

## DATA PAPER

# Data from, 'Web-based Positive Psychology Interventions: A Reexamination of Effectiveness'

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We present two datasets. The first dataset comprises 992 point-in-time records of self-reported happiness and depression in 295 participants, each assigned to one of four intervention groups, in a study of the effect of web-based positive-psychology interventions. Each point-in-time measurement consists of a participant's responses to the 24 items of the Authentic Happiness Inventory and to the 20 items of the Center for Epidemiological Studies Depression (CES-D) scale. Measurements were sought at the time of each participant's enrolment in the study and on five subsequent occasions, the last being approximately 189 days after enrolment. The second dataset contains basic demographic information about each participant. The data are suitable for replication purpose and for various time-series analyses and between-group comparisons. The authors welcome collaborative research based on re-analyses of the data.

**Keywords:** positive psychology; experimental replication; happiness; depression; online therapy; signature strengths; e-mental health

## (1) Overview

### Context

### Collection Date(s)

The data were collected from participants between 5 January 2012 and 22 August 2012. The first participant enrolled on 5 January 2012 and the last participant enrolled on 17 February 2012. Both the first and last participants were among those who completed the measurement questionnaires on all six measurement occasions (see Methods).

### Background

We have previously reported the results of our replication [1] of a landmark randomized controlled trial [2] which had suggested that positive psychology interventions, when delivered via the internet, could increase participants' happiness and decrease their depression relative to the changes effected by a placebo control.

Our main finding was contrary to that of the original study by Seligman et al. [2]. All interventions, including the theoretically-neutral placebo, led to significant increases in happiness and to significant reductions in depression. The effects of the positive-psychology interventions were statistically indistinguishable from those of the placebo.

Here, we present two datasets relating to our replication study [1].

The first dataset comprises 992 point-in-time records of the self-reported happiness and depression of 295 participants, each assigned to one of four intervention groups, in a study of the effect of web-based positive-psychology interventions on happiness and depression. Each point-in-time measurement consists of a participant's responses to the 24 items of the Authentic Happiness Inventory (AHI) [3] and to the 20 items of the Center for Epidemiological Studies Depression (CES-D) scale [4]. Measurements were attempted at the time of each participant's enrolment in the study and on five subsequent occasions, the last being approximately 189 days after enrolment.

The second dataset contains demographic information about the each of the 295 participants. The data are suitable for various time-series analyses and between-group comparisons.

## (2) Methods

### Sample

Following a media release about the study by the Media Office of the University of Tasmania (see Dataset Description below), information about the study was made available through a variety of online and offline sources. Potential participants were invited to visit the

study website at [www.happiness-study.org](http://www.happiness-study.org) where they could read about the study in greater detail and enroll in it if they wished.

Outlets that took up the media release included newspapers (the Launceston Examiner), television news segments (ABC1, Hobart; Southern Cross Tasmania, Hobart; WIN Hobart, Hobart); radio (ABC local radio) and internet articles (Tasmanian Examiner <[www.examiner.com.au](http://www.examiner.com.au)>, Campus Daily Australia <[www.campusdaily.com.au](http://www.campusdaily.com.au)>, ABC Online <[www.abc.net.au/news](http://www.abc.net.au/news)>, Get Living <[www.getliving.com.au](http://www.getliving.com.au)>, University of Tasmania website <[www.utas.edu.au](http://www.utas.edu.au)>, and Asian Scientist <[www.asianscientist.com](http://www.asianscientist.com)>). Following the initial media uptake, we made a further attempt to attract participants to the study by placing an advertisement in the classified advertisement section of the Melbourne-based newspaper *The Herald Sun*.

Two hundred and ninety five (295) participants enrolled in the study and completed the initial questionnaires. Participants, were aged 18–83 years (mean = 43 years), 85% were female, 75% had a tertiary educational qualification (bachelor or post-graduate) and only 5% indicated that they had neither completed 12 years of schooling nor engaged in post-school vocational training. Seventy-six per cent of participants classified their income as 'average or above'.

As can be seen from the third-column of the table, the fact that a participant did not complete one set of measurements does not mean that they necessarily did not complete any subsequent measurements. Seventy-two (72) participants completed the measurement scales on all measurement occasions.

**Materials**

At the time of enrolment, participants completed an online form which asked about their sex, age, and level of education in addition to asking whether the participant would classify their income as being below average, average or above average. Also at the time of enrolment, and on each subsequent measurement occasion, participants completed the Authentic Happiness Inventory (AHI) [3] and the Center for Epidemiological Studies Depression (CES-D) scale [4].

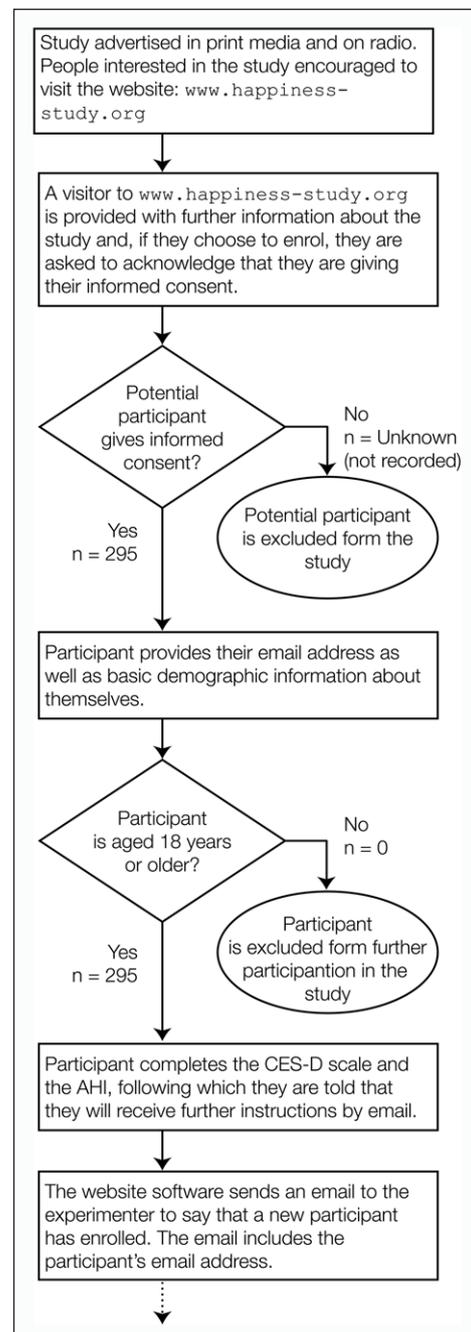
The AHI is a 24-item self-report scale intended to measure the respondent's level of happiness. Each item comprises an ordered group of 5 statements from which the respondent is asked to choose the statement that best describes the way they have been feeling for the past week, including the day of response. Statements within each group are scored from 1 to 5 with the first (least-happiness) item being scored as 1, and the last (most-happiness) item being scored as 5. A total AHI score is obtained by summing the scores for the 24 items. The total AHI score will be within the range 24–120.

The CES-D scale is a 20 item self-report scale used to assess depressive symptomatology, with higher scores indicating more symptoms. Each item consists of a single statement, such as "I felt that everything I did was an effort". The respondent is asked to indicate how often they felt "this way" (i.e., as indicated by the item statement) during the past week. Responses are made by endorsing one of four

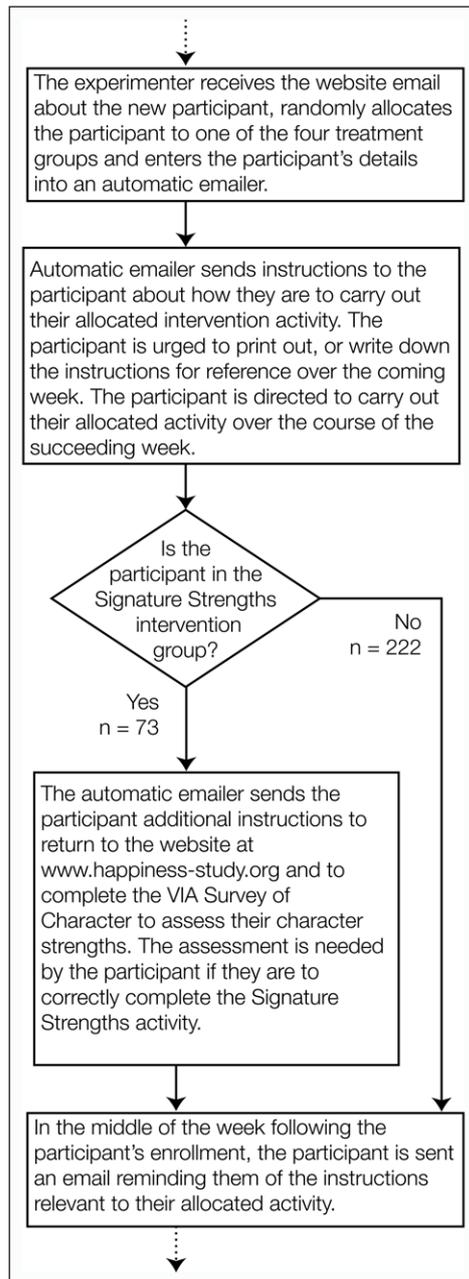
statements relating to the frequency of symptoms. With the exception of four items on the CES-D that are reverse-scored, the response which indicates the lowest frequency of experiencing a symptom ("Rarely or none of the time") is scored as zero, and the response that indicates the highest frequency ("Most or all of the time") is scored as 3. A total CES-D score is obtained by first reversing the scores of items 4, 8, 12 and 16, and then summing the scores for the 20 items. The total CES-D score will be within the range 0–60.

**Procedures**

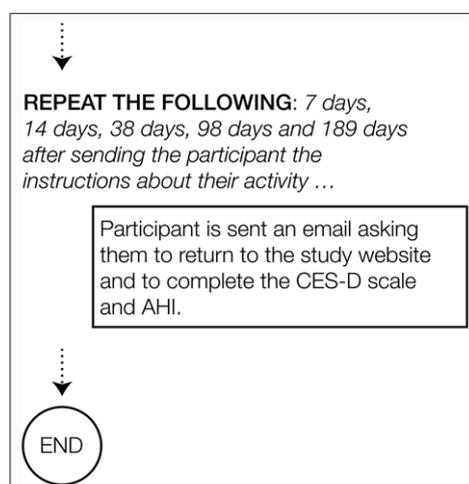
The study can conveniently be divided, in terms of each participant, into three phases: (i) enrolment and initial data collection, (ii) intervention, and (iii) post-intervention assessments. The phases are summarised in **Figures 1–3**.



**Figure 1:** Study Phase 1: Enrollment.



**Figure 2:** Study Phase 2: Intervention.



**Figure 3:** Study Phase 3: Post-intervention assessments.

*Enrolment and initial data collection.* The study was publicized on radio and in print media. Anyone interested in participating in the study was encouraged to visit the study website at [www.happiness-study.org](http://www.happiness-study.org) where they could obtain more information and enroll in the study if they wished. The additional information included that which was required for a person to be able to give their informed consent to participation.

A visitor to the website who indicated, by clicking, that they wished to participate in the study, was asked to acknowledge that they were giving their informed consent to participation and also asked for an email address. Any potential participant who did not give these two pieces of information was automatically excluded from further participation in the study by the website software and no record of their visit to the website was retained.

Participants then completed a survey of basic demographic information in addition to completing the CES-D scale and the AHI. After completing the various questionnaires, participants were thanked for enrolling and told that they would soon receive instructions about the intervention activity that they were to complete over the succeeding week. The website software then sent an email to the experimenter to say that a new participant had enrolled in the study and to tell the experimenter the participant's email address.

*Intervention.* The experimenter randomly assigned the new participant to one of the four intervention groups and entered the participant's details (including email address and intervention group) into a website-based automatic emailer [5]. Group-assignment was typically done within one day (median < 12 hours) of a participant enrolling in the study but tended to be longer if a participant enrolled during a weekend. The emailer automatically took care of all further contact with participants, including sending instructions about the intervention activities and reminders about follow-up measurements.

All participants were sent instructions to perform their allocated intervention activity over the succeeding week but the details varied according to which activity had been assigned. A copy of the actual instructions is available in the file `participant-instructions.txt`. Participants assigned to the *Gratitude Visit* intervention were asked to write a letter to someone who had been kind to them but whom they had never properly thanked, and to deliver the letter in person. Participants in the *Signature Strengths* intervention group were asked to visit a page at the study website that was hidden from other participants, and to complete an assessment of their character strengths [6]. Once the participant had completed the assessment and been given the results, which were also emailed to them, they were told to use one of their top-five character strengths in a new and different way over the course of the next week. Participants allocated to the *Three Good Things* intervention were told that each day for the next week they were to record three good things that happened to them, together with a causal explanation of why each thing had happened. They were also told that it was not important how significant or insignificant each of these good things was. Participants in the *Early Memories* intervention

(which served as a theoretical control group), were asked to write down something about their early memories each night for a week.

In the middle of the week after a participant's enrolment an email was sent to them repeating the instructions for their assigned activity. Regarding the matter of whether participants did in fact perform their assigned activity, see the section on Quality Control.

*Post-intervention assessments.* At the end of the week after a participant enrolled, and at every other occasion shown in **Table 1**, the participant was sent an email asking them to visit the study website to complete the CES-D scale and the AHI.

**Table 1:** shows the number of participants who responded on each of the six measurement occasions.

Measurement occasion and name	Number of days after enrolment in the study	Number of participants completing the measurement scales
0 – Pretest	0	295
1 – Posttest	7	147
2 – One-week follow-up	14	157
3 – One-month follow-up	38	139
4 – Three-month follow-up	98	134
5 – Six-month follow-up	189	120

### Quality Control

In an effort to ensure that participants were in Australia, we checked that the IP numbers of the computers used to enroll in the study were within the IP ranges allocated to Australia. We did not detect any IP numbers outside the allowed Australian ranges. However, we are aware that the procedure for determining whether a person is in Australia, or not, is not completely accurate and can give incorrect results if a participant uses a VPN.

In the post-test questionnaire, we asked participants to confirm that they had completed the activity to which they had been assigned. All participants who completed the post-test questionnaire confirmed that they had completed their assigned activity. However, because participants were only asked to complete the activity for one week, we did not repeat the intervention-check in later follow-up questionnaires. It therefore remains possible that some participants who did not complete the post-test questionnaire, but who did complete one or more of the later follow-up questionnaires, did not in fact perform the intervention activity assigned to them. This was one of the reasons for our report [1] including analyses based on "intention-to-treat".

Measurement of happiness and depression, with the AHI and the CES-D scale, were made using a web-based forms. The form automatically coded participant's responses, prevented participants from giving multiple responses to any questionnaire item that required only a single response, and also required participants to answer all questions before they submitted the questionnaire forms.

### Ethical issues

The study, data collection, and data archiving were approved by the Tasmanian Social Sciences Research Ethics Committee and conform to guidance on human research ethics published by the Australian Government National Health and Medical Research Council [7]. At enrolment, subjects gave their informed consent to participation in the study, and supplied an email address that possibly contained personally identifying information. Data were collected over the internet and the IP address of the computer used by each participant on each measurement occasion was automatically recorded by the company that hosted the website at [www.happiness-study.org](http://www.happiness-study.org). Email addresses were used only for the purpose of communicating to participants about the study. Similarly, IP addresses were used only for the purpose of verifying that the participants, at the time of enrolment, were located in Australia.

Participants were not paid directly but were told that if they completed all follow-up questionnaires, they would be entered at the end of the study into a draw for a book voucher valued at AU\$ 100.

### (3) Dataset description

#### Object name

The name of the data set is "A randomized placebo-controlled trial of positive psychology interventions in Australia". The data set consists of eight files:

- One file (`ahi-cesd.csv` – CSV format) contains the main data, namely, measurements from participants that were made using the CES-D scale and the AHI.
- One file (`particant-info.csv` – CSV format) contains demographic information about participants.
- Two files (`code-book.pdf` – PDF 1.5 format, `code-book.txt` – plain text) contain the code book. The two files contain the same information but are in different formats and are laid out somewhat differently. The PDF file is easiest to read but the plain text file is included to ensure accessibility.
- Two files (`media-release.pdf` – PDF 1.4 format, `media-release.txt` – plain text with markdown) contain the text of the media release used to recruit participants to the study. The two files contain the same text but are in different formats. The PDF file is easiest to read but the plain text file is included to ensure accessibility.
- Two files (`participant-instructions.pdf` – PDF 1.4 format, `participant-instructions.txt` – plain text with markdown) contain the full text of the instructions that were emailed to participants in each of the intervention groups. The two files contain the same information but are in different formats and are laid out somewhat differently. The PDF file is easiest to read but the plain text file is included to ensure accessibility.

#### Data type

Processed data. The main data object contains "cleaned" dataset files with some variables added, some omitted, and some altered as described below.

Each participant's email address, remote computer IP number and description of their reasons for enrolling

in the study, have been omitted to preserve anonymity. With the exception of omitting those variables, the demographic information is unprocessed.

Each record of the measures of happiness (AHI) and depression (CES-D scale) includes all the primary data from the each of the 24 items of the AHI [3] and the 20 items of the CESD [4] but excludes the actual date and time at which the participant logged into the computer system. For convenience, derived totals of the AHI items and CES-D items (appropriately scaled) have been added to each record of happiness and depression. The original time and date attached to each record has been replaced by the calculated number of fractional days between the time and date of enrolment of the participant and the time when the participant created the later record.

#### Format names and versions

CSV, PDF-1.4, PDF 1.5, and plain text.

#### Data Collectors

Rosalind Woodworth.

#### Language

The codebook, media-release, and participant instructions are written in English.

#### License

The data have been deposited under a Creative Commons Attribution 4.0 International (CC BY 4.0) License.

#### Repository location

The dataset is available from *figshare*: at <https://doi.org/10.6084/m9.figshare.1577563.v1>.

#### Publication date

The dataset was published on Saturday, 3 February 2018.

### (4) Reuse potential

The data are of potential interest to clinical psychologists, health psychologists, or other researchers particularly interested in subjective wellbeing or internet-based psychological interventions.

At the time of publication, the dataset appears to be the only publicly available data from a trial of positive psychology interventions and the file set includes the only complete set of instructions given to participants in a trial of web-based positive psychology interventions (cf. Mongrain & Anselmo-Matthews [8], Seligman et al. [2]). As such, it will be useful for setting up future studies of this kind.

Other potential uses include the following:

- Verification of the results of our replication study [1]
- Aggregation, or inclusion into meta-analyses and systematic reviews
- Examination of the effects of different statistical approaches to dealing with missing data
- Educational purposes, particularly as a demonstration of the application of multilevel modelling to discontinuous or non-linear change [9, chapter 6].

Finally, the dataset includes variables such as participants' age and level of education that might be found to moderate the effects reported in the original paper [1].

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#### Competing Interests

The authors have no competing interests to declare.

#### Author Contribution

1. Co-designed the study, collected the data, analyzed the data, wrote the initial report, reviewed the original journal publication. University of Tasmania.
2. Co-designed the study, co-supervised the data-collection, reviewed the data-analysis, co-wrote the draft of the original journal publication. University of Tasmania.
3. Co-designed the study, conducted secondary data-analyses, co-wrote the draft of the original journal publication. University of Tasmania.
4. Co-supervised the data collection, reviewed the data analysis, reviewed the draft of the initial report, reviewed the manuscript of the original journal publication. University of Tasmania.

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