Check for updates

DATA NOTE

REVISED **A dataset for the perceived vulnerability to disease scale in Japan before the spread of COVID-19 [version 2; peer review: 2 approved]**

Yuki Yamada [iD] [1], Haoqin Xu [2], Kyoshiro Sasaki [iD] [3]

[1]Faculty of Arts and Science, Kyushu University, Fukuoka, Japan
[2]Graduate School of Human-Environment Studies, Kyushu University, Fukuoka, Japan
[3]Faculty of Informatics, Kansai University, Takatsuki, Japan

Abstract
The COVID-19 outbreak is a worldwide medical and epidemiological catastrophe, and the number of psychological studies concerning COVID-19 is growing daily. Such studies need baseline data from before the COVID-19 outbreak for comparison, but such datasets have not yet been accumulated and shared. Here, we provide a dataset on the perceived vulnerability to disease scale for 1382 Japanese participants obtained through an online survey conducted in 2018 that will be useful for comparison with current or post-COVID-19 perceived vulnerability to disease data.

Keywords
coronavirus, disgust, emotion, Japanese, perceived infectability, germ aversion
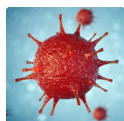
This article is included in the Disease Outbreaks gateway.
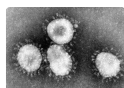
This article is included in the Coronavirus collection.

Open Peer Review

Reviewer Status ✓✓

	Invited Reviewers	
	1	**2**
version 2 (revision) 22 Jul 2020		✓ report
		↑
version 1 06 May 2020	✓ report	? report

1. **Shu Imaizumi** [iD], Ochanomizu University, Tokyo, Japan

2. **Amir H. Pakpour** [iD], Qazvin University of Medical Sciences, Qazvin, Iran

Any reports and responses or comments on the article can be found at the end of the article.

Corresponding author: Yuki Yamada (yamadayuk@gmail.com)

Author roles: Yamada Y: Conceptualization, Funding Acquisition, Methodology, Project Administration, Supervision, Writing – Original Draft Preparation, Writing – Review & Editing; **Xu H**: Conceptualization, Investigation, Methodology, Writing – Review & Editing; **Sasaki K**: Conceptualization, Funding Acquisition, Methodology, Writing – Review & Editing

How to cite this article: Yamada Y, Xu H and Sasaki K. **A dataset for the perceived vulnerability to disease scale in Japan before the spread of COVID-19 [version 2; peer review: 2 approved]** F1000Research 2020, **9**:334 https://doi.org/10.12688/f1000research.23713.2

First published: 06 May 2020, **9**:334 https://doi.org/10.12688/f1000research.23713.1

REVISED   **Amendments from Version 1**

Based on the reviewers' comments, some minor changes were made to improve clarity and accuracy. Figure 1 has been added for information.

Any further responses from the reviewers can be found at the end of the article

---

Introduction

Currently, a new type of coronavirus infection (coronavirus disease 2019; COVID-19) is spreading on a global scale. Although the details of this infection are not yet clear, it is rapidly spreading in many countries, and the strength of the infection is likely to be great. In response to this unprecedented situation, governments are asking people to take social distancing measures and limit their outside activities. Under such threats and political measures, the state of mind of the people must also be quite different from before. Therefore, many social and behavioral studies of such factors including people's political attitudes, controllability, emotional states, anxiety, and stress in COVID-19 situations are being conducted simultaneously and rapidly (Van Bavel *et al.,* 2020). However, it is difficult to predict how long the current pandemic will last, and even if the situation is under control, it is unclear whether the psychological traits of people in the post-COVID-19 world who experienced this pandemic will be similar to those before COVID-19. Thus, such survey studies need pre-outbreak data as a baseline for comparison and data obtained before the COVID-19 outbreak

are of great importance. Accordingly, we here provide a dataset for the perceived vulnerability to disease scale obtained in Japan in 2018 (Yamada, 2020).

With the spread of COVID-19 and under the guidance of the World Health Organization (WHO), people have begun to wash their hands more often. Concomitantly, we have become more afraid of infection than ever before. People have begun to disinfect various places and objects with alcohol and to wear masks. These behaviors are based on a heightened perceived vulnerability to disease (PVD). A psychological scale has been developed to measure this tendency (Duncan *et al.,* 2009). The PVD scale is composed of two subscales: "Perceived Infectability," which is related to the beliefs of one's own susceptibility to infecting diseases, and "Germ Aversion," which is related to an awareness of discomfort in situations with a high likelihood of infection with a pathogen. This scale has already been localized in Japan (Fukukawa *et al.,* 2014). It has also been translated not only in Japan but other countries as well (Ahmadzadeh *et al.,* 2013; Klavina *et al.,* 2011; Prokop *et al.,* 2010; Skolnick & Dzokoto, 2013). In the early stages of the COVID-19 spread, the PVD was used to confirm concurrent validity of the scale regarding the COVID-19 (Ahorsu *et al.,* 2020). Moreover, a Chinese study had already compared PVD scale scores with those of other countries (Goh, 2020); this was a cross-sectional study and there was no baseline. These results suggest that the generality of this scale and the necessity of baseline data are both striking. Therefore, we provide data on the pre-pandemic PVD scale for use in comparative studies (Yamada, 2020). The distribution of the individual PVD scale score is shown in Figure 1.
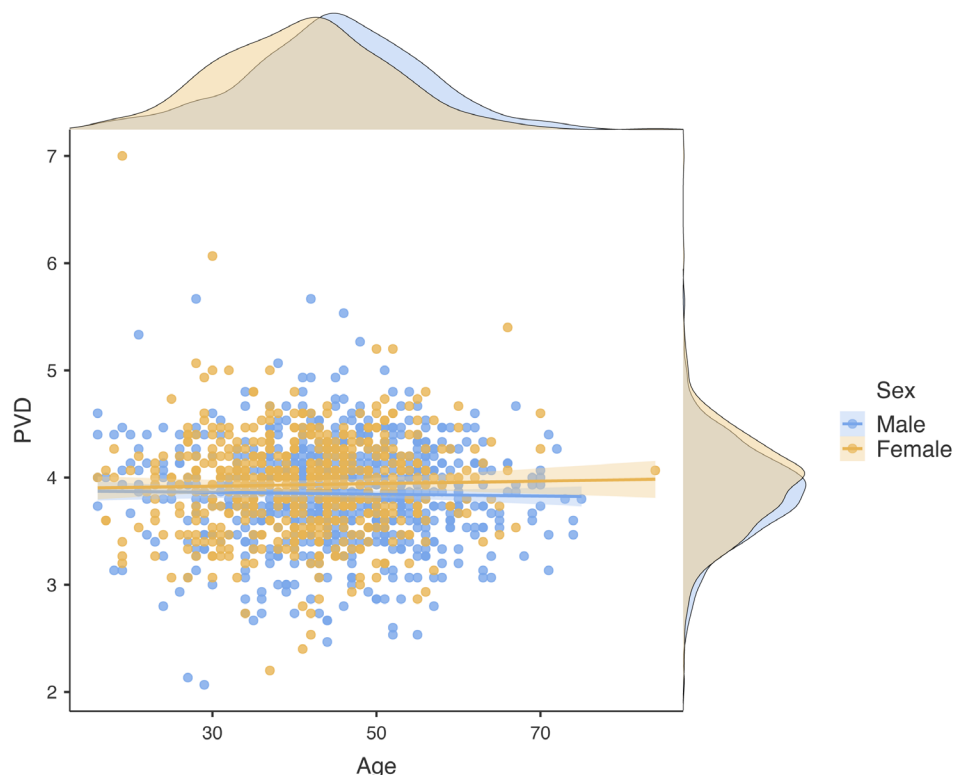

Figure 1. The relation between the individual PVD scale score and age for male and female participants. We excluded the data of the participants whose sex was unknown from this figure because their sample size was only 16.

Methods
Participants
We recruited a maximum of 2000 participants online through Yahoo! Crowdsourcing Service and recorded the data collected during the survey period. As a result, a total of 1428 Japanese people in Japan participated in this survey (868 men, 543 women, 17 unknown; mean age ± SD = 43.40 ± 10.62 years).

Scale
We used the Japanese version of the PVD scale developed by Fukukawa *et al.* (2014). The scale consists of a total of 15 items. Each item was scored on a seven-point scale (1: *strongly disagree*, 7: *strongly agree*). Items 3, 5, 11, 12, 13, and 14 were reverse-scaled items. All the items of this scale are available from the original papers (English: Duncan *et al.,* 2009; Japanese: Fukukawa *et al.,* 2014).

Procedure
The survey was conducted from September 22–23, 2018. Participants accessed the Yahoo! Crowdsourcing service page for the link to the web address of the survey page on Google Forms. The participants were first asked to input their age and sex (male, female, or other). The order of items on the scale was randomized across participants based on the setting of Google Forms. In order to check whether the participants were concentrating on the task, a calculation problem ($171 - 169 = ?$) was inserted after the 7th item of the PVD scale as an attention check question to identify respondents who do not answer seriously (Sasaki & Yamada, 2019). After the survey, the participants received 10 T-points (Japanese point service, in which one T-point is worth one JPY) as a reward.

Inclusion
The survey was posted on the website of the crowdsourcing service and users of the service were free to view it and participate in it.

Exclusion
We excluded participants who gave an incorrect answer to the attention check question. As a result, we eliminated the data of 46 participants. We present the remaining dataset for 1382 participants (833 men, 533 women, 16 unknown; mean age ± SD = 43.46 ± 10.62 years) as a relatively reliable one.

Ethical approval and consent to participate
The present study received approval from the psychological research ethics committee of the Faculty of Human-Environment Studies at Kyushu University (approval number: 2016-017). Completion of the survey was taken as consent to participate from participants. Participants had the right to withdraw from the survey at any time without providing a reason. Although we did not obtain personal information about the participants, as this was a crowdsourced survey, it was explained to them that their responses would not be tied to them personally.

Data availability
Underlying data
Open Science Framework: Japan PVD 2018. https://doi.org/10.17605/OSF.IO/QW2AF; registration DOI https://doi.org/10.17605/OSF.IO/7Y4AV (Yamada, 2020).

This project contains the following underlying data:
- PVDJapan2018.xlsx. (The dataset.)
- Description of Dataset.txt.

Data are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

References

Ahmadzadeh M, Ghamarani A, Samadi M, *et al.*: **The investigation of validity and reliability of a scale of perceived vulnerability to disease in Iran.** *Brit J Soc Sci.* 2013; **1**(4): 43–51.
Publisher Full Text

Ahorsu DK, Lin CY, Imani V, *et al.*: **The fear of COVID-19 scale: development and initial validation.** *Int J Ment Health Addict.* 2020; 1–9.
PubMed Abstract | **Publisher Full Text** | **Free Full Text**

Duncan LA, Schaller M, Park JH: **Perceived vulnerability to disease: Development and validation of a 15-item self-report instrument.** *Pers Individ Dif.* 2009; **47**(6): 541–546.
Publisher Full Text

Fukukawa Y, Oda R, Usami H, *et al.*: **[Development of a Japanese version of the Perceived Vulnerability to Disease Scale].** *Shinrigaku Kenkyu.* 2014; **85**(2): 188–195.
PubMed Abstract | **Publisher Full Text**

Goh JX: **Perceived vulnerability to disease predicts restrictive policy supports in response to the 2019-nCoV outbreak.** 2020.
Publisher Full Text

Klavina L, Buunk AP, Pollet TV: **Out-group mating threat and disease threat increase implicit negative attitudes toward the out-group among men.** *Front Psychol.* 2011; **2**: 76.
PubMed Abstract | **Publisher Full Text** | **Free Full Text**

Prokop P, Usak M, Fancovicová J: **Risk of parasite transmission influences perceived vulnerability to disease and perceived danger of disease-relevant animals.** *Behav Processes.* 2010; **85**(1): 52–57.
PubMed Abstract | **Publisher Full Text**

Sasaki K, Yamada Y: **Crowdsourcing visual perception experiments: a case of contrast threshold.** *PeerJ.* 2019; **7**: e8339.
PubMed Abstract | **Publisher Full Text** | **Free Full Text**

Skolnick AJ, Dzokoto VA: **Disgust and contamination: a cross-national comparison of ghana and the United States.** *Front Psychol.* 2013; **4**: 91.
PubMed Abstract | **Publisher Full Text** | **Free Full Text**

Van Bavel JJ, Baicker K, Boggio PS, *et al.*: **Using social and behavioural science to support COVID-19 pandemic response.** *Nat Hum Behav.* 2020; **4**(5): 460–471.
PubMed Abstract | **Publisher Full Text**

Yamada Y: **Japan PVD 2018.** 2020.
http://www.doi.org/10.17605/OSF.IO/7Y4AV

Open Peer Review

Current Peer Review Status: ✔ ✔

Version 2

Reviewer Report 02 September 2020

✔ **Amir H. Pakpour** iD

Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran

The authors have addressed my previous concerns. It is acceptable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Psychology, methodology, Biostatistics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 14 July 2020

? **Amir H. Pakpour** iD

Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran

Dear Author(s),
Please

1. The aim of this study is vague. The abstract is incomplete and the results and the method parts are not accessible. In addition to this, your keywords are not able to reflect the whole details of the study.

2. One of the psychological scales was introduced, however, there is not any hint to find out about that.

3. In the method part, there is not solid ground to opt Web-sampling? it could lead to bias definitely.

4. Is there any previous knowledge to select age and sex as covariates?

5. I would suggest the authors add the following citation:
   Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. *International journal of mental health and addiction*.[1]

References

1. Ahorsu DK, Lin CY, Imani V, Saffari M, et al.: The Fear of COVID-19 Scale: Development and Initial Validation.*Int J Ment Health Addict*. 2020. 1-9 PubMed Abstract | Publisher Full Text

Is the rationale for creating the dataset(s) clearly described?

Yes

Are the protocols appropriate and is the work technically sound?

Partly

Are sufficient details of methods and materials provided to allow replication by others?

No

Are the datasets clearly presented in a useable and accessible format?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Psychology, methodology, Biostatistics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 15 Jul 2020

Yuki Yamada, Kyushu University, Fukuoka, Japan

Thank you for reviewing our data paper. We were happy to address each comment.

1. The aim of this study is vague. The abstract is incomplete and the results and the method parts are not accessible. In addition to this, your keywords are not able to reflect the whole details of the study.

Reply: Thank you for your comment. Our manuscript was submitted as *Data Notes*, in which, the paper aims to provide a valuable dataset and promote its reuse. Further, this point was already apparent in the first draft. Generally, *Data Notes* should explain how the data was created without including any analyses or conclusions. As well, we followed the article guidelines, which are available at https://f1000research.com/for-authors/article-guidelines. Therefore, based on the guidelines, we believe that our abstract was not incomplete.

2. One of the psychological scales was introduced, however, there is not any hint to find out about that.

Reply: The present study used only the Japanese version of the perceived vulnerability to disease (PVD) scale (Fukukawa et al., 2014); we assume that you are referring to this scale. This scale is a just localized version of the original PVD scale (Duncan et al., 2009); the contents in the Japanese version of the PVD scale are also identical to the original scale. Furthermore, we already clarified this point in the Introduction of the first draft.

3. n the method part, there is not solid ground to opt Web-sampling? it could lead to bias definitely.

Reply: Thank you very much for your remark. Although it is unclear to us what kind of bias you were referring to regarding the web sampling, we believe that those who will use this dataset will carefully address any areas of concern. To that end, we explicitly stated that this data was obtained by web-sampling and provided more detailed data characteristics, as responded in 2-4.

4. Is there any previous knowledge to select age and sex as covariates?

Reply: As per our response in 2-1, *Data Notes* do not have to include any analyses or conclusions. Moreover, age and sex as covariates are dependent on the purpose of using this dataset and should not be predicated here; therefore, those using the dataset should address age and sex as covariates as they deem necessary. But just for information, we would show a graph representing the relation between the individual PVD scale score and age for each gender for future data users.

5. I would suggest the authors add the following citation: Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. International journal of mental health and addiction.[1]

Reply: Thank you for this valuable information. We have cited this article in the revised manuscript.

We express our sincere gratitude for your time and effort for the valuable comments and suggestions, and hope that our revised manuscript is now suitable for approval.

Competing Interests: No competing interests were disclosed.

Reviewer Report 26 May 2020

✔ **Shu Imaizumi** [iD]

Institute for Education and Human Development, Ochanomizu University, Tokyo, Japan

The authors provide a dataset of the PVD scale from a Japanese sample in September 2018, which would serve as a baseline for comparison with the PVD in the current and post COVID-19 situations. The study will give not only a dataset but also an important message for future studies on the changes in human behavior during and after this COVID-19 period. I would like to give some minor comments.

Introduction:
- To be precise, COVID-19 is an abbreviation for coronavirus disease 2019.

- "perceived infectability" and "germ aversion" may be capitalized, according to Duncan *et al.* (2009).

- It might be better to clarify that Goh (2020) was a cross-sectional study (i.e., no comparison with pre-COVID-19 data) to underscore the necessity of baseline.

Participants, Exclusion:
- It would be better to report SD of participants' age.

Procedure:
- Please clarify whether the calculation problem was inserted between or after the PVD scale items.

Is the rationale for creating the dataset(s) clearly described?

Yes

Are the protocols appropriate and is the work technically sound?

Yes

Are sufficient details of methods and materials provided to allow replication by others?

Yes

Are the datasets clearly presented in a useable and accessible format?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Cognitive psychology

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Author Response 15 Jul 2020

Yuki Yamada, Kyushu University, Fukuoka, Japan

The authors provide a dataset of the PVD scale from a Japanese sample in September 2018, which would serve as a baseline for comparison with the PVD in the current and post COVID-19 situations. The study will give not only a dataset but also an important message for future studies on the changes in human behavior during and after this COVID-19 period. I would like to give some minor comments.
Reply: Thank you very much for your positive and valuable comments. We want to address your remarks with sincerity.

To be precise, COVID-19 is an abbreviation for coronavirus disease 2019.
"perceived infectability" and "germ aversion" may be capitalized, according to Duncan et al. (2009).
Reply: Following your suggestions, we have revised the manuscript accordingly.

It might be better to clarify that Goh (2020) was a cross-sectional study (i.e., no comparison with pre-COVID-19 data) to underscore the necessity of baseline.
Reply: Thank you for this valuable suggestion. We have clarified that Goh (2020) was a cross-sectional study in the revised manuscript.

It would be better to report SD of participants' age.
Reply: We have calculated the *SD* (= 10.62) of participants' age and indicated this in the revised manuscript.

Please clarify whether the calculation problem was inserted between or after the PVD scale items.
Reply: Based on this comment, we have clarified that the calculation problem was inserted after the 7th item of the PVD scale.

Competing Interests: No competing interests were disclosed.

The benefits of publishing with F1000Research:

- Your article is published within days, with no editorial bias

- You can publish traditional articles, null/negative results, case reports, data notes and more

- The peer review process is transparent and collaborative

- Your article is indexed in PubMed after passing peer review

- Dedicated customer support at every stage

For pre-submission enquiries, contact research@f1000.com

F1000Research