20
Preoccupation	.54**	.46**
Part of self died	.61**	.57**
Unrealness	.26	.36*

Avoidance	.52**	.55**
Sadness	.13	.01
Anger	.51**	.49**
Difficulty moving on	.50**	.44**
Numbness	.45**	.50**
Life is empty	.50**	.48**
Loneliness	.35*	.38**

Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

Discussion

The aim of this study was to examine if grief symptoms fluctuate in the daily lives of recently bereaved people, and if these fluctuations are related to the severity of retrospectively assessed PGD severity. To do this, interviews were held to collect data on overall interview-based PGD severity at T1 and T2, and ESM was used to collect data on fluctuations in ESM-PGD items. Data from 47 participants were analysed. This is the first research of its kind examining the fluctuations in ESM-PGD items in bereaved people. Therefore, this research may offer new insights into the understanding of the grieving process.

The mean RMSSD value of each ESM-PGD item shows that grief symptoms fluctuate for each of the 11 ESM-PGD items, with the highest fluctuations being in Preoccupation, Yearning, and Sadness. These findings show that there are indeed fluctuations in the ESM-PGD items. The fluctuations of ESM-PGD items found in this study could be evidence for the oscillation within the dual processing model as proposed by Stroebe and Schut (1999). As people avoid stressors they might give low scores on the ESM measurement, however if they confront stressors, they might give high scores on the ESM measurement. This could explain why these fluctuations occur in the daily lives of recently bereaved people. Future research

could investigate this relation between oscillation and fluctuations. This could be done by for example adding questions regarding loss-oriented and restoration-oriented coping mechanisms to the ESM and comparing these results to the fluctuations of the ESM-PGD items.

Fluctuations in 8 out of the 11 ESM PGD-items were moderately to strongly positively related to overall interview-based PGD severity. However, Yearning and Sadness were two of the ESM-PGD items with the largest fluctuations, yet do not seem to correlate to the overall interview-based PGD severity at T1 and T2. Preoccupation, which had the largest fluctuations out of all items, does correlate to overall interview-based PGD severity at T1 and T2. This could mean that the ESM questions for Yearning and Sadness do not measure these items properly, which goes against the experts' opinions from the study by Lenferink et al. (2022b). It could also mean that Yearning and Sadness are not relevant for PGD, which is not in line with the criteria for PGD of the DSM-5-TR (American Psychiatric Association, 2022). According to a latent class analysis by Heeke et al. (2022) on PGD in participants who lost a loved one at least six months prior, 31% of participants with no PGD symptoms experienced yearning. For participants with moderate PGD symptoms 78% experienced yearning, and 91% of participants with high PGD symptoms experienced yearning. For experiencing sadness it was 13% of participants with no PGD symptoms, 69% of participants with moderate PGD symptoms, and 94% of participants with high PGD symptoms. These were two of the most experienced items that they tested, meaning that Yearning and Sadness might not be relevant for PGD, but that they might be aspects of grief that are experienced by most people. This means that the DSM-5-TR diagnosis of PGD could be reevaluated to see if it is relevant to include yearning and sadness in the criteria of PGD.

These findings are novel in the field of PGD research, as there has been no previous study researching this specific topic. The findings of daily fluctuations in ESM-PGD items,

and its correlation to the severity of PGD at T1 and T2, could mean that ESM can be used as a predictive measure for bereaved people's development of PGD. Through ESM, bereaved people's grief symptoms could be monitored shortly after the loss of their loved one, and through the predictivity of the fluctuations people might be able to receive help earlier. Furthermore, the use of ESM ensures more realistic data compared to only traditional methods that have been mostly used to study PGD (Myin-Germeys & Kuppens, 2022). This study also has a higher sample size than most ESM studies. This sample consists of 47 participants, where as the median sample size in previous ESM studies is 19 (van Berkel et al., 2018).

However, there are also some limitations to this study. The sample is not generalizable to all recently bereaved people as most participants in the sample lost their partner. In a study by Doering et al. (2022) it was found that the loss of a partner or a child were significant predictors of PGD severity compared to other relations. Furthermore, 27 out 74 participants (36%) had to be removed from the dataset due to lack of compliance and retention. These participants either completed less than 50% of the ESM measurements or did not complete the T2 interview. As mentioned previously, this is a general limitation of ESM (Myin-Germeys & Kuppens, 2022). A literature review on ESM studies by van Berkel et al. (2018) also discusses these limitations of compliance and retention, they state that the average response rate of ESM studies was approximately 70%. This can be explained by the fact that some people find filling out several surveys a day for multiple consecutive days in a row too burdensome (Myin-Germeys & Kuppens, 2022). One way to improve the compliance and retention in this study would be to increase the window of time in which a participant can answer the ESM-questionnaire. Participants had 60 minutes to complete an ESM-questionnaire for this study. In future research this window could be expanded.

Although these findings are not generalizable to all bereaved individuals due to the sample, it is still of interest to do more research on this topic. These findings show that daily fluctuations in ESM-PGD items could predict the severity of PGD. Therefore, it could be of interest to do an additional measurement when the loss of a loved one has reached one year, to see if the severity of PGD symptoms has changed, and if they could get an official PGD diagnosis according to the DSM-5-TR. This additional measurement could give a better insight into the predictive nature of daily fluctuations in ESM-PGD items. If the severity of PGD persist in one year, using ESM early on to predict a future diagnosis could be helpful for enabling people to seek help earlier for their debilitating grief symptoms. Furthermore, the ESM questions also ask for if participants were with somebody, and where they were. This study did not research whether these factors had an influence on the fluctuations. For future research it could be of interest to examine if these factors had an influence on fluctuations. These findings could then be used for therapy and psychoeducation. Bereaved people will be made more aware of in what context their grief symptoms might increase, and what they could do to change the context to regulate the intensity of the symptoms.

In conclusion, grief symptoms fluctuate in the daily lives of recently bereaved people. These fluctuations, in all ESM-PGD items are related to the severity of PGD at T1 and T2, except for Yearning and Sadness which have no association. This means that the diagnosis of PGD in the DSM-5-TR could be reevaluated to examine if Yearning and Sadness are relevant for PGD. Furthermore, the findings of this study show that fluctuations in ESM-PGD items could be used as a predictive tool for PGD severity and enable recently bereaved people to seek help for their debilitating grief symptoms at an earlier stage.

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Appendix

Heat maps of ESM-PGD items

The following figures show heat maps of the answers of the participants per ESM measurement ranging from green to red for all ESM-PGD items except for Yearning (see Figure 2). Green is 0 (not at all) and red is 6 (very much). White is a missing value, meaning that the participant did not answer that measurement.

Figure A1

Preoccupation heat map

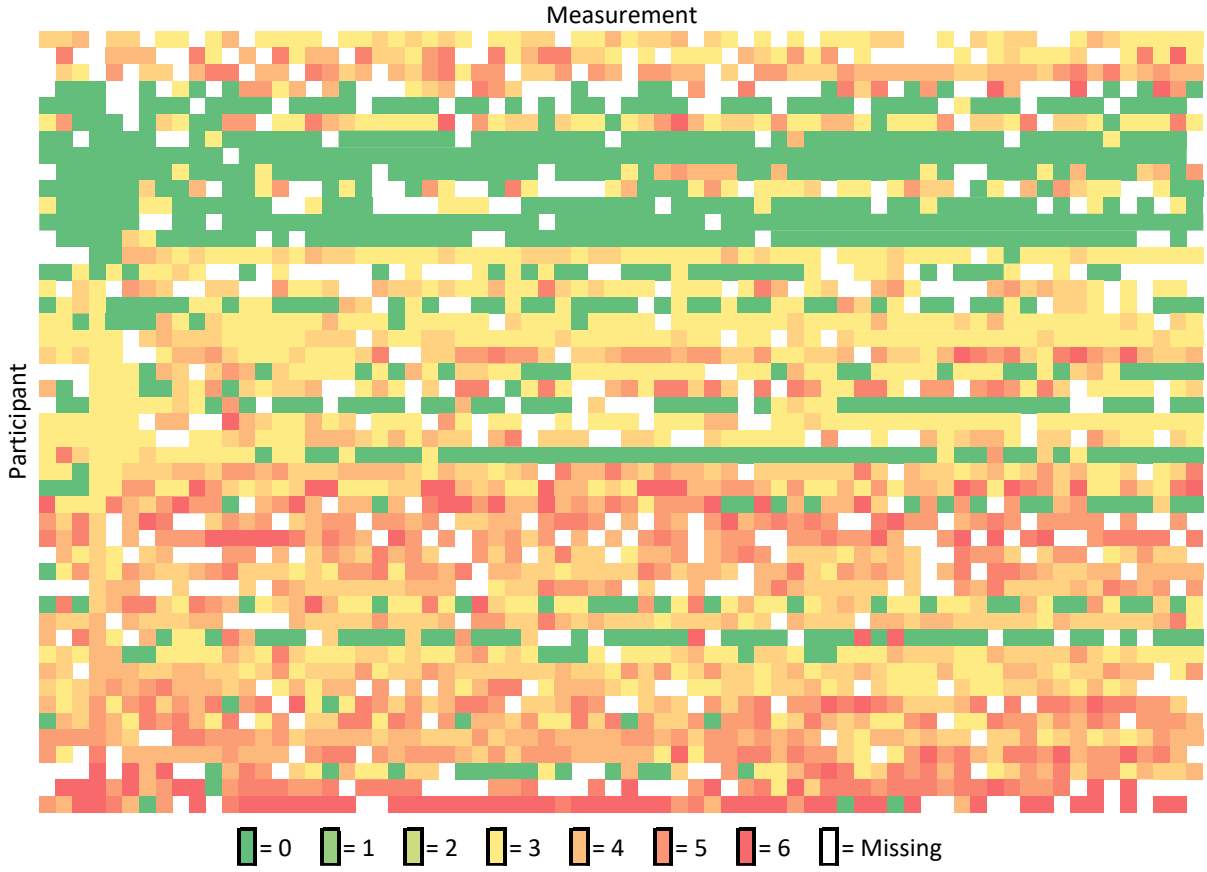

Figure A2

Part of self died heat map

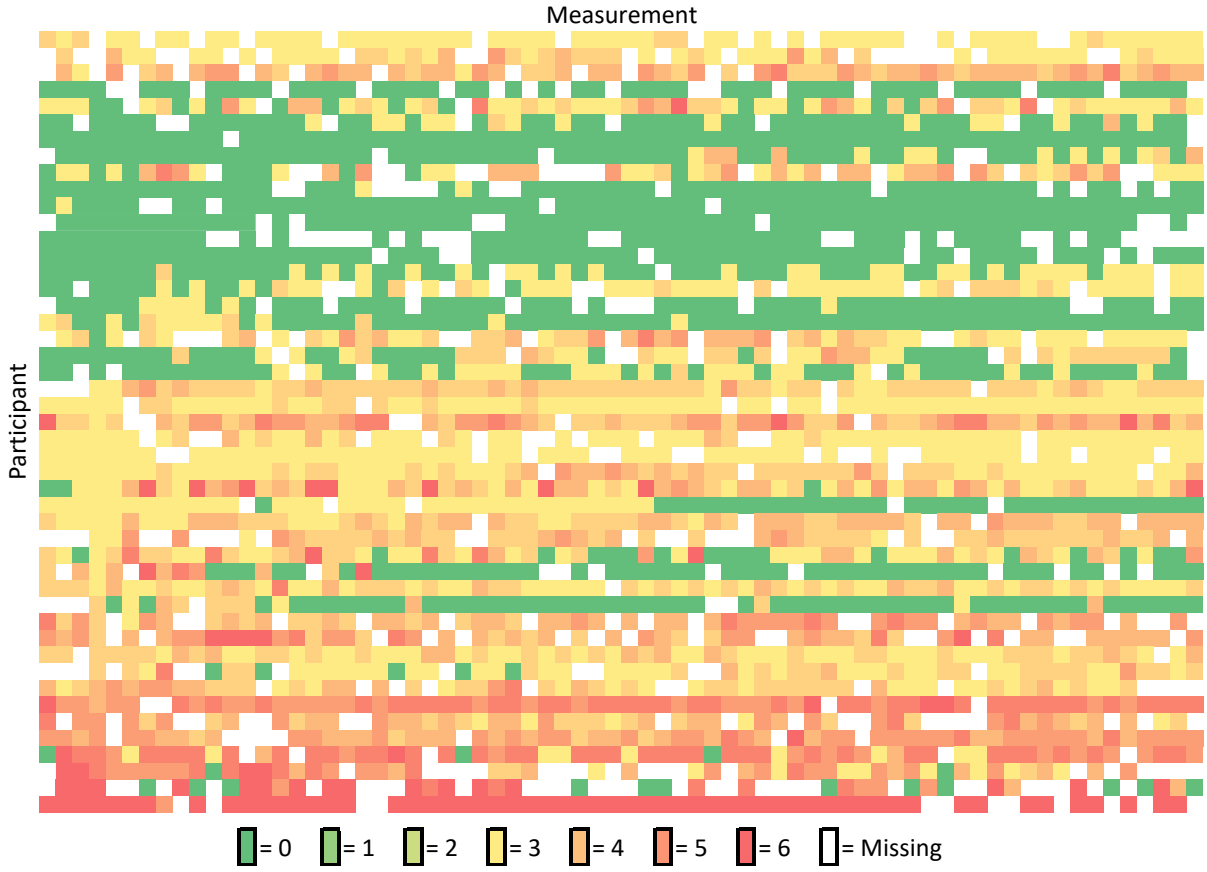

Figure A3

Unrealness heat map

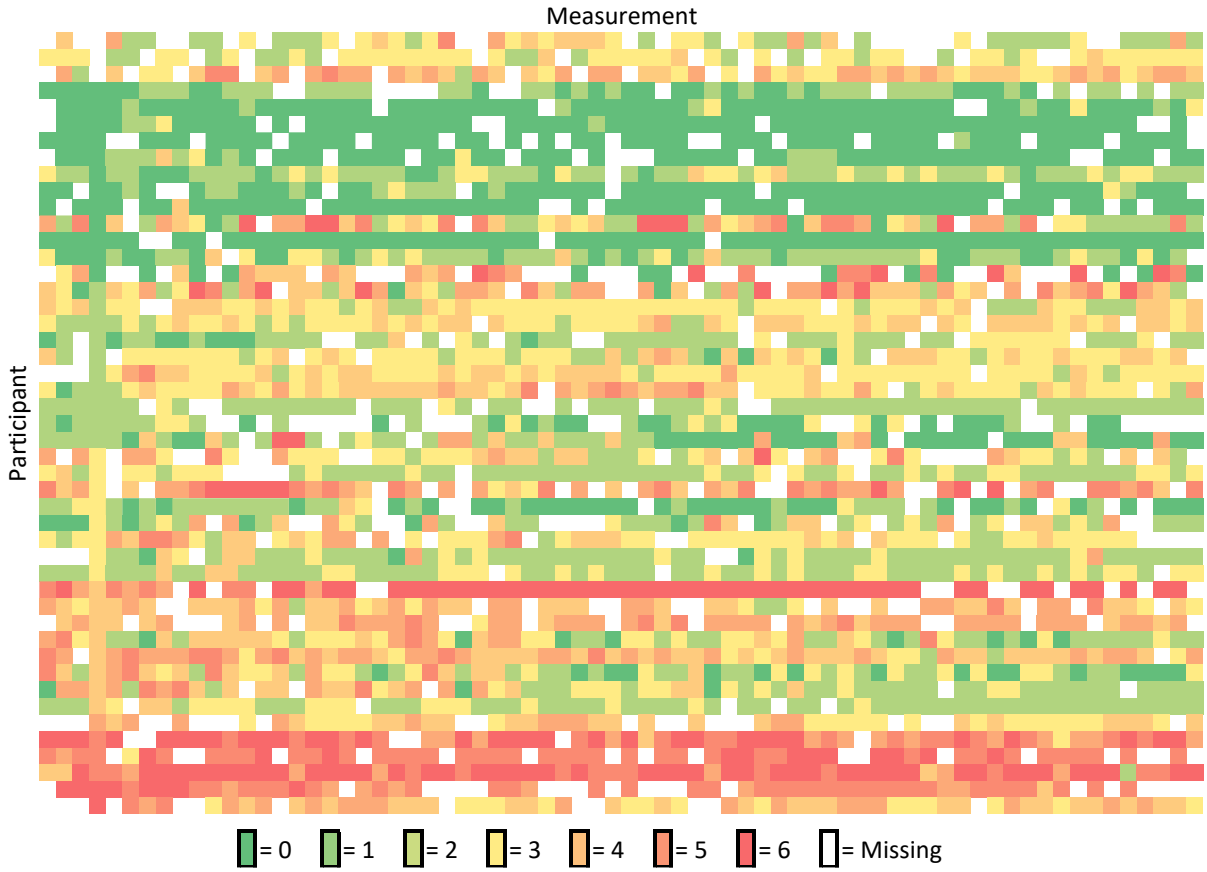

Figure A4

Avoidance heat map

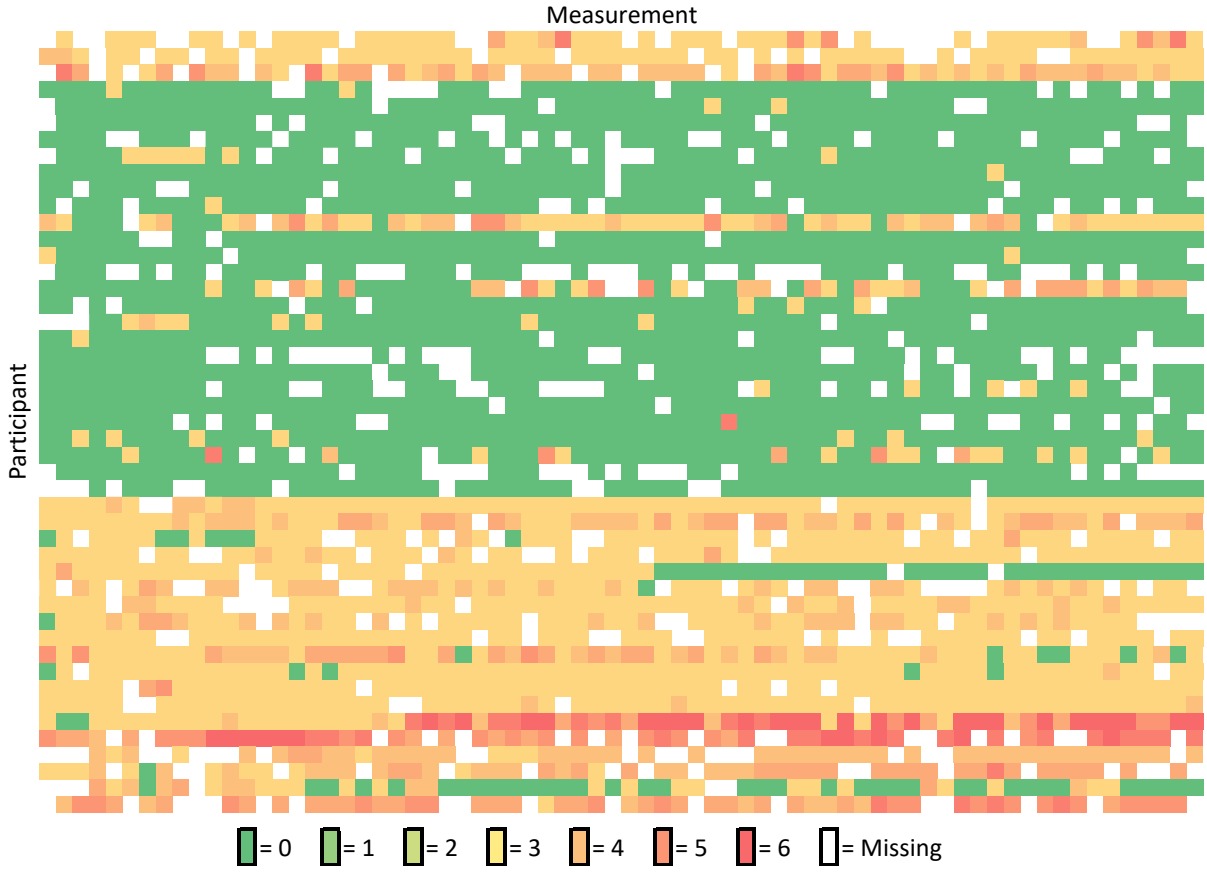

Figure A5

Sadness heat map

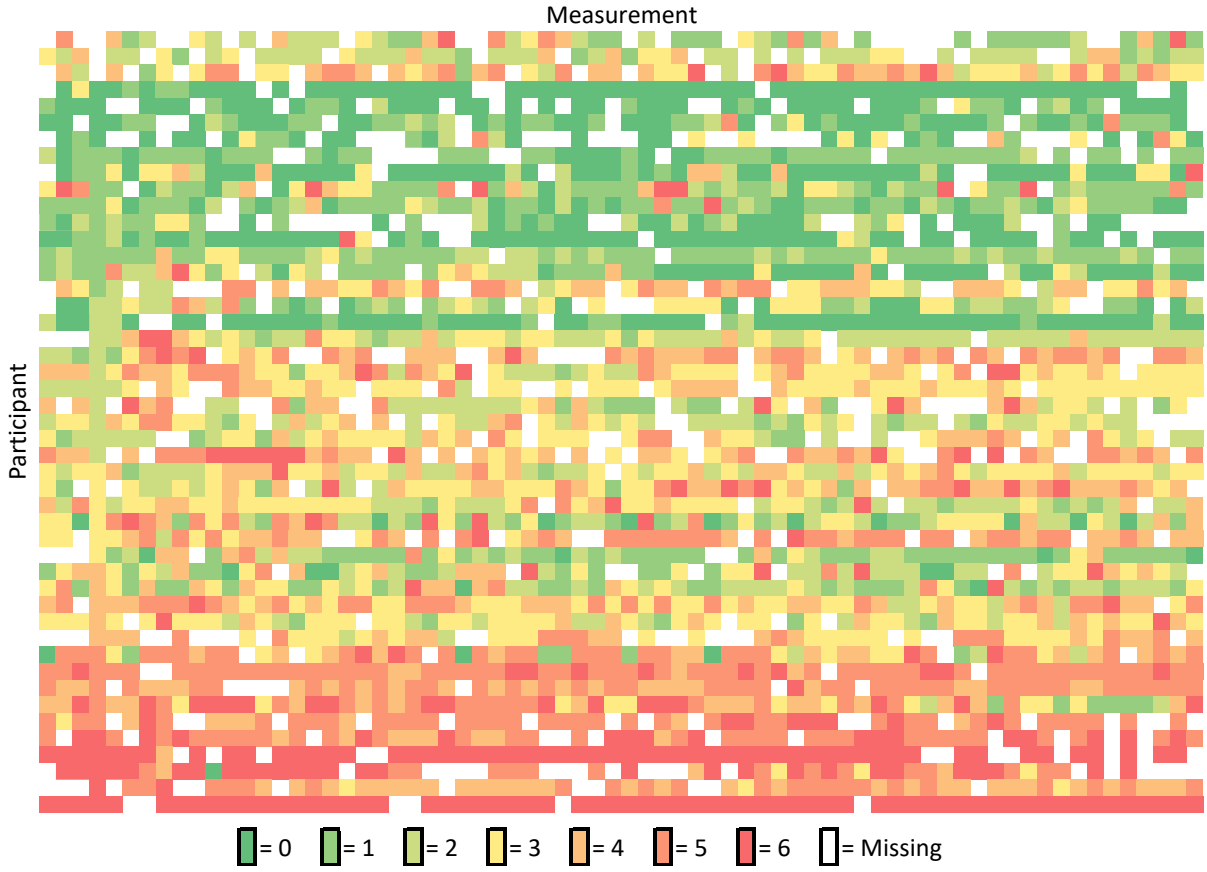

Figure A6

Anger heat map

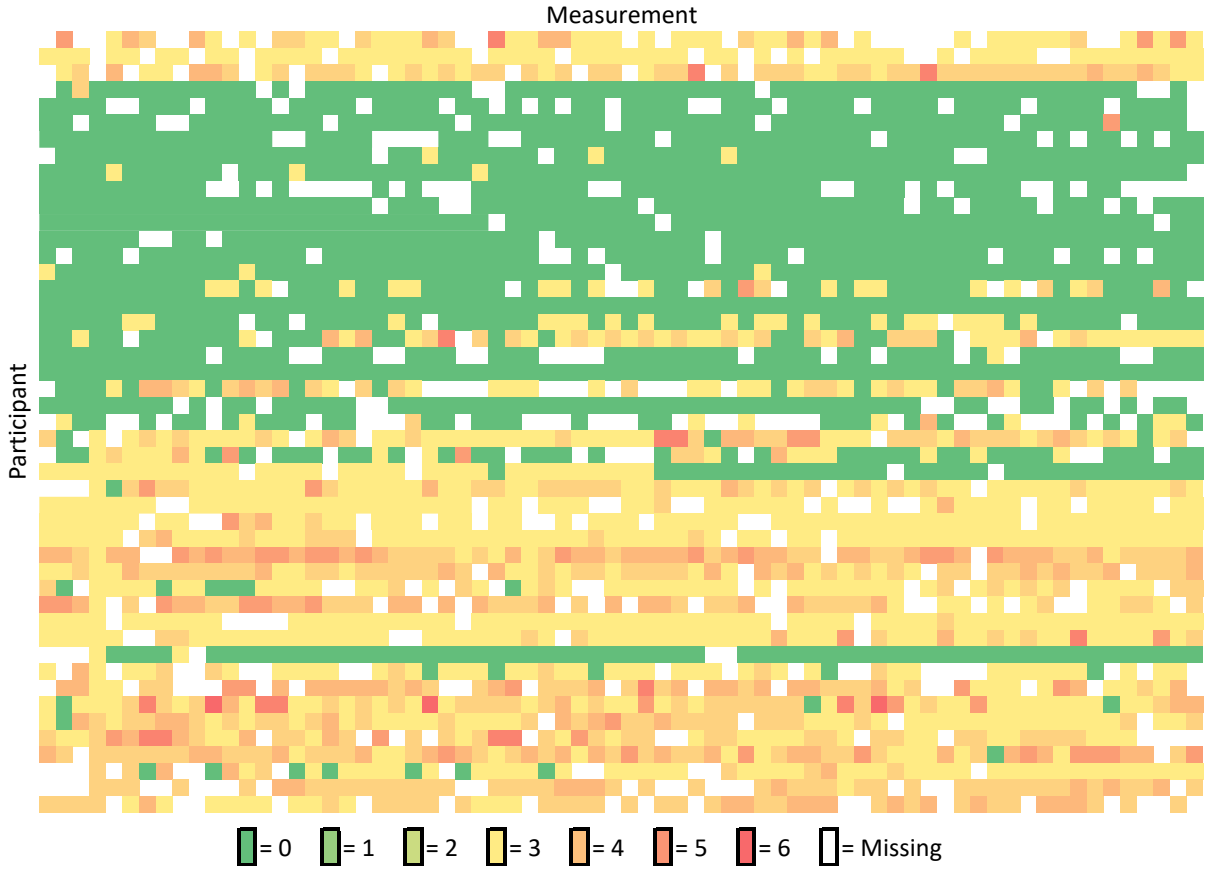

Figure A7

Difficulty moving on heat map

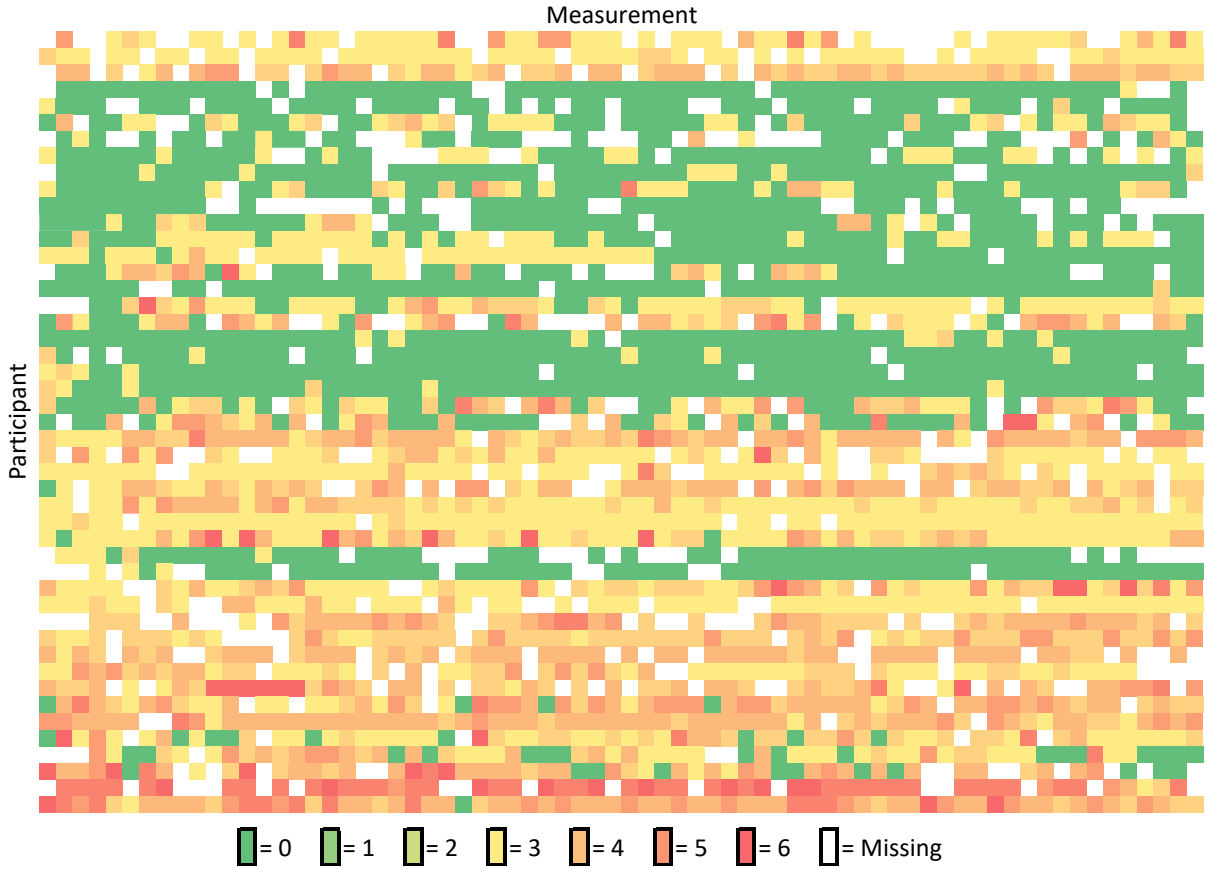

Figure A8

Numbness heat map

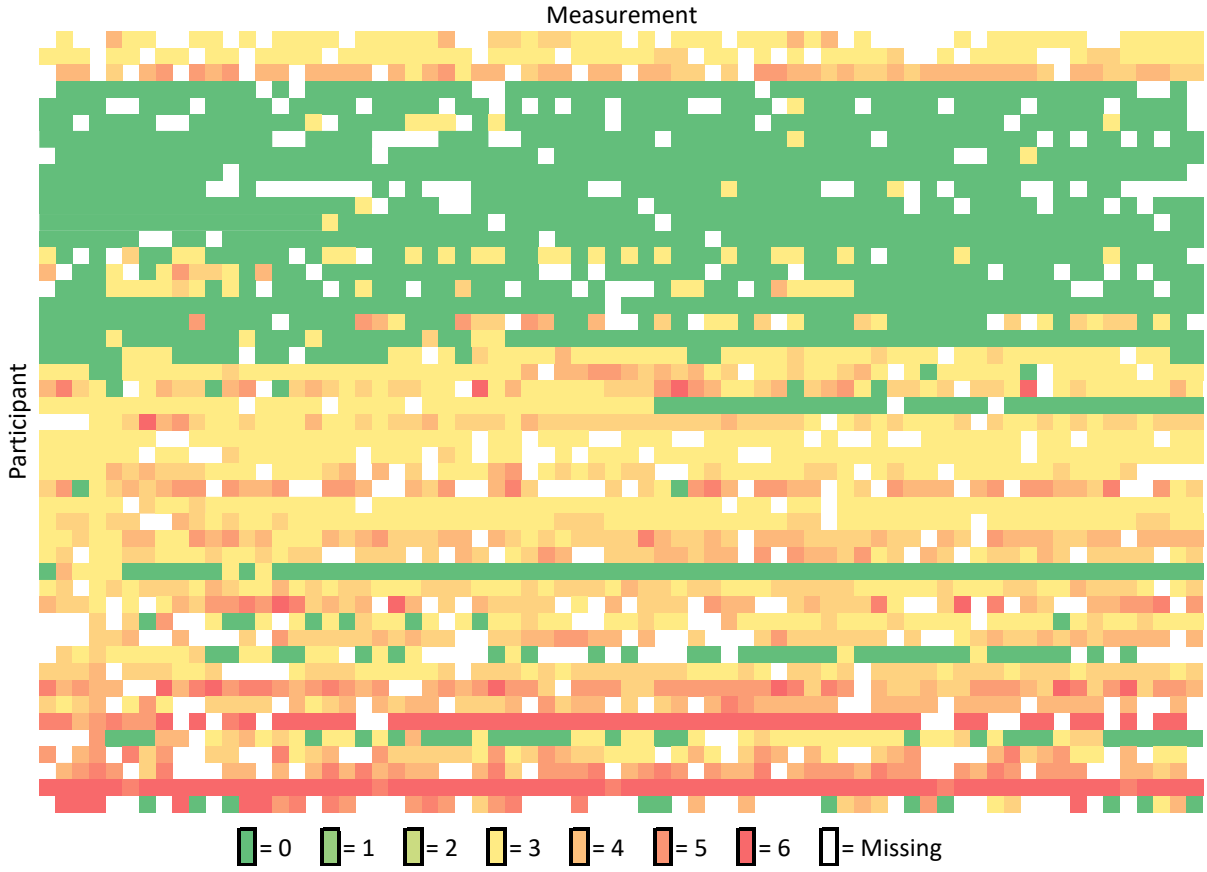

Figure A9

Life is empty heat map

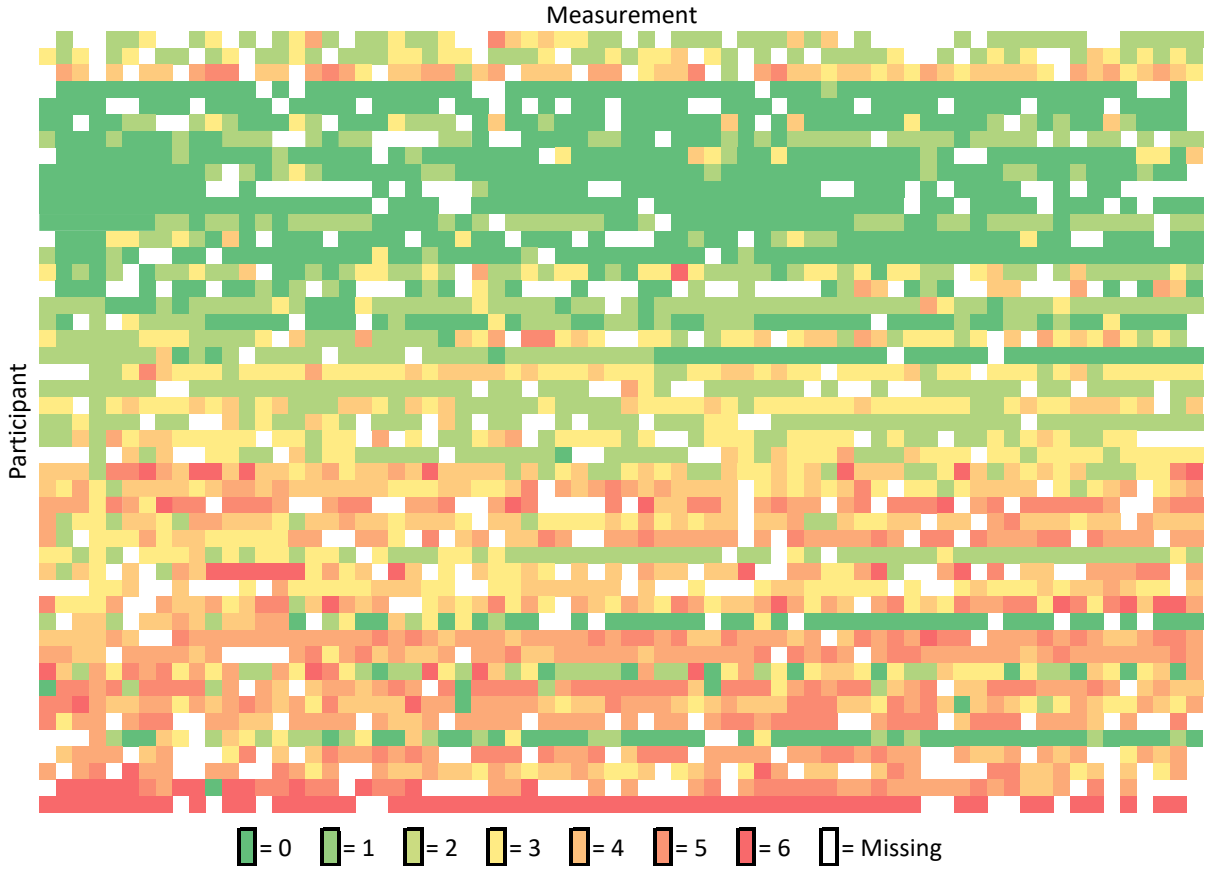

Figure A10

Loneliness heat map