Data from 'Critical Slowing Down as a Personalized Early Warning Signal for Depression'
Kossakowski, J.J.; Groot, P.; Haslbeck, J.M.B.; Borsboom, D.; Wichers, M.

Published in:
Journal of Open Psychology Data

DOI:
10.5334/jopd.29

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
DATA PAPER

Data from ‘Critical Slowing Down as a Personalized Early Warning Signal for Depression’

Jolanda J. Kossakowski¹, Peter C. Groot², Jonas M. B. Haslbeck¹, Denny Borsboom¹ and Marieke Wichers³

¹ Department of Psychology, University of Amsterdam, Amsterdam, The Netherlands
² User Research Center, Department of Psychiatry and Psychology, Maastricht University Medical Centre, Maastricht, The Netherlands
³ University of Groningen, University Medical Center Groningen, Department of Psychiatry, Interdisciplinary Center Psychopathy and Emotion Regulation, Groningen, The Netherlands

Corresponding author: Jolanda J. Kossakowski (j.j.kossakowski@uva.nl)

We present a dataset of a single (N = 1) participant diagnosed with major depressive disorder, who completed 1478 measurements over the course of 239 consecutive days in 2012 and 2013. The experiment included a double-blind phase in which the dosage of anti-depressant medication was gradually reduced. The entire study looked at momentary affective states in daily life before, during, and after the double-blind phase. The items, which were asked ten times a day, cover topics like mood, physical condition and social contacts. Also, depressive symptoms were measured on a weekly basis using the Symptom Checklist Revised (SCL-90-R). The data are suitable for various time-series analyses and studies in complex dynamical systems.

Keywords: ESM; time-series; depression; critical transition; psychopathology

Funding statement: This study was supported by an Aspasia grant (MW., NWO grant), and by the Brain Foundation of the Netherlands (MW., grant No. F2012(1)-03).

(1) Overview

Context

Collection Date(s)
The data were collected between August 13, 2012, and April 11, 2013.

Background
We present a dataset of a single participant, with a history of major depressive disorder (MDD), whose daily life experience was monitored over the course of 239 days [1]. The participant, who initiated the experiment, wanted to obtain more personal insight during a period in which the anti-depressants were gradually reduced. The aim of the participant was to know whether or not he would become more vulnerable to develop a new depressive episode when the anti-depressants were reduced, and whether this vulnerability could be detected in the data. The study design was set up at the initiative of, and in collaboration with, the participant, who agreed upon the set of items that was selected and added some items that were relevant to the participant. The participant had also found a pharmacist who provided a dose-reduction scheme that was randomly chosen out of several dose-reduction schemes that were designed in collaboration with the participant. The chosen dose-reduction scheme was unknown to both the participant and the researchers involved in the experiment. The participant was monitored on a momentary basis during a baseline period, a period of dose-reduction and a post-reduction period. The participant also initiated a follow-up measurement period in which his daily life experiences kept being monitored.

(2) Methods

Sample
The participant is a 57-year old male with a history of major depression. The participant has been using antidepressants for 8.5 years [2]. The participant completed on average 6.2 assessments per day (SD = 1.9).

Materials
The dataset consists of items that were measured momentary, daily, and weekly.

Momentary
Momentary items (no. items is 50) were collected using the experience sampling method (ESM; [3]). Items were selected based on previous experience with these types
of items regarding within-person variation, loading on a
negative or positive affect component, the relevance for
the current type of psychopathology and specific per-
sonal characteristics of the participant. The momentary
assessment questionnaire consisted of items pertaining
to mood states (e.g. feeling relaxed, feeling irritated etc.),
self-esteem, the company the participant was in at the
moment of assessment, the pleasantness or unpleasant-
ness of being in company, physical condition, the activity
that the participant was doing at the moment of assess-
ment, and to an important event that had occurred since
the last assessment.

33 items were measured on a 7-point Likert scale, rang-
ing from 1 (not) to 7 (very). The items concerned with feel-
ing down, lonely, anxious and guilty were measured on a
7-point Likert scale, ranging from –3 (not) to 3 (very). This
scale differs from the majority of the items as a pilot trial
showed that the participant reported more variation with a
7-point Likert scale ranging from –3 to 3 than a 7-point
Likert scale ranging from 1 to 7. Items with respect to the
company the participant was in, the activity the participant
was enrolled in or any event that had taken place since the
last assessment were categorized accordingly. Two items
concerning the pleasantness and importance of the event
were measured on a 7-point Bipolar scale, ranging from –3
(unpleasant/unimportant) to 3 (pleasant/important).

**Daily**

Two separate sets of items were completed daily: a six-
item set after waking up (item labels start with ‘morn’), with
which information is collected on the quality of sleep. The
other set consists of six items and were asked to be filled
out right before the participant went to sleep (item labels
start with ‘even’). This set of items was concerned with the
quality of the day the participant had. At both occasions,
the participant was asked whether or not he took his med-
ication either yesterday (morning item), or today (even-
ing item). Three of the morning items were categorized
accordingly. Two of the morning items and four of the
evening items were measured on a 7-point Likert scale,
ranging from 1 (not) to 7 (very). The medication items
together with one evening item was measured dichoto-
mously (yes/no).

**Weekly**

Once a week the participant completed 13 items of the
depression subscale of the Symptom Checklist Revised
(item labels start with SCL-90-R; [4]). Each item is scored
on a 5-point Likert scale, with 0 meaning that the partici-
 pant wasn’t bothered by that specific thought or feeling at
all, and 4 meaning that he was extremely bothered by it.

**Missing Data**

**Missing data for momentary items**

Each day, 43.4 items were filled out on average (SD = 1.3) per
day at each assessment. In total, out of 1478 assessments,
only five were aborted before completion. At 1478 assess-
ments, items were completed on average 1280.4 times
(SD = 378). Supplement “MissingnessMomentaryItems.
pdf” gives a more detailed description of the missingness
per assessment, day and item.

**Missing data for daily items**

During the entire study, 59.7% of the set of morning
items and 81.5% of the set of evening items were com-
pleted. Each day, either the entire set of morning/evening
items was answered, or none. On average, 3.6 (SD = 2.9) of
the morning items and 4.9 (SD = 2.3) of the evening items
were completed.

**Missing data for weekly items**

The study lasted for 34 weeks. During this period, depres-
sive symptoms were measured on a weekly basis. This
weekly questionnaire was completed 28 times (= 82.4%).
On each of these occasions, all items were answered.

**Procedures**

The entire study comprised 5 phases: (1) a baseline measure-
ment period that lasted four weeks, (2), a double-blind period
in which the anti-depressant dosage was not yet reduced,
which lasted between zero and six weeks, (3) a double-blind
period in which the anti-depressant dosage was gradually
reduced from 150 mg (venlafaxine) to 0 mg, which lasted
eight weeks, (4), a post-assessment period in which the anti-
depressant dosage was not changed, which lasted again eight
weeks, and (5), a follow-up period that lasted twelve weeks.

The dose-reduction scheme issued in phase 3 was set up
by the pharmacist who provided the anti-depressants dur-
ing the study. Several reduction schemes were developed,
which varied with respect to the length in weeks before the
dose reduction started (phase 2). During the experi-
ment, the participant and the researchers involved were
unaware of the dose-reduction scheme, although they
did know that the anti-depressant dosage was going to be
reduced. The participant reported after the experiment that
he had nog been able to figure out which eventual
dose-reduction scheme had been used.

At the start of the experiment, the participant received
a PsyMate [a digital device with touch screen, [5]],
which was set up to send out a beep-signal at random moments
within each of ten 90-minute intervals between 07:30 AM
and 10.30 PM every day. At each beep-signal, the participant
completed a 50-item questionnaire. Each beep-signal was
accompanied by a ten-minute window in which the ques-
tionnaire was available to the participant. Assessments were
started on average within 2.16 minutes (SD = 21 seconds).
At the beginning and ending of each day, the participant was
asked to complete an extra set of six items. On Mondays, the
participant’s depressive symptoms were measured using the
depression subscale of the SCL-90-R [4].

**Quality Control**

All questionnaires were administered by means of a digi-
tal device (PsyMate). In a few cases, the SCL-90-R was
completed on paper and e-mailed to the researchers, who
added the scores to the dataset.

**Ethical issues**

The participant (the 2nd author of this paper) initiated the
study and expressed that he wanted the data to be published.
Approval from the Maastricht University ethical committee
was therefore unnecessary and not obtained. The participant
gave his consent for collecting and (re)using the data.
(3) Dataset description

Object name
The datafile is named “ESMdata.zip”. This zip file contains the data “ESMdata.xls”, “ESMdata.csv”, “ESMdata.txt”, a codebook “Codebook.pdf” and a supplement “MissingnessMomentaryItems.pdf”.

Data type
All data files are primary data, with the exception of one variable called ‘dep’. This is a mean score of the SCL-90-R items as is mentioned as such in the codebook.

Format names and versions
The data are provided in three different formats: .xls, .csv and .txt format. The accompanying codebook and the supplement are in .pdf format.

Data Collectors
Peter Groot and Marieke Wichers designed the entire study and the experiment. Frenk Peeters was involved as a psychiatrist in the design phase of the experiment, Claudia Simons was responsible for the ESM briefing and technical assistance regarding the use of the PsyMate to collect the data.

Language
English.

License
The data have been deposited under a CC-By Attribution 4.0 International (CC-By) License.

Embargo
Not applicable.

Repository location

Publication date
The data have been published online since November 30, 2016.

(4) Reuse potential

The dataset contains around 1500 measurements and almost 50 items. Furthermore, items have been completed at different time scales: momentary, daily and weekly. It is a very extensive time-series dataset that can be used for several purposes. First, Wichers et al. [1] showed that the participant experienced a critical transition and that symptoms behaved conform principles of complex dynamical systems. Therefore, these data are extremely suitable for researchers to validate new methods for predicting the onset of a critical transition. Second, there have been recent developments into estimating time-varying networks. This data can be used as an empirical example to show how time-varying networks can be estimated and how the network develops over time. Lastly, since items were measured at different time scales, this dataset can aid research that aims to combine (time-series) data from different time scales.

Competing Interests
The authors have no competing interests to declare.

References