Meta-RESEARCH PROTOCOL

**The WEIRD problem in a “non- WEIRD” context? A meta-research on the representativeness of human subjects in Chinese Psychological Research**

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Authors’ note: This protocol is based on Topor et al. (2021).

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**Abstract:**

**Background:** Psychological science aims at understanding general human mind and behaviours, yet most published studies used data from a very narrow slice of the human population, i.e., samples from Western, Education, Industrialized, Rich, and Democratic (WEIRD) regions, especially from North America. This creates the generalizability crisis in psychological science. To alleviate this problem, researchers are trying to collect more data from “non-WEIRD” regions. Large-scale international collaborative projects were initiated to increase the diversity of human subjects. However, it is unknown whether human subjects from “non-WEIRD” regions can represent their local population.

**Methods:** We plan to conduct a meta-research to survey the sample characteristics of Chinese participants reported in empirical studies published in 5 mainstream Chinese psychological journals and in large-scale international collaborations. We will first extract information about Chinese subjects reported in these journals and in those projects. Then, we will use these data to answer the following questions: (1) Whether the Chinese participants reported in large-scale international collaboration are from the same (narrow) population as those reported in Chinese psychological journals? (2) To what extent these Chinese participants represent the Chinese population, as compared with the official census data and from a large-scale social science survey, Chinese Family Panel Study (CFPS)? (3) What are the share and distinct characteristics between Chinese participants and participants from other regions.

**Hypothesis:** We expect that (1) There is no difference between Chinese participants reported in Chinese journals and in large-scale international collaboration; (2) As WEIRD sample only represents a narrow slice of human population, the Chinese participants are also from a very narrow slice of Chinese population; (3) Given that most psychological researchers around the world use convenient sampling methods, Chinese human subjects share many characteristics with participants from other regions (e.g., most of them are young college students who take psychological courses).

**Discussion:** If our hypotheses are confirmed, we probably discuss the mindset of using convenient sampling approach in psychological science and how this mindset spread from Western to all psychological science and how the current publishing system reinforced such mindset/practices.

**Keywords:** meta-research, population psychology, representativeness,WEIRD, generalizability

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| **Title** |
| 1. **Provide a working title for your study.**   The WEIRD problem in a “non- WEIRD” context: A meta-research on the representativeness of human subjects in Chinese psychological research |

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| **Description and Aims** |
| 1. **Provide a brief description of your research topic, including background, purpose and rationale of the review, and overriding research questions.**   **Background:** Psychological science studies human mind and behaviour, which have a growing impact on society. However, psychological science largely relies on unrepresentative subject samples, most of human participants in published psychological studies are undergraduate students who take psychology courses from “Western, Educated, Industrialized, Rich, and Democratic” regions (Henrich et al., 2010; Henry, 2008; Sears, 1986). This not only means imprecise and unreliable cover of individual differences, which has been overlooked in the neuroscience field (Zuo et al., 2019), but also limits our understanding of the whole picture of human mind and behaviour (Apicella et al., 2020; Barrett, 2020) and leads to incorrect policies (Arnett, 2008). This issue, combined with other methodological issues, created a generalizability crisis in psychology (Yarkoni, 2020).  To solve this problem, researchers in the field started to include more diverse data. Many international collaborative projects are initiated (Gordon et al., 2020; Moshontz et al., 2018). Typically, these projects recruit collaborators globally, especially those from non-WEIRD regions, such as Asia, Middle East, Latin America, and Africa. These efforts are applaudable and indeed increased the geographical diversity of psychological science. These projects, however, have not checked whether data collected from non-WEIRD regions are representative of the local population. Left this issue unaddressed, these large collaboration projects may create an illusion the WEIRD problem can be solved by simply involving more researchers from non-WEIRD regions, ignoring the fact that data collected from non-WEIRD regions may suffer a similar unrepresentative problem.  To understand how representative is the subjects in psychological research from a typical non-WEIRD region, China, we propose to survey the studies conducted by Chinese researchers. China is the second-largest economy and has the largest population in the world, yet with a very different history and cultural tradition from WEIRD regions. Also, Chinese researchers are actively participated in international collaborations (in Many Labs 5, Psychological Science Accelerator, etc.). However, whether Chinese participants in these studies represent the Chinese population had never been checked. Meanwhile, whether these Chinese participants share some common characteristics with participants from other regions is also unclear.  **Purpose:** We are trying to understand how representative is the participants from a non-WEIRD region. To do so, we will survey the demographic characteristics of Chinese participants in published empirical studies in Chinese psychological journals and in large-scale international collaborative projects. Also, we will compare the characteristics of Chinese samples to the samples of other regions and explore whether they share similar patterns. In addition, we will record the way how these participants were recruited, we will also record how the conclusions were drawn based on these samples. |

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| **Research Question** |
| 1. **What is the primary research question?** 2. Whether characteristics of Chinese participants reported in large-scale international collaboration is similar to those reported in Chinese psychological journals? 3. To what extent the Chinese participants in psychological science can represent Chinese population, as compared with the census data from the National Bureau of Statistics of China (http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/qgrkpcgb/) and from a large-scale social survey, Chinese Family Panel Study (CFPS, http://www.isss.pku.edu.cn/cfps/en/)? 4. What are the shared and distinct patterns of Chinese participants and participants from other regions? 5. **Clearly define secondary research questions, if any.** 6. Is the information about the ways Chinese psychological science researchers used to recruit their participants available? 7. How did the authors generalize their research result, as described in the abstract and discussion (or conclusion) sections? 8. **Clearly state any hypothesis/hypotheses.** 9. There is no difference between Chinese human subjects reported in Chinese journals and in large-scale international collaborative projects; 10. As WEIRD sample only represents a narrow slice of human beings, the Chinese samples also come from a very narrow slice of the Chinese population;   (3) Chinese human subjects share many characteristics as other non-WEIRD and WEIRD samples (e.g., most of them are young college students who take psychological courses). |

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| **Coding/Screening** |
| 1. **What software/applications are you planning to use to store and manage the data throughout the research process?**   We will use EndNote to manage the items of literature and use .CSV file to collect, store, and manage data. And we also will use R and/or Python to analyze data.   1. **State whether you are planning to design coding/screening manuals for your co-researcher.**   We have developed the first version of the coding manual. Now the manual is in Chinese, given that we are going to code Chinese articles. The manual was based on previous studies (Arnett, 2008; Nielsen et al., 2017; Pollet & Saxton, 2019; Rad et al., 2018), which will help coders to extract the following information: articles IDs, source journal, article title, study number, study type, sample type, sample size, methods for participants recruitment, gender, age, socio-economic status, educational attainment, ethnicity, occupation, religion, region for participants recruitment, and remark.  Once started, the coding manual will be further improved by the following procedure: At least two coders will code ten random articles independently, they will compare the results, resolve the differences and revise the manual; after that, they will code another ten articles and compare the results and revise the coding manual again. This procedure will be iterated until no disagreement between the two coders. Future coders will be trained so that they all understand the manual before they start coding.   1. **Clearly define the procedure for selecting records and data extraction.**   The scope of the empirical studies included in this project is from two sources.  The first data source is the 1000 empirical studies published in mainstream Chinese journals. These studies include 500 empirical papers that had been surveyed by Wang et al. (2021). Those 500 papers are published in five mainstream Chinese psychological journals (*Acta Psychological Sinica, Journal of Psychological Science, Chinese Journal of Clinical Psychology, Psychological Development and Education, Psychological and Behavioral Studies*) in the years 2017 and 2018. Another 500 papers will be selected from the same five journals but published at different time points. To be specific, we will also select 250 articles published in 2008 and 250 articles in 2020~2021. The criteria and procedure of article selection, same as Wang et al. (2021), is described as below:  Step 1: Assign an identifier for each article. For literature in different periods, we will obtain information of all the papers published in those journals in three different periods and assign a unique identifier to each article. Each article ID has a total of 8 digits. The first four number represents the selected period (we will use 2008, 2018, 2021 to represent articles from three different periods), the fifth number represents the journal ID, from 1 to 5, and the last three number represent the order of the paper in the journal. For example, the first article in *Acta Psychologica Sinica* from 2008, coded 20081001. The second article in *Acta Psychologica Sinica* this year was coded 20081002.  Step 2: Random sampling from all articles. We will use the `*sample*` function to sample a certain number of papers from all the papers in each journal. The number of papers sampled from each journal will be weighted by the total number of papers published in that year. After getting the identifiers of the selected papers, two independent researchers will check each article to make sure that it is an empirical study. If not, we will replace the article with the empirical article, which has the smallest distance to the article whose identifier is sampled.  2008 2017 & 2018 2020.06 -2021.06  *Acta Psychological Sinica, 39 95 28*  *Journal of Psychological Science 107 115 61*  *Chinese Journal of Clinical Psychology 64 146 94*  *Psychological Development and Education 24 62 29*  *Psychological and Behavioral Studies 16 82 38*  Step 4: Data extraction. At this stage, we will go through the methods section and further inspect the data used in those studies. We will filter out studies that used existing data or from large-scale databases or using animals. For the remaining studies, we will extract the following information of the study: articles IDs, source journal, article title, study number, study type, sample type, sample size, and methods for participants recruitment. More importantly, we will extract all information, if available, about participants: gender, age, socio-economic status, educational attainment, ethnicity, occupation, religion, region for participants recruitment, and remark. Additionally, we will read the abstract and discussion (or conclusion) to understand how the authors interpret the generalizability of their results or conclusion. In these parts, we will code these studies based on our coding manual. See the supplemental document "The Coding Manual (V1, in Chinese)" for more details.  The second source of data will come from large-scale international collaborations that are aimed at addressing the WEIRD problem. More specifically, we will check the data from all Many Labs projects (especially Man Lab 2 (Klein et al., 2018)), the human penguin project (Hu et al., 2019; IJzerman et al., 2018), and all finished projects from PSA (Jones et al., 2021; Wang et al., 2021). The data of these projects is different from the first data source because we will apply for using the raw data. In addition, if possible, we will also use data from other large-scale collaborations which contain samples from China or other non-WEIRD regions. We will search and extract demographical characteristics of Chinese samples reported in those studies.  Figure 1. Schema of the current meta-research   1. **How many researchers will extract data from the records? How will any disagreement between co-researchers’ coding decisions be resolved?**   At least four coders will extract data from the records of Chinese studies (depend on how many coders will be recruited). After the formal coding manual is established, we will randomly divide the 1000 papers into several parts. For each part, there will be two coders who independently extract data from papers. After that, the results from the two coders are compared. Also, we will use the R package *irr* to check the consistency of the coding content (Gamer et al., 2019). |

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| **Transparency** |
| 1. **Provide a clear statement clarifying the stage of your systematic review at the time of pre-registration (include all that apply):**   We have gathered the article’s information and assign IDs to those articles (i.e., Step 1 in the answer to A8), but have not started any process at the time of pre-registration.   1. **Have you made any changes or have you updated the protocol since the first pre-registration?**   NA   1. **Declare if you or any of the review co-authors are an author of one of the records that will likely be included in the review (based on your search strategy).**   NA   1. **List all additional documents that will be attached or submitted together with the pre-registration.**   Manual for extracting data from Chinese empirical studies. The manual itself is in Chinese*.*   1. **Pre-register the protocol on a designated online platform with a link protected from expiration or deactivation.**   OSF will be used for pre-registration. |

**References**

Apicella, C., Norenzayan, A., & Henrich, J. (2020, 08/01). Beyond WEIRD: A review of the last decade and a look ahead to the global laboratory of the future. *Evolution and Human Behavior, 41*. <https://doi.org/10.1016/j.evolhumbehav.2020.07.015>

Arnett, J. J. (2008, 11/01). The neglected 95%: Why American psychology needs to become less American. *The American psychologist, 63*, 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>

Barrett, H. C. (2020, 2020/08/01/). Towards a cognitive science of the human: Cross-cultural approaches and their urgency. *Trends in Cognitive Sciences, 24*(8), 620-638. <https://doi.org/https://doi.org/10.1016/j.tics.2020.05.007>

Gamer, M., Lemon, J., & Singh, I. F. P. (2019). *irr: Various coefficients of interrater reliability and agreement (R*

*package version 0.84.1) [Computer software]*. <https://CRAN.R-project.org/package=irr>

Gordon, M., Viganola, D., Bishop, M., Chen, Y., Dreber, A., Goldfedder, B., Holzmeister, F., Johannesson, M., Liu, Y., Twardy, C., Wang, J., & Pfeiffer, T. (2020). Are replication rates the same across academic fields? Community forecasts from the DARPA SCORE programme. *Royal Society Open Science, 7*(7), 200566. <https://doi.org/doi:10.1098/rsos.200566>

Henrich, J., Heine, S., & Norenzayan, A. (2010, 06/01). The weirdest people in the world? *The Behavioral and brain sciences, 33*(2-3), 61-83; discussion 83. <https://doi.org/10.1017/S0140525X0999152X>

Henry, P. J. (2008, 2008/05/22). College Sophomores in the Laboratory Redux: Influences of a Narrow Data Base on Social Psychology's View of the Nature of Prejudice. *Psychological Inquiry, 19*(2), 49-71. <https://doi.org/10.1080/10478400802049936>

Hu, C.-P., Yin, J.-X., Lindenberg, S. M., Dalğar, İ., Weissgerber, S., Vergara, R., Cair, A., Čolić, M., Dursun, P., Frankowska, N., Hadi, R., Hall, C., Hong, Y., Joy-Gaba, J., Lazarević, D., Lazarević, L., Parzuchowski, M., Ratner, K., Rothman, D., Sim, S., Simão, C., Song, M., Stojilović, D., Blomster, J., Brito, R., Hennecke, M., Jaume-Guazzini, F., Schubert, T., Schütz, A., Seibt, B., Zickfeld, J., & IJzerman, H. (2019, 2019/04/17). Data from the Human Penguin Project, a cross-national dataset testing principles from social thermoregulation theory. *Scientific Data, 6*(1), 32. <https://doi.org/10.1038/s41597-019-0029-2>

IJzerman, H., Lindenberg, S. M., Dalğar, İ., Weissgerber, S., Vergara, R., Cair, A., Čolić, M., Dursun, P., Frankowska, N., Hadi, R., Hall, C., Hong, Y., Hu, C.-P., Joy-Gaba, J., Lazarević, D., Lazarević, L., Parzuchowski, M., Ratner, K., Rothman, D., Sim, S., Simão, C., Song, M., Stojilović, D., Blomster, J., Brito, R., Hennecke, M., Jaume-Guazzini, F., Schubert, T., Schütz, A., Seibt, B., & Zickfeld, J. (2018). The Human Penguin Project: Climate, Social Integration, and Core Body Temperature. *Collabra: Psychology, 4*(1), 37. <https://doi.org/10.1525/collabra.165>

Jones, B. C., DeBruine, L. M., Flake, J. K., Liuzza, M. T., Antfolk, J., Arinze, N. C., Ndukaihe, I. L. G., Bloxsom, N. G., Lewis, S. C., Foroni, F., Willis, M. L., Cubillas, C. P., Vadillo, M. A., Turiegano, E., Gilead, M., Simchon, A., Saribay, S. A., Owsley, N. C., Jang, C., Mburu, G., Calvillo, D. P., Wlodarczyk, A., Qi, Y., Ariyabuddhiphongs, K., Jarukasemthawee, S., Manley, H., Suavansri, P., Taephant, N., Stolier, R. M., Evans, T. R., Bonick, J., Lindemans, J. W., Ashworth, L. F., Hahn, A. C., Chevallier, C., Kapucu, A., Karaaslan, A., Leongómez, J. D., Sánchez, O. R., Valderrama, E., Vásquez-Amézquita, M., Hajdu, N., Aczel, B., Szecsi, P., Andreychik, M., Musser, E. D., Batres, C., Hu, C.-P., Liu, Q.-L., Legate, N., Vaughn, L. A., Barzykowski, K., Golik, K., Schmid, I., Stieger, S., Artner, R., Mues, C., Vanpaemel, W., Jiang, Z., Wu, Q., Marcu, G. M., Stephen, I. D., Lu, J. G., Philipp, M. C., Arnal, J. D., Hehman, E., Xie, S. Y., Chopik, W. J., Seehuus, M., Azouaghe, S., Belhaj, A., Elouafa, J., Wilson, J. P., Kruse, E., Papadatou-Pastou, M., De La Rosa-Gómez, A., Barba-Sánchez, A. E., González-Santoyo, I., Hsu, T., Kung, C.-C., Wang, H.-H., Freeman, J. B., Oh, D. W., Schei, V., Sverdrup, T. E., Levitan, C. A., Cook, C. L., Chandel, P., Kujur, P., Parganiha, A., Parveen, N., Pati, A. K., Pradhan, S., Singh, M. M., Pande, B., Bavolar, J., Kačmár, P., Zakharov, I., Álvarez-Solas, S., Baskin, E., Thirkettle, M., Schmidt, K., Christopherson, C. D., Leonis, T., Suchow, J. W., Olofsson, J. K., Jernsäther, T., Lee, A.-S., Beaudry, J. L., Gogan, T. D., Oldmeadow, J. A., Balas, B., Stevens, L. M., Colloff, M. F., Flowe, H. D., Gülgöz, S., Brandt, M. J., Hoyer, K., Jaeger, B., Ren, D., Sleegers, W. W. A., Wissink, J., Kaminski, G., Floerke, V. A., Urry, H. L., Chen, S.-C., Pfuhl, G., Vally, Z., Basnight-Brown, D. M., Jzerman, H. I., Sarda, E., Neyroud, L., Badidi, T., Van der Linden, N., Tan, C. B. Y., Kovic, V., Sampaio, W., Ferreira, P., Santos, D., Burin, D. I., Gardiner, G., Protzko, J., Schild, C., Ścigała, K. A., Zettler, I., O’Mara Kunz, E. M., Storage, D., Wagemans, F. M. A., Saunders, B., Sirota, M., Sloane, G. V., Lima, T. J. S., Uittenhove, K., Vergauwe, E., Jaworska, K., Stern, J., Ask, K., van Zyl, C. J. J., Körner, A., Weissgerber, S. C., Boudesseul, J., Ruiz-Dodobara, F., Ritchie, K. L., Michalak, N. M., Blake, K. R., White, D., Gordon-Finlayson, A. R., Anne, M., Janssen, S. M. J., Lee, K. M., Nielsen, T. K., Tamnes, C. K., Zickfeld, J. H., Rosa, A. D., Vianello, M., Kocsor, F., Kozma, L., Putz, Á., Tressoldi, P., Irrazabal, N., Chatard, A., Lins, S., Pinto, I. R., Lutz, J., Adamkovic, M., Babincak, P., Baník, G., Ropovik, I., Coetzee, V., Dixson, B. J. W., Ribeiro, G., Peters, K., Steffens, N. K., Tan, K. W., Thorstenson, C. A., Fernandez, A. M., Hsu, R. M. C. S., Valentova, J. V., Varella, M. A. C., Corral-Frías, N. S., Frías-Armenta, M., Hatami, J., Monajem, A., Sharifian, M., Frohlich, B., Lin, H., Inzlicht, M., Alaei, R., Rule, N. O., Lamm, C., Pronizius, E., Voracek, M., Olsen, J., Giolla, E. M., Akgoz, A., Özdoğru, A. A., Crawford, M. T., Bennett-Day, B., Koehn, M. A., Okan, C., Gill, T., Miller, J. K., Dunham, Y., Yang, X., Alper, S., Borras-Guevara, M. L., Cai, S. J., Tiantian, D., Danvers, A. F., Feinberg, D. R., Armstrong, M. M., Gilboa-Schechtman, E., McCarthy, R. J., Muñoz-Reyes, J. A., Polo, P., Shiramazu, V. K. M., Yan, W.-J., Carvalho, L., Forscher, P. S., Chartier, C. R., & Coles, N. A. (2021, 2021/01/04). To which world regions does the valence–dominance model of social perception apply? *Nature Human Behaviour, 5*(1), 159-169. <https://doi.org/10.1038/s41562-020-01007-2>

Klein, R. A., Vianello, M., Hasselman, F., Adams, B. G., Adams, R. B., Alper, S., Aveyard, M., Axt, J. R., Babalola, M. T., Bahník, Š., Batra, R., Berkics, M., Bernstein, M. J., Berry, D. R., Bialobrzeska, O., Binan, E. D., Bocian, K., Brandt, M. J., Busching, R., Rédei, A. C., Cai, H., Cambier, F., Cantarero, K., Carmichael, C. L., Ceric, F., Chandler, J., Chang, J.-H., Chatard, A., Chen, E. E., Cheong, W., Cicero, D. C., Coen, S., Coleman, J. A., Collisson, B., Conway, M. A., Corker, K. S., Curran, P. G., Cushman, F., Dagona, Z. K., Dalgar, I., Dalla Rosa, A., Davis, W. E., de Bruijn, M., De Schutter, L., Devos, T., de Vries, M., Doğulu, C., Dozo, N., Dukes, K. N., Dunham, Y., Durrheim, K., Ebersole, C. R., Edlund, J. E., Eller, A., English, A. S., Finck, C., Frankowska, N., Freyre, M.-Á., Friedman, M., Galliani, E. M., Gandi, J. C., Ghoshal, T., Giessner, S. R., Gill, T., Gnambs, T., Gómez, Á., González, R., Graham, J., Grahe, J. E., Grahek, I., Green, E. G. T., Hai, K., Haigh, M., Haines, E. L., Hall, M. P., Heffernan, M. E., Hicks, J. A., Houdek, P., Huntsinger, J. R., Huynh, H. P., IJzerman, H., Inbar, Y., Innes-Ker, Å. H., Jiménez-Leal, W., John, M.-S., Joy-Gaba, J. A., Kamiloğlu, R. G., Kappes, H. B., Karabati, S., Karick, H., Keller, V. N., Kende, A., Kervyn, N., Knežević, G., Kovacs, C., Krueger, L. E., Kurapov, G., Kurtz, J., Lakens, D., Lazarević, L. B., Levitan, C. A., Lewis, N. A., Lins, S., Lipsey, N. P., Losee, J. E., Maassen, E., Maitner, A. T., Malingumu, W., Mallett, R. K., Marotta, S. A., Međedović, J., Mena-Pacheco, F., Milfont, T. L., Morris, W. L., Murphy, S. C., Myachykov, A., Neave, N., Neijenhuijs, K., Nelson, A. J., Neto, F., Lee Nichols, A., Ocampo, A., O’Donnell, S. L., Oikawa, H., Oikawa, M., Ong, E., Orosz, G., Osowiecka, M., Packard, G., Pérez-Sánchez, R., Petrović, B., Pilati, R., Pinter, B., Podesta, L., Pogge, G., Pollmann, M. M. H., Rutchick, A. M., Saavedra, P., Saeri, A. K., Salomon, E., Schmidt, K., Schönbrodt, F. D., Sekerdej, M. B., Sirlopú, D., Skorinko, J. L. M., Smith, M. A., Smith-Castro, V., Smolders, K. C. H. J., Sobkow, A., Sowden, W., Spachtholz, P., Srivastava, M., Steiner, T. G., Stouten, J., Street, C. N. H., Sundfelt, O. K., Szeto, S., Szumowska, E., Tang, A. C. W., Tanzer, N., Tear, M. J., Theriault, J., Thomae, M., Torres, D., Traczyk, J., Tybur, J. M., Ujhelyi, A., van Aert, R. C. M., van Assen, M. A. L. M., van der Hulst, M., van Lange, P. A. M., van ’t Veer, A. E., Vásquez- Echeverría, A., Ann Vaughn, L., Vázquez, A., Vega, L. D., Verniers, C., Verschoor, M., Voermans, I. P. J., Vranka, M. A., Welch, C., Wichman, A. L., Williams, L. A., Wood, M., Woodzicka, J. A., Wronska, M. K., Young, L., Zelenski, J. M., Zhijia, Z., & Nosek, B. A. (2018). Many Labs 2: Investigating Variation in Replicability Across Samples and Settings. *Advances in Methods and Practices in Psychological Science, 1*(4), 443-490. <https://doi.org/10.1177/2515245918810225>

Moshontz, H., Campbell, L., Ebersole, C. R., IJzerman, H., Urry, H. L., Forscher, P. S., Grahe, J. E., McCarthy, R. J., Musser, E. D., Antfolk, J., Castille, C. M., Evans, T. R., Fiedler, S., Flake, J. K., Forero, D. A., Janssen, S. M. J., Keene, J. R., Protzko, J., Aczel, B., Álvarez Solas, S., Ansari, D., Awlia, D., Baskin, E., Batres, C., Borras-Guevara, M. L., Brick, C., Chandel, P., Chatard, A., Chopik, W. J., Clarance, D., Coles, N. A., Corker, K. S., Dixson, B. J. W., Dranseika, V., Dunham, Y., Fox, N. W., Gardiner, G., Garrison, S. M., Gill, T., Hahn, A. C., Jaeger, B., Kačmár, P., Kaminski, G., Kanske, P., Kekecs, Z., Kline, M., Koehn, M. A., Kujur, P., Levitan, C. A., Miller, J. K., Okan, C., Olsen, J., Oviedo-Trespalacios, O., Özdoğru, A. A., Pande, B., Parganiha, A., Parveen, N., Pfuhl, G., Pradhan, S., Ropovik, I., Rule, N. O., Saunders, B., Schei, V., Schmidt, K., Singh, M. M., Sirota, M., Steltenpohl, C. N., Stieger, S., Storage, D., Sullivan, G. B., Szabelska, A., Tamnes, C. K., Vadillo, M. A., Valentova, J. V., Vanpaemel, W., Varella, M. A. C., Vergauwe, E., Verschoor, M., Vianello, M., Voracek, M., Williams, G. P., Wilson, J. P., Zickfeld, J. H., Arnal, J. D., Aydin, B., Chen, S.-C., DeBruine, L. M., Fernandez, A. M., Horstmann, K. T., Isager, P. M., Jones, B., Kapucu, A., Lin, H., Mensink, M. C., Navarrete, G., Silan, M. A., & Chartier, C. R. (2018, Dec). The Psychological Science Accelerator: Advancing Psychology Through a Distributed Collaborative Network. *Advances in Methods and Practices in Psychological Science, 1*(4), 501-515. <https://doi.org/10.1177/2515245918797607>

Nielsen, M., Haun, D., Kärtner, J., & Legare, C. H. (2017, 2017/10/01/). The persistent sampling bias in developmental psychology: A call to action. *Journal of Experimental Child Psychology, 162*, 31–38. <https://doi.org/https://doi.org/10.1016/j.jecp.2017.04.017>

Pollet, T. V., & Saxton, T. K. (2019, 2019/09/01). How diverse are the samples used in the journals ‘Evolution & Human Behavior’ and ‘Evolutionary Psychology’? *Evolutionary Psychological Science, 5*(3), 357–368. <https://doi.org/10.1007/s40806-019-00192-2>

Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences, 115*(45), 11401–11405. <https://doi.org/10.1073/pnas.1721165115>

Sears, D. O. (1986). College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature. *Journal of Personality and Social Psychology, 51*(3), 515-530. <https://doi.org/10.1037/0022-3514.51.3.515>

Topor, M., Pickering, J., Mendes, A. B., Bishop, D., Büttner, F. C., Elsherif, M., Evans, T. R., Henderson, E. L., Kalandadze, T., Nitschke, F., Staaks, J., Akker, O. v. d., Yeung, S. K., Zaneva, M., Lam, A., Madan, C., Moreau, D., O'Mahony, A., Parker, A. J., Riegelman, A., Testerman, M., & Westwood, S. (2021). Non-interventional, reproducible, and open (NIRO) systematic review guidelines. <https://doi.org/https://doi.org/10.17605/OSF.IO/F3BRW>

Wang, J., Song, Q-Y., Xu, Y-P., Jia B-B., Lu, C-L., Chen, X., Dai, Z-X., Huang, Z-Y., Li Z-J., Lin, J-X., Luo, W-Y., Shi S-N., Zhang, Y-Y., Zang, Y-F., Zuo, X-N., Hu, C-P. (2021). Interpreting nonsignificant results: A quantitative investigation based on 500 Chinese psychological research. *Advances in Psychological Science, 29*(3), 381–393.

Wang, K., Goldenberg, A., Dorison, C. A., Miller, J. K., Uusberg, A., Lerner, J. S., Gross, J. J., Agesin, B. B., Bernardo, M., Campos, O., Eudave, L., Grzech, K., Ozery, D. H., Jackson, E. A., Garcia, E. O. L., Drexler, S. M., Jurković, A. P., Rana, K., Wilson, J. P., Antoniadi, M., Desai, K., Gialitaki, Z., Kushnir, E., Nadif, K., Bravo, O. N., Nauman, R., Oosterlinck, M., Pantazi, M., Pilecka, N., Szabelska, A., van Steenkiste, I. M. M., Filip, K., Bozdoc, A. I., Marcu, G. M., Agadullina, E., Adamkovič, M., Roczniewska, M., Reyna, C., Kassianos, A. P., Westerlund, M., Ahlgren, L., Pöntinen, S., Adetula, G. A., Dursun, P., Arinze, A. I., Arinze, N. C., Ogbonnaya, C. E., Ndukaihe, I. L. G., Dalgar, I., Akkas, H., Macapagal, P. M., Lewis, S., Metin-Orta, I., Foroni, F., Willis, M., Santos, A. C., Mokady, A., Reggev, N., Kurfali, M. A., Vasilev, M. R., Nock, N. L., Parzuchowski, M., Espinoza Barría, M. F., Vranka, M., Kohlová, M. B., Ropovik, I., Harutyunyan, M., Wang, C., Yao, E., Becker, M., Manunta, E., Kaminski, G., Marko, D., Evans, K., Lewis, D. M. G., Findor, A., Landry, A. T., Aruta, J. J. B., Ortiz, M. S., Vally, Z., Pronizius, E., Voracek, M., Lamm, C., Grinberg, M., Li, R., Valentova, J. V., Mioni, G., Cellini, N., Chen, S.-C., Zickfeld, J., Moon, K., Azab, H., Levy, N., Karababa, A., Beaudry, J. L., Boucher, L., Collins, W. M., Todsen, A. L., van Schie, K., Vintr, J., Bavolar, J., Kaliska, L., Križanić, V., Samojlenko, L., Pourafshari, R., Geiger, S. J., Beitner, J., Warmelink, L., Ross, R. M., Stephen, I. D., Hostler, T. J., Azouaghe, S., McCarthy, R., Szala, A., Grano, C., Solorzano, C. S., Anjum, G., Jimenez-Leal, W., Bradford, M., Pérez, L. C., Cruz Vásquez, J. E., Galindo-Caballero, O. J., Vargas-Nieto, J. C., Kácha, O., Arvanitis, A., Xiao, Q., Cárcamo, R., Zorjan, S., Tajchman, Z., Vilares, I., Pavlacic, J. M., Kunst, J. R., Tamnes, C. K., von Bastian, C. C., Atari, M., Sharifian, M., Hricova, M., Kačmár, P., Schrötter, J., Rahal, R.-M., Cohen, N., FatahModarres, S., Zrimsek, M., Zakharov, I., Koehn, M. A., Esteban-Serna, C., Calin-Jageman, R. J., Krafnick, A. J., Štrukelj, E., Isager, P. M., Urban, J., Silva, J. R., Martončik, M., Očovaj, S. B., Šakan, D., Kuzminska, A. O., Djordjevic, J. M., Almeida, I. A. T., Ferreira, A., Lazarevic, L. B., Manley, H., Ricaurte, D. Z., Monteiro, R. P., Etabari, Z., Musser, E., Dunleavy, D., Chou, W., Godbersen, H., Ruiz-Fernández, S., Reeck, C., Batres, C., Kirgizova, K., Muminov, A., Azevedo, F., Alvarez, D. S., Butt, M. M., Lee, J. M., Chen, Z., Verbruggen, F., Ziano, I., Tümer, M., Charyate, A. C. A., Dubrov, D., Tejada Rivera, M. d. C. M. C., Aberson, C., Pálfi, B., Maldonado, M. A., Hubena, B., Sacakli, A., Ceary, C. D., Richard, K. L., Singer, G., Perillo, J. T., Ballantyne, T., Cyrus-Lai, W., Fedotov, M., Du, H., Wielgus, M., Pit, I. L., Hruška, M., Sousa, D., Aczel, B., Szaszi, B., Adamus, S., Barzykowski, K., Micheli, L., Schmidt, N.-D., Zsido, A. N., Paruzel-Czachura, M., Bialek, M., Kowal, M., Sorokowska, A., Misiak, M., Mola, D., Ortiz, M. V., Correa, P. S., Belaus, A., Muchembled, F., Ribeiro, R. R., Arriaga, P., Oliveira, R., Vaughn, L. A., Szwed, P., Kossowska, M., Czarnek, G., Kielińska, J., Antazo, B., Betlehem, R., Stieger, S., Nilsonne, G., Simonovic, N., Taber, J., Gourdon-Kanhukamwe, A., Domurat, A., Ihaya, K., Yamada, Y., Urooj, A., Gill, T., Čadek, M., Bylinina, L., Messerschmidt, J., Kurfalı, M., Adetula, A., Baklanova, E., Albayrak-Aydemir, N., Kappes, H. B., Gjoneska, B., House, T., Jones, M. V., Berkessel, J. B., Chopik, W. J., Çoksan, S., Seehuus, M., Khaoudi, A., Bokkour, A., El Arabi, K. A., Djamai, I., Iyer, A., Parashar, N., Adiguzel, A., Kocalar, H. E., Bundt, C., Norton, J. O., Papadatou-Pastou, M., De la Rosa-Gomez, A., Ankushev, V., Bogatyreva, N., Grigoryev, D., Ivanov, A., Prusova, I., Romanova, M., Sarieva, I., Terskova, M., Hristova, E., Kadreva, V. H., Janak, A., Schei, V., Sverdrup, T. E., Askelund, A. D., Pineda, L. M. S., Krupić, D., Levitan, C. A., Johannes, N., Ouherrou, N., Say, N., Sinkolova, S., Janjić, K., Stojanovska, M., Stojanovska, D., Khosla, M., Thomas, A. G., Kung, F. Y. H., Bijlstra, G., Mosannenzadeh, F., Balci, B. B., Reips, U.-D., Baskin, E., Ishkhanyan, B., Czamanski-Cohen, J., & Dixson, B. J. W. (2021, 2021/08/02). A multi-country test of brief reappraisal interventions on emotions during the COVID-19 pandemic. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-021-01173-x>

Yarkoni, T. (2020, 2020). The generalizability crisis. *BEHAVIORAL AND BRAIN SCIENCES*, 1-37. <https://doi.org/10.1017/S0140525X20001685>

Zuo, X.-N., Xu, T., & Milham, M. P. (2019, 2019/06/28). Harnessing reliability for neuroscience research. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-019-0655-x>