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Open Science and Qualitative Methods

For students, supervisors, and researchers interested in qualitative psychology at the Department of Psychology, UiO

Foto: Jarli & Jordan/UiO

Preface

This report is aimed at students and supervisors using qualitative methods who are asked to address Open Science in their research projects without knowing what Open Science implies for these projects. We hope that you will find this report helpful.

The purpose of this report is to provide a broad understanding of Open Science and describe how open science practices may or may not apply to qualitative research approaches.

We would like to express our gratitude to the management at PSI for providing resources for this task and supporting our investigation into how Open Science can be comprehended and addressed in qualitative psychology.

It is important to note that this work is in progress. This report is a living document that represents our ongoing exploration of the relationship between Open Science and qualitative research.

The authors Oslo, June 2024

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Executive Summary

Open Science is described as an umbrella term for a diversity of aims and practices to increase public trust in scientific knowledge and increase the societal impact of research.

In psychology, the Open Science movement has gained attention and impetus, especially as a remedy for "the replication crisis," which revealed that numerous quantitative studies fail to replicate. However, many Open Science principles for improving replicability in quantitative studies conflict with the knowledge ambitions and epistemological stands in qualitative approaches.

Today, Open Science is increasingly articulated as a demand for research funding, publication, and job announcements in academia. We recommend that Open Science is not confused with a standardised framework that ends up with a checklist approach across all research approaches.

- Open Science is often understood as the particular practices of preregistration of hypotheses and analysis and open sharing of data. In most traditions of qualitative research, the research questions should be flexible and open, and the data are often too sensitive and context-dependent to be shared. Such practices may, therefore, limit the development of a broad range of qualitative research methodologies.

- However, more broadly, Open Science concerns the need for trustworthy, transparent, and accessible research. Many practices already well-established in qualitative research, such as reflexivity, transparency, and user participation, may be seen as promoting these aims.

We encourage The Department of Psychology to approach the aims of Open Science through diverse tailor-made practices for different methodological approaches. We also encourage critical reflections, discussions of dilemmas and engagement in innovative strategies for opening up our research and strengthening its societal impact.

Introduction

Open Science is an umbrella term for a diversity of aims and practices that aim to increase public trust in scientific knowledge and the societal impact of research (UNESCO, 2021).

The reproducibility of research results is described as one of several aims of Open Science. This aim has a central role in some authorized sources on Open Science (e.g., Center for Open Science, 2024), and a less central role in others (e.g., UNESCO, 2021). In psychology, Open Science is often described as a remedy for the so-called replication crisis. The replication crisis in psychological research refers to the widespread concern that many findings in the field of psychology, particularly in experimental psychology, turned out to be difficult to replicate (Sabik et al., 2021). This means that when other researchers attempt to replicate the results of a study, they often encounter difficulties in obtaining the same results. The replication crisis has raised questions about the reliability and validity of many psychological findings and led to an increased focus on issues such as research transparency, methodological rigour, and the publication of negative results. Therefore, the term Open Science is often referred to as remedies to strengthening the replicability of findings by engaging in specific research practices such as preregistration of hypotheses and sharing data (Center for Open Science, 2024).

However, researchers have pointed out that the Open Science movement has not critically looked at the theoretical and philosophical underpinnings of the replication crisis of psychological science (Wiggins & Christopherson, 2019). Further, researchers have investigated what kind of words and concepts are used to describe Open Science in the research literature and found that this vocabulary often relies on assumptions from positivistic, realist ontology and essentialistic epistemology (Nelson et al., 2021).

Open Science practices, such as preregistration, open protocols and open data, are increasingly articulated as demands for research funding, publication, and job announcements in academia. Some journals even offer badges for articles based on Open Science practices, e.g., promoted by the Center for Open Science (Prosser et al., 2023; Kirschner et al., 2023). Through these mechanisms, Open Science is presented as a framework for *all* psychological research, even though it rests on specific research traditions associated with the hypothetico-deductive methodology (Bennet, 2021). On this background, academic discussions on how to understand and handle the implications of the Open Science movement in qualitative research continue to grow (see for example Prosser et al., 2023; Class et al., 2021; Steltenpol et al., 2023; Bennet, 2021). In editorials in leading qualitative journals in psychology, it is argued that the focus on practices to strengthen replication of findings is problematic in qualitative research and that qualitative researchers should be cautious with Open Science practices aiming for replicability (Kirschner et al., 2023; Riley et al., 2019).

If we take a broader view of Open Science that focuses on the aim of *trust in science*, and tone down the aim of replicability, an array of practices for *opening up* the research become relevant, also for a range of qualitative methodologies. Many practices already well-

established in qualitative research, such as reflexivity, transparency, and user participation, may be seen as promoting trust in science and have been treated as Open Science practices for qualitative methodologies (Class et al., 2021; Steltenpohl et al., 2023).

The purpose of this report is to provide a broad understanding of Open Science, and describe how different Open Science practices can be understood in qualitative research methodologies in psychology.

We will first briefly describe central sources on the origins of Open Science. Building on these origins, we'll present some approaches and understandings of Open Science. Next, we present three typical practices of Open Science and discuss the applicability of these practices in qualitative methodologies. We will use Willig's (2021) distinction between interpretative and exploratory qualitative methodologies ("Big Q") on the one hand, and less interpretive and exploratory qualitative methodologies, closer to hypothetico-deductive research ("Small q") on the other. At last, we will suggest some openness practices from the literature of interpretative qualitative methodologies that may inspire a broader range of Open Science practices.

Open Science - following UNESCO's definition

Open Science has been understood in various terms, from a focus on *particular practices* in hypothetico-deductive research, to a broader focus on the overarching aims of democratising knowledge, applicable to a broader scope of research methodologies. To critically engage with practices of Open Science, we start by using UNESCO's definition of Open Science (2021).

According to UNESCO (2021, p. 7), Open Science is:

> "An inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community. It comprises all scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences and the humanities, and it builds on the following key pillars: open scientific knowledge, Open Science infrastructures, science communication, open engagement of societal actors, and open dialogue with other knowledge systems."

Through this definition, UNESCO positions Open Science as an opportunity to achieve *justice* by providing everyone with access to research results and (re)creating trust in science through trustworthy research practices, thus contributing to a well-functioning science system and sustainable societal development.

Moreover, UNESCO defines their version of the Open Science movement through the overarching aim of *democratising* knowledge (see NFR 2020; UNESCO, 2021). Open Science is presented as

> "a movement to transform scientific practice to adapt to the changes, challenges, opportunities and risks of the digital era and to increase the societal impact of science" (UNESCO, 2021, p. 4).

UNESCO's problem formulation addresses the increasing global inequalities in producing and accessing scientific knowledge and, at the same time, the urgent need for research to deal with complexity and environmental, social, and economic challenges in the world. The need is articulated as the importance of seriously engaging with and listening to people and institutions outside of academia:

> "… Open Science provides the basis for citizen and community involvement in the generation of knowledge and for an enhanced dialogue between scientists, policymakers and practitioners, entrepreneurs and community members, giving all stakeholders a voice in developing research that is compatible with their concerns, needs and aspirations" (UNESCO 2019, p. 13-14).

This aim is also emphasized by the Research Council of Norway (2020)**.**

Relevant practices following from UNESCO's definition of Open Science

UNESCO's definition of the aims of Open Science opens up a wide range of relevant Open Science practices. These practices are not presented as universal instructions but rather as suggestions on how to democratize knowledge and increase trust in science.

To (re)create trust in science, important measures will be to support a culture of transparency, openness, and honesty toward other researchers and the public, maximise the public benefit, and avoid resource waste. Following this, Open Science practices may broadly include transparency and reflexivity in the research process, sharing of research data and research material, open access publishing, open source software, open peer review, and open educational resources.

Open Science – definition grounded in hypothetico-deductive methodologies

As mentioned, Open Science is often referred to as a remedy to strengthen the reproducibility of findings by engaging in specific research practices such as preregistration of hypotheses and sharing data. We will have a closer look at (1) Preregistration of hypotheses; (2) Open protocols; (3) Open data (see e.g., Nosek et al. 2015; Open Science Collaboration, 2015):

1) Preregistration: Pre-registration of research refers to the process of stating in advance the research question, methods, and plan of analysis. It involves documenting and submitting the research proposal to a public registry before data collection begins. By pre-registering a study, researchers can transparently disclose their research plans, reducing the possibility of data manipulation, "biased reporting", or changing the research question or methods post hoc. It is meant as preventive measures against publication bias, data dredging, and selective reporting.
2) Open protocols: Open protocols typically mean that information such as the research question or hypothesis, study design, data collection procedures, sample characteristics, planned analyses, and other relevant details are openly shared. By open protocols, researchers commit to avoiding questionable research practices and engaging in a more rigorous and predictable scientific process.
3) Open data: Open data refers to the practice of making research data freely available and accessible. It involves sharing data sets, whether raw or processed, along with relevant documentation, such as methodologies and codebooks. The core principle behind it is to promote transparency, reproducibility, and collaboration in scientific research. By making data openly available, researchers allow others to verify and build upon their findings, facilitating further analysis and replication.

What these three practices share is that they are meant to enable others to check and replicate the research. It allows other researchers to verify whether the study was conducted as planned and is meant to reduce the chances of cheating. The assumption is that if the research is conducted right, all researchers will find the same results if they follow the same protocol. There is a concern among qualitative researchers about the use of Open Science practices in qualitative methods when the practices are understood as described here (Kirschner et al., 2023; Bennett, 2021). In the following, we will try to explain why.

A critical view: Other ways of understanding the replication crisis?

If non-replicability is seen as a problem per definition, it takes for granted that changing results is a consequence of failed research. However, non-replicability could also be seen as a consequence of a changing society and changing practices and ideas (for example, in social psychological experiments of obedience), hence reflecting psychological phenomena as context-dependent, manifesting in a variety of ways, and continuously developing. The lack of diversity in groups of respondents and participants, and the lack of taking cultural and historical context into account is an alternative explanation of the replication crisis (Sabik et al., 2021). Already in 1973, Gergen (1973) advocated this perspective on the failure of replicating motivations for political activism:

> *Variables that successfully predicted political activism during the early stages of the Vietnam War are dissimilar to those which successfully predicted activism during later periods. The conclusion seems clear that the factors motivating activism*

> *changed over time. Thus, any theory of political activism built from early findings would be invalidated by later findings. Future research on political activism will undoubtedly find still other predictors more useful* (Gergen, 1973, p 315.)

Different traditions: Big Q and Small q qualitative research

Many authors of introductory books in qualitative psychology differentiate between “Big Q” and “Small q” qualitative research (Willig, 2021; Braun & Clarke, 2022; Marecek, 2011). The concepts were initially articulated by Kidder & Fine (1987) to delineate between qualitative research carried out within interpretative and exploratory qualitative methodologies (referred to as “Big Q”) on one hand, and less interpretative qualitative methods, which are more akin to hypothetico-deductive research (referred to as "Small q"), on the other. In Big Q qualitative research, replication often holds little significance, e.g., because the changing context is seen as an intrinsic part of the studied phenomenon. Big Q qualitative research is based on a variety of epistemological positions; contextualism and social constructionism are examples (Willig, 2021; Braun & Clarke, 2022). In research traditions of small q qualitative research, aspirations of replication may be more pronounced. Examples of small q qualitative research are open-ended questions in surveys, where, e.g., content analysis is used to score and count qualitative data material. Small q qualitative research starts with a hypothesis and predefined categories to check the data material against (Willig, 2021). Research is then often expected to find the same results if the research procedure is repeated. This is, according to Willig (2021), not compatible with the spirit of Big Q-qualitative methods.

Why should qualitative researchers be cautious about Open Science practices aiming for replication?

Preregistration: In most qualitative research methodologies, both research questions and analysis are developed during the research process. This is not seen as “cheating” but as an important part of the research process, and a prerequisite to learn something new (e.g., (Haavind, 2000). The research questions must then be flexible and open to new ways of seeing the phenomena (Kirschner et al., 2023; Braun & Clarke, 2022).

Open protocols: The premise in interpretative (hermeneutical) qualitative traditions of psychology is that the analytic gaze of the researcher develops continuously. This reflects the researcher’s learning process about the phenomenon under investigation. This is why pre-registration of the analysis is not a way to improve the analytic process (Kirschner et al., 2023).

Open data: Qualitative data are often personal and may concern sensitive life stories (Class et al., 2021; Prosser et al., 2023; Kirschner et al., 2023; Tsai et al., 2016). In most qualitative research, the *context* is at the core of the interpretation of the results (Braun & Clarke,

2022). There exists a potential risk of diminishing contextual understanding when anonymized data are shared on the internet and utilized by researchers who lack familiarity with the specific research setting from which the data originated. Sharing data can be accomplished in better ways within the confines of a research group or institution, or among researchers and master students affiliated with a research group that possesses ownership of the data. This ensures that the researchers who collected the data retain a greater degree of control over its usage. In situations involving small groups or case studies, there is a heightened likelihood of inadvertently disclosing sensitive information about a company, institution, or specific group of individuals. Consequently, embracing openness may inadvertently contravene privacy rights under prevailing laws and regulations, such as the General Data Protection Regulation (GDPR). QualiFAIR at the University of Oslo works with challenges with open data in qualitative research.

For "small q" research, Open Science practices aiming for replication may be relevant. However, for Big Q qualitative research, other practices for robust research are at the core. This means that if Open Science is defined within the frames of hypothetico-deductive methodologies, it promotes small q qualitative research and may constrain the advancement of Big Q qualitative research.

Reflexivity and positionality

The Research Council of Norway is not explicit about reflexivity when they present their policy for Open Science (2020), but they write indirectly about it. For example, they argue that

> "Opening up research fields, research questions, and the choice of theory and method to different experiences, perspectives and understandings can make research more relevant and easier to utilize" (The Research Council of Norway, 2020, p. 13).

This corresponds very well to the focus on reflexivity in qualitative research. The literature exploring the relationship between qualitative methods and Open Science often highlights the significance of reflexivity, as emphasized by Steltenpohl et al. (2023) and Bennett (2021). Reflexivity can be considered an integral aspect of Open Science as it involves being transparent about the underlying assumptions and premises guiding the research process (Steltenpohl et al., 2023). In the realm of qualitative research, openness entails explicitly acknowledging the researcher's position within a research project. Most qualitative approaches seek to elucidate how the researcher's background, theories, and values influence the inquiry process and findings (e.g., Olmos-Vega et al., 2022; Braun & Clarke, 2022; Levitt et al., 2020). It is crucial to recognize that every researcher operates within social, societal, and historical contexts, which encompass specific power dynamics shaped by factors such as ethnicity, gender, socioeconomic status, and other social identities. Moreover, implicit or explicit theoretical, disciplinary, and epistemological orientations also

shape researchers' positions within their respective fields (see e.g., Louis & Barton, 2002; Merriam et al., 2001).

Transparency

Openness in qualitative research can also involve clarifying and exploring the situatedness of psychological phenomena, unveiling how they are intricately shaped by the social, historical, and cultural contexts in which they arise. Another dimension of openness is to ensure transparency throughout the entire research endeavour. This entails making all steps of the research process visible and comprehensible, allowing readers to assess the trustworthiness of the conclusions by examining the internal consistency between research premises, methodological strategies, and results (Pratt et al., 2020; Bennett, 2021; Steltenpohl et al., 2023). Additionally, transparency can be exemplified by showcasing how the analysis and results are firmly grounded in the empirical data. This can be accomplished through the use of illustrative examples that show the diversity and variation within the data, thereby clarifying the situatedness of interpretations. Moreover, transparency also encompasses articulating the theoretical and analytical frameworks that guide the researcher's interpretive lens, thereby enhancing the transparency of the analytic process.

User participation

Another criterion suggested for achieving the objective of Open Science is the participation of non-researchers and stakeholders in the research process, serving as a means to democratize the creation of knowledge (NFR, 2020; UNESCO, 2021). Involving various societal stakeholders in the research processes, commonly referred to as user participation, empowers individuals for whom the research holds implications to influence the selection of research topics and the overall research process (Trivedi & Wykes, 2002). This objective aligns with established practices in qualitative research, including participatory research. The intent is not only to enable assessment by the research community but also to demystify the research process for non-researchers and diverse societal stakeholders, thereby increasing the accessibility and comprehensibility of research findings.

Concluding remarks on Open Science practices

Our recommendation to the Department of Psychology at UiO (PSI) is that Open Science should not be perceived as a rigid set of standardized practices that can be applied universally to all research. Instead, we encourage PSI to adopt a comprehensive understanding of Open Science, as reflected in UNESCO's (2021) definition, allowing for a variety of relevant openness practices that align with the diverse range of methodologies represented at PSI.

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