

Torka, Ann-Kathrin; Hüffmeier, Joachim

Article — Published Version

Going off script: Exploring the reporting of preregistration deviations in Industrial and Organizational Psychology and their relationship with questionable research practices

Journal of Occupational and Organizational Psychology

Provided in Cooperation with:

John Wiley & Sons

Suggested Citation: Torka, Ann-Kathrin; Hüffmeier, Joachim (2025) : Going off script: Exploring the reporting of preregistration deviations in Industrial and Organizational Psychology and their relationship with questionable research practices, Journal of Occupational and Organizational Psychology, ISSN 2044-8325, Wiley, Hoboken, NJ, Vol. 98, Iss. 4, <https://doi.org/10.1111/joop.70057>

This Version is available at:

<https://hdl.handle.net/10419/335655>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

RESEARCH ARTICLE

Going off script: Exploring the reporting of preregistration deviations in Industrial and Organizational Psychology and their relationship with questionable research practices

Ann-Kathrin Torka¹  | Joachim Hüffmeier^{1,2} ¹TU Dortmund University, Dortmund, Germany²University of Agder, Kristiansand, Norway**Correspondence**Ann-Kathrin Torka, Emil-Figge-Straße 50,
44227 Dortmund, Germany.Email: ann-kathrin.torka@tu-dortmund.de**Abstract**

In the present study, we aim to take stock of, encourage and contribute to the establishment of preregistration as a standard to increase transparency in Industrial and Organizational Psychology (IOP). To do so, we examined to what extent IOP research is preregistered and adheres to preregistrations. We analysed 27 IOP journals and found that only 91 articles (0.70% of studies published between 2017 and 2023) included a preregistration. A random sample of 25 of these preregistered studies revealed that 72% deviated from their preregistrations at least once, with 68% having at least one undisclosed deviation, indicating that deviations from preregistrations are common. The studies in our IOP sample deviated on average $M = 1.84$ ($SD = 1.72$) times from their preregistrations. Importantly, the vast majority of these deviations do not seem to be linked to questionable research practices. We further compared the IOP sample with a recent sample from *Psychological Science*, which represents the current state-of-the-art in preregistrations. We found no difference in the number of (undisclosed) deviations, which suggests that preregistration can be effectively implemented even in fields where it is not yet standard. To support this implementation, we offer resources and best practice recommendations for transparently reporting deviations.

KEYWORDS

Industrial and Organizational Psychology, Open Science, preregistration, questionable research practices, transparency

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2025 The Author(s). *Journal of Occupational and Organizational Psychology* published by John Wiley & Sons Ltd on behalf of The British Psychological Society.

Practitioner points

- Preregistrations remain rare in Industrial and Organizational (IO) Psychology, with only 0.70% of articles between 2017 and 2023 having a preregistration.
- Deviations from preregistrations are common, but mostly harmless. In a random subset of preregistered IO Psychology studies, the majority (72%) deviated from their preregistrations, but deviations were mostly not linked to questionable research practices.
- Our random subset of IO Psychology studies showed similar adherence to preregistrations as a random subset of studies from *Psychological Science* (one of the first journals in Psychology that introduced preregistrations), suggesting that preregistering studies adequately is possible even in fields where it is not yet widely adopted.

INTRODUCTION

The trustworthiness of the cumulative knowledge in Industrial and Organizational (IO) Psychology is currently at risk, just as in related fields (see Keener et al., 2023). One factor contributing to this problem is the use of questionable research practices (QRPs; O'Boyle & Götz, 2022). QRPs are researcher behaviours that can distort findings in favour of significant results. When using QRPs, researchers exploit their degrees of freedom to present biased evidence (Banks et al., 2016). Common QRPs include selectively reporting hypotheses, Hypothesizing After the Results are Known (HARKing; Kerr, 1998), *p*-hacking (i.e., 'report only [...] analyses [...] that "work"' Simonsohn et al., 2014, p. 534), and cherry-picking results (John et al., 2012). There is some evidence that the field of organizational research in general, and IO Psychology, in particular, is affected by QRPs. For instance, Banks et al. (2016) found that many management researchers admitted engaging in QRPs (e.g., 49.6% in HARKing and 33.3% in *p*-hacking). Similar practices have been reported among psychologists in general (Agnoli et al., 2017; John et al., 2012). Consistent with HARKing and selective outcome reporting, journal articles in IO Psychology and management often report more supported and fewer unsupported hypotheses than the underlying dissertations (Kepes et al., 2022; Mazzola & Deuling, 2013).

A suitable Open Science Practice (OSP) to reduce the use of QRPs and to increase transparency consists in preregistering study hypotheses and analysis plans (Banks et al., 2019; Kepes & McDaniel, 2013). By doing so, researchers allow others to scrutinize and verify the research process. This helps to enhance the reproducibility (i.e., two researchers achieve identical results by analysing the same data using the same methodology; Asendorpf et al., 2013) and trustworthiness of scientific findings (Nosek et al., 2018). Research on preregistration has shown that it can help increase transparency and rigour in scientific reporting (Toth et al., 2020; see also Scheel et al., 2021), and that researchers perceive it to improve the quality of their projects and research processes (Sarafoglou et al., 2022).

However, it is currently unclear to which extent IO Psychology studies are actually preregistered and how strongly authors deviate from their preregistrations. A recent study found that only one of 244 coded studies from four leading journals in the organizational sciences (i.e., *Journal of Applied Psychology*, *Journal of Management*, *Journal of Organizational Behavior* and *Personnel Psychology*) had preregistered its hypotheses (Crede & Sotola, 2024). Thus, preregistration rates in IO Psychology might be rather low. Moreover, there is an ongoing debate about when and how to deviate from a preregistration (Lakens, 2024). Among other things, this is because deviations from a preregistered plan can be either unintentional or intentional, and they can either increase or decrease the quality of a study (Lakens, 2024). However, prior research on adherence to preregistrations in Psychology found that researchers generally deviated substantially from their preregistrations (van den Akker et al., 2023, 2024).

In the present study, we seek to illuminate the current use of preregistrations in IO Psychology, including the (non-)disclosure of deviations from preregistrations. To achieve this goal, we will code and analyse how

preregistrations are currently implemented in IO Psychology and, more broadly, in Psychology generally. Thereby, we intend to advance the current research practice towards a broader implementation of preregistrations in IO Psychology. As our first contribution, we will assess the current prevalence of preregistrations in IO Psychology, and the extent to which deviations from preregistrations are (un-)disclosed in preregistered studies. Identifying a potentially low rate of articles with preregistration practices in IO Psychology could highlight the need for increased awareness of, education about and interventions on preregistration. Moreover, understanding disclosure practices can inform strategies for improving transparency.

As our second contribution, we will illuminate whether undisclosed deviations in our sample of IO Psychology studies are generally associated with QRPs. If we find associations of deviations and QRPs, our study could provide a basis for efforts to improve research integrity and methodological rigour in IO Psychology. As our third contribution, we will offer a comparison with a recent sample of preregistered articles from the journal *Psychological Science*, which publishes studies from many psychological fields, but typically not from IO Psychology research. *Psychological Science* was the pioneering journal in Psychology¹ that first introduced Open Science Badges, thereby explicitly encouraging preregistrations in January 2014. Thus, it represents the current state-of-the-art when it comes to preregistrations (Eich, 2014; Hardwicke & Vazire, 2024). *Psychological Science* as a critical and demanding benchmark is therefore highly relevant for IO Psychology: If preregistrations are not worse in IO Psychology, this non-difference would suggest that learning to preregister is not as difficult to learn as may be expected. Such a finding could, thus, serve as encouragement for the IO Psychology community to take up preregistration as a standard research practice.

Finally, as a fourth contribution, we will provide an overview of relevant resources that provide hands-on advice on how to conduct preregistrations and on best practices for handling deviations from them (e.g., templates for deviations). This is crucial because providing accessible and helpful tools and guidelines can lower the barrier to entry for IO Psychology researchers, encouraging them to attempt their first preregistrations.

RATIONALE AND RESEARCH QUESTIONS

Preregistrations

In about the last decade, Psychology was confronted with low reproducibility (Artner et al., 2021; Maassen et al., 2020) and low replicability (i.e., obtaining an equivalent finding with another random sample, Asendorpf et al., 2013; Open Science Collaboration, 2015; Pashler & Wagenmakers, 2012), resulting in the so-called ‘replication crisis’ (for an overview, see Nosek et al., 2022). In response to this crisis, Nosek et al. (2015) introduced preregistrations as part of their Transparency and Openness Promotion (TOP) Guidelines. By preregistering their studies, researchers outline a detailed plan for their research projects before collecting and analysing data, thereby committing themselves to their hypotheses, methods and analysis plans. The preregistration is then uploaded to one of various online repositories, such as the Open Science Framework (OSF) or aspredicted.com.

By limiting researchers' degrees of freedom, preregistrations can reduce the use of QRPs. Overall, they increase transparency and aim to improve the credibility and reproducibility of scientific findings (Nosek et al., 2018). Indeed, Registered Reports (RRs), which are preregistered studies that undergo peer review before data collection, have been found to exhibit higher methodological and analytical rigour as well as to possess higher overall quality than comparison papers that were not RRs (Soderberg et al., 2021). Further, as there are fewer supported hypotheses in preregistered than non-preregistered studies, they decrease the amount of false positive findings (Toth et al., 2020; see also Scheel et al., 2021). Taken together, preregistrations are perceived by many as ‘a game changer’ (Simmons et al., 2021, p. 177).

¹The journal *Cortex* introduced Registered Reports (and thus, also preregistrations) even earlier, in 2013. However, *Psychological Science* was the first Psychology journal covering multiple subfields to adopt preregistrations.

However, not all research approaches emphasize reproducibility to the same extent as quantitative approaches. Qualitative and interpretive approaches, for instance, are typically aimed at deepening the understanding of a phenomenon rather than reproducing specific effects (Green & Thorogood, 2014). Accordingly, preregistering studies is still relatively uncommon in qualitative research (Kern & Gleditsch, 2017; Piñeiro & Rosenblatt, 2016). Yet, the flexibility and openness inherent in qualitative work do not relieve researchers of the responsibility to strive for transparency (Haven & Van Grootel, 2019). Thus, although it does not come without challenges, preregistration can be a valuable step towards greater transparency also in qualitative research.

In fact, preregistration can enhance the credibility of both quantitative and qualitative research, albeit in different ways. In quantitative research, its value lies in distinguishing genuine predictions from post-hoc interpretations. In qualitative research, preregistration allows others to evaluate whether appropriate methods were chosen for data collection and analysis, and whether the interpretations are convincing (Haven & Van Grootel, 2019). Researchers can, for example, preregister the types of interviews or focus groups they plan to conduct and include, along with the theoretical framework guiding their study. By reflecting on their theoretical lens and values before entering the field and interpreting the data, researchers can enhance the transparency and trustworthiness of their findings. In line with this, Haven et al. (2020) conceptualize preregistration for qualitative studies as the starting point of a systematic research log. Based on systematic empirical investigations within the qualitative research community, they have developed a preregistration template tailored to the needs of qualitative researchers (for another template, see Kern & Gleditsch, 2017).

The implementation of preregistrations

For all kinds of research methods, open and transparent research can be seen as a common desideratum. Following Merton's (1942) Scientific Ethos of Communism, the expectation would be that researchers disclose not only their findings but also the methods and reasoning behind them, at least within the academic community (Götz & O'Boyle, 2023). This use of OSPs, such as preregistration, can be understood through the lens of an institutional perspective of the tragedy of the commons: Applying the theoretical arguments made by Ansari et al. (2013), a shift towards a shared logic of the commons requires that researchers (i) recognize their interdependence, (ii) acknowledge how their own behaviour may contribute to systemic issues (e.g., drastic replication problems) and (iii) engage in collective action to address them.

When applied to IO Psychology, this perspective suggests that implementation rates of OSPs in general, and implementation of preregistrations, in particular, may be rather low. This is because, unlike in other areas of Psychology, large-scale replication efforts are to date still missing in IO Psychology. However, such efforts help to raise awareness of the field-wise and drastic problems related to the lacking replicability of primary findings and how researchers are commonly at the root of these problems. Additionally, motivational barriers may play a role. The current academic incentive structure continues to prioritize publication quantity and favours statistically significant over null results (e.g., Fanelli, 2012; Giner-Sorolla, 2012; Sterling, 1959). This may discourage researchers from engaging in practices like preregistration that prioritize transparency over a high probability of getting published. These practices also require time resources and increase the chances of obtaining statistically non-significant results. As a result, the overall number of articles with a preregistration in IO Psychology may currently be rather low.

Indeed, despite its potential to enhance credibility, Hardwicke et al. (2022) found that, in a sample of 250 randomly selected published psychological articles from 2014 to 2017, only 3% had a preregistration. These findings are, of course, interesting. However, the included studies are—by now—relatively old, and their focus was on Psychology as a whole, and they included only $N=34$ articles from Applied Psychology. Similarly, Tenney et al. (2021) found comparable results in top-tier organizational behaviour journals between 2011 and 2019. While their study especially focused on

the organizational behaviour domain, it was limited to only four journals. Crede and Sotola (2024) found an even lower rate of preregistrations in the organizational sciences. However, their research was not only limited to four journals but also focused exclusively on interaction effects. As a result, neither study provides a clear picture of the absolute number of preregistered articles in IO Psychology. Thus, as a first focus of our research, we are interested in the general number of articles² with a preregistration in IO Psychology.

RQ1: How many published articles in IO Psychology have a preregistration?³

Deviations from preregistrations

Even researchers who preregister their studies might not always adhere to their preregistered plans. Indeed, deviations from preregistrations seem to be quite common. For instance, van den Akker et al. (2023) assessed the extent of selective hypothesis reporting in Psychology by comparing preregistrations with the corresponding articles. In their sample ($N = 459$), 52% and 57% of studies contained omitted and added hypotheses, respectively, and 18% included hypotheses that had undergone a change in direction. Furthermore, in their research on gambling studies with $N = 20$ investigated preregistrations, Heirene et al. (2021) found that 65% of the included studies exhibited undisclosed deviations. Even 89% of $N = 27$ preregistered studies from *Psychological Science* included undisclosed deviations (Claesen et al., 2021).

Using a different approach, Toth et al. (2020) compared published preregistered studies against published non-preregistered studies in Applied Psychology and Management. They found that only 16% of all preregistered studies explicitly discussed some kind of deviations from their preregistration. However, as outlined above, research in other fields suggests that the number of deviations from preregistrations is usually much higher. Taken together, a considerable number of studies in IO Psychology possibly deviate from their preregistrations without transparently reporting these deviations.

To explain these undisclosed deviations from preregistrations, we borrow from theorizing in behavioural ethics. Specifically, Merritt et al.'s (2010) Moral-Self-Licensing approach would predict that preregistering a study should make people feel secure in their moral self-regard (i.e., 'I am one of the few open and transparent researchers in IO Psychology. I even preregister my study'), which may make them particularly likely 'to do potentially immoral things without worrying about feeling or appearing immoral' (p. 344). Thus, somewhat paradoxically, the rare behaviour of preregistering a study could potentially make deviating from the preregistered plan, even without reporting it, seem less problematic to the researcher, as their prior 'moral investment' in transparency provides a psychological licence to bend the rules without threatening their self-image as a good and ethical scientist.

Nonetheless, we currently cannot say anything about the true extent to which preregistered IO Psychology studies in fact deviate from their preregistrations and do or do not disclose it. This is because prior research has either focused only on deviations related to hypotheses (van den Akker et al., 2023), examined statements made by the authors about deviations rather than deviations themselves (Toth et al., 2020), or investigated fields other than IO Psychology, such as Psychology as a whole (Claesen et al., 2021; Toth et al., 2020; van den Akker et al., 2024) or gambling studies

²In the analyses of our manuscript, we differentiate between articles and studies: Articles are research manuscripts published in a scientific journal. With studies, we refer to individual studies published as part of a research manuscript, i.e., there are multi-study articles that include more than one individual study.

³As a first deviation from our preregistration (https://osf.io/g69v4/?view_only=5082510df627479ea803ffb089318488), we changed the wording of RQ1 from "How many published articles in IO Psychology are preregistered?" to "How many published articles in IO Psychology have a preregistration?" to reflect that studies, but not articles as a whole are preregistered.

(Heirene et al., 2021). Furthermore, while Hardwicke et al. (2022), Tenney et al. (2021) and Crede and Sotola (2024) included at least some preregistered articles from IO Psychology, they did not examine deviations from these preregistrations. Therefore, we are interested in the extent to which preregistered studies in IO Psychology (a) deviate from their preregistrations and (b) disclose these deviations.

RQ2: How many preregistered studies in IO Psychology deviate from their preregistration in at least one aspect?

RQ3: How many preregistered studies in IO Psychology do not report at least one extant deviation from their preregistration in the published article?

Differences in preregistration practices between different fields of research

Exploring how disclosed and undisclosed deviations from preregistrations might differ between different fields of research can help to gain deeper insights into current preregistration practices and possible differences in the current preregistration quality in IO Psychology. Understanding these differences can potentially also provide valuable insights into specific challenges within IO Psychology. For example, preregistering a study in applied organizational settings may not be as straightforward as preregistering a study conducted in a controlled laboratory environment. Field studies or employee surveys, in particular, could be more challenging to preregister because they come with some practical challenges and unique features. These include a higher likelihood of unforeseen circumstances, like premature termination of data collection, organizational restructuring or changes in processes, teams or software—any of which can influence a study's design. Furthermore, participating organizations often have great influence over the research process. They may dictate the study's start date, measurement time points, or applied measures, and might request changes even during data collection. Such studies are typically developed in close collaboration with multiple stakeholders (e.g., work councils, data protection officers, managers) and the design often evolves iteratively, making it difficult to define all methodological decisions in advance. Research opportunities may also arise spontaneously—for instance, when studying the rollout of a new HR tool—leaving little time for detailed preregistrations. Another distinct challenge in applied organizational research concerns data access and confidentiality: Researchers often lack full access to the data or data collection processes, and sensitive organizational information must not be made publicly available.

In other psychological fields, preregistering a study might be more straightforward. Claesen et al. (2021), for instance, investigated the adherence to preregistrations and the disclosure of preregistration deviations in *Psychological Science*—a journal that only very rarely publishes articles from IO Psychology. *Psychological Science* is the pioneering journal in Psychology that was one of the very first to introduce preregistrations. The 27 studies they examined were conducted during a period when preregistration was a new OSP in Psychology, spanning from February 2015 to November 2017. Thus, their sample represents what could be termed the first generation of preregistrations.

Authors from fields other than IO Psychology, where preregistrations were introduced quite early (such as authors publishing in the field of Social Psychology or in *Psychological Science*), have been increasingly exposed to preregistration practices. They, thus, probably gained greater familiarity with preregistering studies over time, leading to improvements in the specificity of (i.e., ‘all phases of [a] research process are described’, Heirene et al., 2021, p. 4) and adherence to their preregistrations (a trend also noted in research on gambling, as observed by Heirene et al., 2021). Furthermore, based on the institutional perspective of the tragedy of the commons (Ansari et al., 2013) and the Moral-Self-Licensing approach (Merritt et al., 2010), Social Psychology scholars, for instance, could be expected to be more aware of the problems related to undisclosed deviations. Moreover, IO Psychology scholars might be self-licensing to a greater extent than Social Psychology scholars because preregistering studies is still rare in this field. To investigate deviations from preregistrations across different research fields, we will

generally build on the approach of Claesen et al. (2021). However, we will include an updated, more recent sample of preregistered studies published in *Psychological Science*. Important as the Psychology journal first introducing Open Science Badges for preregistrations, *Psychological Science* represents the current state-of-the-art when it comes to preregistering studies. It, thus, is a critical and demanding benchmark for comparison.

RQ4: Are there more undisclosed deviations from preregistrations in published IO Psychology studies than in a random sample of currently published studies from *Psychological Science*?

Deviations from preregistrations and their relationship with QRPs

While the full benefits and the rationale underlying the preregistration of studies are realized only when researchers generally adhere to their predetermined plans, there are of course (and often) circumstances that lead them to deviate from their preregistration. Many of these circumstances are not problematic at all (e.g., after preregistering their study, researchers learn about a methodologically sounder way to analyse their data). However, one problematic reason to deviate from a preregistration would be that the study does not produce the desired empirical outcome. For example, a researcher might consciously decide to selectively omit preregistered dependent variables from the manuscript that do not support the hypotheses. In these cases, deviations from preregistrations would directly reflect or be associated with QRPs.

However, as mentioned above, QRPs are not the only reason why researchers deviate from preregistered plans. Toth et al. (2020) explored various explanations for why researchers deviate in their studies from their preregistrations, encompassing both minor and significant changes. They differentiate between changes that occurred (i) due to (unintentional) errors, (ii) due to adding to (e.g., adding variables) or slightly changing the procedure, (iii) due to updating sample size, (iv) due to changes made to the analysis plan and (v) due to preregistration-introduced issues related to QRPs. As illustrated by this typology, deviations from a preregistration are often not a sign of problematic behaviour, but researchers may learn new things they did not know at the time of the preregistration or there are deviations that are beyond their control. For instance, a smaller sample than preregistered might result if a cooperating organization ends data collection ahead of time. Other deviations can even improve the quality of a study compared to the preregistered plan, such as incorporating helpful comments from the review process or correcting an error in the preregistration (Willroth & Atherton, 2024). We agree with Toth et al. (2020) that different types of deviations from a preregistration can be associated with QRPs to different degrees. We will therefore also examine different types of deviations from preregistrations in IO Psychology with regard to their association with QRPs.

RQ5: How many undisclosed deviations from preregistrations in published IO Psychology studies might be (vs. are likely not) associated with QRPs?

METHOD

Transparency and openness

Below, we report how we determined our sample size, all data exclusions and all measures (Simmons et al., 2012). The current study is preregistered. The preregistration of this study can be accessed via the following link: https://osf.io/g69v4/?view_only=5082510df627479ea803ffb089318488. Supplemental materials, including the full data set, are publicly available under https://osf.io/7v2ya/?view_only=

38bd429f83314f52903d8c8fb3456e6b. All deviations from the preregistration are disclosed in the manuscript and in Table S1.

Sample

We base our analysis on the IO Psychology journals in the ABS Academic Journal Guide 2021⁴ (<https://charteredabs.org/academic-journal-guide-2021/>), which generally includes 66 journals. However, we excluded journals that (1) are not published in English or German (e.g., *Gedrag en Organisatie*), (2) focus on theoretical contributions and commentaries rather than empirical research (e.g., *Organizational Psychology Review*), (3) have a topical rather than disciplinary focus (e.g., *Accident Analysis & Prevention*) or (4) focus on a discipline other than IO Psychology (e.g., Military Psychology: *Military Psychology*, or School Psychology: *Journal of School Psychology*). Using this approach, we identified a final sample of 27 journals (see Table 1).

In these journals, we first conducted an electronic keyword search within *Web of Science* to identify all published studies, with no restrictions on publication year (search string: IS = insert journal ISSNs). Afterwards, we searched for quantitative and qualitative studies that were preregistered performing a second electronic keyword search within *Web of Science* (search string: IS = insert journal ISSNs AND ALL = prereg* OR OSF OR aspredicted OR registered⁵ OR pre-reg*). We deviated from our preregistration with this search string. As preregistered, we had first used the following search string: IS = insert journal ISSNs AND ALL = prereg*. However, this search yielded only $N = 46$ hits (i.e., potentially preregistered studies), which appeared (too) low to us. In order to not miss any preregistered studies, we expanded our search string as described above, yielding $N = 540$ hits (i.e., potentially preregistered studies, see Figure 1). We then screened these hits to identify studies with a preregistration.

Finally, we drew a random sample of 25⁶ studies, while limiting each journal's representation to a maximum of five studies (the prevalence of preregistered studies was very unequal across journals, see Table 1). To limit each article to no more than one included study, we drew one random study from multi-study papers (where applicable). To do so, for each multi-study paper, we used a random number generator to generate one random number in the range of the total number of studies. The study that matched the generated number was selected for inclusion. To summarize, it was our aim to include $N = 25$ preregistered studies from IO Psychology in our analyses. Our subset was drawn randomly and is intended to be representative of the full set of all $N = 91$ preregistered IOP studies. To empirically check and possibly support this claim, we drew a second random sample of 25 further IO Psychology studies and compared both subsets on key characteristics. The results of this comparison can be found in Tables S2 and S3. They suggest that the initial subsample is likely representative of the broader population of $N = 91$ preregistered IO Psychology studies.

Further, we drew a sample of 25 additional studies from *Psychological Science* as a 'state-of-the-art baseline'. We chose this journal for comparison because it is the journal with the longest and most established use of preregistrations in Psychology (Eich, 2014). Thus, transparency is now the default for the journal (Hardwicke & Vazire, 2024), making it a highly relevant benchmark for comparison. To rule out the possibility that potential differences between this sample and the sample from IO Psychology are due to the year in which they were published (i.e., authors may have gained more knowledge about preregistering studies over time and improved the specificity of and adherence to their preregistrations), we matched the studies from *Psychological Science* to the included studies from IO Psychology regarding the

⁴The ABS Academic Journal Guide 2021 was the most recent version available when we preregistered this study. We compared this list to the now available and more recent ABS Academic Journal Guide 2024. We found three journals that were included in the 2024 guide, but not in the 2021 guide (i.e., *IJSE Transactions on Occupational Ergonomics and Human Factors*, *International Coaching Psychology Review*, and *International Journal of Workplace Health Management*). However, following our preregistered exclusion criteria, we would exclude all of them because they have a topical rather than disciplinary focus. Thus, updating our data to the more recent ABS Academic Journal Guide 2024 would not alter our findings.

⁵Including this keyword should have also retrieved Registered Reports in our electronic search.

⁶This sample size is comparable to prior research on preregistration deviations in other domains (e.g., $N = 20$ articles in Heirene et al., 2021; $N = 27$ articles in Claesen et al., 2021).

TABLE 1 List of included IO Psychology journals and the number of articles with preregistration.

Title	Number of articles with preregistration
<i>Applied Psychology: An International Review</i>	3
<i>Cognition, Technology and Work</i>	1
<i>European Journal of Work and Organizational Psychology</i>	5
<i>Human Performance</i>	0
<i>International Journal for Educational and Vocational Guidance</i>	8
<i>International Journal of Selection and Assessment</i>	0
<i>International Journal of Stress Management</i>	0
<i>Journal of Applied Psychology</i>	18
<i>Journal of Business and Psychology</i>	6
<i>Journal of Career Assessment</i>	0
<i>Journal of Career Development</i>	0
<i>Journal of Employment Counseling</i>	0
<i>Journal of Managerial Psychology</i>	0
<i>Journal of Occupational and Organizational Psychology</i>	3
<i>Journal of Occupational Health Psychology</i>	1
<i>Journal of Organizational Behavior</i>	0
<i>Journal of Personnel Psychology</i>	1
<i>Journal of Vocational Behavior</i>	0
<i>Organizational Behavior and Human Decision Processes</i>	31
<i>Personnel Psychology</i>	2
<i>Psychologist-Manager Journal</i> ^a	0
<i>Revue Européenne de Psychologie Appliquée</i> ^b	0
<i>Scandinavian Journal of Work, Environment and Health</i>	10
<i>South African Journal of Industrial Psychology</i>	0
<i>Work</i>	2
<i>Work and Stress</i>	0
<i>Zeitschrift für Arbeits- und Organisationspsychologie</i>	0

^aName changed to Psychology of Leaders and Leadership.

^bFrench articles excluded.

year of publication (i.e., we matched both sub-samples according to the year of publication). More specifically, for each IO Psychology study included in our sample, we searched for articles with preregistered studies in *Psychological Science* that were published in the same year (search string: IS=0956-7976 AND ALL=prereg* AND PY=*insert year*)⁷ and then drew a random article (that was not already included in the sample). Again, to limit each article to no more than one included study, we drew one random study from multi-study papers using a random number generator. To summarize, it was our aim to include $N=25$ preregistered studies from *Psychological Science* in our analyses that match the sample from IO Psychology regarding the publication year. To ensure objective coding, we excluded our own preregistered studies from the samples. All included preregistrations were from quantitative studies, systematic reviews, or meta-analyses—we did not observe any preregistrations of qualitative studies in our sample of $N=25$ studies from IO Psychology and $N=25$ studies from *Psychological Science*.

⁷Contrary to the search for articles with preregistration from IO Psychology, these searches yielded a sufficient number of suitable articles for each year.

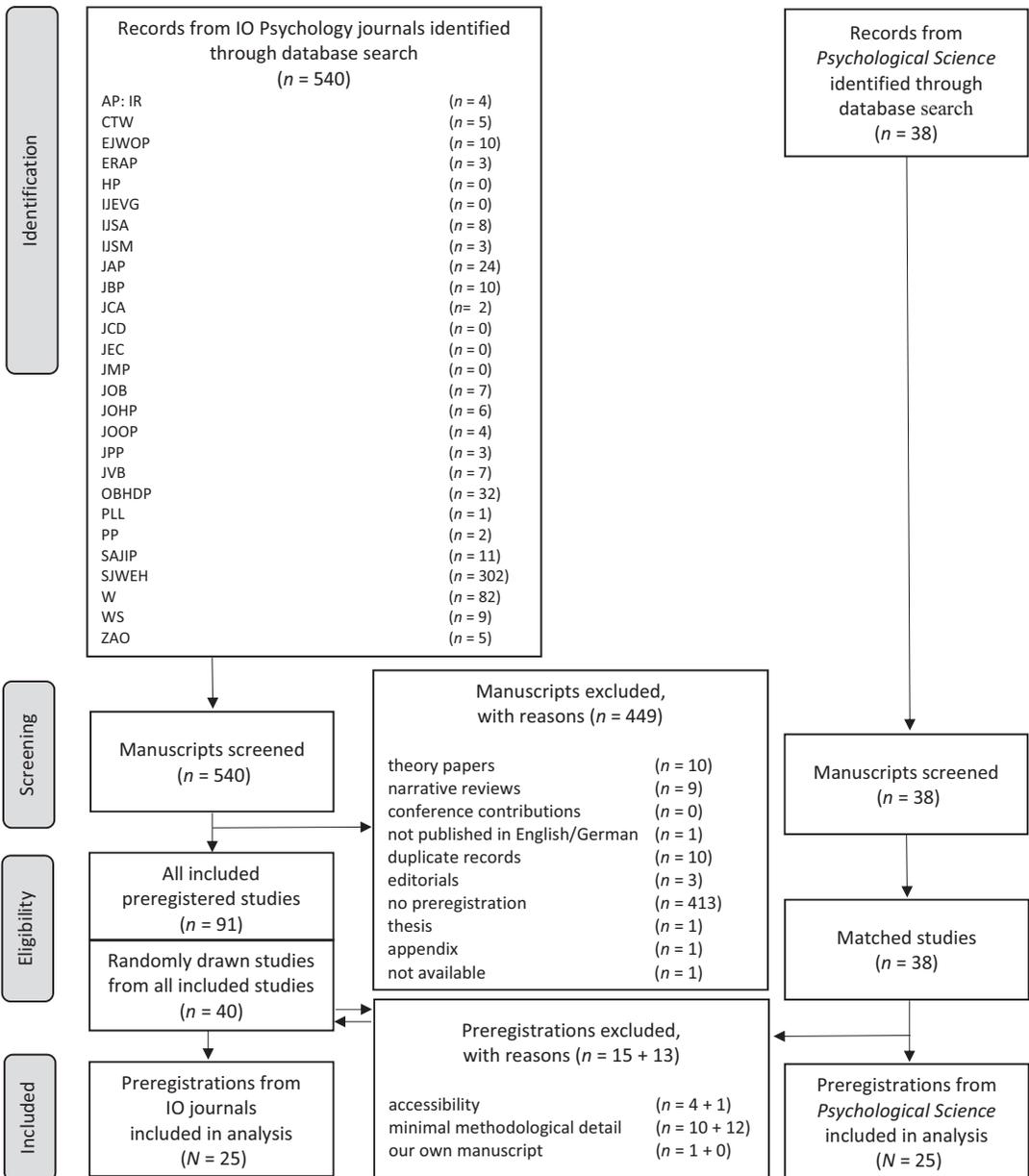


FIGURE 1 Flowchart of identification and selection of preregistrations. The ‘preregistrations excluded’ box shows the number of excluded preregistrations for both sub-samples: IO Psychology (left) and *Psychological Science* (right). Specifically, we excluded $n = 15$ preregistrations from IO Psychology and $n = 13$ from *Psychological Science*.

Exclusion criteria

Articles were excluded from our analyses if they were theory papers, narrative reviews, or conference contributions, or if they were not published in English or German. We expected our search string to return only articles that were preregistered, as it included terms like ‘prereg*’ or ‘registered’. However, the broad search also produced many false positive hits—for example, numerous hits from *Scandinavian Journal of Work, Environment & Health* were studies about registered nurses. Thus, as a second deviation

from our preregistration, we also excluded all articles that did not include at least one preregistered study. Preregistered studies were excluded from our analyses following the exclusion criteria formulated by Claesen et al. (2021, p. 3):

Both exclusion criteria for the adherence assessment, accessibility and minimal methodological detail, were assessed using six items each that were scored with either 0 (unfulfilled) or 1 (fulfilled). The items for accessibility were the following: a preregistration plan should be a (i) permanent, (ii) read-only, (iii) time-stamped, (iv) public, (v) non-ambiguously available, and (vi) on a third-party repository stored document. If not all items were scored with a 1, the plan was excluded. Minimal detail was assessed for the remaining preregistration plans by evaluating whether they contained some information on the following methodological aspects: (i) a research question and/or hypothesis, (ii) a list of variables, (iii) operationalization of the variables, (iv) a sample size, (v) a procedure, and (vi) a statistical model. Again, if not all items were present, the plan was excluded.

However, we noticed that it is not possible for some studies to specify a sample size in advance (e.g., when working with archival data). In these situations, it was sufficient for our minimal detail assessment that the preregistration had inclusion criteria or a stopping rule. In total, we had to exclude $n = 10$ preregistrations due to missing minimal methodological detail. For a detailed overview of included and excluded manuscripts, see the flowchart in [Figure 1](#).

Coding procedure

Our first criterion variable (see RQ1) is the number of published articles with a preregistration in IO Psychology. We provide an estimate of published articles with a preregistration in IO Psychology as well as an estimate of the proportion of articles with a preregistration in IO Psychology (i.e., the number of published articles with a preregistration from IO Psychology divided by the number of all published articles from IO Psychology). Our second (see RQ2) and third (see RQ3) criterion variables are (a) the proportion of studies that deviate from their preregistration in at least one aspect (i.e., the number of studies from IO Psychology with at least one deviation from their preregistration divided by the number of all studies from IO Psychology included in our sample) and (b) the proportion of studies that deviate from their preregistration but do not report it in the published article (i.e., the number of studies from IO Psychology with at least one *undisclosed deviation* from their preregistration divided by the number of all studies from IO Psychology included in our sample).

To examine whether there are deviations from the preregistrations in a study and how these deviations are reported versus not reported, we followed the approach by Claesen et al. (2021) and compared the following aspects of each preregistration with the final (published) study: (i) hypotheses/research questions, (ii) variables/covariates, (iii) sample size, (iv) exclusion criteria, (v) procedure and (vi) analysis (exploratory analyses are not included in the comparison). For each aspect, we coded whether there were no deviations, only disclosed deviations, or at least one undisclosed deviation.⁸ We then used these codes to form three count variables ranging from zero to six (because we looked at six aspects of each preregistration [i–vi], see above): (a) number of aspects with no deviations, (b) number of aspects with only disclosed deviations and (c) number of aspects with undisclosed deviations. We used this number of aspects with undisclosed deviations from preregistrations in the IO studies as another criterion variable (see RQ3).

We describe how we assessed adherence to the preregistration for each of these aspects (adapted from Claesen et al., 2021) in [Table 2](#). In case of reasonable doubt about a deviation from the

⁸We did not preregister our approach for handling meta-analyses and reviews. We included them, but coded sample size criteria as not applicable.

TABLE 2 Coding of deviations from the preregistrations.

Aspects	No deviations from the preregistration	Deviation(s) from the preregistration
Hypotheses/ Research questions	The hypotheses/research questions (RQs) are either exactly the same as preregistered, or they do at least not contradict the preregistered hypotheses/RQs and analyses. For example, they contain more detail that does not contradict the preregistered hypotheses/RQs, or the wording is changed to be more precise or had to be changed due to an error in the preregistration, etc.	The hypotheses/RQs are not the same as preregistered, insofar that they are not in line with the preregistered hypotheses/RQs. For example, hypotheses/RQs were deleted or added, the direction of a predicted effect shifted, etc.
Variables/ Covariates	The variables/covariates are exactly the same as preregistered. If the wording is changed to be more precise or due to an error in the preregistration (e.g., the name of a variable was changed while the operationalization stayed the same), this does not constitute a deviation.	The variables/covariates are not the same as preregistered. For example, dependent variables were deleted (i.e., not reported although they were preregistered) or added (i.e., reported although they were not preregistered).
Sample size	The sample size and/or stopping rule is the same as preregistered. When it is not clear in the preregistration whether the planned sample size is before or after exclusions, it must match with either the sample size before or after exclusions in the article. Deviating from Claesen et al. (2021) a sample size slightly lower (i.e., -5%) or slightly higher (+5%) than preregistered will not be considered as a deviation if it is reasonable that (termination of) data collection was not based on significance tests (e.g., if the study was run by an external provider [prolific or amazon turk], because those external providers are known to run studies with some, usually small, deviations from the originally determined sample size). However, if only a minimum is preregistered, but the obtained sample size is more than 5% higher than this preregistered minimum, this will be considered a deviation.	The reported sample size and/or stopping rules is not the same as was preregistered.
Exclusion criteria	The applied exclusion criteria are the same as preregistered. We do not consider implicit exclusion criteria as deviations, for example, if authors write 'the sample consisted of US adults' while non-US residents and minors were the preregistered exclusion criteria. If no exclusion criteria were preregistered, there are also no exclusions in the published article.	The exclusion criteria are not the same as preregistered. If no exclusion criteria were preregistered, but there were exclusions in the published article, this is a deviation. Because of terminology, exclusion criteria may appear to vary, while they are in fact the same (e.g., living in the US is technically not the same as being in the US, but this is not a deviation). Non-preregistered criteria are deviations, but this does not hold for implicit exclusion criteria, for example, 'the sample consisted of Psychology students'.
Procedure	The procedure is the same as the preregistered procedure, regardless of whether the authors provide more or less detail in the article.	Large changes in the procedure (including the design, e.g., changing from a within- to a between-subjects design).

TABLE 2 (Continued)

Aspects	No deviations from the preregistration	Deviation(s) from the preregistration
Analyses	The model is either exactly the same, or contains less or more detail that does not contradict the original analyses. Terminology may be inconsistent.	Changes to the model, such as for instance extra covariates in a regression, using other variables as dependent/predictor variables than preregistered, etc. Deviating from Claesen et al. (2021), extra analyses due to extra hypotheses are also coded as deviations.

preregistration plan, we coded this aspect as no deviation. In line with Claesen et al. (2021), accessibility was rated for all preregistrations, minimal methodological detail was rated for all preregistrations that passed the accessibility criteria, and adherence was assessed for all preregistrations that passed the exclusion criteria.

Given the remaining subjectivity in the coding scheme, we double-coded the deviations from preregistrations with a second coder. For the IO Psychology preregistrations, the resulting inter-rater reliability was substantial (123 of 150 codes were identical, $\kappa = .62$; Landis & Koch, 1977). More specifically, for all 25 IO Psychology preregistrations, the coders agreed in 16 to 23 out of 25 cases across the six aspects: hypotheses (21 agreements), variables (23), sample size (16), exclusion criteria (23), procedures (20) and analyses (20). All deviations between the coders were discussed until the coders found a consensus.

The lower agreement regarding sample sizes was due to cases where sample sizes were not applicable (e.g., reviews, meta-analyses). Here, the first coder coded it as ‘not applicable’, while the second coder coded it as ‘no deviation’. However, we of course resolved this inconsistency when discussing the coding.

For the *Psychological Science* preregistrations, the resulting inter-rater reliability was moderate (121 of 150 codes were identical, $\kappa = .44$; Landis & Koch, 1977). More specifically, for all 25 *Psychological Science* preregistrations, the coders agreed in 18 to 22 out of 25 cases across the six aspects: hypotheses (18 agreements), variables (22), sample size (19), exclusion criteria (22), procedures (19) and analyses (21). Again, all deviations between the coders were discussed until the coders found a consensus.

For each aspect that deviates from the preregistration, we coded whether the deviations were disclosed or not disclosed. We coded an aspect as ‘all deviations disclosed’ if the authors clearly acknowledge all deviations in the main text, the notes, the supplemental material and/or the Open Science Practices disclosure (e.g., by writing ‘we deviate from our preregistration by doing XY’). By contrast, we coded an aspect as having ‘at least one undisclosed deviation’ if the authors do not clearly acknowledge all deviations in the main text, the notes, the supplemental material and/or the open practices disclosure. If a deviation was only visible through a shared statistical analysis code (i.e., there is no explicit mention of this deviation), this was also coded as undisclosed deviation.

Finally, as additional analysis, we aim to obtain the first evidence on the relationship between disclosed and undisclosed deviations in IO Psychology and QRPs. Therefore, for each aspect with disclosed and undisclosed deviations from the preregistration that we found, we also coded whether the deviations may be (vs. are likely not) associated with QRPs (see also Heirene et al., 2021; Toth et al., 2020). Deviations that are likely not associated with QRPs are, for instance, changes due to errors in the preregistration, or having to terminate data collection due to extenuating circumstances. By contrast, deviations that may be associated with QRPs are, among others, failures to report preregistered hypotheses, reporting of non-preregistered hypotheses, altering of preregistered hypotheses (i.e., HARKing), adding or dropping data/conditions/covariates/dependent variables to avoid null results, (falsely) rounding *p*-values, or modifying measures after data collection.

RESULTS

Preregistrations in IO Psychology

First, to answer how many published articles in IO Psychology have a preregistration (RQ1), we provide descriptive statistics for an estimate of the number of published articles with preregistration in IO Psychology as well as the proportion of published articles with preregistration (i.e., the number of published articles with preregistration in IO Psychology divided by the number of all published articles in IO Psychology). We found that only $N=91$ articles in our IO Psychology sample had a preregistration at all ($n=3$ from *JOOP*). These articles were published starting from 2017 with three exceptions (one article was published in 2012 and two were published in 2013). [Figure 2](#) gives an overview of the number of articles with preregistration in IO Psychology per year.

Interestingly, the 91 articles with preregistration from IO Psychology were published in only 13 different journals (i.e., roughly half of our sample of 27 included journals, see [Table 1](#)). Specifically, more than half of the articles (i.e., $n=49$ articles, 53.85%) were published in only two different journals (i.e., *Organizational Behavior and Human Decision Processes* and *Journal of Applied Psychology*). [Table 3](#) provides further insights into the distribution of preregistrations across different study characteristics, such as topic and type of study. Interestingly, most studies that are preregistered are from Organizational Psychology and are online experiments (for a deeper insight into study designs and topics included in our IO Psychology sample, see [Table S3](#)). To assess the specificity and quality of the preregistrations in IO Psychology, we rated their accessibility and minimal methodological detail.⁹ Of all $N=91$ preregistrations, 83 (91.21%) passed the accessibility criteria, and 66 (72.53%) passed the accessibility and the minimal methodological detail criteria. Thus, overall, most preregistrations in IO Psychology are accessible and report at least some methodological details.

As shown in [Figure 2](#), there is an increase of articles with preregistration in IO Psychology in the last years,¹⁰ with a peak of 31 articles with preregistration published in 2023.

However, the proportion of articles with preregistration among all published articles is still negligible. After the replication crisis became apparent in 2015, the first articles with preregistration were published in 2017. Therefore, we conducted another electronic keyword search within *Web of Science* to identify all published studies, this time limiting the timeframe to 2017–2023 (search string: IS = *insert journal ISSNs* AND PY = 2017–2023, see [Table 4](#)). Overall, there were 122,227 published articles in IO Psychology between 2017 and 2023 (including studies for which it is not applicable to preregister, such as theory articles, commentaries, or editorials). This allowed us to calculate the proportion of articles with a preregistration among all published articles from 2017 to 2023: Only 0.70% of all studies published between 2017 and 2023 have a preregistration (1.0% for studies published in *JOOP*).¹¹ [Table 4](#) shows the development of the proportion of articles with preregistration in IO Psychology. [Figure 3](#) aptly illustrates this proportion: Preregistrations are barely visible in the black area.

Deviations from preregistrations in IO Psychology

In view of RQ2, we found that 18 of the 25 included studies from the IO Psychology sample (i.e., 72%) deviated from their preregistration in at least one aspect. We found ten deviations in the aspect ‘hypotheses/RQs’, ten in ‘procedure’, eight in ‘analyses’, seven in ‘variables/covariates’, seven

⁹We thank an anonymous reviewer for this valuable suggestion.

¹⁰While this increase may appear as a jump in preregistered articles, it remains relatively small and may be linked to influential papers that drew attention to preregistration, such as Banks et al. (2019) and Nosek et al. (2018).

¹¹We did not check for duplicate records in the total number of published studies. However, our electronic search via *Web of Science* was unlikely to include many duplicates. During the screening of preregistered studies, we did check for duplicate records and found the number of duplicate records was minimal and only affected one journal (*Work*, see [Figure 1](#)).

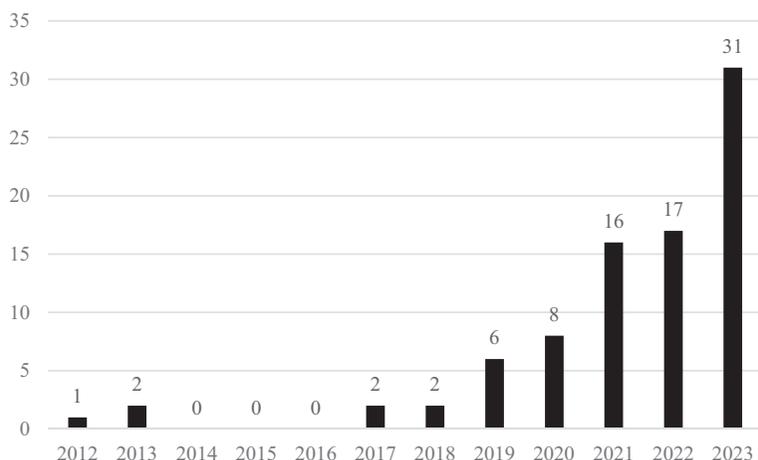


FIGURE 2 Number of articles with preregistration in IO Psychology per year. Data for 2024 are not depicted as the year has not yet concluded.

TABLE 3 Distribution of preregistrations across different study characteristics.

Study characteristics	<i>N</i>
Study topic	
Industrial Psychology	13
Organizational Psychology	71
Both	7
Overall	91
Study type	
Survey	17
Secondary data analyses	9
Experimental field study	14
Correlational field study	1
Online experiment	121
Lab experiment	17
Meta-analysis	10
Review	2
Overall	191

Note: We identified 91 articles that included at least one preregistration. However, since most were multi-study papers with multiple preregistered studies, we coded 91 articles based on their topic but 191 studies based on their study type.

in ‘sample size’ and four in ‘exclusion criteria’. [Figures 4](#) and [5](#) offer more detailed insights in the distribution of deviations across different methodological aspects ([Figure 4](#)) and across the included studies ([Figure 5](#)).

In an exploratory manner, we also checked potential predictors of the adherence to a preregistration. We included four continuous variables (i.e., impact factor, number of authors, number of studies per article, and publication year) and three categorical variables (i.e., journal, study design, and study topic). We will report the results for the continuous possible predictors of adherence in the following.

We found no correlation of adherence (i.e., number of aspects without deviations from the preregistrations) and (i) the journals' impact factors, (ii) the number of authors, (iii) the number of studies per article or (iv) the publication year, all $p_{\text{psi}} > .218$. We also tested whether our three categorical variables

TABLE 4 Proportion of articles in IO Psychology with preregistration.

Year	Published articles	Articles with preregistration	Articles with preregistration
	Cumulated <i>N</i>	Cumulated <i>N</i>	Cumulated %
2017	1.268	5	0.39
2018	2.535	7	0.28
2019	4.072	13	0.32
2020	5.901	21	0.36
2021	8.153	37	0.45
2022	10.325	54	0.52
2023	12.227	85	0.70

Note: The data for the *N* of published articles and the *N* of articles with preregistration are aggregated as cumulative totals. For instance, there were a total of *N* = 1.268 articles published in 2017, and a combined total of *N* = 2.535 articles published in both, 2017 and 2018. Further, data for 2024 are not depicted as the data for this year were not fully available at the time of data analysis.

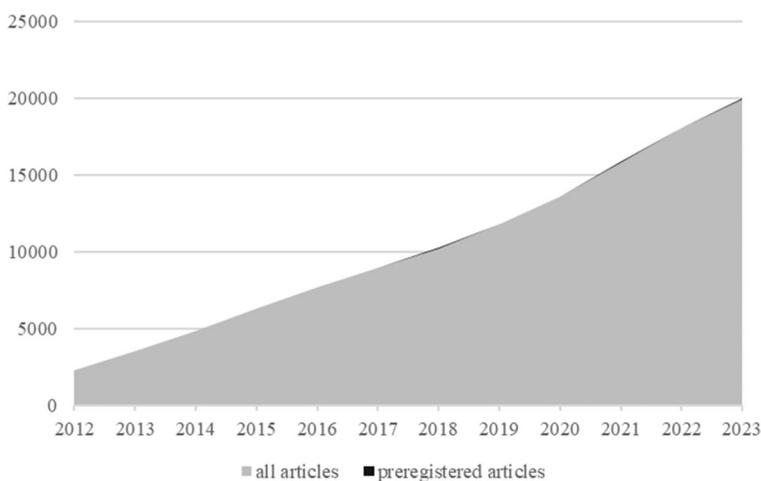


FIGURE 3 Stacked area chart of articles in IO Psychology, divided into articles without and with preregistration. Data for 2024 are not depicted as the year had not concluded at the time of data collection.

‘journal’, ‘study design’ and “study topic” were predictors of adherence. However, due to the small number of preregistrations per cell (ranging from $n=1$ to 5 for ‘journal’, $n=1$ to 14 for ‘study design’, and $n=1$ to 6 for ‘study topic’), it is unclear to which extent the variation we observed reflects random variation versus systematic differences between journals. We therefore report the results of these potential categorical predictors of adherence in more detail only in Tables S4–S6.

To answer our third and main research question RQ3 (i.e., *How many preregistered studies in IO Psychology do not report at least one extant deviation from their preregistration in the published article?*) we first provide descriptive statistics for the proportion of studies that deviate from their preregistration but do not report it in the published article (i.e., the number of studies from the IO Psychology sample with at least one undisclosed deviation from their respective preregistrations divided by the number of all studies included in our IO Psychology sample). Second, we will also provide descriptive statistics of the specific areas where the studies deviate from their preregistrations without reporting it (i.e., hypotheses/RQs, variables/covariates, sample size, exclusion criteria, procedure, or analysis).

Overall, there were 17 studies from our IO Psychology sample (i.e., 68%) with at least one undisclosed deviation from their preregistration. We found eight undisclosed deviations in the aspect ‘hypotheses/RQs’, eight in ‘procedure’, six in ‘analyses’, six in ‘variables/covariates’, three in ‘sample

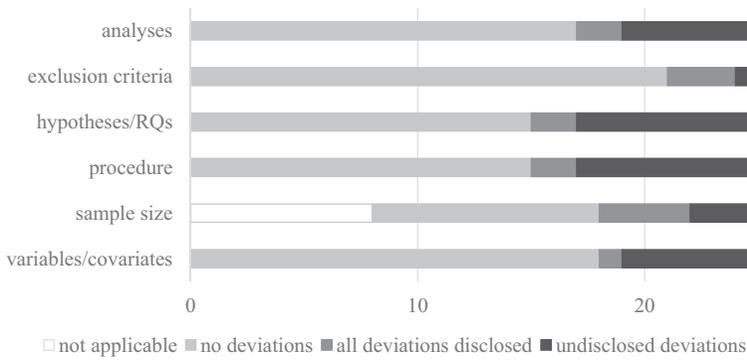


FIGURE 4 Overview of adherence per methodological aspect (IO Psychology). We coded sample size as ‘not applicable’ if no sample size was preregistered (e.g., for meta-analyses, reviews, secondary data analyses).

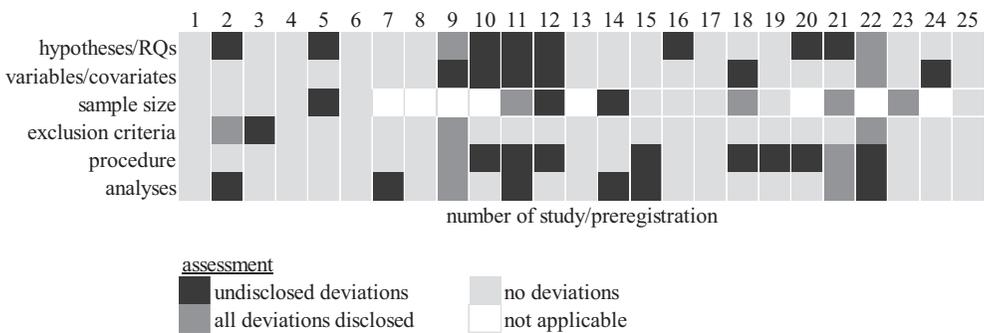


FIGURE 5 Tile plot of the assessment of each methodological aspect per study (IO Psychology). We coded sample size as ‘not applicable’ if no sample size was preregistered (e.g., for meta-analyses, reviews, secondary data analyses).

size’ and one in ‘exclusion criteria’ (see Figure 5). Taken together, the studies from our IO sample had on average $M=1.84$ ($SD=1.72$) aspects with deviations, divided into $M=0.56$ ($SD=1.12$) aspects with disclosed deviations, and $M=1.28$ ($SD=1.21$) aspects with undisclosed deviations.

Again, in an exploratory manner, we also tested potential predictors of the disclosure of deviations. Again, we included four continuous variables (i.e., impact factor, number of authors, number of studies per article, and publication year) and three categorical variables (i.e., journal, study design, and study topic). We will report the results for the continuous possible predictors of disclosure in the following.

We found no correlation between disclosure (i.e., the number of aspects with undisclosed deviations) and (i) the journals’ impact factors, (ii) the number of authors, (iii) the number of studies per article or (iv) the publication year, all $ps > .101$. We also tested whether our three categorical variables ‘journal’, ‘study design’ and ‘study topic’ were predictors of disclosure. However, once again, due to the small number of preregistrations per cell (ranging from $n=1$ to 5 for ‘journal’, $n=1$ to 14 for ‘study design’ and $n=1$ to 6 for ‘study topic’), it is unclear to which extent the variation we observed reflects random variation versus systematic differences between journals. We therefore report the results of our potential predictors of disclosure in more detail only in Tables S4–S6.

Comparing the IO Psychology and the *Psychological Science* samples

In the following, we compare our findings from IO Psychology with the current study sample from *Psychological Science* to answer RQ4: *Are there more undisclosed deviations from preregistrations in published IO*

Psychology studies than in a random sample of currently published studies from Psychological Science? In our sample of preregistered studies from *Psychological Science*, 17 of the 25 reviewed studies (i.e., 68%) deviated from their preregistration in at least one aspect. Further, there were 15 studies (i.e., 60%) with at least one undisclosed deviation from their preregistration. Overall, the studies had on average $M = 1.20$ ($SD = 1.26$) deviations, divided into $M = 0.24$ ($SD = 0.52$) disclosed deviations, and $M = 1.08$ ($SD = 1.19$) undisclosed deviations. As preregistered, we conducted a chi-squared test¹² to compare the number of undisclosed deviations in preregistered, published IO Psychology studies with the number of undisclosed deviations in current, published and preregistered *Psychological Science* studies. We found no difference between the two samples in their number of undisclosed deviations, Fisher's exact test $p = .973$. The corresponding Bayes Factor (BF_{01}) was estimated as $BF_{01} = 9.57$, indicating substantial evidence in favour of the null hypothesis, which suggests no difference between the two samples, over the alternative hypothesis (i.e., a difference between samples). This suggests that the data are approximately 9.57 times more likely under the null hypothesis than under the alternative hypothesis. As additional, non-preregistered and exploratory analyses, we also found no difference between the two samples concerning the number of studies that deviated from their preregistration in at least one aspect, Fisher's exact test $p = .448$, $BF_{01} = 2.84$, nor concerning the number of disclosed deviations, Fisher's exact test $p = .576$, $BF_{01} = 1.54$. We offer more detailed insights into the distribution of deviations across different methodological aspects and across the included *Psychological Science* studies in [Figures S1](#) and [S2](#).

Deviations' relationship with QRPs

Finally, we were interested in how many disclosed and undisclosed deviations from preregistrations in published IO Psychology studies might be (vs. are likely not) associated with QRPs. As described in the methods section, we coded six aspects for each of our 25 included studies from IO Psychology for deviations versus no deviations (see [Table 2](#)). Thus, in total, we examined 150 aspects and found a total of 46 deviations, divided into 32 undisclosed and 14 disclosed deviations. Importantly, the vast majority of these deviations do not seem to be linked to QRPs. Most deviations appeared to be due to unforeseen circumstances (i.e., not being able to recruit the preregistered sample size), learning (i.e., choosing a more suitable statistical analysis), suggested changes during the review process (i.e., moving some hypotheses into the online supplement), or small errors in the preregistration (i.e., wording errors) or during data collection (i.e., participants completed the study more than once). Please note that it was only possible to unambiguously evaluate the reasons for deviations when they were explicitly disclosed. In all other cases, some ambiguity remains in assessing the authors' rationale for deviating from their preregistration. However, we found it reasonable to assume that researchers were rather unlikely to engage in QRPs if deviations were minor—for example, if only the wording of a hypothesis was changed, exploratory research questions were added, a complete list of exploratory measures was missing (while predictor and criterion variables remained the same), or the sample size was slightly larger (+5%) in an online experiment (e.g., conducted via Prolific). [Table 5](#) offers detailed insights into the potential reasons for the 26 undisclosed deviations that are unlikely to be linked to QRPs (for details on the [undisclosed] deviations probably related to QRPs, see below). Most of them (ten of 26) seem to be due to either learning and/or a small error in the preregistration.

For the disclosed deviations, we found two instances that could be interpreted as associated with QRPs. Specifically, in both instances, an open-ended research question from the preregistration was transformed into a directional hypothesis in the manuscript. However, these changes were clearly described in the manuscripts as a result of learning processes after gaining a better understanding of the literature following the preregistrations.

¹²As the expected frequencies in our sample were smaller than five (Field, 2013), we used Fisher's exact test (Fisher, 1922). However, results did not change when conducting a Pearson-chi-square test.

TABLE 5 Coding of undisclosed deviations in the IO Psychology sample regarding QRPs.

Aspects	Deviation	Why not a QRP?	Coding
Hypotheses/RQs			
1	Wording changed + hypothesis missing in Manuscript	Only wording was changed, not the meaning of the hypothesis + missing hypothesis and analysis is reported in online supplement	Wording changed + shift to online supplement
2	Wording changed (an overall mediation hypothesis was split into separate hypotheses)	Only wording was changed	Wording changed
3	An RQ was added + the wording was changed	Only addition of RQ, not hypothesis + wording was changed	Exploratory RQ added + wording changed
4	Two RQs in the preregistration, four RQs in the manuscript	Only addition of RQs	Exploratory RQ added
5	Wording changed (an overall mediation hypothesis was split into separate hypotheses)	Only wording was changed	Wording changed
Variables/Covariates			
6	Name of a stimulus was changed	The names were described as 'ethnically prototypical names validated by past research', so we assume this change was based on gaining a better understanding of past research	Learning or small error in the preregistration
7	A preregistered variable is missing in the manuscript	It was an exploratory measure	Omission of an exploratory measure
8	Variable added following a first qualitative study	We assume this change was based on gaining a better understanding of the phenomenon after the authors had conducted a qualitative study (i.e., interviews)	Learning
9	Many more details measured than preregistered, but in general, predictor and criterion variables are the same	Complete list of exploratory measures was missing in the preregistration (while predictor and criterion variables remained the same)	Exploratory measures added
Sample size			
10	Differences in sample sizes and conditions between preregistration and manuscript unclear, sample size seems to be slightly (but more than 5%) smaller	A stopping rule was preregistered (stopping the survey after maximum 30 days), likely the cause of the deviation + although the overall preregistered N was not reached, the preregistered N per condition was reached	Slightly smaller sample size due to unforeseen circumstances
11	Sample size was slightly (but more than 5%) larger	They preregistered only a minimum, study was conducted via Cloud-Research (i.e., authors probably did not have full control over sample size)	Slightly larger sample size in an online experiment
12	Sample size was slightly (but more than 5%) larger	Study was conducted via Prolific (i.e., authors probably did not have full control over sample size)	Slightly larger sample size in an online experiment

(Continues)

TABLE 5 (Continued)

Aspects	Deviation	Why not a QRP?	Coding
Procedure			
13	Recruiting strategies were added (e-mail vs. business social media, e-mail, or telephone)	The recruiting strategy is unlikely to change the study's outcomes	Learning or small error in the preregistration
14	A manipulation check was added	Including a manipulation check is a standard approach + no additional exclusions based on the manipulation check	Learning or small error in the preregistration
15	Likert scale was changed (1 = very unlikely to 6 = very likely vs. 1 = strongly disagree to 7 = strongly agree)	After checking the source of the scale, we found out that the Likert scale reported in the manuscript is consistent with the original scale used	Small error in the preregistration
16	A qualitative aspect was added to the study	The qualitative aspect was added to answer an RQ	Change in exploratory approach
17	Deviations in used electronic databases and in search string	The changes in the search strategy are unlikely to bias the study's outcomes	Learning or small error in the preregistration
18	Search string was slightly modified (i.e., lik vs. liking)	The minimal change in the search strategy is unlikely to change the study's outcomes	Learning or small error in the preregistration
19	Changed time between two waves from one to two days	Minimal change, unlikely to change the study's outcomes	Learning or small error in the preregistration
20	Search string was slightly modified (i.e., added agil princip and agil value)	The change in the search strategy is unlikely to bias the study's outcomes	Learning or small error in the preregistration
Analyses			
21	An ANOVA was preregistered, the manuscript reports only the interaction effect and the eta-squared	Slight deviation in the analysis reporting format (<i>f</i> instead of <i>F</i> , no explicit ANOVA table), but its content is consistent with the preregistration	Content consistent with the preregistration
22	Qualitative analysis was added	The qualitative analysis was added to answer an RQ	Change in exploratory approach
23	The authors log transformed their estimates	Standard approach in meta-analysis (with odds ratio or hazard ratio), probably contributed to the validity of the analysis	Learning or small error in the preregistration
24	Change in analysis of manipulation check (<i>t</i> -test vs. $2 \times 2 \times 2$ ANOVA)	All main effects are reported and the preregistered effect is also highly significant	Content consistent with the preregistration
25	Missing analysis of a hypothesis (paired <i>t</i> -test)	The associated hypothesis was omitted from the manuscript, we coded this as a QRP in the aspect 'Hypotheses/RQs'; here in the aspect 'Analyses', it is coded as subsequent error	Subsequent error (because of omitted hypothesis)
26	Preregistered to report σ^2 and f^2 , but τ^2 is missing	The f^2 results were clearly reported and interpreted so that the deviation has no substantive impact on the presentation of the results, results of f^2 are very clear	Small omission in the manuscript

Regarding undisclosed deviations, we found six instances that could (or perhaps even should be) perceived as related to QRPs. Three of these cases involve changes to the hypotheses. In one case, part of a hypothesis was omitted, while in another, an entire hypothesis was removed. In the third case, studying a supplementary dependent variable from the preregistration was introduced as testing a new hypothesis in the manuscript. Further, in two cases, a preregistered predictor variable was omitted from the manuscript (and also not reported in an online supplement). In the last case, participants were excluded based on a manipulation check, leading to an exclusion of over a quarter of the data. Although such an exclusion criterion may be reasonable, it was not preregistered, and the deviation is not mentioned in the manuscript. Because the authors shared their data, we could rerun their analyses while including the previously excluded participants and found that the authors' results were no longer statistically significant. Consequently, this change in statistical significance, combined with the undisclosed deviation from the preregistration, could be interpreted as representing a QRP.

DISCUSSION

We were interested in (i) the general extent to which research in IO Psychology is preregistered, (ii) how it handles deviations, (iii) in differences between different fields of research and (iv) the relationship between undisclosed deviations and QRPs. Despite a small increase in articles with preregistration at a rather low level in the last years, we found that research in IO Psychology is, with few exceptions, currently not preregistered. Although preregistration has been introduced to Psychology for almost a decade (Nosek et al., 2015), IO Psychology as a research field obviously has yet to adopt this OSP. Future research should examine reasons and potential barriers that hinder researchers in IO Psychology from preregistering their studies (for a first survey in Psychology, see Spitzer & Mueller, 2023).

It is, however, encouraging that IO Psychologists who *do* preregister their studies do this just as well as Psychologists in other fields. Furthermore, our findings suggest that there are comparable rates of undisclosed deviations across different fields of research. We found that 68% of our included IO Psychology studies had undisclosed deviations, a comparable rate to what Heirene et al. (2021) found in their sample of gambling studies. Similarly, in our sample of studies published in *Psychological Science*, 60% included undisclosed deviations. In studies with 'first generation preregistrations' in *Psychological Science*, Claesen et al. (2021) found that 89% included undisclosed deviations. Their sample included studies published from 2015 to 2017, while our sample included studies published from 2017 to 2024. This may indicate that researchers are more consequent in disclosing preregistration deviations (or/and in adhering to their preregistrations). However, we were also not as strict in coding some aspects as Claesen et al. (2021; e.g., we did not flag small deviations from the preregistered sample size as deviations, see our methods section). Another encouraging finding of our study is that, in general, the undisclosed deviations in IO Psychology do not seem to be associated with QRPs. On the contrary, most deviations seemed to be due to unforeseen circumstances or minor, harmless errors.

Influence of journal policies on preregistration practices

As mentioned before, more than half of the preregistered studies (i.e., $n=49$ studies, 53.85%) were published in only two journals: *Organizational Behavior and Human Decision Processes* and the *Journal of Applied Psychology*. Interestingly, those journals mention preregistrations prominently on their webpages. *Organizational Behavior and Human Decision Processes* requires authors of all empirical manuscripts to include a research transparency statement. Specifically, authors aspiring to publish in the journal need to attach a mandatory 5-Item Submission Checklist that includes the specific statement that all deviations from any preregistered plans are reported. However, even for the articles published here, we found

some undisclosed deviations. Similarly, since November 2021, all articles submitted to the *Journal of Applied Psychology* must include a subsection in their method section titled ‘Transparency and Openness’ (requiring authors to state whether the study design and hypotheses were preregistered and, if so, how to access the preregistration). The journals’ support of and request for preregistrations therefore seem to increase the likelihood that authors will actually preregister their studies (for comparable results regarding replication studies, see Torka et al., 2023). This aligns with the findings by Toth et al. (2020), which suggest that the policies of the top journals in their field are a huge motivational force for researchers.

According to theorizing on organizations by DiMaggio and Powell (1983), an institutional driver of change results from *institutional isomorphism*. This means that organizations, like journals, align with each other due to the following three isomorphic processes: (a) coercive, (b) mimetic and (c) normative processes. Thus, if influential journals (like *JAP* or *OBHDP*) implement preregistrations in their journal guidelines, other journals are expected to follow their lead and also implement preregistrations. They would then introduce preregistration not necessarily out of conviction but also simply out of institutional pressure or imitation if they are uncertain about OSPs. Thus, the so-called A journals like *OBHDP* or *JAP* in IO Psychology are especially important in initiating change towards a more systematic implementation of preregistrations in the field.

Challenges and potentials of preregistration in qualitative research

As mentioned in the Methods section, we did not observe any qualitative preregistrations in our two samples. Furthermore, while four of the $N=91$ IO Psychology articles with a preregistration included a qualitative study, only one of them was preregistered.¹³ We believe this may be due to the current norms and expectations in the broader field, where OSPs have been more widely adopted among quantitative researchers. In fact, there is an ongoing debate about whether preregistration is a valid tool for qualitative studies. There are researchers who consider preregistration unhelpful, unnecessary, or even undesirable for qualitative research (Coffman & Niederle, 2015; Humphreys et al., 2013). Preregistrations in qualitative research are also often seen as incompatible with qualitative research’s (a) aims, (b) needed flexibility and (c) valued subjectivity. Thus, it could be argued that, if it is not the aim of qualitative research to test theory, if key design elements often evolve throughout the research process, and if findings are based on the researcher’s subjective interpretation, ‘it seems impossible to preregister a qualitative study’ (Haven & Van Grootel, 2019, p. 235).

However, the interpretive flexibility that qualitative scholars enjoy only increases the need for transparency (Moravcsik, 2014). As already mentioned in our theory section, preregistration can be a valuable step towards greater transparency also in qualitative research. Therefore, it would be beneficial if more researchers participated in the debate about preregistration in qualitative research and, ultimately, preregistered their qualitative studies.

Practical implications

Practical recommendations for researchers, reviewers and editors

Preregistration is still the exception rather than the norm in IO Psychology. To accelerate the implementation of preregistrations, the field’s research culture must change its reward structure, shifting the focus from significant results to rigorous and transparent research. Editors can support this

¹³It was one of our own studies.

shift by explicitly endorsing preregistration as a valuable practice on their journals' homepages, by offering Open Science Badges to recognize preregistered studies and/or registered reports. As noted previously, a field's A journals are especially influential in shaping disciplinary norms and can therefore serve as key institutional drivers of change (see DiMaggio & Powell, 1983). Furthermore, reviewers can help normalize preregistration by routinely inquiring whether a study's hypotheses or design were preregistered, thereby increasing visibility and encouraging the adoption of this practice. Notably, the studies that adhered to their preregistration in every aspect were *not* only those studies that preregistered the bare minimum of details. We observed a wide range of specificity in the coded preregistrations (see also Allen & Mehler, 2019; Bakker et al., 2020). Despite preregistering a study, researchers still have many degrees of freedom, such as preregistering only the dependent and independent variables without control variables, or preregistering variables without specifying their operationalization (cf. Heirene et al., 2021). Even vague preregistrations are, however, helpful as they reduce flexibility in making decisions *after* collecting and seeing the data, and increase the transparency of decisions (Simmons et al., 2021). Thus, we encourage IO psychologists to preregister at least the essential methodological detail, including hypotheses, dependent and independent variables (predictor and criterion variable), planned sample size, and planned analyses to test the hypotheses.

Furthermore, matching studies to their preregistration was sometimes challenging in our analysis, particularly for multi-study papers, for OSF projects with multiple preregistrations, or when the study name in the preregistration did not match the name in the manuscript (e.g., Study 2 in the preregistration was labelled as Study 1 in the manuscript). Therefore, echoing others who conducted similar studies on preregistrations (Claesen et al., 2021; Heirene et al., 2021), we recommend including a direct link to the preregistration (rather than the overall project page) in the manuscript.

As previously mentioned, authors in IO Psychology who preregister their studies appear to perform this task just as well as researchers in other fields. Thus, preregistering studies is probably as suitable and as easy to learn for researchers in IO Psychology as it is for researchers from other psychological disciplines, even though the preregistration of studies is not yet a standard in IO Psychology. It may even be a motivating experience. Indeed, a survey of psychologists revealed that motivation to preregister again had increased, instead of decreased, for most participants who had already preregistered before (Spitzer & Mueller, 2023). To contribute to and support the establishment of preregistrations as a standard OSP in IO Psychology, we compiled resources for conducting a preregistration in Table 6.

Deviations as normal part of the research process

As a key finding of our research, we found that more than two thirds of studies do deviate from their preregistration. Thus, it is common and normal to deviate, which may be due to various reasons such as unforeseen circumstances, gaining new knowledge, or suggestions during the review process. This finding has practical implications for two audiences: authors on the one hand and reviewers and editors on the other. Regarding authors, we hope that our findings contribute to alleviating their fear of (failures in) preregistrations and show that 'pre-registrations are a plan, not a prison' (DeHaven, 2017, Title). Doing a preregistration does not bind researchers; they can still adapt their research for valid reasons. Indeed, there are three different stages of research when preregistration plans can be modified: (i) prior to data collection, (ii) during data collection or (iii) after data collection (for more details, see the information about withdrawing and updating preregistrations in Table 6). Taken together, preregistration is not meant to restrict researchers rigidly. Instead, it is designed to promote transparency and flexibility, allowing researchers to update their plans or acknowledge deviations as long as these changes are clearly documented.

The finding that deviating from a preregistration is common has also practical implications for reviewers and editors. They should perceive deviations from preregistrations as a normal occurrence and thereby normalize 'failure', rather than criticizing authors for them. In fact, their normalizing of these

TABLE 6 Resources for conducting a preregistration.

Content	Resources
Basic and helpful information about preregistration	<ul style="list-style-type: none"> • Nosek et al. (2018) • Nosek et al. (2019) • Simmons et al. (2021) • https://www.cos.io/initiatives/prereg
Survey studies about preregistrations	<ul style="list-style-type: none"> • Sarafoglou et al. (2022) • Spitzer and Mueller (2023)
Preregistration forms and templates, e.g., <ul style="list-style-type: none"> • for quantitative and qualitative research • for systematic reviews and meta-analyses • for projects that use pre-existing data sets 	<ul style="list-style-type: none"> • https://osf.io/zab38/ • https://aspredicted.org/
Recommendations for preregistering studies	<ul style="list-style-type: none"> • Claesen et al. (2021) • Heirene et al. (2021)
Information about withdrawing and updating preregistrations	<ul style="list-style-type: none"> • https://help.osf.io/article/152-withdraw-a-registration • https://www.cos.io/blog/preregistration-plan-not-prison • https://help.osf.io/article/110-introduction-to-updating • https://help.osf.io/article/112-starting-an-update
Recommendations on whether and when to deviate from a preregistration	<ul style="list-style-type: none"> • Lakens (2024) • Willroth & Atherton (2024)
Templates for deviations	<ul style="list-style-type: none"> • Willroth & Atherton (2024): https://docs.google.com/document/d/1m7k53z38w18AJe56ucftunnHuFM7wDlMFjpoGenwN6k/edit?usp=fatal-error-notifier-usp • Mellor et al. (2023): https://osf.io/yrvcg

deviations can help create a more open research environment. A survey found that researchers worry a preregistration might restrict them to their preregistered plan and feel uncertain about how to proceed if their study design needs to change (Toth et al., 2020). Thus, by communicating their understanding that deviations are part of the research process, reviewers and editors can encourage more researchers to adopt preregistrations. For example, editors could provide guidance on how to report preregistration deviations on their journal's homepage (e.g., within the submission guidelines). In addition, they could require authors to explicitly state whether, and to what extent, they adhered to their preregistration (for a guide on how editors can get started with Open Science, see Silverstein et al., 2024). As another example, reviewers should look for deviations from the preregistered plan and should point them out if the authors did not disclose them. However, as this would require additional effort from the reviewers, some journals¹⁴ (although not from Psychology) have already implemented so-called Open Science editors, whose task it is to promote and advance OSPs in the journal. Researchers may, in turn, benefit from preregistering during the review process. Research has shown that preregistration can help increase transparency and rigour in scientific reporting (Toth et al., 2020; see also Scheel et al., 2021) and that researchers perceive it as improving the quality of their projects and research processes (Sarafoglou et al., 2022; Toth et al., 2020). Additionally, based on personal experience, providing preregistrations during peer review may lead to positive feedback. Thus, preregistration may enhance perceived credibility and trust in findings among reviewers and readers (e.g., McKiernan et al., 2016; Nosek et al., 2018). However, systematic evidence on its broader impact remains limited. Future research is needed to

¹⁴See, for instance, the *European Journal of Political Research*.

examine how preregistration influences different factors, such as publication success, trust in findings and citation rates.

Limitations

Our estimate of 0.7% may slightly underestimate the proportion of preregistered studies. This is because we did not exclude studies where preregistrations are not applicable, such as theory articles, commentaries or editorials. Nevertheless, the total number of studies published between 2017 and 2023 that included a preregistration remained extremely low. Moreover, our estimate aligns with findings from four prominent organizational behaviour journals: Tenney et al. (2021) reported a preregistration rate of 0.8% between 2011 and 2019.

Further, although we preregistered a detailed coding scheme, the coding of adherence to a preregistration involved some subjectivity in judgements. In certain cases, we made a conscious choice not to code somewhat ambiguous decisions by authors as non-adherence. For instance, some exclusion criteria were not explicitly preregistered, such as excluding participants who (a) were unable to fully participate in the research study (e.g., they cancelled the study before completion or they were not able to participate due to developmental delays), (b) did not give informed consent, (c) did not correctly follow the study (due to their own fault, experimenter error or technical error) or (d) completed the study more than once. In these cases, where situations occurred that were obviously not anticipated by the authors (and at least partly could not have been anticipated), it seemed too strict to code a deviation.

However, there were other instances where we made decisions to code somewhat ambiguous decisions by authors as non-adherence. For example, we coded a deviation when the preregistered hypotheses were not reported in the manuscript, even if the discussion stated that preregistered hypotheses were tested. Given the subjectivity in the coding scheme, we double-coded the deviations from preregistrations by a second coder. As already mentioned in the method, the resulting inter-rater reliability was substantial for the IO Psychology preregistrations and moderate for the preregistrations from *Psychological Science*. Furthermore, there were instances where manuscripts deviated from their preregistration but reported the planned aspects in a supplement. For instance, some hypotheses and analyses were only reported in the online supplement. If authors disclosed this, we coded these cases as 'no deviation' because the preregistration was followed, albeit reported differently (i.e., not in the main manuscript). To be transparent concerning these decisions, we provide an overview of the related instances in [Figures S3a](#) and [S3b](#).

Conclusion

We hope that the results of our study encourage IO Psychology researchers to try their first preregistration—after all, preregistering studies can be learned and done quite effectively even if a scientific field has not implemented preregistration as established practice. Additionally, we recommend that authors are transparent about any deviations from their preregistrations. This transparency protects against any accusations of engaging in QRPs. Our findings demonstrate that deviations from preregistrations are a common part of the research process, reinforcing that preregistration should not be seen as overly restrictive. Making these insights more widely known could help reduce concerns about preregistration being a 'prison' that limits researchers' flexibility. We also show that preregistrations are more common in journals that actively promote them, highlighting the crucial role of journal policies in shaping research practices. By increasing awareness of the role journals play in fostering preregistration and normalizing deviations as part of the scientific process, we can help create a research culture that values both transparency and flexibility.

AUTHOR CONTRIBUTIONS

Ann-Kathrin Torka: Conceptualization; formal analysis; project administration; writing – original draft; methodology; data curation; writing – review and editing; investigation; visualization. **Joachim Hüffmeier:** Supervision; writing – review and editing; conceptualization; methodology; resources.

ACKNOWLEDGEMENT

Open Access funding enabled and organized by Projekt DEAL.

CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

Supporting Information, including the full data set, is publicly available under https://osf.io/7v2ya/?view_only=38bd429f83314f52903d8c8fb3456e6b.

ORCID

Ann-Kathrin Torka  <https://orcid.org/0000-0002-8259-9867>

Joachim Hüffmeier  <https://orcid.org/0000-0002-0490-7035>

REFERENCES

- Agnoli, F., Wicherts, J. M., Veldkamp, C. L. S., Albiero, P., & Cubelli, R. (2017). Questionable research practices among Italian research psychologists. *PLoS One*, *12*(3), e0172792. <https://doi.org/10.1371/journal.pone.0172792>
- Allen, C., & Mehler, D. M. (2019). Open science challenges, benefits and tips in early career and beyond. *PLoS Biology*, *17*(5), e3000246. <https://doi.org/10.1371/journal.pbio.3000246>
- Ansari, S., Wijen, F., & Gray, B. (2013). Constructing a climate change logic: An institutional perspective on the “tragedy of the commons”. *Organization Science*, *24*(4), 1014–1040. <https://doi.org/10.1287/orsc.1120.0799>
- Artner, R., Verliefde, T., Steegen, S., Gomes, S., Traets, F., Tuerlinckx, F., & Vanpaemel, W. (2021). The reproducibility of statistical results in psychological research: An investigation using unpublished raw data. *Psychological Methods*, *26*(5), 527–546. <https://doi.org/10.1037/met0000365>
- Asendorpf, J. B., Conner, M., De Fruyt, F., De Houwer, J., Denissen, J. J. A., Fiedler, K., Fieder, S., Funder, D. C., Kliegl, R., Nosek, B. A., Perugini, M., Roberts, B. W., Schmitt, M., Vanaken, M. A. G., Weber, H., & Wicherts, J. M. (2013). Recommendations for increasing replicability in psychology. *European Journal of Personality*, *27*(2), 108–119. <https://doi.org/10.1002/per.1919>
- Bakker, M., Veldkamp, C. L., van Assen, M. A., Cromptvoets, E. A., Ong, H. H., Nosek, B. A., Soderberg, C. K., Mellor, D., & Wicherts, J. M. (2020). Ensuring the quality and specificity of preregistrations. *PLoS Biology*, *18*(12), e3000937. <https://doi.org/10.1371/journal.pbio.3000937>
- Banks, G. C., Field, J. G., Oswald, F. L., O’Boyle, E. H., Landis, R. S., Rupp, D. E., & Rogelberg, S. G. (2019). Answers to 18 questions about open science practices. *Journal of Business and Psychology*, *34*, 257–270. <https://doi.org/10.1007/s10869-018-9547-8>
- Banks, G. C., O’Boyle, E., Jr., Pollack, J. M., White, C. D., Batchelor, J. H., Whelpley, C. E., Abstron, K. A., Bennett, A. A., & Adkins, C. L. (2016). Questions about questionable research practices in the field of management: A guest commentary. *Journal of Management*, *42*(1), 5–20. <https://doi.org/10.1177/0149206315619011>
- Claesen, A., Gomes, S., Tuerlinckx, F., & Vanpaemel, W. (2021). Comparing dream to reality: An assessment of adherence of the first generation of preregistered studies. *Royal Society Open Science*, *8*(10), 211037. <https://doi.org/10.1098/rsos.211037>
- Coffman, L. C., & Niederle, M. (2015). Pre-analysis plans have limited upside, especially where replications are feasible. *Journal of Economic Perspectives*, *29*(3), 81–98. <https://doi.org/10.1257/jep.29.3.81>
- Crede, M., & Sotola, L. K. (2024). All is well that replicates well: The replicability of reported moderation and interaction effects in leading organizational sciences journals. *Journal of Applied Psychology*, *109*, 1659–1667. <https://doi.org/10.1037/apl0001197>
- DeHaven, A. (2017). *Preregistration: A plan, not a prison*. COS. <https://www.cos.io/blog/preregistration-plan-not-prison>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160.
- Eich, E. (2014). Business not as usual. *Psychological Science*, *25*(1), 3–6. <https://doi.org/10.1177/0956797613512465>
- Fanelli, D. (2012). Negative results are disappearing from most disciplines and countries. *Scientometrics*, *90*(3), 891–904. <https://doi.org/10.1007/s11192-011-0494-7>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications Ltd.
- Fisher, R. A. (1922). On the mathematical foundations of theoretical statistics. *Philosophical Transactions of the Royal Society of London*, *222*, 309–368. <https://doi.org/10.1098/rsta.1922.0009>

- Giner-Sorolla, R. (2012). Science or art? How aesthetic standards grease the way through the publication bottleneck but undermine science. *Perspectives on Psychological Science*, 7(6), 562–571. <https://doi.org/10.1177/1745691612457576>
- Götz, M., & O'Boyle, E. H. (2023). Cobblers, let's stick to our lasts! A song of sorrow (and of hope) about the state of personnel and human resource management science. *Research in Personnel and Human Resources Management*, 41, 7–92. <https://doi.org/10.1108/S0742-730120230000041004>
- Green, J., & Thorogood, N. (2014). *Qualitative methods for health research. Introducing qualitative methods* (3rd ed.). SAGE Publications.
- Hardwicke, T. E., Thibault, R. T., Kosie, J. E., Wallach, J. D., Kidwell, M. C., & Ioannidis, J. P. A. (2022). Estimating the prevalence of transparency and reproducibility-related research practices in psychology (2014–2017). *Perspectives on Psychological Science*, 17(1), 239–251. <https://doi.org/10.1177/1745691620979806>
- Hardwicke, T. E., & Vazire, S. (2024). Transparency is now the default at psychological science. *Psychological Science*, 35(7), 708–711. <https://doi.org/10.1177/09567976231221573>
- Haven, T. L., Errington, T. M., Gleditsch, K. S., van Grootel, L., Jacobs, A. M., Kern, F. G., Piñeiro, R., Rosenblatt, F., & Mokink, L. B. (2020). Preregistering qualitative research: A Delphi study. *International Journal of Qualitative Methods*, 19, 1609406920976417.
- Haven, T. L., & Van Grootel, D. L. (2019). Preregistering qualitative research. *Accountability in Research*, 26(3), 229–244. <https://doi.org/10.1080/08989621.2019.1580147>
- Heirene, R., LaPlante, D., Louderback, E. R., Keen, B., Bakker, M., Serafimovska, A., & Gainsbury, S. M. (2021). Preregistration specificity & adherence: A review of preregistered gambling studies & cross-disciplinary comparison. *PsyArXiv*. <https://doi.org/10.31234/osf.io/nj4es>
- Humphreys, M., De la Sierra, R. S., & Van der Windt, P. (2013). Fishing, commitment, and communication: A proposal for comprehensive nonbinding research registration. *Political Analysis*, 21(1), 1–20. <https://doi.org/10.1093/pan/mps021>
- John, L. K., Loewenstein, G., & Prelec, D. (2012). Measuring the prevalence of questionable research practices with incentives for truth telling. *Psychological Science*, 23(5), 524–532. <https://doi.org/10.1177/0956797611430953>
- Keener, S. K., Kepes, S., & Torika, A. K. (2023). The trustworthiness of the cumulative knowledge in industrial/organizational psychology: The current state of affairs and a path forward. *Acta Psychologica*, 239, 104005. <https://doi.org/10.1016/j.actpsy.2023.104005>
- Kepes, S., Keener, S. K., McDaniel, M. A., & Hartman, N. S. (2022). Questionable research practices among researchers in the most research-productive management programs. *Journal of Organizational Behavior*, 43(7), 1190–1208. <https://doi.org/10.1002/job.2623>
- Kepes, S., & McDaniel, M. A. (2013). How trustworthy is the scientific literature in industrial and organizational psychology? *Industrial and Organizational Psychology*, 6(3), 252–268. <https://doi.org/10.1111/iops.12045>
- Kern, F. G., & Gleditsch, K. S. (2017). Exploring pre-registration and pre-analysis plans for qualitative inference [working paper]. <https://tlp.de/nvb9i>
- Kerr, N. L. (1998). HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, 2(3), 196–217. https://doi.org/10.1207/s15327957pspr0203_4
- Lakens, D. (2024). When and how to deviate from a preregistration. *Collabra: Psychology*, 10(1), 117094. <https://doi.org/10.1525/collabra.117094>
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174. <https://doi.org/10.2307/2529>
- Maassen, E., van Assen, M. A., Nuijten, M. B., Olsson-Collentine, A., Wicherts, J. M., & Gnams, T. (2020). Reproducibility of individual effect sizes in meta-analyses in psychology. *PLoS One*, 15(5), e0233107. <https://doi.org/10.1371/journal.pone.0233107>
- Mazzola, J. J., & Deuling, J. K. (2013). Forgetting what we learned as graduate students: HARKing and selective outcome reporting in I–O journal articles. *Industrial and Organizational Psychology*, 6(3), 279–284. <https://doi.org/10.1111/iops.12049>
- McKiernan, E. C., Bourne, P. E., Brown, C. T., Buck, S., Kenall, A., Lin, J., & Yarkoni, T. (2016). How open science helps researchers succeed. *eLife*, 5, e16800. <https://doi.org/10.7554/eLife.16800>
- Mellor, D. T., Esposito, J., Hardwicke, T. E., Nosek, B. A., Cohoon, J., Soderberg, C. K., Kidwell, M. C., Clyburne-Sherin, A., Buck, S., DeHaven, A. C., & Speidel, R. (2023). Transparent changes template document. <https://osf.io/yrvcg>
- Merritt, A. C., Efron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass*, 4(5), 344–357. <https://doi.org/10.1111/j.1751-9004.2010.00263.x>
- Merton, R. K. (1942). A note on science and democracy. *Journal of Legal and Political Sociology*, 1(1-2), 115–126.
- Moravcsik, A. (2014). Trust, but verify: The transparency revolution and qualitative international relations. *Security Studies*, 23(4), 663–688. <https://doi.org/10.1080/09636412.2014.970846>
- Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., Buck, S., Chambers, C. D., Chin, G., Christensen, G., Contestabile, M., Dafoe, A., Eich, E., Freese, J., Glennerster, R., Goroff, D., Green, D. P., Hesse, B., Humphreys, M., ... Yarkoni, T. (2015). Promoting an open research culture. *Science*, 348(6242), 1422–1425. <https://doi.org/10.1126/science.aab2374>
- Nosek, B. A., Beck, E. D., Campbell, L., Flake, J. K., Hardwicke, T. E., Mellor, D. T., van 't Veer, A. E., & Vazire, S. (2019). Preregistration is hard, and worthwhile. *Trends in Cognitive Sciences*, 23(10), 815–818. <https://doi.org/10.1016/j.tics.2019.07.009>

- Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(11), 2600–2606. <https://doi.org/10.1073/pnas.1708274114>
- Nosek, B. A., Hardwicke, T. E., Moshontz, H., Allard, A., Corker, K. S., Dreber, A., Fidler, F., Hilgard, J., Kline Struhl, M., Nuijten, M. B., Rohrer, J. M., Romero, F., Scheel, A. M., Scherer, L. D., Schönbrodt, F. D., & Vazire, S. (2022). Replicability, robustness, and reproducibility in psychological science. *Annual Review of Psychology*, *73*(1), 719–748. <https://doi.org/10.1146/annurev-psych-020821-114157>
- O'Boyle, E. H., & Götz, M. (2022). Questionable research practices. In L. J. Jussim, J. A. Krosnick, & S. T. Stevens (Eds.), *Research integrity: Best practices for the social and behavioral sciences* (pp. 260–294). Oxford University Press. <https://doi.org/10.1093/oso/9780190938550.003.0010>
- Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, *349*(6251). <https://doi.org/10.1126/science.aac4716>
- Pashler, H., & Wagenmakers, E. J. (2012). Editors' introduction to the special section on replicability in psychological science: A crisis of confidence? *Perspectives on Psychological Science*, *7*(6), 528–530. <https://doi.org/10.1177/1745691612465253>
- Piñero, R., & Rosenblatt, F. (2016). Pre-analysis plans for qualitative research. *Revista de Ciencia Política*, *36*(3), 785–796. <https://doi.org/10.4067/S0718-090X2016000300009>
- Sarafoglou, A., Kovacs, M., Bakos, B., Wagenmakers, E. J., & Aczel, B. (2022). A survey on how preregistration affects the research workflow: Better science but more work. *Royal Society Open Science*, *9*(7), 211997. <https://doi.org/10.1098/rsos.211997>
- Scheel, A. M., Schijen, M. R., & Lakens, D. (2021). An excess of positive results: Comparing the standard psychology literature with registered reports. *Advances in Methods and Practices in Psychological Science*, *4*(2), 1–12. <https://doi.org/10.1177/25152459211007467>
- Silverstein, P., Elman, C., Montoya, A., McGillivray, B., Pennington, C. R., Harrison, C. H., & Syed, M. (2024). A guide for social science journal editors on easing into open science. *Research Integrity and Peer Review*, *9*(1), 2. <https://doi.org/10.1186/s41073-023-00141-5>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). A 21 word solution. *Dialogue: The Official Newsletter of the Society for Personality and Social Psychology*, *26*, 4–7. <https://doi.org/10.2139/ssrn.2160588>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2021). Pre-registration is a game changer. But, like random assignment, it is neither necessary nor sufficient for credible science. *Journal of Consumer Psychology*, *31*(1), 177–180. <https://doi.org/10.1002/jcpy.1207>
- Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: A key to the file-drawer. *Journal of Experimental Psychology: General*, *143*(2), 534–547. <https://doi.org/10.1037/a0033242>
- Soderberg, C. K., Errington, T. M., Schiavone, S. R., Bottesini, J., Thorn, F. S., Vazire, S., Esterling, K. M., & Nosek, B. A. (2021). Initial evidence of research quality of registered reports compared with the standard publishing model. *Nature Human Behaviour*, *5*(8), 990–997. <https://doi.org/10.1038/s41562-021-01142-4>
- Spitzer, L., & Mueller, S. (2023). Registered report: Survey on attitudes and experiences regarding preregistration in psychological research. *PLoS One*, *18*(3), e0281086. <https://doi.org/10.1371/journal.pone.0281086>
- Sterling, T. D. (1959). Publication decisions and their possible effects on inferences drawn from tests of significance—Or vice versa. *Journal of the American Statistical Association*, *54*(285), 30–34. <https://doi.org/10.1080/01621459.1959.10501497>
- Tenney, E. R., Costa, E., Allard, A., & Vazire, S. (2021). Open science and reform practices in organizational behavior research over time (2011 to 2019). *Organizational Behavior and Human Decision Processes*, *162*, 218–223. <https://doi.org/10.1016/j.obhdp.2020.10.015>
- Torka, A. K., Mazei, J., & Hüffmeier, J. (2023). Are replications mainstream now? A comparison of support for replications expressed in the policies of social psychology journals in 2015 and 2022. *Social Psychological Bulletin*, *18*, e9695. <https://doi.org/10.32872/spb.9695>
- Toth, A. A., Banks, G. C., Mellor, D., O'Boyle, E. H., Dickson, A., Davis, D. J., DeHaven, A., Bochantin, J., & Borns, J. (2020). Study preregistration: An evaluation of a method for transparent reporting. *Journal of Business and Psychology*, *36*, 553–571. <https://doi.org/10.1007/s10869-020-09695-3>
- van den Akker, O. R., Bakker, M., van Assen, M. A., Pennington, C. R., Verweij, L., Elsherif, M. M., Claesen, A., Gaillard, S. D. M., Yeung, S. K., Frankenberger, J. L., Krautter, K., Cockcroft, J. P., Kreuer, K. S., Evans, T. R., Heppel, F. M., Schoch, S. F., Korbacher, M., Yamada, Y., Albayrak-Aydemir, N., ... Wicherts, J. M. (2024). The potential of preregistration in psychology: Assessing preregistration producibility and preregistration-study consistency. *Psychological Methods*. Advance online publication. <https://doi.org/10.1037/met0000687>
- van den Akker, O. R., van Assen, M. A., Enting, M., de Jonge, M., Ong, H. H., Ruffer, F., Ruffer, F., Schoenmakers, M., Stoevenbelt, A. H., Wicherts, J. M., & Bakker, M. (2023). Selective hypothesis reporting in psychology: Comparing preregistrations and corresponding publications. *Advances in Methods and Practices in Psychological Science*, *6*(3), 25152459231187988. <https://doi.org/10.1177/25152459231187988>
- Willroth, E. C., & Atherton, O. E. (2024). Best laid plans: A guide to reporting preregistration deviations. *Advances in Methods and Practices in Psychological Science*, *7*(1), 25152459231213802. <https://doi.org/10.1177/25152459231213802>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Appendix S1.

How to cite this article: Torka, A.-K., & Hüffmeier, J. (2025). Going off script: Exploring the reporting of preregistration deviations in Industrial and Organizational Psychology and their relationship with questionable research practices. *Journal of Occupational and Organizational Psychology*, 98, e70057. <https://doi.org/10.1111/joop.70057>