

# **Beyond organisational boundaries: Ecosystem and Researcher Influences on Research Integrity and Practice**

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**We sought to understand how selected individual and organisational-level factors influence engagement in Questionable Research Practices (“QRPs”), and the extent to which engagement varies across organisations and countries.**

- QRPs (Questionable Research Practices): Ethically ambiguous practices that compromise scientific integrity.<sup>1</sup>
- Highly prevalent.<sup>2</sup>
- Their cumulative impact over time adversely affects science by undermining the reliability and validity of scientific knowledge.<sup>3</sup>

### **The Current Research:**

- 1.** Explore determinants of QRPs at individual (for example commitment to normative ideals, sex, disciplines) and organisational (workplace type, working environment) levels.
- 2.** Recognise the amount of variance that can be attributed to individual, organisational and country difference.



**Introduction**



Existing  
Literature



Methodology



Results

1. John, Loewestein & Prelec, 2012; Simmons, Nelson & Simonsohn, 2011; Wicherts et al., 2016; Bakker, van Dijk, & Wicherts, 2012; LeBel et al., 2013

2. Martinson et al., 2005; John et al., 2012, Fanelli, 2009,; cf. Xie et al.,2021; Fiedler & Schwarz, 2016.

3. Simmons et al., 2011; 1359 .

The reasons proposed in existing research for participation in questionable research practices (QRPs) are based on scattered and disjointed evidence.

- A recent survey of researchers in the Netherlands found that commitment to the normative ideals of science was one of the strongest predictors of engagement in QRPs.<sup>1</sup>
- Preliminary evidence suggests women are less likely to engage in QRPs<sup>1</sup>, but relationship not consistently found across all samples.<sup>2</sup>
- Mixed evidence on the relationship between academic rank and QRP engagement.<sup>1-2</sup>
- Mixed findings on disciplinary differences in QRP engagement.<sup>2-3</sup>
- Several studies have found self-reported publication pressure to be positively associated with self-reported use of QRPs.<sup>1-2,4</sup>

1. Gopalakrishna et al., 2022
2. Schneider et al. (2023)
3. Xie, Wang and Kong (2021)
4. Maggio et al., 2019



Introduction



**Existing Literature**



Methodology



Results



Discussion

## Secondary Data:

- International Survey on Research Integrity (IRIS)
- Analytical sample of 39,699 researchers, with 86.7% from Europe, 4.5% from the US and 8.7% elsewhere.
- Includes individual-level factors and organisational-level features that likely influence QRP engagement.

## Analysis:

- Multi-level modelling approach, allowing us to partition the variability of QRP engagement across individuals, organisations and countries.
- Dependent Variable: Mean QRP engagement, based on eight items.
- Grouping variables: country (34 countries) and organisation (7,666 organisations).
- Country was self-selected by respondent.
- Organisation indicated by email domain (e.g., Harvard.edu).

1. Part of the Horizon-EU funded 'Standard Operating Procedures for Research Integrity' project.
2. Reproducibility Materials (code) on the Open Science Framework <https://osf.io/sg8zf/>. Main dataset available on UK Data Archive. Institutional data available from Nick Allum ([nallum@essex.ac.uk](mailto:nallum@essex.ac.uk)) upon request.



Existing  
Literature



Methodology



Results



Discussion



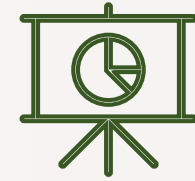
Conclusion

Individual Level Fixed Effects	
<b>Contract Type</b> (ref = permanent) No Contract Temporary Contract	0.05* 0.06***
<b>Career Stage</b> (ref = early career) mid-career later-career retired	-0.07*** -0.11*** -0.18***
<b>Disciplinary Field</b> (ref = natural sciences) medical social humanities	0.07*** -0.10*** -0.30***
<b>Sex</b> (Ref = Male)	-0.04***
<b>Scientific norms</b>	-0.15***

Literature



Methodology



**Results**

Individual level



Discussion



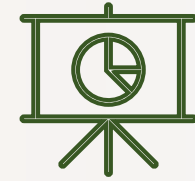
Conclusion

Organisation Level Fixed Effects	
<b>Workplace type</b> (ref = Academia)	
industry	0.21***
non-profit	0.13***
government research	0.07***
health research	0.07 **
other	0.04
<b>Integrity Breaches</b>	-0.05***
<b>Integrity Training</b>	-0.00
<b>Awareness of RI statement</b> (ref = aware)	
unaware	0.03**
no statement	0.11***
<b>Working environment</b>	-0.12***

Literature



Methodology



**Results**

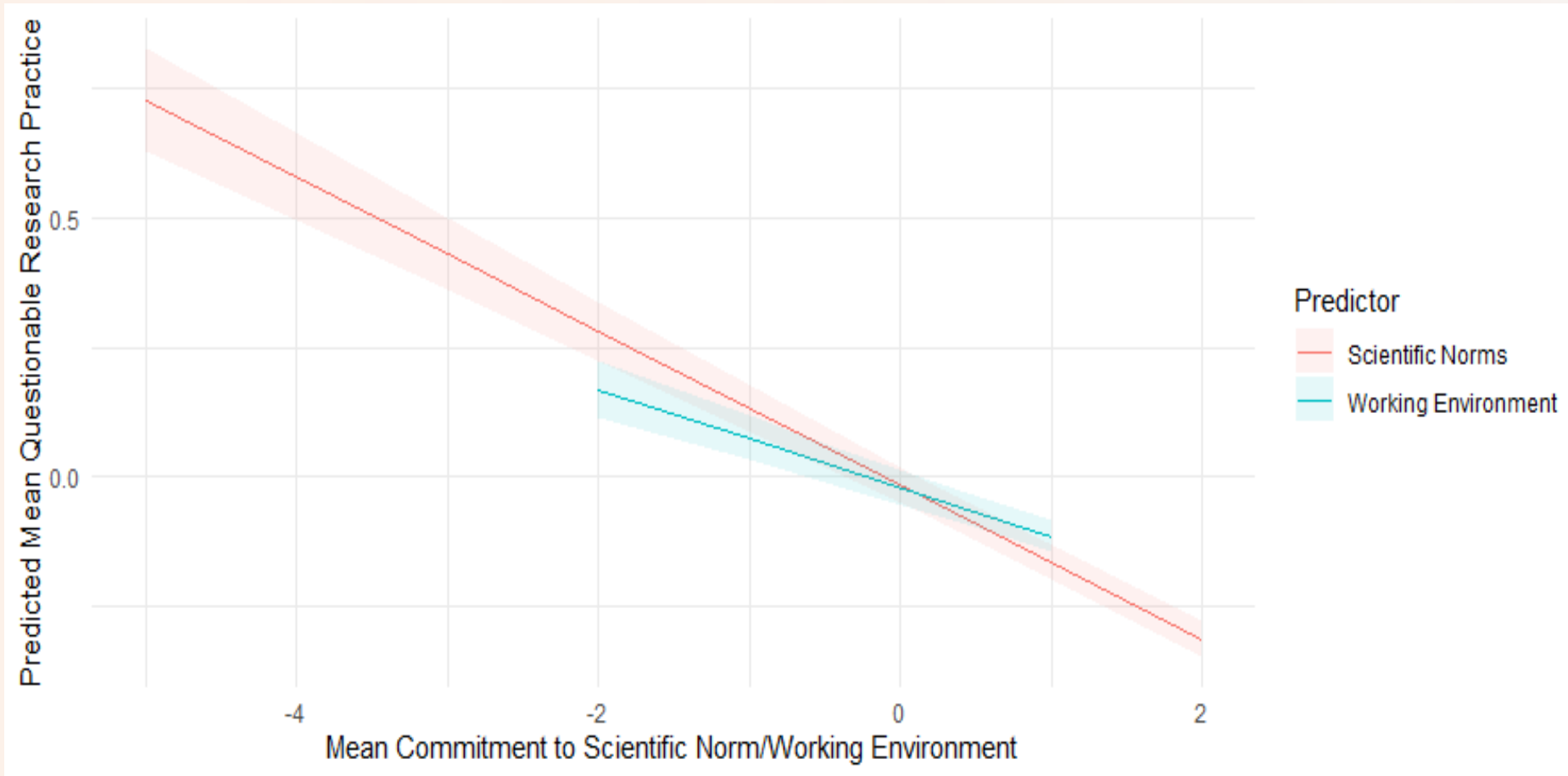
Organisational level



Discussion



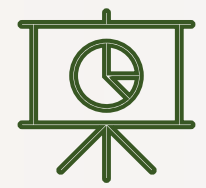
Conclusion



Literature



Methodology



**Results**

Organisational level



Discussion

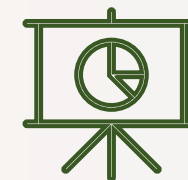


Conclusion

Literature



Methodology



**Results**

Random Effects



Discussion



Conclusion

Random Effects	Model
% of country-level variance	1.05%
% of organisation-level variance	0.87%



## The archetypical “deviant” researcher:

- Early-career researchers.
- Temporary employment contracts.
- Medical and natural sciences.
- Non-academic institutions
- Mertonian Norms.
- Work environments: Less collegial, high publication pressure, power imbalances, conflicts.
- Lack of whistle blower and breacher protection and support.
- Lower conscientiousness and agreeableness.<sup>1</sup>
- Focus on skill demonstration over development.<sup>2</sup>
- Descriptive norms.<sup>3</sup>

## Minimal variance in QRP engagement due to organisational and country differences.

1. Schenider et al., 2023
2. Janke, Daumiller & Rudert, 2019
3. Sacco, Bruton & Brown, 2018



Results



**Discussion**



Conclusion

## Concluding remarks:

- Explanatory framework of QRP engagement and research misbehaviour.
- The influence of proximal organisational environment is less overt.
- Place focus on the broader systemic-level factors that transcend research institutions (i.e., hyper-competition and publication-pressure), and researcher level factors.
- Idiosyncratic researcher differences are more impactful than local contexts.
- Research integrity training?

## Where next?

- There are other possible determinants at the individual, organisational and systemic levels.

## Limitations:

- Note, our effect sizes are small, so we should be concomitantly humble in our interpretations of the results.
- QRPs represent a distinct set of practices that qualitatively differ from QRPs in other surveys.



Discussion



Conclusion

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