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Authors	Lakhzoum, Dounia;Egan, Ciara;O'Hora, Denis;Creaven, Ann-Marie;Noone, Chris;Matvienko-Sikar, Karen;Callaghan, Fran;Dahly, Darren;Breen, Ellen;Niamh, Niamh;Canny, Geraldine;Dunne, Siobhán;Schwamm, Hardy;Fitzgerald, Brian;Green, James A;Hayes, Ashling;Healy, Patrick;Kane, David;Moerman, Kevin Mattheus;Carey, Áine;Morley, Fiona;O'Flaherty, Roisin;Palmer, Brendan;Quinn, Ciarán;Roche, Joseph;Santos, Flávia H.;Simpson, Andrew;Straube, Armin;Toomey, Elaine;Hassan, Umair Ul;Bowman, Sarah;Warntjes, Immo;Wride, Mike;Lynott, Dermot
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University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Awareness and Adoption of Open Research Practices in Ireland: A Nationwide Survey Analysis

Dounia Lakhzoum[1], Ciara Egan[2], Denis O'Hora[2], Ann-Marie Creaven[3], Chris Noone[2], Karen Matvienko-Sikar[4], Fran Callaghan[1], Darren Dahly[4], Ellen Breen[5], Niamh Brennan[6], Geraldine Canny[7], Siobhán Dunne[6], Hardy Schwamm[4], Brian Fitzgerald[8], James Green[3], Ashling Hayes[3], Patrick Healy[3], David Kane[7], Kevin Mattheus Moerman[2], Áine Carey[1], Fiona Morley[1], Roisin O'Flaherty[1], Brendan Palmer[4], Ciarán Quinn[1], Joseph Roche[6], Flavia H. Santos[10], Andrew Simpson[9], Armin Straube[3], Elaine Toomey[2], Umair Ul Hassan[2], Sarah Bowman[6], Immo Warntjes[6], Michael Wride[3], Dermot Lynott[1]

Author affiliations
1 Maynooth University (Ireland)
2 University Galway (Ireland)
3 University Limerick (Ireland)
4 University College Cork (Ireland)
5 Dublin City University (Ireland)
6 Trinity College Dublin (Ireland)
7 South East Technological University (Ireland)
8 LERO (Ireland)
9 Royal College Surgeons Ireland (Ireland)
10 University College London (UK)

Corresponding author: Dounia Lakhzoum (dounia.lakhzoum@gmail.com)

Abstract

In response to the reproducibility crisis, substantial and targeted efforts have promoted Open Research Practices (ORPs) to ensure research is rigorous, reliable and robust. To assess current needs, and following similar efforts in the UK and the Netherlands, we mapped levels of awareness and adoption of Open Research Practices (ORPs) in Ireland. Previous evidence points to a persistent gap between researchers' awareness and actual adoption of open practices. To investigate this phenomenon, we implemented a two-part nationwide survey of the Irish research community using the Brief Open Research Survey (BORS) to gauge levels of awareness and adoption of Open Research Practices (ORPs), and the COM-B model of behaviour change to evaluate situational and psychological drivers of adoption. Results indicate that while awareness is consistently high across open practices, adoption levels show a significant relative drop. The COM-B model analysis revealed that Motivation, the extent to which Open Research is embedded as a routine element of researchers' workflows, was the strongest predictor of adoption, followed by Capability (having the skills and knowledge) and Opportunity (time, resources and support), corroborating previous findings. These results highlight the need for the early integration of targeted, practical training to bridge the awareness-adoption gap and to foster open practices as a habitual way of doing research.

Keywords: Meta-science, Open Science, Awareness, Adoption, Open Research Practices, Brief Open Research Survey, National Survey, Ireland.

Introduction

Researchers strive to uncover truths about the world, whether their research leads to the discovery of new galaxies, how language shapes the mind, or the origins of an ancient artifact. However, when this pursuit is distorted by external pressures, unethical practices or lack of training in rigorous methods, it can lead to unreliable findings, and ultimately the erosion of the public's trust. In contrast, Open Research Practices (ORPs) promote rigour, transparency, and the accessibility of research findings. To understand how these practices are being adopted and to assess current needs, our study surveyed the research community in Ireland spanning all disciplines (social sciences, sciences, and humanities), methods (quantitative, qualitative, and mixed) and roles (academics, researchers, librarians, and research support). Our results not only provide a comprehensive view of the Irish Open Research landscape but also capture factors that move researchers from being aware of open practices to making them an integral part of their research workflow.

Questionable Research Practices and the Reproducibility Crisis

Following numerous failed replications across multiple fields, the research community has become acutely aware that we face challenges in reproducing and replicating previous studies. A survey conducted by *Nature* of over 1,500 researchers revealed that 90% of respondents believe there is indeed a reproducibility crisis, largely attributed to selective reporting of results, fraud, and pressure to publish [1]. The case of psychology has attracted considerable attention, particularly due to highly publicized replication failures [2–4]. As a result, the field has undergone major reforms [5] and currently stands at the forefront of developing and promoting better reproducible practices [6]. However, psychology is far from an isolated case. In recent years, replication attempts across diverse fields from biomedicine [7] and cancer biology [8] to economics [9,10] and experimental philosophy [11] have marked the beginning of a broader effort to test reproducibility on a larger scale [12].

While the replication crisis has often been framed as a consequence of blatant scientific misconduct or outright fraud [13], the reality is much more nuanced. Previous evidence

from meta-science studies has revealed that, on average, only 1–2% of scientists admit to having fabricated or falsified data at least once [14]. The lack of reproducibility in research is more often due to Questionable Research Practices (QRPs; [1,15–17]). These practices do not necessarily reflect malicious intent but can arise from a lack of training, support, time, and external pressures. Common Questionable Research Practices (QRPs) include *selective reporting*, where only significant results are published while non-significant findings are ignored; *p-hacking*, which involves manipulating data or statistical tests to achieve a desired p-value; and *HARKing* (hypothesising after the results are known), where hypotheses are formulated post-hoc based on observed data. Other practices include cherry-picking data, using inadequate sample sizes, and lacking transparency in reporting methods and results. In a survey of researchers in the Netherlands, Gopalakrishna and colleagues found that 51% of respondents engaged in at least one Questionable Research Practice. The study also noted that early career researchers and those facing high pressure to publish were most likely to engage in these practices [16,18]. The adverse consequences these questionable practices have on the scientific literature and broader research culture are not difficult to grasp considering their likelihood to increase publication bias, inflate effect sizes, and lead to false positive findings [19,20]. However, concerns about research credibility are not solely tied to the use of Questionable Research Practices (QRPs); they also stem from a failure to adopt Open Research Practices (ORPs) as illustrated by an empirical assessment of Open Research Practices (ORPs) in the social sciences. Among 250 papers published between 2014 and 2017, only 40% were not behind a paywall, 11% made materials accessible, 7% provided raw data, and none were preregistered [21]. Since then, consistent efforts have been made to foster open practices.

Adoption of Open Research Practices

Open Research Practices (ORPs) strive to ensure responsible conduct at every stage of the research process. These practices include Preprints (to ensure early availability of research), Open Access publication, study Preregistration (where researchers specify hypotheses, methods, and analysis plans before data collection), the sharing of data,

materials, and analysis code, all of which speak to the rigour, transparency, and accessibility of research findings, as well as enhancing the credibility of the work.

Recent studies have sought to assess the level of engagement with Open Research Practices (ORPs), and to identify the factors that promote their adoption. For instance, in a survey of psychology researchers in the UK and Ireland, Silverstein and colleagues found high levels of engagement with Open Research Practices (ORPs) among almost all respondents, particularly in publishing Open Access articles and the sharing of data and materials [22]. A majority of respondents also reported adopting Preprints, Pre-registration, and sharing analysis code. However, the lowest levels of engagement were observed for more time-intensive practices, such as Registered Reports, where study protocols are peer-reviewed before data collection. Notably, the adoption of Open Research Practices (ORPs) varied among respondents, with higher engagement among quantitative researchers, those affiliated with institutions that support Open Research, and amongst individuals in influential roles within these institutions.

In two cross-disciplinary surveys, Gopalakrishna and colleagues along with Norris and colleagues [18,23] evaluated nationwide engagement with Open Research Practices (ORPs) and the factors that promote their adoption. Gopalakrishna and colleagues surveyed nearly 7,000 academics in the Netherlands and found significant variations in engagement with specific practices. While almost all respondents reported avoiding plagiarism, less than half participated in study Preregistration. The adoption of responsible practices also varied across different respondent profiles, with academics in the arts and humanities, as well as early career researchers, being less likely to engage in these practices. The study identified that factors such as publication pressure negatively impacted responsible practices, whereas mentoring, adherence to scientific norms, and funding pressure served as positive influences.

In the UK, Norris and colleagues developed the Brief Open Research Survey (BORS), which surveyed over 1,000 academics to evaluate awareness and adoption of Open Research [23]. The survey, designed to track the uptake of these practices over time, found that respondents were most familiar with and actively engaged in Open Access publication,

Preprints, and data sharing. In contrast, Registered Reports and Preregistration were less well-known and saw lower adoption rates. The study highlighted key areas where support is needed to boost Open Research adoption, including incentives, dedicated funding, and recognition in promotion and recruitment processes.

Open Research as Behaviour: Insights from the COM-B Model of Behaviour Change

Just like quitting smoking or starting a new exercise routine, adopting Open Research Practices (ORPs) is also a behaviour that can be quantified. The COM-B model of behaviour change as part of the Behaviour Wheel, introduced by [24], provides a systematic framework for understanding behaviour [24]. It posits that for individuals to engage in specific behaviour (B), they must have the capability (C), opportunity (O), and motivation (M) to do so. Although the COM-B model has been previously applied to health-related behaviours, Norris and O'Connor (2019) have proposed its adoption for investigating the uptake of Open Research Practices (ORPs; [25]).

Previous research on questionable practices and the adoption of responsible practices highlights several key factors influencing this behaviour: publication and funding pressures, inadequate training and institutional support, adherence to scientific norms, and external incentives like recognition in promotion and recruitment [23,25]. However, applying the COM-B model allows for a systematic assessment of the key predictors of adoption of Open Research and identifies how barriers can be addressed through targeted interventions. Consequently, the model provides a structured approach to understanding behaviour through three major components: *capability*, *opportunity*, and *motivation*. Capability is divided into Physical Capability, referring to an individual's physical ability, and Psychological Capability, including the necessary skills, knowledge, and training. Opportunity consists of Physical Opportunity, covering access to appropriate research infrastructure, sufficient time, and financial support, and Social Opportunity, including the social environment, the presence of peers engaged in Open Research, incentives from funders and institutions, and recognition in promotion and recruitment criteria. Motivation is categorised into Reflective Motivation, involving conscious processes such as attitudes

towards Open Research and intentional planning to incorporate these practices; and Automatic Motivation, relating to unconscious processes like habitual engagement with Open Research and its seamless integration into the research workflow (see Table 2 for a complete description of the COM-B components).

Studies applying the COM-B model to assess Open Research have found that all six dimensions of the model impacted engagement with open practices, though their significance varies. Norris and colleagues along with Silverstein and colleagues found that researchers view adequate funding (physical opportunity), incentives (social opportunity), training and understanding of open practices (psychological capability), and recognition of open research (social opportunity) as key dimensions that can motivate the adoption of Open Research Practices (ORPs). In [22], Automatic Motivation emerged as the most consistent predictor of engagement with Open Research Practices (ORPs). In contrast, neither Norris and colleagues nor Silverstein and colleagues found Reflective Motivation to be a reliable predictor of engagement with Open Research. The stronger impact of Automatic Motivation on engagement with Open Practices compared to Reflective Motivation likely stems from the habitual nature of automatic behaviours. When open practices become ingrained habits, they require less conscious effort, making them easier to maintain. Conversely, reflective motivation involves deliberate decision-making, which can be hindered by external pressures and resource constraints. One common criticism that could shed light on the underlying mechanisms of adoption is that Open Research often follows a one-size-fits-all approach, primarily addressing the workflow of hypothetico-deductive quantitative research [26]. However, growing interest in how these practices can be adapted for qualitative and mixed-methods research suggests that the diversity and unique needs of qualitative methodologies have not been sufficiently considered.

To better understand these dynamics, more fine-grained investigation is needed to identify the specific factors that predict engagement and uncover the barriers to adoption, enabling more targeted and effective interventions.

The Present Survey

This study presents a comprehensive survey on the awareness and adoption of Open Research Practices (ORPs) across research institutions in Ireland. Our survey aimed to establish a snapshot of Open Researchers behaviours among a wide array of roles, including researchers and academics, librarians, and research support personnel, covering disciplines from science, social sciences and the humanities. Additionally, we incorporated perspectives from different research methodologies, including qualitative, quantitative, and mixed methods researchers, to ensure a broad and inclusive understanding of the current landscape.

The primary objectives of the survey were threefold: to estimate the extent of engagement with Open Research Practices (ORPs) within research departments across Ireland; to identify factors, derived from the COM-B model of behaviour change, influencing researchers' engagement in Open Research Practices (ORPs), focusing on their capabilities, opportunities, and motivations; to gather views, needs, and experiences of researchers regarding open research training.

The insights gained from this survey will help to establish the current landscape of Open Research Practices (ORPs) across the country, providing a foundation for future initiatives and targeted interventions.

Method

Participants

383 participants responded to the survey. All participants were research practitioners based in Ireland, including academics, researchers, librarians, and individuals in research support roles. Researchers and academics from PhD level to full professor represented a wide range of disciplines across the social sciences, sciences, and humanities, employing diverse research methods, including qualitative, quantitative, and mixed methods approaches. Table A1 provides a summary of the survey response screening process used

to arrive at the final set of valid survey responses, presented as percentages. The analyses in this paper are based on 264 remaining valid responses.

Design and procedure

This cross-disciplinary study was conducted online using Qualtrics to gather responses on participants' awareness, engagement, and understanding of the COM-B model of behaviour change. The survey was fully anonymised and designed to be completed in approximately 10 minutes. To promote participation, we leveraged the TROPIC consortium, a group of Irish researchers, librarians, and research support personnel across Ireland. An invitation email outlined the study's aims and included a direct link to participate, with the survey set to remain open for 12 weeks.

Upon accessing the survey, participants first viewed an information page, followed by a consent form. After providing consent, participants completed screening questions to confirm eligibility as research practitioners based in Ireland. They then provided demographic information, including academic rank, field of study, and primary research methodology. Once these preliminary steps were completed, participants proceeded to the main survey sections.

Survey

The survey structure included several sections: participant information and informed consent, demographics, and a respondent profile. The profile referred to respondents' role (researcher, librarian, or research support), academic rank, discipline, primary research methods (quantitative, qualitative, or mixed methods), and university affiliation.

Participants then responded to questions assessing their awareness and engagement with Open Research Practices (ORPs) based on the Brief Open Research survey adapted from [23], each containing 11 items with response options of Yes, No, and N/A. In the awareness question (see Table 1), they were asked, "Which of the following research practices are you aware of?" with options to select "Yes" if aware, "No" if unaware, or "N/A" if the practice was not applicable to their field. The engagement question asked, "Which of the following research practices have you used?" with similar response options of Yes, No, or N/A.

Table 1. Items from the Brief Open Research Survey (adapted from Norris et al. (2022))

Open Research Practices	Definition
Open Research	Sometimes referred to as Open Scholarship or, in a more narrow application, Open Science.
Study Preregistration	e.g., pre-analysis plan, prospective registration.
Registered Reports	Format of empirical article where a study proposal is reviewed before the research is undertaken.
Open Materials	Making research materials publicly available, e.g., experiments, questionnaires, intervention materials.
Open Data	Making research data publicly available, e.g., FAIR data.
Open Code/Open Software	Making analysis code publicly available.
Preprints	Making research papers available prior to journal peer-review in an online repository.
Open Peer Review	Journal or grant peer review where authors and reviewers are aware of each other's identity.
Open Access	Making peer-reviewed papers or other publications publicly available.
Replication Studies	Research attempting to reproduce the methods and findings of prior research.
Research Co-production	Researchers, public, and practitioners working together in research, sharing responsibility throughout a project.

Following this, participants answered items related to the COM-B model of behaviour change, with 11 statements rated on a 7-point Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree), including an N/A option if a statement was inapplicable (see Table 2).

Table 2. COM-B dimensions and corresponding statements used in the survey.

COM-B Dimension	Statements
Physical Capability	I am physically capable of engaging in open research practices (e.g., I have sufficient physical stamina, I have sufficient physical skills).
Psychological Capability	I am equipped with the skills necessary to engage with open research practices.
	I have enough information and training to understand and implement open research practices.
Physical Opportunity	I have access to the appropriate research infrastructure to engage in open research practices (e.g., access to appropriate repositories, computing resources etc.).
	I have enough time to implement open research practices in my work.
	I have sufficient financial support to engage in open research (e.g., to cover costs of video recordings, transcription/translation, data storage etc.).
Social Opportunity	Others in my wider research environment engage with and encourage the use of open research practices.
	There are adequate incentives from funders, institutions or other regulators to engage in open research.
	There is sufficient recognition of open research in promotion and recruitment criteria.
Reflective Motivation	I am sufficiently motivated to engage with open research practices.
	I believe open research practices to be a positive thing.
	I consciously plan on working more with open research practices in the future.
Automatic Motivation	I have developed the habit of engaging in open research practices as an everyday part of my research process.
	When I think about my research, I automatically think about the open research elements as well.

Finally, the survey included questions on participants' training needs regarding Open Research Practices (ORPs), asking whether they had already received training, if they were

interested in further training, and which specific aspects of Open Research Practices (ORPs) they wished to explore further. The study was preregistered on AsPredicted.

Results

The results section first presents descriptive statistics to provide an overview of participants' response before delving into regression analyses to assess the impact of COM-B predictors on the awareness and adoption of Open Research Practices (ORPs).

Table 3 below summarises the mean ratings for the six COM-B dimensions.

Table 3. Mean ratings for the six COM-B dimensions, with 95% Confidence Intervals, and Standard Deviations.

		95% CI		
Dimensions	**Mean**	**Lower**	**Upper**	**SD**
Physical Capability	6.07	5.90	6.25	1.29
Psychological Capability	4.97	4.82	5.11	1.57
Physical Opportunity	4.03	3.89	4.16	1.80
Social Opportunity	3.84	3.70	3.97	1.83
Reflective Motivation	5.55	5.42	5.67	1.64
Automatic Motivation	4.50	4.32	4.68	1.92

The results show that Physical Capability received the highest rating (6.07), indicating researchers generally feel physically capable of engaging in Open Research Practices (ORPs). In contrast, Social Opportunity (influence of peers and institutional culture) and Physical Opportunity (availability of resources, infrastructure, and time) received the lowest ratings (3.84 and 4.03 respectively), suggesting that researchers may perceive external factors -such as lack of institutional or social support -as barriers to engagement.

Psychological Capability (knowledge and skills required for open research) was rated lower (4.97) than Reflective Motivation which captures conscious decision-making, values, beliefs about open research (5.55), suggesting that while researchers recognise the value of open research, they may still experience gaps in knowledge and training. Notably, Reflective Motivation scored higher than Automatic Motivation (4.50), implying that engagement with open research may currently be more deliberate rather than ingrained as a routine part of the research process.

To further explore the relationships between these dimensions and adoption of Open Research Practices (ORPs), Figure 1 presents a correlation heatmap, illustrating the associations between COM-B components and Mean Engagement.

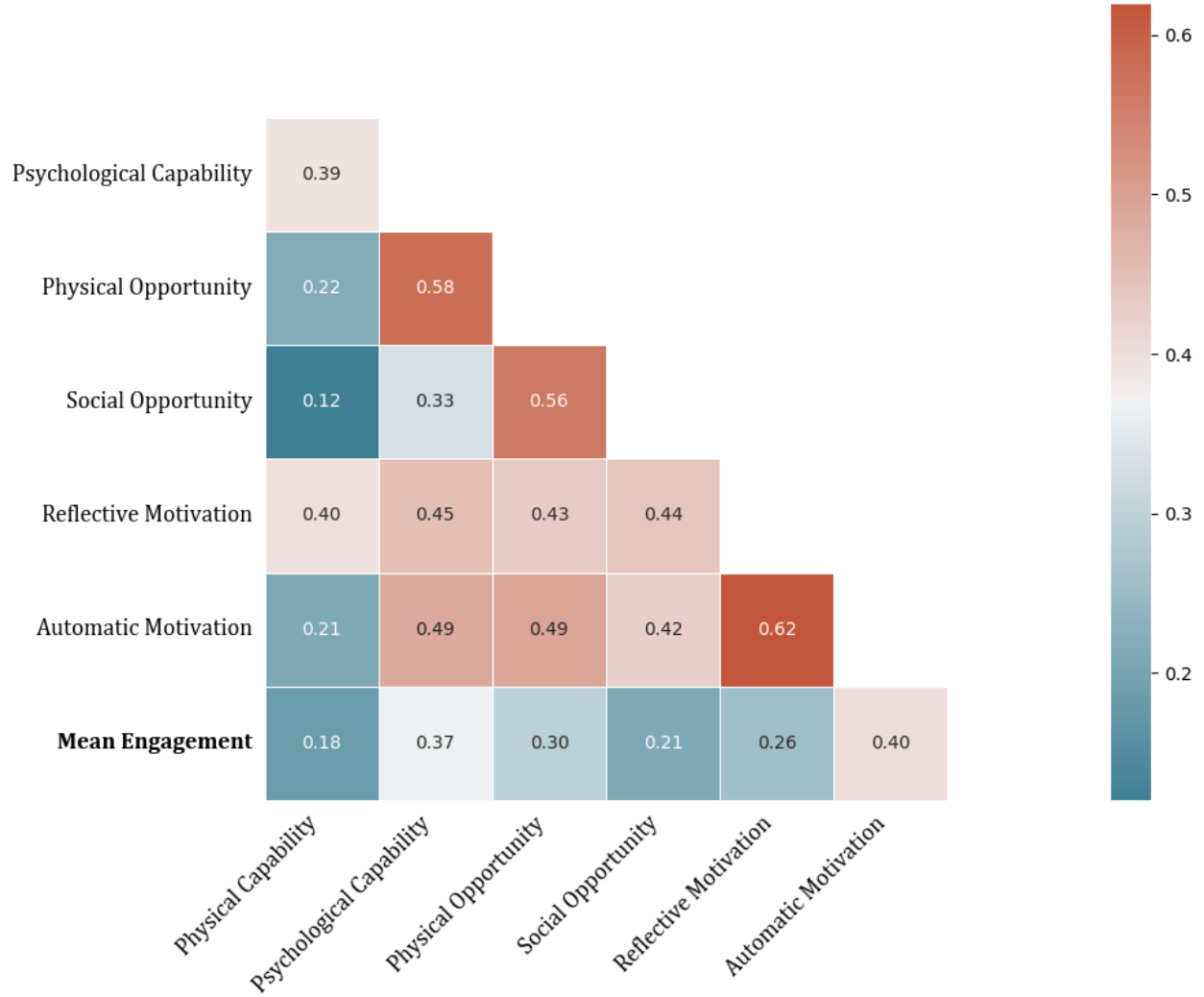

Figure 1. Correlation heatmap (Pearson's *r*) of COM-B components and Mean Engagement.

The correlation analysis (Figure 1) highlights several notable relationships among the COM-B components and their association with engagement in Open Research Practices (ORPs). The strongest correlation was observed between Automatic Motivation and Reflective Motivation (0.62), suggesting that researchers who consciously value open research are also more likely to internalise these behaviours as automatic habits. Psychological Capability and Physical Opportunity (0.58), as well as Social Opportunity and Physical Opportunity (0.56), showed strong associations, indicating that access to resources and institutional support are closely linked to researchers' perceived ability to engage with open research.

When examining the relationship between COM-B components and Mean Engagement, the highest correlation was found with Automatic Motivation (0.40), followed by Psychological Capability (0.37) and Physical Opportunity (0.30). This suggests that both intrinsic motivation and access to resources play key roles in facilitating engagement. Reflective Motivation (0.26) also showed a moderate association, reinforcing the idea that while conscious intentions matter, and believing that open research is a positive thing, it may not always translate directly into action. The weaker correlations with Social Opportunity (0.21) and Physical Capability (0.18) indicate that while these factors contribute to engagement, they may be less influential compared to cognitive and motivational drivers. The radar plot below (Figure 2) illustrates notable gaps between awareness and engagement across various Open Research Practices (ORPs).

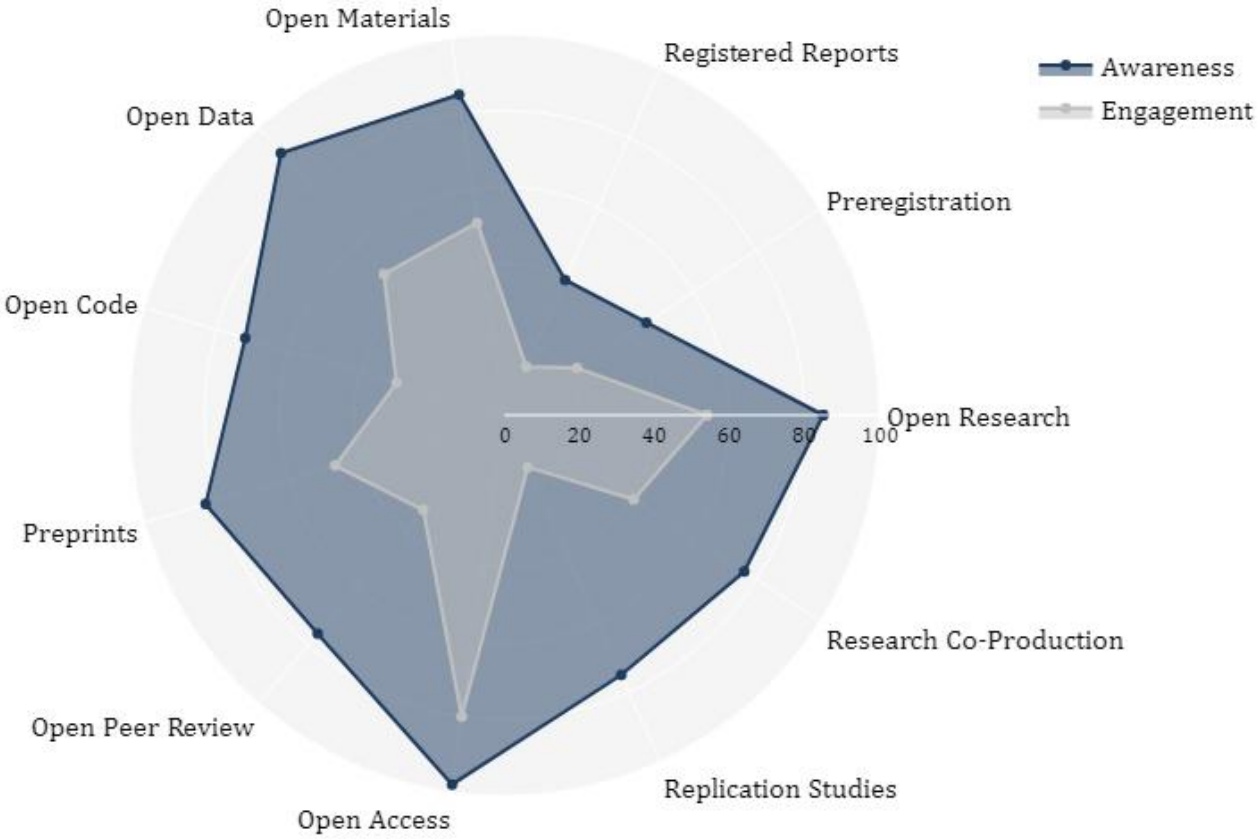

Figure 2. Radar Plot of Awareness and Engagement Levels (as % of respondents) across Open Research Practices (ORPs). The darker shading indicates level of awareness of specific practices, while the lighter shading indicates level of engagement.

Open Access (98%), Open Data (91%), Open Materials (85%) and Preprints (83%) had the highest awareness levels, reflecting their well-established presence in the scholarly discourse around open research and have been integrated into open research workflows, often supported or required by journals to promote transparency and reproducibility. In contrast, awareness of more demanding practices in terms of effort, time and training such

as Preregsitration (45%) and Registered Reports (39%) is significantly lower, suggesting these are less familiar to researchers.

Engagement levels, however, are consistently lower than awareness across all practices, highlighting a gap between knowing about these practices and actively adopting them. While Open Access (80%) shows the highest engagement, other widely recognised practices like Open Data (49%) and Open Materials (51%) show moderate uptake. Engagement in Registered Reports (14%) and Replication Studies (15%) remain notably low. The disparity between awareness and engagement suggests that while many researchers recognise the value of Open Research, knowledge of a practice does not guarantee its adoption, highlighting the need for incentives, institutional support and training to bridge the gap between awareness and active participation.

These descriptive findings provide a foundational understanding of participants' awareness and engagement with Open Research Practices (ORPs). To further investigate the factors that facilitate or hinder their adoption, the following regression analyses examine the impact of COM-B predictors on awareness and engagement levels.

A series of independent regression models were conducted to examine the relationship between each of the six COM-B components and Mean Awareness (Table 4) and Mean Engagement (Table 5). Each model included background predictors (Gender, Role, Rank, Methodology, Discipline) and one COM-B component at a time. The detailed results are summarised in Table 4 and 5 below which presents the predictors' estimate, t-values, p-values and 95% confidence intervals.

Table 4. Results of six separate regression models examining the effect of each **COM-B factors** (Physical Capability, Psychological Capability, Physical Opportunity, Social Opportunity, Reflective Motivation, Automatic Motivation) on **Mean Awareness** of Open Research Practices (ORPs). The table shows unstandardised coefficients, t-value, p-value, and the 95% lower and upper confidence intervals for the coefficients (N = 221).

				95% CI	
Predictor	**B**	**t**	**p-value**	**Lower**	**Upper**
Physical Capability	0.02	2.03	0.04	5.25×10^{-4}	0.04
Psychological Capability	0.04	3.67	3.13×10^{-4}	0.02	0.05
Physical Opportunity	0.03	2.68	7.87×10^{-3}	7.87×10^{-3}	0.05
Social Opportunity	0.01	1.49	0.14	-4.65×10^{-3}	0.03
Reflective Motivation	0.03	3.05	2.59×10^{-3}	0.01	0.05
Automatic Motivation	0.02	2.93	3.82×10^{-3}	7.64×10^{-3}	0.04

Baseline model with only background variables: $F(17, 233) = 3.29$, $p = 2.27 \times 10^{-5}$, Adjusted $R^2 = 0.13$.

Psychological Capability showed the strongest impact on participants' awareness ($B = 0.04$, $p = 3.13 \times 10^{-4}$, $t(202) = 3.67$, Adjusted $R^2 = 0.20$), compared to the baseline model with only background variables (Adjusted $R^2 = 0.13$). This suggests that increased knowledge and skills in Open Research are strongly associated with increased awareness.

Similarly, both Automatic Motivation ($B = 0.02$, $p = 3.82 \times 10^{-3}$, $t(202) = 2.93$, Adjusted $R^2 = 0.18$) and Reflective Motivation ($B = 0.03$, $p = 2.59 \times 10^{-3}$, $t(202) = 3.05$, Adjusted $R^2 = 0.18$) contributed significantly, suggesting that both automatic and deliberate efforts impact awareness.

Physical Opportunity ($B = 0.03$, $p = 7.87 \times 10^{-3}$, $t(202) = 2.68$, Adjusted $R^2 = 0.17$) also played a role, implying access to resources and institutional support can facilitate awareness. In contrast, Physical Capability ($B = 0.02$, $p = 0.04$, $t(202) = 2.03$, Adjusted $R^2 = 0.16$) had a significant yet weaker effect.

Finally, Social Opportunity showed no significant effect on awareness (p = 0.14, *ns*).

Table 5. Results of six separate regression models of each **COM-B factors** (Physical Capability, Psychological Capability, Physical Opportunity, Social Opportunity, Reflective Motivation, Automatic Motivation) on **Mean Engagement** in Open Research Practices (ORPs). The table shows unstandardised coefficients, t-value, p-value, and the 95% lower and upper confidence intervals for the coefficients (N = 221).

				95% CI	
Predictor	**B**	**t**	**p-value**	**Lower**	**Upper**
Physical Capability	0.02	1.57	0.11	-4.90×10^{-3}	0.04
Psychological Capability	0.05	4.50	1.17×10^{-5}	0.03	0.08
Physical Opportunity	0.05	3.84	1.66×10^{-4}	0.02	0.07
Social Opportunity	0.04	3.43	7.39×10^{-4}	0.02	0.06
Reflective Motivation	0.05	3.80	1.91×10^{-4}	0.02	0.07
Automatic Motivation	0.05	5.73	3.59×10^{-8}	0.04	0.07

Baseline model with only background variables: F(17, 218) = 2.56, p < 0.001 Adjusted R^2 = 0.10.

Automatic Motivation had the most impact on engagement and therefore proved the strongest predictor of adoption of Open Research Practices (ORPs) (B = 0.05, p = 3.59×10^{-8}, t(202) = 5.73, Adjusted R^2 = 0.21), compared to the baseline model with only background variables (Adjusted R^2 = 0.10). This result underscores the importance of ingrained, automatic behaviour in enhancing engagement.

Psychological Capability also played a significant role (B = 0.05, p = 1.17×10^{-5}, t(202) = 4.50, Adjusted R^2 = 0.16), reinforcing the relationship between knowledge, skills, and active participation in Open Research.

Reflective Motivation *(B* = 0.05, $p = 1.91 \times 10^{-4}$, t(202) = 3.80, Adjusted R^2 = 0.14) and Physical Opportunity (*B* = 0.05, $p = 1.66 \times 10^{-4}$, t(202) = 3.84, Adjusted R^2 = 0.14) showed comparable effects, highlighting the role of both deliberate effort and accessible resources in fostering engagement.

Social Opportunity had a moderate but significant impact (*B* = 0.04, $p = 7.39 \times 10^{-4}$, t(202) = 3.43, Adjusted R^2 = 0.13) showing a comparable effect of institutional and peer support on engagement. In contrast, Physical Capability did not show any statistically significant effect on engagement (*p* = 0.11, *ns*).

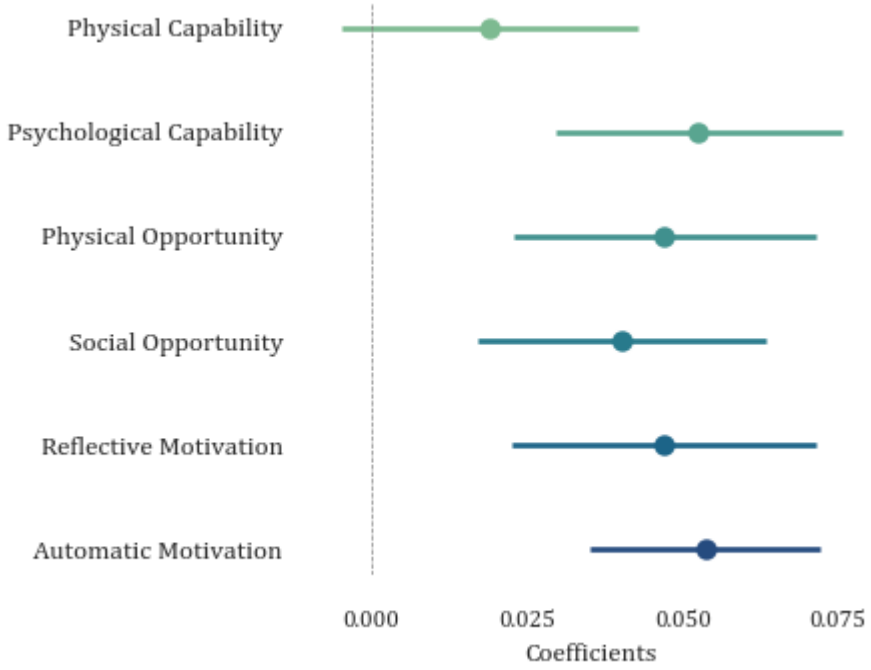

Figure 3. Regression Coefficients with 95% Confidence Intervals for COM-B Modalities

Discussion

This study examined the factors influencing awareness and engagement in Open Research Practices (ORPs) through the BORS (Brief Open Research Survey [23]) and COM-B [25] frameworks in an effort to map the Open Research uptake across Irish research institutions.

The findings underscore that while awareness of Open Research Practices (ORPs) was high for certain practices, a consistent gap remained between awareness and actual adoption, suggesting that knowing about these practices does not necessarily translate into active engagement. The strongest correlation observed was between mean engagement and Automatic Motivation, indicating that researchers who have internalised Open Research as a routine aspect of their workflow are the most likely to seamlessly adopt these practices.

Regression analyses further highlighted the central role of Automatic Motivation in driving engagement. Researchers who instinctively consider Open Research elements in their work, likely due to long-term exposure and reinforcement, were significantly more engaged. This aligns with findings from [22] who also identified Automatic Motivation as the most robust predictor of Open Research engagement. Psychological Capability pertaining to knowledge and skills, was an important factor for awareness. However, knowledge alone is not sufficient to guarantee adoption, suggesting that awareness must be translated into habitual practice for active and sustained participation in Open Research reflecting the mechanisms underpinning Automatic Motivation. These findings emphasise the importance of practical, hands-on training initiative designed to embed Open Research principles into researchers' workflows. Ireland, where the study was conducted, has recognised this need and invested in nationwide training programmes such as TROPIC (TRaining in Open Research in an Irish Context) to upskill researchers and aimed at bridging the awareness-engagement gap observed in the present study (see also [27]).

The study also revealed more fine-grained patterns, showing that not all disciplines and methodologies face Open Research equally. When mapping the COM-B components across disciplines (Figure A1), a clear disciplinary divide emerged. Humanities consistently scored lower than Social Sciences, which in turn scored lower than Sciences [28]. This underscores that key requirements influencing Open Research adoption, such as knowledge, skills, access to infrastructure, and peer or institutional support, are not evenly met across disciplines [29]. This pattern reflects the fact that scholarly discourse around Open Research has historically been more tailored toward scientific and quantitative research fields, making it seem less applicable to Humanities and qualitative disciplines [26,30]. The

disparities were further emphasised when considering levels of awareness and engagement across disciplines.

As seen in Figure A2 showing Mean Awareness and Engagement by discipline and methodology, the same ranking pattern emerged, with Humanities consistently exhibiting the lowest awareness and engagement, followed by Social Sciences, and then Science exhibiting the highest scores. Across all disciplines, engagement levels were approximately half of awareness levels, reinforcing the previously discussed gap between awareness and adoption [23,31]. A similar trend was observed across research methodologies: qualitative researchers scored lower in both awareness and engagement than those using mixed methods, who in turn scored lower than quantitative researchers. However, the gap between awareness and engagement was particularly pronounced among qualitative researchers, suggesting that even when they are aware of Open Research Practices (ORPs), barriers to implementation may be stronger than for other methodological approaches suggesting the need for a more tailored approach to training [32,33].

This study aimed to map the landscape of Open Research Practices (ORPs) across Ireland. In doing so, it uncovered systemic patterns, notably the awareness-engagement gap, the importance of habitual, unconscious behaviours (automatic motivation) in predicting engagement and variations across disciplines and methodologies. These findings align with broader research indicating that while awareness of Open Research Practices (ORPs) is high, actual engagement varies significantly [23]. Addressing this gap in Open Research necessitates tailored practical training, as disciplines and methodologies encounter unique challenges. For instance, qualitative researchers often face ethical dilemmas concerning the sharing of sensitive data and materials [34–37], which can impede open sharing practices. Additionally, humanities scholars may experience institutional barriers and a lack of infrastructure to support open research initiatives, hindering their engagement [30]. Moreover, quantitative researchers might confront challenges related to data sharing and security [38].

To foster a truly inclusive and effective Open Research culture, future efforts must prioritise practical training, ensuring that all researchers, regardless of field or methodology, can fully engage with and benefit from Open Research Practices (ORPs).

Ethical approval

The present study received Ethical Approval from The Social Research Ethics Sub-Committee of Maynooth University (Reference SRESC-2023-36694).

Preregistration and Data Availability

The study was preregistered on AsPredicted, detailing the study's aims, hypotheses, and analysis plan. All data, materials, and code are available on the Open Science Framework (OSF).

Declaration of AI use

We have not used AI-assisted technologies in creating this article.

Conflict of interest declaration

We declare we have no competing interests.

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Appendix

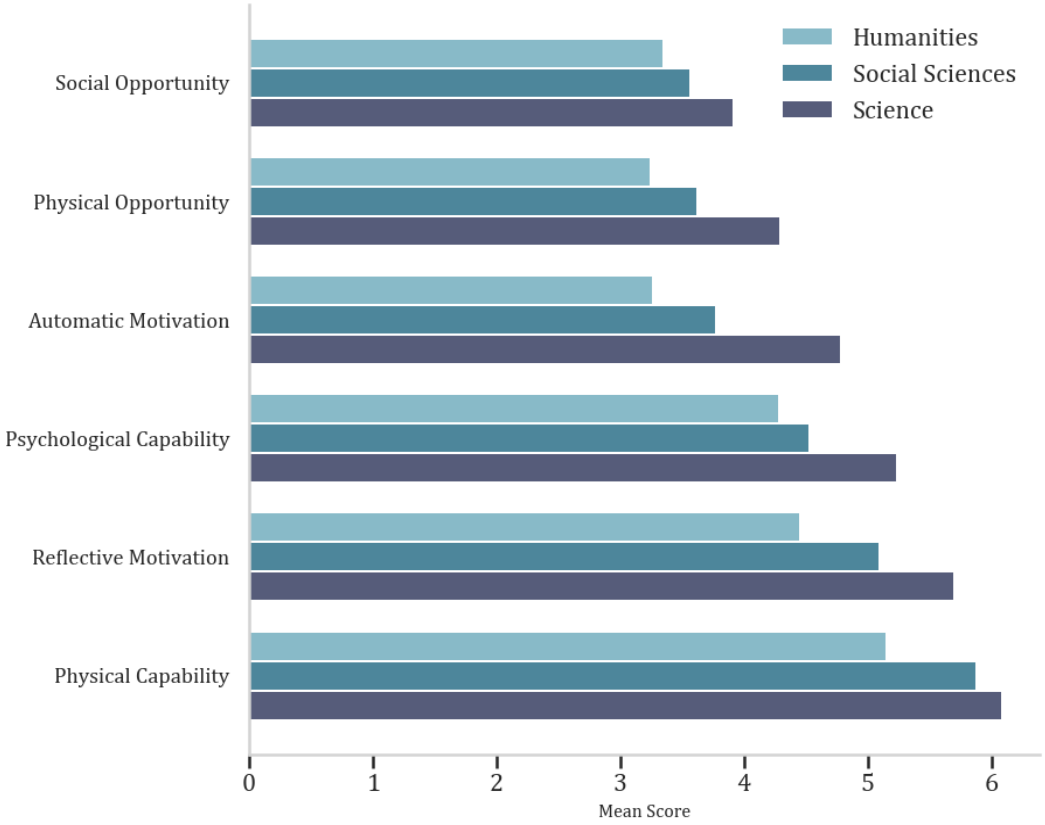

Figure A1. Mean COM-B components scores based on discipline.

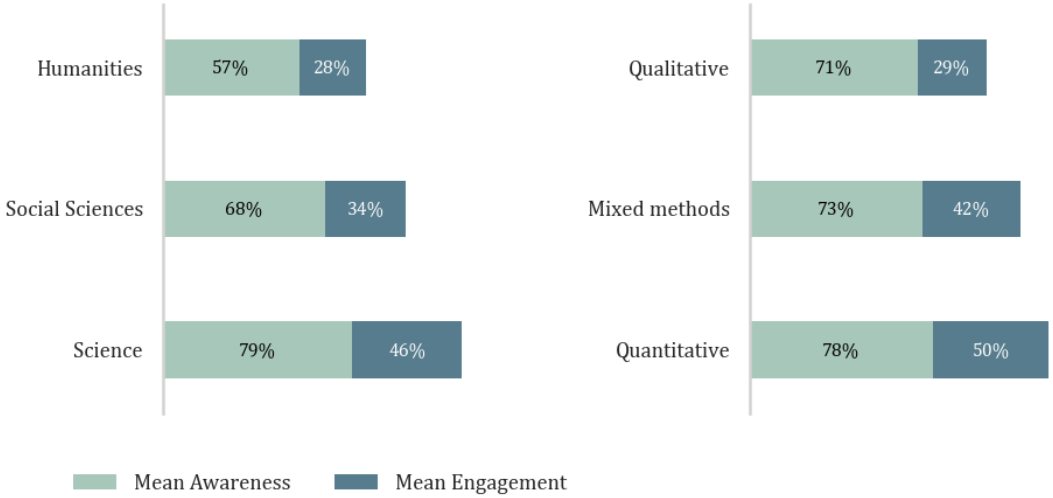

Figure A2. Mean Awareness and Engagement by Discipline (left) and by Methodology (right).

Table A1. Summary survey response screening to arrive at the final set of valid survey responses (%)

Total Survey Responses	383	%
Number exiting from survey landing page, providing no responses	73	19.06
Number not agreeing to consent	3	0.78
Number providing consent, but no further responses	3	0.78
Number not responding Ireland to country criterion	4	1.04
Number exiting from survey after Country question, providing no further responses	2	0.52
Number exiting from survey after Gender question, providing no further responses	3	0.78
Number exiting from survey after Role question, providing no further responses	2	0.52
Number exiting from survey after Discipline question, providing no further responses	4	1.04
Number exiting from survey after Rank question, providing no further responses	2	0.52
Number exiting from survey after University question, providing no further responses	23	6.01
Remaining Valid Responses	264	68.93

Table A2. Demographics of respondents by Role and Primary Methodology (%)

Role	N	%
Research/Academic	220	83.33
Research Support	18	6.82
Librarian	15	5.68
Other	11	4.17
Tot	264	100

Methodology	N	%
Qualitative	53	20.08
Quantitative	75	28.41
Mixed methods	90	34.09
Other	46	17.42
Tot	264	100

Table A3. Demographics of respondents by Academic Rank (%)

Academic Rank	N	%
Assistant Professor / Lecturer	68	25.76
Masters	21	7.95
Associate Professor, Senior Lecturer, Reader or Professor	60	22.73
PhD student or junior researcher	63	23.86
Postdoctoral researcher	20	7.58
Research Fellow / Senior Research Associate	9	3.41
Other	23	8.71
Tot	264	100

Table A4. Demographics of respondents by Discipline (%)

Discipline	N	%
Psychology	33	12.50
Subjects allied to medicine	27	10.23
Humanities and liberal arts (non-specific)	7	2.65
Business and management	10	3.79
Education and teaching	13	4.92
Medicine and dentistry	8	3.03
Computing	23	8.71
Biological and sport sciences	9	3.41
Historical, philosophical and religious studies	6	2.27
Language and area studies	2	0.76
Physical sciences	13	4.92
Creative arts and design	4	1.52
Social sciences	22	8.33
Combined and general studies	4	1.52
Communications and media	2	0.76
Engineering and technology	9	3.41
General and others in sciences	3	1.14
Law	4	1.52
Geographical and environmental studies	12	4.55
Agriculture, food and related studies	5	1.89
Mathematical sciences	23	8.71
Architecture, building and planning	1	0.38
Other	24	9.09
Tot	264	100

Table A5. Demographics of respondents by University (%)

University	N	%
University of Galway	9	3.41
University College Dublin	21	7.95
Trinity College Dublin	8	3.03
University of Limerick	21	7.95
University College Cork	39	14.77
Maynooth University	71	26.89
Technological University Dublin	5	1.89
Mary Immaculate College, University of Limerick	4	1.52
Dublin City University	8	3.03
Royal College of Surgeons Ireland	7	2.65
South East Technological University	44	16.67
Atlantic Technological University	4	1.52
National College of Ireland	8	3.03
Munster Technological University (MTU)	12	4.55
Other Institution	3	1.14
Tot	264	100

Table A6. Mean Awareness Scores for each Open Research Practice, sorted by increasing levels of awareness. N/A responses are excluded from the calculation of the mean.

				95% CI		
Open Research Practices	**N**	**NA**	**Mean**	**Lower**	**Upper**	**SD**
Open Access	250	1	98.00	96.26	99.74	14.03
Open Data	247	4	92.31	88.98	95.64	26.70
Open Materials	239	12	89.54	85.65	93.43	30.67
Open Research	248	3	86.29	82.00	90.58	34.46
Preprints	247	4	84.62	80.11	89.12	36.15
Research Co-Production	238	13	80.67	75.64	85.70	39.57
Replication Studies	234	17	79.91	74.77	85.06	40.15
Open Code / Software	232	19	78.02	72.68	83.36	41.50
Open Peer Review	246	5	77.64	72.43	82.86	41.75
Preregistration	223	28	50.22	43.65	56.80	50.11
Registered Reports	226	25	43.81	37.32	50.29	49.72

Table A7. Mean Engagement Scores for each Open Research Practice, sorted by increasing levels of awareness. N/A responses are excluded from the calculation of the mean.

				95% CI		
Open Research Practices	**N**	**NA**	**Mean**	**Lower**	**Upper**	**SD**
Open Access	228	8	82.89	78.00	87.79	37.74
Open Research	222	14	57.66	51.14	64.17	49.52
Open Materials	216	20	55.56	48.91	62.20	49.81
Open Data	214	22	54.21	47.51	60.90	49.94
Preprints	222	14	50.00	43.41	56.59	50.11
Research Co-Production	210	26	46.19	39.43	52.95	49.97
Open Code	192	44	36.46	29.63	43.28	48.26
Open Peer Review	225	11	34.22	28.01	40.44	47.55
Preregistration	198	38	27.78	21.52	34.03	44.90
Registered Reports	200	36	17.00	11.78	22.22	37.66
Replication Studies	206	30	16.99	11.85	22.13	37.65

Table A8. Mean Ratings for each of the COM-B questions, and the corresponding COM-B dimension to which they relate. N/A responses are excluded from the calculation of the mean.

					95% CI		
Statement	**Category**	**N**	**NA**	**Mean**	**Lower**	**Upper**	**SD**
I am physically capable of engaging in open research practices (e.g., I have sufficient physical stamina, I have sufficient physical skills)	Physical Capability	215	19	6.07	5.90	6.25	1.29
I am equipped with the skills necessary to engage with open research practices	Psychological Capability	228	6	5.30	5.11	5.48	1.43
I have enough information and training to understand and implement open research practices	Psychological Capability	229	5	4.64	4.43	4.85	1.63
I have access to the appropriate research infrastructure to engage in open research practices (e.g., access to appropriate repositories, computing resources, etc.)	Physical Opportunity	226	8	4.82	4.61	5.03	1.63
I have enough time to implement open research practices in my work	Physical Opportunity	226	8	4.01	3.79	4.23	1.67
I have sufficient financial support to engage in open research (e.g., to cover costs of video recordings, transcription/translation, data storage, etc.)	Physical Opportunity	222	12	3.24	3.01	3.47	1.74

Table A8. Continued from the previous page

					95% CI		
Statement	**Category**	**N**	**NA**	**Mean**	**Lower**	**Upper**	**SD**
Others in my wider research environment engage with and encourage the use of open research practices	Social Opportunity	222	12	4.66	4.44	4.88	1.68
There are adequate incentives from funders, institutions, or other regulators to engage in open research	Social Opportunity	226	8	3.65	3.42	3.89	1.79
There is sufficient recognition of open research in promotion and recruitment criteria	Social Opportunity	222	12	3.19	2.97	3.42	1.71
I am sufficiently motivated to engage with open research practices	Reflective Motivation	227	7	4.99	4.76	5.21	1.71
I believe open research practices to be a positive thing	Reflective Motivation	228	6	6.15	5.97	6.34	1.40
I consciously plan on working more with open research practices in the future	Reflective Motivation	224	10	5.50	5.29	5.70	1.58
I have developed the habit of engaging in open research practices as an everyday part of my research process	Automatic Motivation	218	16	4.38	4.13	4.62	1.87
When I think about my research, I automatically think about the open research elements as well	Automatic Motivation	220	14	4.62	4.36	4.88	1.96