

ISIC2024 Appendix I: Table 1 with Supported References

Table 1. Themes and sub-themes (causes of RM) from the first-stage literature review

| Themes | Sub-themes (Causes of RM) | Supported References |
|-----------------------|---|--|
| Individual Causes | Personal characters | (Aubert Bonn & Pinxten, 2019; Buljan et al., 2018; Cairns et al., 2021; Dannhoferová et al., 2022; Davis, 2003; DuBois et al., 2013; Fanelli et al., 2015; Farahat, 2022; Gillespie, 1991; Holtfreter et al., 2020; Krstić, 2015; National Academies of Sciences et al., 2017; Rodrigues et al., 2023; Tjldink et al., 2016; Tourish & Craig, 2020; Vučković et al., 2020; Wright et al., 2008) |
| | Lack of ethical awareness | (Aubert Bonn & Pinxten, 2019; Buljan et al., 2018; Cairns et al., 2021, 2021; Dannhoferová et al., 2022; Fanelli et al., 2015; Fonseca et al., 2016; Franzen et al., 2007; Golden et al., 2023; Herr, 2019; Holtfreter et al., 2020; Juyal et al., 2015; Krstić, 2015; National Academies of Sciences et al., 2017; Rodrigues et al., 2023; Roje et al., 2022; Sadeghi-Bazargani et al., 2020; Tang, 2023; Thiese et al., 2017; Tourish & Craig, 2020; Vučković et al., 2020; Wright et al., 2008) |
| | Insufficient RI education and training | (Al-Has et al., 2021; Cairns et al., 2021; ElHafeez et al., 2022; Fisher & Partin, 2014; Fonseca et al., 2016; Juyal et al., 2015; Krstić, 2015; Kwee & Kwee, 2023; Mardani et al., 2020; National Academies of Sciences et al., 2017; Rodrigues et al., 2023; Roje et al., 2022; Sadeghi-Bazargani et al., 2020) |
| | Lack of experience | (Aubert Bonn & Pinxten, 2019; Buljan et al., 2018; Fanelli et al., 2015; Horbach & Halffman, 2019; Okonta & Rossouw, 2013; Rodrigues et al., 2023; Roje et al., 2022; Roy & Edwards, 2023) |
| | Unstable mental state | (Cairns et al., 2021; Davis et al., 2007; Fanelli, Costas, & Ioannidis, 2017; Horbach et al., 2020; National Academies of Sciences et al., 2017; Parnther, 2022; Vučković et al., 2020; Wright et al., 2008) |
| | Excessive personal and family pressures | (Cairns et al., 2021; Davis et al., 2007; DuBois et al., 2013; Farahat, 2022; Fonseca et al., 2016; Roje et al., 2022; Sadeghi-Bazargani et al., 2020; Tang, 2023; Tourish & Craig, 2020; Vučković et al., 2020) |
| Organizational Causes | Lack of explicit rules and regulations | (Cairns et al., 2021; Davis, 2003; DuBois et al., 2013; Fanelli et al., 2015; Franzen et al., 2007; Golden et al., 2023; Horbach & Halffman, 2019; Kwee & Kwee, 2023; Mardani et al., 2020; Okonta & Rossouw, 2013; Rodrigues et al., 2023; Roy & Edwards, 2023; Tourish & Craig, 2020) |
| | Lack of supervision and mentoring | (Al-Has et al., 2021; Aubert Bonn & Pinxten, 2019; Davis et al., 2007; DuBois et al., 2013; ElHafeez et al., 2022; Fanelli, Costas, Fang, et al., 2017; Gillespie, 1991; Golden et al., 2023; Gopalakrishna et al., 2022; Herr, 2019; Juyal et al., 2015; Kwee & Kwee, 2023; Mardani et al., 2020; National Academies of Sciences et al., 2017; Parnther, 2022; Patnaik, 2016) |

| Themes | Sub-themes (Causes of RM) | Supported References |
|-----------------|---|--|
| | Lack of punishment and insufficient censure | (Buljan et al., 2018; Cairns et al., 2021; Dannhoferová et al., 2022; DuBois et al., 2013; Holtfreter et al., 2020; Okonta & Rossouw, 2013; Parnther, 2022; Tourish & Craig, 2020) |
| | Lack of report and transparency on RM | (Buljan et al., 2018; Dannhoferová et al., 2022; Farahat, 2022; Golden et al., 2023; Gopalakrishna et al., 2022; Mardani et al., 2020; Okonta & Rossouw, 2013; Roje et al., 2022; Schulz, 2015; Tang, 2023; Titus et al., 2008; Tourish & Craig, 2020) |
| | Misdirected reward system | (Aubert Bonn & Pinxten, 2019; Buljan et al., 2018; DuBois et al., 2013; Fanelli, Costas, Fang, et al., 2017; Fanelli et al., 2015, 2022; Gillespie, 1991; Herr, 2019; Horbach & Halffman, 2019; National Academies of Sciences et al., 2017; Parnther, 2022; Roy & Edwards, 2023; Stern et al., 2014; Tourish & Craig, 2020; Vučković et al., 2020) |
| Systemic Causes | “Publish or perish” pressure | (Anderson et al., 2007; Buljan et al., 2018; Cairns et al., 2021; Davis, 2003; Davis et al., 2007; DuBois et al., 2013; Fanelli, Costas, Fang, et al., 2017; Fanelli et al., 2015, 2022; Fonseca et al., 2016; Franzen et al., 2007; Gillespie, 1991; Golden et al., 2023; Gopalakrishna et al., 2022; Herr, 2019; Holtfreter et al., 2020; Horbach & Halffman, 2019; Jacob, 2016; Juyal et al., 2015; Krstić, 2015; Kwee & Kwee, 2023; Mardani et al., 2020; Okonta & Rossouw, 2013; Patnaik, 2016; Rodrigues et al., 2023; Roy & Edwards, 2023; Sadeghi-Bazargani et al., 2020; Stern et al., 2014; Tjldink et al., 2016; Tourish & Craig, 2020) |
| | Pressure from grant application | (Buljan et al., 2018; DuBois et al., 2013; ElHafeez et al., 2022; Fanelli et al., 2022; Franzen et al., 2007; Golden et al., 2023; Gopalakrishna et al., 2022; Holtfreter et al., 2020; Kwee & Kwee, 2023; Mardani et al., 2020; National Academies of Sciences et al., 2017; Okonta & Rossouw, 2013; Patnaik, 2016; Roy & Edwards, 2023; Tourish & Craig, 2020) |
| | Pressure from promotion and tenure | (Davis et al., 2007; Gillespie, 1991; Golden et al., 2023; Holtfreter et al., 2020; National Academies of Sciences et al., 2017; Okonta & Rossouw, 2013; Roje et al., 2022; Tjldink et al., 2016; Wright et al., 2008) |
| | Overly intense peer competition | (Al-Has et al., 2021; Cairns et al., 2021; Farahat, 2022; Golden et al., 2023; Gopalakrishna et al., 2022; Herr, 2019; Horbach et al., 2019; Rodrigues et al., 2023; Roy & Edwards, 2023; Stern et al., 2014; Tourish & Craig, 2020; Vučković et al., 2020) |

References:

- Al-Has, A., Fadzil, A. R., Shazwan, M. S., Yunas, N. S., Bathumalai, P., & Sorgar, I. A. A. (2021). *The Major Causes of Research Misconduct* (M. ÖZER KESKIN & H. ÇİFTÇİ, Eds.; pp. 83–91). Farabi Publishing House.
- Anderson, M. S., Ronning, E. A., De Vries, R., & Martinson, B. C. (2007). The perverse effects of competition on scientists' work and relationships. *Science and Engineering Ethics*, 13(4), 437–461. <https://doi.org/10.1007/s11948-007-9042-5>
- Aubert Bonn, N., & Pinxten, W. (2019). A decade of empirical research on research integrity: What have we (not) looked at? *Journal of Empirical Research on Human Research Ethics*, 14(4), 338–352. <https://doi.org/10.1177/1556264619858534>
- Buljan, I., Barać, L., & Marušić, A. (2018). How researchers perceive research misconduct in biomedicine and how they would prevent it: A qualitative study in a small scientific community. *Accountability in Research*, 25(4), 220–238. <https://doi.org/10.1080/08989621.2018.1463162>
- Cairns, A. C., Linville, C., Garcia, T., Bridges, B., Tanona, S., Herington, J., & Laverty, J. T. (2021). A phenomenographic study of scientists' beliefs about the causes of scientists' research misconduct. *Research Ethics*, 17(4), 501–521. Scopus. <https://doi.org/10.1177/17470161211042658>
- Dannhoferová, J., Foltýnek, T., Dlabolová, D., & Fishman, T. (2022). Cutting the vicious circle: Addressing the inconsistency in teachers' approaches to academic integrity breaches. *Journal on Efficiency and Responsibility in Education and Science*, 15(1), 10–22. Scopus. <https://doi.org/10.7160/eriesj.2022.150102>
- Davis, M. S. (2003). The role of culture in research misconduct. *Accountability in Research*, 10(3), 189–201. <https://doi.org/10.1080/714906092>
- Davis, M. S., Riske-Morris, M., & Diaz, S. (2007). Causal factors implicated in research misconduct: Evidence from ORI case files. *Science and Engineering Ethics*, 13(4), 395–414. <https://doi.org/10.1007/s11948-007-9045-2>
- DuBois, J. M., Anderson, E. E., Chibnall, J., Carroll, K., Gibb, T., Ogbuka, C., & Rubbelke, T. (2013). Understanding research misconduct: A comparative analysis of 120 cases of professional wrongdoing. *Accountability in Research*, 20(5–6), 320–338. <https://doi.org/10.1080/08989621.2013.822248>
- ElHafeez, S. A., Salem, M., & Silverman, H. J. (2022). Reliability and validation of an attitude scale regarding responsible conduct in research. *PLoS ONE*, 17(3 March). Scopus. <https://doi.org/10.1371/journal.pone.0265392>
- Fanelli, D., Costas, R., Fang, F. C., Casadevall, A., & Bik, E. M. (2017). *Why do scientists fabricate and falsify data? A matched-control analysis of papers containing problematic image duplications* [Preprint]. Scientific Communication and Education. <https://doi.org/10.1101/126805>
- Fanelli, D., Costas, R., & Ioannidis, J. P. A. (2017). Meta-assessment of bias in science. *Proceedings of the National Academy of Sciences*, 114(14), 3714–3719. <https://doi.org/10.1073/pnas.1618569114>

- Fanelli, D., Costas, R., & Larivière, V. (2015). Misconduct policies, academic culture and career stage, not gender or pressures to publish, affect scientific integrity. *PLOS ONE*, 10(6), e0127556. <https://doi.org/10.1371/journal.pone.0127556>
- Fanelli, D., Schleicher, M., Fang, F. C., Casadevall, A., & Bik, E. M. (2022). Do individual and institutional predictors of misconduct vary by country? Results of a matched-control analysis of problematic image duplications. *PLOS ONE*, 17(3), e0255334. <https://doi.org/10.1371/journal.pone.0255334>
- Farahat, A. (2022). Elements of academic integrity in a cross-cultural middle eastern educational system: Saudi Arabia, Egypt, and Jordan case study. *International Journal for Educational Integrity*, 18(1). Scopus. <https://doi.org/10.1007/s40979-021-00095-5>
- Fisher, E. R., & Partin, K. M. (2014). The Challenges for Scientists in Avoiding Plagiarism. *Accountability in Research*, 21(6), 353–365. <https://doi.org/10.1080/08989621.2013.877348>
- Fonseca, P., Olabarrieta-Landa, L., Panyavin, I., Jimenez, X., Arelis, A., Barajas, B., Agudelo, Y., & Lasprilla, J. (2016). Perceived ethical misconduct: A survey of neuropsychology professionals in Mexico. *International Journal of Psychological Research*, 9(1), 64–71. <https://doi.org/10.21500/20112084.2101>
- Franzen, M., Rödder, S., & Weingart, P. (2007). Fraud: Causes and culprits as perceived by science and the media. Institutional changes, rather than individual motivations, encourage misconduct. *EMBO Reports*, 8(1), 3–7. <https://doi.org/10.1038/sj.embor.7400884>
- Gillespie, I. E. (1991). Fraud and misconduct in medical research: Causes, investigation and prevention. *Journal of the Royal College of Physicians of London*, 25(2), 89–94.
- Golden, J., Mazzotta, C. M., & Zittel-Barr, K. (2023). Systemic obstacles to addressing research misconduct in higher education: A case study. *Journal of Academic Ethics*, 21(1), 71–82. <https://doi.org/10.1007/s10805-021-09438-w>
- Gopalakrishna, G., Riet, G. ter, Vink, G., Stoop, I., Wicherts, J. M., & Bouter, L. M. (2022). Prevalence of questionable research practices, research misconduct and their potential explanatory factors: A survey among academic researchers in The Netherlands. *PLOS ONE*, 17(2), e0263023. <https://doi.org/10.1371/journal.pone.0263023>
- Herr, M. (2019). Responding to research misconduct: A primer for LIS professionals. *Science & Technology Libraries*, 38(3), 272–287. <https://doi.org/10.1080/0194262X.2019.1644268>
- Holtfreter, K., Reisig, M., Pratt, T., & Mays, R. (2020). The perceived causes of research misconduct among faculty members in the natural, social, and applied sciences. *Studies in Higher Education*, 45(11), 2162–2174. <https://doi.org/10.1080/03075079.2019.1593352>
- Horbach, S. P. J. M., Breit, E., Halffman, W., & Mamelund, S.-E. (2020). On the willingness to report and the consequences of reporting research misconduct: The role of power relations. *Science and Engineering Ethics*, 26(3), 1595–1623. <https://doi.org/10.1007/s11948-020-00202-8>
- Horbach, S. P. J. M., Breit, E., & Mamelund, S.-E. (2019). Organisational responses to alleged scientific misconduct: Sensemaking, sensegiving, and sensehiding. *Science and Public Policy*, 46(3), 415–429. <https://doi.org/10.1093/scipol/scy068>

- Horbach, S. P. J. M., & Halffman, W. (2019). The extent and causes of academic text recycling or 'self-plagiarism'. *Research Policy*, 48(2), 492–502. <https://doi.org/10.1016/j.respol.2017.09.004>
- Jacob, M. (2016). On the scope and typology of 'research misconduct': The gaze of the general medical council, 1990-2015. *Medical Law Review*, 24(4), 497–517. <https://doi.org/10.1093/medlaw/fww019>
- Juyal, D., Thawani, V., & Thaledi, S. (2015). Rise of academic plagiarism in India: Reasons, solutions and resolution. *Lung India*, 32(5), 542–543. Scopus. <https://doi.org/10.4103/0970-2113.164151>
- Krstić, S. B. (2015). Research integrity practices from the perspective of early-career researchers. *Science and Engineering Ethics*, 21(5), 1181–1196. <https://doi.org/10.1007/s11948-014-9607-z>
- Kwee, R. M., & Kwee, T. C. (2023). Retracted publications in medical imaging literature: An analysis using the retraction watch database. *Academic Radiology*, 30(6), 1148–1152. Scopus. <https://doi.org/10.1016/j.acra.2022.06.025>
- Mardani, A., Nakhoda, M., & Gooshki, E. (2020). Relationship among factors affecting research misconduct in medical sciences in Iran. *Accountability in Research-Policies and Quality Assurance*, 27(7), 417–443. <https://doi.org/10.1080/08989621.2020.1766977>
- National Academies of Sciences, E., Affairs, P. and G., Committee on Science, E., & Science, C. on R. (2017). Understanding the causes. In *Fostering Integrity in Research*. National Academies Press (US). <https://www.ncbi.nlm.nih.gov/books/NBK475947/>
- Okonta, P., & Rossouw, T. (2013). Prevalence of scientific misconduct among a group of researchers in Nigeria. *Developing World Bioethics*, 13(3), 149–157. <https://doi.org/10.1111/j.1471-8847.2012.00339.x>
- Parnter, C. (2022). International students and academic misconduct: Considering culture, community, and context. *Journal of College and Character*, 23(1), 60–75. <https://doi.org/10.1080/2194587X.2021.2017978>
- Patnaik, P. (2016). Scientific misconduct in india: Causes and perpetuation. *Science and Engineering Ethics*, 22(4), 1245–1249. <https://doi.org/10.1007/s11948-015-9677-6>
- Rodrigues, F., Gupta, P., Khan, A. P., Chatterjee, T., Sandhu, N. K., & Gupta, L. (2023). The cultural context of plagiarism and research misconduct in the Asian region. *Journal of Korean Medical Science*, 38(12). Scopus. <https://doi.org/10.3346/JKMS.2023.38.E88>
- Roje, R., Reyes Elizondo, A., Kaltenbrunner, W., Buljan, I., & Marušić, A. (2022). Factors influencing the promotion and implementation of research integrity in research performing and research funding organizations: A scoping review. *Accountability in Research*, 0(0), 1–39. <https://doi.org/10.1080/08989621.2022.2073819>
- Roy, S., & Edwards, M. A. (2023). NSF Fellows' perceptions about incentives, research misconduct, and scientific integrity in STEM academia. *Scientific Reports*, 13(1), Article 1. <https://doi.org/10.1038/s41598-023-32445-3>
- Sadeghi-Bazargani, H., Nikniaz, L., & Yousefi Nodeh, H. R. (2020). Street research market: Dealing with scientific misconduct in Iran. *BMC Medical Ethics*, 21(1). Scopus. <https://doi.org/10.1186/s12910-020-00518-x>
- Schulz, W. (2015). Ethics and the responsible conduct of research in the chemical community: The unique role and challenges of the news media.

- Accountability in Research-Policies and Quality Assurance*, 22(6), 384–401. <https://doi.org/10.1080/08989621.2015.1047706>
- Stern, A. M., Casadevall, A., Steen, R. G., & Fang, F. C. (2014). Financial costs and personal consequences of research misconduct resulting in retracted publications. *eLife*, 3, e02956. <https://doi.org/10.7554/eLife.02956>
- Tang, B. L. (2023). Nature and causes of questionable research practice and research misconduct from a philosophy of science perspective. *Ethics & Behavior*, 0(0), 1–9. <https://doi.org/10.1080/10508422.2023.2208245>
- Thiese, M., Walker, S., & Lindsey, J. (2017). Truths, lies, and statistics. *Journal of Thoracic Disease*, 9(10), 4117–4124. <https://doi.org/10.21037/jtd.2017.09.24>
- Tijdink, J. K., Bouter, L. M., Veldkamp, C. L. S., Van De Ven, P. M., Wicherts, J. M., & Smulders, Y. M. (2016). Personality traits are associated with research misbehavior in Dutch scientists: A cross-sectional study. *PLOS ONE*, 11(9), e0163251. <https://doi.org/10.1371/journal.pone.0163251>
- Titus, S. L., Wells, J. A., & Rhoades, L. J. (2008). Repairing research integrity. *Nature*, 453(7198), Article 7198. <https://doi.org/10.1038/453980a>
- Tourish, D., & Craig, R. (2020). Research misconduct in business and management studies: Causes, consequences, and possible remedies. *Journal of Management Inquiry*, 29(2), 174–187. <https://doi.org/10.1177/1056492618792621>
- Vučković, D., Peković, S., Blečić, M., & Đoković, R. (2020). Attitudes towards cheating behavior during assessing students' performance: Student and teacher perspectives. *International Journal for Educational Integrity*, 16(1). Scopus. <https://doi.org/10.1007/s40979-020-00065-3>
- Wright, D. E., Titus, S. L., & Cornelison, J. B. (2008). Mentoring and research misconduct: An analysis of research mentoring in closed ORI cases. *Science and Engineering Ethics*, 14(3), 323–336. <https://doi.org/10.1007/s11948-008-9074-5>