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Position Paper of the Psychologie-Fachschaften-Konferenz (PsyFaKo) "Cultural Change Towards Openness in Research: Open Science and Open Access as Solution Strategies"

To whom it may concern,

the German psychology student representation [Psychologie-Fachschaften-Konferenz, PsyFaKo¹] adopted the following position on the "Cultural Change Towards Openness in Research: Open Science and Open Access as Solution Strategies" during their 30th conference, that took place from 21st November to the 24th November in Bielefeld. The adoption of this position was legitimized by the 234 conference attendees from the 45 faculty-associations of German universities².

In recent years, evidence has been found in various research areas that research findings are only reproducible³ to a very limited extent (Begley, Ellis & Rouse, 2012; Camerer et al., 2016; Camerer et al., 2018; Creswell, Von Haeffel, Jackson, Liu & Naselsky, 2017; Heller, Hippke & Rodenbeck, 2019; Open Science Collaboration, 2015; Stodden, Guo & Ma, 2013). A possible reason for this could be the incentive structures under which scientific knowledge is generated. At the same time, publication pressure and a lack of transparency in the documentation of the research process challenge the reproducibility of research results.

A fundamental characteristic of high-quality research is the reproducibility of findings. The lack of reproducibility of research results calls previous results into question and raises doubts about the quality of research. Results that could not be reproduced therefore require closer examination.

In recent years, various research principles have been developed under the term "Open Science" in order to improve reproducibility, traceability, and cooperation in the scientific

¹ English: Conference of Psychology-Students Councils

² Translator's note: This refers to mainly to Germany, but student's councils from Austria and Switzerland often attend the conference, too.

³ Due to the inter-professional character of the position paper, the term *reproducibility* is used here. This is to be understood as both the direct and conceptual reproduction of empirical research. Interprofessionalism, in this context, refers to the overarching relevance for different fields of science.

community. These include transparency of data (Open Data) and experimental materials (Open Material), free access to scientific results (Open Access) and free availability of teaching materials (Open Educational Resources) (Kraker, Leony, Reinhardt & Beham, 2011; Nosek et al., 2015).

In recent years, the **the federal student representatives** [Bundesfachschaftentagungen] of various disciplines adopted various position papers on Open Science, which emphasise central aspects of Open Science in their respective subjects:

- Replication crisis and Open Science in psychology (Psychology^[1])
- Open Access (Economics^[2], Medicine^[3])
- Open Educational Resources (Computer Science^[4])
- Open Access, Open Data and Open Source (Physics^[5])
- Dealing with null results (Physics^[6])

In this paper we adopt an interdisciplinary perspective and demand a general interprofessional cultural change towards an open research culture.

1. Implementation of Open Science in Teaching

Open Science must become an integral part of university teaching in all subject areas through appropriate implementation in the module manuals. In general an early implementation of Open science - during the bachelor's programme - is essential in order to clarify its relevance for empirical science to students. However, the question of how Open Science is specifically implemented in teaching must be answered from the unique perspective of the respective subject areas. In many subjects, it could be useful to address this issue in introductory courses on scientific working methods. In this process, there should also be a critical examination of scientific incentive structures, as many of the deficits within the respective disciplines are also attributed to these.

2. Free Access to Scientific Knowledge:

We demand free access to scientific knowledge according to Open Access principles. Open Access means that scientific publications are published under a free license (e.g.

the [Creative Commons License CC-BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)) and are accessible everywhere, free of charge. Access to as well as the publication of knowledge must not be dependent on the available financial resources.

We encourage **researchers** to publish their work under Open Access conditions. We explicitly point out that there are a variety of different business models to achieve this goal^[7]. We support the further development of these models and their establishment in different scientific fields

Universities must promote Open Access publications. This can be achieved, on the one hand, by providing appropriate Open Access publication funds by the respective university libraries and, on the other hand, by establishing their own repositories in which research work can be published. In addition, university libraries can offer the possibility of publishing research results directly by founding their own publishing houses.

Research societies (e.g. DFG, Leibniz Institutes, Fraunhofer Institutes, etc.) must also arrange for research projects supported by them to be published as Open Access publications. This approach is also implemented by the EU-funded project Plan S^[8]. This obligates the funded researchers to publish their results in Open Access journals.

In addition, we also demand worldwide free access not only to completed publications but also to other resources. This includes the provision of the software used and its codes (Open Source), structured research data (Open Data) and the experimental materials used (Open Material) in accordance with the FAIR principles (**F**indable, **A**ccessible, **I**nteroperable, and **R**eusable)^[9].

3. Further Development of Science Metrics

We also call for a critical reflection on the use and further development of science metrics. This is relevant because current metrics (e.g. the Journal Impact Factor) do not adequately reflect the actual added value of a scientific publication and lead to misplaced incentives in science (Fooladi et al., 2013). It is the task of the scientific community to develop objective metrics to measure the impact of a publication, as is

currently done under the keyword *altmetrics* ("alternative metrics"). Important contributions to the establishment of alternative metrics have been made, for example, in the San Francisco Declaration on Research Assessment (DORA)^[10].

We criticize the strong fixation on conventional science metrics (such as the *Journal Impact Factor* or the *h-index*) in the hiring process of professors, as these do not adequately reflect the scientific influence of the applicants' publications. This fixation encourages a scientific environment in which researchers publish with a strong focus on quantity at the expense of the quality of their studies.

4. Sustainable Improvements of Incentive Structures

We call for a sustainable change in the incentive structures in research, which is essential to enable a cultural change towards Open Science. Scientific work, which adheres to the principles of Open Science, is not sufficiently rewarded in the current scientific landscape. Furthermore, publications in Open Access journals are perceived less career-promoting. Therefore, it is unrealistic to expect researchers to work in accordance with the Open Science principles, if it harms their career (Koole & Lakens, 2012). In addition to the positive effects of Open Science on research, the application of Open Science must be worthwhile for individual researchers.

Universities play a key role in changing incentive structures. They decide which young researchers will be awarded a professorship. This far-reaching decision has far reaching consequences, therefore Universities should be fully cognizant of their responsibility and use meaningful criteria in this process. When determining qualification in teaching and research, it is essential to consider Open Science as a further recruitment criterion. **We therefore call for the inclusion of a corresponding passage in job advertisements for professorships⁴.**

In summary, we would like to state that the **integration of open science into teaching**, the **publication according to open access criteria**, the **critical reflection of science metrics** and

⁴ Exemplary advertisement for a W3-Professorship in Social Psychology from the LMU Munich: https://www.osc.uni-muenchen.de/news/w2_prof_openscience, Retrieved 23. November 2019

the **sustainable improvement of incentive structures** are indispensable steps towards a culture of open science.

Please do not hesitate to contact us if you have any further questions.

Signed, the *Konferenzrat der Psychologie-Fachschaften-Konferenz* [Executive Committee of the PsyFaKo e. V.]



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References

- Begley, C. G., & Ellis, L. M. (2012). Drug development: Raise standards for preclinical cancer research. *Nature*, 483(7391), 531. <https://doi.org/10.1038/483531a>
- Fooladi, M., Salehi, H., Yunus, M. M., Farhadi, M., Chadegani, A. A., Farhadi, H., & Ebrahim, N. A. (2013). Does criticisms overcome the praises of journal impact factor?. *arXiv preprint arXiv:1305.0379*. <https://doi.org/10.5539/ass.v9n5p176>
- Camerer, C. F., Dreber, A., Forsell, E., Ho, T. H., Huber, J., Johannesson, M., ... & Heikensten, E. (2016). Evaluating replicability of laboratory experiments in economics. *Science*, 351(6280), 1433-1436. <https://doi.org/10.1126/science.aaf0918>
- Camerer, C. F., Dreber, A., Holzmeister, F., Ho, T. H., Huber, J., Johannesson, M., ... & Altmeld, A. (2018). Evaluating the replicability of social science experiments in Nature and Science between 2010 and 2015. *Nature Human Behaviour*, 2(9), 637. <https://doi.org/10.1038/s41562-018-0399-z>
- Creswell, J., Von Hausegger, S., Jackson, A. D., Liu, H., & Naselsky, P. (2017). On the time lags of the LIGO signals. *Journal of Cosmology and Astroparticle Physics*, 2017(08), 013. <https://doi.org/10.1088/1475-7516/2017/08/013>
- Koole, S. L., & Lakens, D. (2012). Rewarding replications: A sure and simple way to improve psychological science. *Perspectives on Psychological Science*, 7(6), 608-614. <https://doi.org/10.1177/1745691612462586>
- Kraker, P., Leony, D., Reinhardt, W., & Beham, G. (2011). The case for an open science in technology enhanced learning. *International Journal of Technology Enhanced Learning*, 3(6), 643-654. <https://doi.org/10.1504/IJTEL.2011.045454>
- Heller, R., Hippke, M., & Rodenbeck, K. (2019). Transit least-squares survey-II. Discovery and validation of 17 new sub-to super-Earth-sized planets in multi-planet systems from K2. *Astronomy & Astrophysics*, 627, A66. <https://doi.org/10.1051/0004-6361/201935600>

Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., ... & Contestabile, M. (2015). Promoting an open research culture. *Science*, 348(6242), 1422-1425. <https://doi.org/10.1126/science.aab2374>

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349(6251), aac4716. <http://doi.org/10.1126/science.aac4716>

Stodden, V., Guo, P., & Ma, Z. (2013). Toward reproducible computational research: an empirical analysis of data and code policy adoption by journals. *PloS one*, 8(6), e67111. □ <https://doi.org/10.1371/journal.pone.0067111>

Links

[1] <https://psyfako.org/wp-content/uploads/2018/07/Positionspapier-der-Psychologie-Fachschaften-Konferenz-PsyFaKo-zum-Thema-%E2%80%9EReplikationskrise-und-Open-Science-in-der-Psychologie%E2%80%9C-W%C3%BCrzburg-2018.pdf>; Retrieved 23.

November 2019

[2] <https://www.bufak-wiso.de/assets/positionspapiere/Positionspapier%20Open%20Access.pdf>; Retrieved 23.

November 2019

[3] https://www.bvmd.de/fileadmin/redaktion/Positionspapiere/2013-06-15_Positionspapier_Open_Access.pdf; Retrieved 23. November 2019

[4] https://wiki.kif.rocks/wiki/KIF450:Resolutionen/Open_Access_Verbreitung; Retrieved 23.

November 2019

[5] https://zapfev.de/resolutionen/wise12/Reso_WiSe12_OpenAccess.pdf; Retrieved 23.

November 2019

[6] https://zapfev.de/resolutionen/wise17/Nullergebnisse/reso_nullergebnisse_ws1718.pdf;

Retrieved 23. November 2019

[7] <https://open-access.net>, Retrieved 23. November 2019

[8] <https://www.coalition-s.org/principles-and-implementation>, Retrieved 23. November

2019

[9] <http://www.go-fair.org/fair-principles/>, Retrieved 23. November 2019

[10] <https://sfdora.org/read/de/>, Retrieved 23. November 2019