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To cite this article: Mehmet A. Orhan (2021) Dynamic interactionism between research fraud and research culture: a commentary to Harvey's analysis, *Quality in Higher Education*, 27:1, 134-146, DOI: [10.1080/13538322.2021.1857900](https://doi.org/10.1080/13538322.2021.1857900)

To link to this article: <https://doi.org/10.1080/13538322.2021.1857900>



Published online: 11 Jan 2021.



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Dynamic interactionism between research fraud and research culture: a commentary to Harvey's analysis

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ABSTRACT

Increasingly more scholars are voicing concerns over fraudulent events and incidences of malpractice in academic research. Disappointingly, but unsurprisingly, research fraud is a consequence or even a rational response to fitting into a malfunctioning research environment that is fetishised globally. The current system creates a toxic ecosystem for research in which short-term individual interests and institutional goals override long-term ones. In addition, perverse incentive systems, unequal power balances and barriers to academic freedom define the rules of research. In response to Professor Lee Harvey bringing this debate with many unique examples to light, this commentary extends the conversation by emphasising the factors that create the pressure behind fraudulent studies, as well as listing the latent problems that establish socially acceptable albeit unethical norms that have led to a dysfunctional and destructive research culture in academia.

Introduction

In his analysis, Harvey (2020) underlines a very problematic area that directly concerns the quality of research and higher education, its institutions, researchers and the broader public: research fraud. He identifies numerous interesting individual cases of research fraud and provides valuable remarks on how reward structures influence research fraud in higher education. Even though it is impossible not to concur with these remarks, there are several areas that deserve an explanation as to why academic fraud happens. For anyone who is not an expert in higher education and lacks a fundamental understanding of the research process, Harvey's editorial piece could be understood as suggesting the problem is the result of some bad people engaging in bad practices by fabricating, falsifying or deceiving research procedures and results. However, this conclusion would not be accurate; there are forces behind scientific practices that can and do engender fraud. Thus, this piece offers a dynamic interactionism perspective proposing that nurture is in a continuous symbiosis with nature and the interplay between forces naturally define what fits best (Lerner,

1978). From the dynamic interactionism perspective, individuals and their actions are not independent of social exchanges with other individuals. Beyond these exchanges, the interplay between environmental factors also shapes and defines individual actions. In the same vein, bad practices in academia prevail because they are the ones that fit into an ecosystem that has created such actions as by-products (Smaldino & McElreath, 2016) whether deliberate or not. Fraud, scientific misconduct, questionable research practices and collectively accepted norms that are problematic in nature are all by-products of a broken research culture that sets the stage for fraudsters to shine in the system by enjoying stellar publications, generous grants and successful careers with little to no penalisation. An assertion that there are bad people doing bad things therefore does not provide sufficient explanation without understanding the environmental forces.

Contrarily, the current research ecosystem rewards and encourages practices that have evolved to make researchers more efficient. There are many ways to do so, such as refraining from conducting longitudinal studies as time, money, effort and speed must be optimised, or designing studies that are guaranteed publication before the study has run its course. Researchers may atomise studies into several smaller publishable pieces (also called salami slicing) in addition to other corner-cutting practices adopted to satisfy intensifying expectations and institutional requirements (Ioannidis, 2014; Ioannidis & Boyack, 2020). Since, in many cases, career success depends on publication quantity rather than quality, anything that limits speed and efficiency is seen as damaging to career success and institutional goals. This efficiency is not without cost: flawed and careless studies, faulty conclusions and questionable research practices have consequently become commonplace (Higginson & Munafò, 2016; Banks *et al.*, 2016; Edwards & Roy, 2017). It is thus imperative to recognise that environmental factors, institutional mechanisms and social exchanges shape researchers' actions and responses.

The aim of this commentary is neither to provide a solution nor defend the wrongdoings of individuals. Rather, it aims to provide a broader angle to understanding some of the reasons and motivations behind research fraud. As Harvey (2020, p. 255) states: 'the reason for fraud is also complicated'. If this commentary makes it even slightly easier to understand some of the factors contributing to research fraud, then this goal will be fulfilled. However, since an analysis without listing external factors or proposing structural changes would be incomplete, these are included here.

Boundaries of research fraud and networked misconduct

Before presenting argumentation, it would be useful to start with a formal definition. Harvey (2020, p. 243) described research fraud as 'fabrication, falsification or deception in performing or reporting research results' Arguably, this

definition falls short of capturing all types of misconduct occurring in research. Even though plagiarism and duplication of publications are also mentioned in the same analysis, misconduct and fraudulent activities can take on various forms.

In a relatively recent study, Artino *et al.* (2019, pp. 80–82) list 43 different types of scientific misconduct during the four main stages of research: (1) data collection and storage; (2) data analysis; (3) study reporting; (4) authorship and collaboration. Among these 43 types of scientific misconduct that have been confessed to by over 500 researchers, the three most frequently reported by Artino *et al.* are:

- Adding one or more authors to a paper who did not qualify for authorship (honorary authorship) (60.57%);
- Citing articles and/or materials that were not read (49.56%);
- Selectively citing certain papers just to please editors and reviewers (49.47%).

These practices illustrate some more significant structural problems linked to research fraud. Inappropriate authorship (in forms of gift or honorary authorship or ghost authorship) is a form of misconduct that contradicts the very essence of science: giving credit where credit is due. Often, the contributions of graduate students or research assistants are ignored (ghost), whereas established scholars who do not provide any meaningful contribution are listed as authors (gift or honorary) (Wislar *et al.*, 2011; Chapman & Lindner, 2014). On the other hand, just because the field places a particularly strong emphasis on a certain number of studies, there is an expectation to cite popular studies. Alternatively, some studies are cited to avoid immediate rejection by editors and reviewers. Just as bouncers at clubs enforce dress codes, some journal editors enforce essential citation lists and establish policies to ensure that submissions contain a minimum number of citations from that same journal in order to boost metrics. Ioannidis and Boyack (2020) revealed some tricky gaming mechanisms for misuse of citation metrics, such as coercive self-citations and ‘citation farms’, which refers to a group of researchers collectively engaging in the massive circulation of citations to inflate both personal and journal-related metrics (Baccini *et al.*, 2019). Empirical evidence indicates that when metrics are used for hiring and promotion decisions, the misuse of citation metrics rises excessively (Seeber *et al.*, 2019). Ioannidis and Boyack (2020, p. 2) suggested that coercive self-citation occurs when ‘editors and/or reviewers force authors to revise their article including citations to articles published by the journals and/or authored by the editors and/or reviewers even though the citations are not really relevant to the work’. For example, Van Noorden (2020) reported that Kuo-Chen Chou, a biophysicist in the United States, has used coercive citation and inappropriate authorship methods while serving as both reviewer and editor in the *Journal of Theoretical Biology*. He

managed to boost his own citations from approximately 2,000 to over 58,000 by requesting several dozen of his publications to be cited. He also reviewed papers that he edited under a pseudonym and even added himself as a co-author during his stint at that journal.

Junior researchers are often victims in this process, and they are expected (and sometimes forced) to comply with hierarchical and positional power. However, senior researchers are not immune to power wars and their damaging consequences to science. This summer, Simine Vazire, a professor of psychological ethics and well-being at the University of Melbourne, publicly announced that she received an admonishing email from the patrons of a well-known peer-review journal, *Social Psychological and Personality Science*, upon desk-rejecting a flawed study authored by eminent researchers of the field while she was the editor-in-chief of that journal (Vazire, 2020).

My decision to reject a certain manuscript was [found] 'distasteful.' I asked for a discussion of the scientific merits of that editorial decision and others, but got nowhere. In the end, no one backed down. I kept doing what I was doing, and they [journal patrons] stood by their concerns about how I was damaging the journal's reputation. It's not hard to imagine how things might have gone differently, though. Without the persistent support of the associate editors and the colleagues I called on for advice during this episode, I very likely would have caved and just agreed to keep the famous people happy. (Vazire, 2020)

As this incident demonstrates, power and politics can influence the types of studies appearing in journals, especially high-impact ones, because leading researchers have the potential to contribute to the journals' reputation and reach. This is a very alarming issue for the progress of science. If such dilemmas like Vazire's are faced by less assertive editors, how can we ensure that we are reading spotless and rigorous studies? If more prominent senior researchers could exert power behind closed doors and influence the peer-review process, how can we fully trust the process? Is there any valid reason why these events should not be considered research fraud?

To this end, if we consider research as a journey from planning to publication and then dissemination, fraud can happen at any point in this journey; even after the study is duly completed. Interfering with publications' editorial decisions, distorting peer-review processes, manipulating citation metrics and misinterpreting results after publication should also be considered research fraud because the intention is to obtain unfair gains; whether these gains are publication, promotion, funding, fame, monetary reward or metrics. These practices bestowing unfair gains only add fuel to the flames when hierarchical inequalities and unequal power balances exist.

In this commentary, a broader perspective is to be provided, and research fraud is captured as 'any corrupt practice that pollutes the integrity at any stage and contaminates the scientific body of knowledge' and therefore, 'any threat to scientific integrity' will provide the basis of this discussion. Beyond

fabrication, falsification and plagiarism, research fraud also includes misconduct, questionable research practices and the unethical norms that influence a fundamental understanding of the world. This inclusive view of scientific misconduct also corroborates the observations of Biagioli and Lippman (2020). Similarly, Dougherty *et al.* (2019) argued that most higher education institutions agree in the broad definition of fraud that captures ‘any other practice that seriously deviates from practices commonly accepted in the discipline or in the academic and research communities’ on top of the triumvirate of fabrication, falsification, and plagiarism. This goes beyond what Harvey defines as research fraud and it guides this commentary to explain the factors that erode scientific integrity and spread the acceptability of questionable research practices that trigger fraud.

Publication pressure is an understatement: pressure to publish in ‘A-journals’

The pressure to publish grows commensurately with increasing competition. It is not only enough to publish but publications should appear in the coveted places that are becoming exceedingly scarce. Committees that make hiring and promotion decisions often evaluate journal metrics as a proxy for publication quality because they provide somewhat objective comparisons. However, as McLuhan (1964, p. 7) once brilliantly stated, ‘the medium is the message’. Academic outlets that were once used for communicating research are now the message themselves.

According to the Society for Personality and Social Psychology’s latest academic job market report (Vuletic *et al.*, 2019), the median number of publications of 255 candidates searching for an academic post is found as high as 6. However, what predicts landing a tenure-track job for first-time job market applicants is not the number of publications. The most important predictor of getting an offer is found to be the impact factor of the journals that published the research. The value of intellectual contributions is deemed valid only if the publication appears in top-tier journals, whereas other contributions are often ignored. More distressingly, publications appearing in lower-ranked journals are not only ignored but they could also damage the reputation and skew judgement on quality, even if a high-impact journal publication record is in place (Powdthavee *et al.*, 2018).

Although some scholars like Butler and Spoelstra (2020) disagree with the use of the ‘game’ metaphor in publication, they notably acknowledge that gaming is partly embedded in research culture due to the instrumental role of publishing in career goals. Gaming has been explicitly and loudly pronounced in academia since the 1960s (Csiszar, 2020). The only way to win the game and gain more legitimate power is to play the game according to the rules as they are clearly defined by metrics (Aguinis *et al.*, 2020; Miller *et al.*, 2011; Steele *et al.*,

2006). Publication in top journals is not only a prerequisite for securing a job; in today's extremely competitive higher education landscape, failure to publish in top journals can cost faculty members their jobs. Dr Lucy Zhao, a lecturer in finance, was dismissed from the University of Technology Sydney for unsatisfactory performance due to lack of A-journal articles despite multiple legitimate, impactful publications. She could return to work upon a tribunal decision for unfair dismissal (Dr. Ruoyun (Lucy) Zhao v. University of Technology Sydney, 2020). The publish-or-perish attitude has become more stringent and the current system ensures that the *status quo* is maintained. In a recent study conducted in the economics departments of Dutch universities, van Dalen (2020) argued that full professors value the publish-or-perish approach more positively compared to their lower-ranking counterparts. Against this dominant assumption, Brodeur *et al.* (2020) demonstrated that increasing publication pressure also increases the frequency of questionable research practices in the top 25 journals in economics.

It is not unknown that certain biases are included in peer-review decisions favouring scientists with higher ranks and the ones from prestigious institutions (Tomkins *et al.*, 2017). In some cases, editorial processes can be customised according to hierarchical ranks, as well as the prestige of the researchers' institutions and their networks. For example, the journal *Proceedings of National Academy of Sciences of the USA*, known for its highly influential studies in diverse fields, allows its members to select their own peer reviewers. Furthermore, Bravo *et al.* (2018) provided evidence of the impact of scholars' reputation and their networks on editorial biases in publication processes in four computer science journals. Likewise, Colussi (2018, p. 45) found the same effect in four economics journals and stated that 'about 43% of the articles published in these journals are authored by scholars connected to one editor at the time of the publication'. One immediate argument might be that it is natural to observe a higher quality of contributions from scholars residing at prestigious institutions and with connections to the editors. However, a growing body of evidence from various studies (Brembs, 2018; Starbuck, 2005) indicates that, although high-quality journals often do not produce the most credible science, what they surely do is build up the fame and popularity of researchers.

Anderson *et al.* (2020) uncovered the relationship between citation counts of studies and the attention these studies receive in popular media outlets. Schekman (2013) stated the following: 'A paper can become highly cited because it is good science—or because it is eye-catching, provocative or wrong. Luxury-journal editors know this, so they accept papers that will make waves because they explore sexy subjects or make challenging claims'. It can thus be concluded that neither citation counts nor journal impact factors are accurate predictors of research quality. Furthermore, Dougherty *et al.* (2019) speculated that individual citation metrics also come with implicit biases linked to race and gender. Overall, the results support the claim external influence

distorts the precise measurement of research quality in both individual citation metrics and journal impact scores.

Collective barriers to academic freedom

Metrics, incentives, and institutional rankings go hand in hand and research quality, quantified by metrics, is seen as the most critical determinant in the assessment of the quality of higher education institutions (Steele *et al.*, 2006). Beyond individual rewards, collective rewards are also granted based on performance measures. Research groups, departments and even universities are usually rewarded and funded based on collective research outcomes. These collective outcomes also constitute the basis for rankings that allow comparison between departments, universities and even nations. Bouyssou and Marchant (2011) criticised the use of individual metrics to be aggregated to measure collective performances because these measurements violate basic assumptions of the consistency principle. This causes flawed comparisons because an institution with more impactful researchers may be ranked below that of an institution with less impactful researchers due to the violation. Congruently, Billaut *et al.* (2010) also provided evidence that famous university rankings contain the measurement problems that make people reach imperfect conclusions about research productivity. However, many institutions rely on rankings to assess research productivity and quality. As discussed by Harvey, the marketisation of higher education is partly responsible for intensifying attention to rankings, as they guide student decisions (that is, consumer behaviour) and universities heavily rely on tuition for the financing of higher education where public research budgets are disappearing (European University Association, 2020).

Rankings also play a huge role in funding decisions in many countries. National research and higher education strategies are designed to support high-quality research determined by rankings and metrics. Top publications are evaluated as performance outcomes when making funding decisions, rewarding the quantity of high-impact publications. For example, one of the world's most advanced economies, Germany, launched the Excellence Initiative in 2006 to stimulate a competitive research environment and catch up with international research standards. It was recently discovered that the number of papers eventually increased as a result. However, the increase in quantity did not match the quality as overall research impact has not improved (Civera *et al.*, 2020).

Collective research strategies often set limits on the publication behaviour of researchers rather than flexing their freedom on the topics they choose to study by designing reward systems. For example, in France, two bodies, Comité National de la Recherche Scientifique (CNRS) [French National Centre for Scientific Research] and Fondation Nationale pour l'Enseignement de la Gestion

des Enterprises (FNEGE) [French Foundation for Management Education] publish the rankings of scholarly journals from various subfields of economics and management. Researchers specialised in these fields are expected to publish here for career advancement and other rewards. Even though both rankings are extensive, they are disproportionately represented across subfields (Orhan, 2020). Another restriction that these rankings create is that interdisciplinary research is not incentivised, thereby forcing a reluctance for researchers to become involved in certain projects that will be published in non-ranking journals. Moreover, while these rankings set ambitious goals for research so that they can deeply specialise in the fields but prevent them from contributing to closely neighbouring fields like anthropology, sociology, political science, social psychology or to newly emerging fields such as organisational neuroscience. Such attempts jointly hinder scientific progress because they disincentivise interdisciplinary collaborations, institutionalise barriers and put limitations on complete academic freedom.

Academic freedom and publication pressure are not mutually exclusive. Academic freedom warrants objectivity and independence. The uncertainty about future employment and lack of stability in junior academic staff positions put academic freedom in danger as they place enormous stress on junior researchers. The tenure system was historically designed as the enabling mechanism for academic freedom. However, Goodhart's law also applies here for the tenure system: once the building block of academic freedom, tenure has become 'the ultimate goal of academic life, has become what used to be the process to the goal, and the process has become corrupted by personalities, egos, and political correctness' (Tierney, 2004, p. 175). To satisfy the strict requirements of tenure, publication pressure is not only concerned with the number of publications. In most competitive institutions, scholars are required to publish in a very limited set of journals, which extremely limits creativity and free thinking. Furthermore, associated with this, there are certainly other barriers to academic freedom.

The dependency on external funding is also partly disturbing how science should be approached. In a very recent report based on the responses of over 4,000 academics on research culture in the UK, Wellcome Trust (2020, p. 14) captured that

there was a prevalent idea that funding criteria were a core driver of research misconduct. Many argued that the nature of these criteria, which rewarded researchers who had published in higher-impact journals, encouraged negative research behaviours, such as deliberate embellishment or distortion of data.

Another problem pointed out by Smith (2005) is the mounting conflict of interest in studies funded externally by industrial companies. Smith argued that medical journals have increasingly become billboards for pharmaceutical companies as they can influence the outcomes of experiences and use funding

as a 'carrot and stick'. Commercial interest overpowering scientific integrity is another nail in the coffin.

The question remains: if there are no major, industry-based funding agencies, do researchers have complete autonomy in deciding what to study? The answer is blurred. According to Frey (2003), academic publications do not fulfil individual satisfaction but, instead, they are positioned to satisfy the needs of editors and reviewers. What sells best in the market is a demand-side decision, and success is dependent on being able to pack what sells in the market. Likewise, Tourish (2020) lamented the deviance of the management field from its core focus. Instead of providing relevant and tangible suggestions for the practice, scholars attribute too much emphasis to theory development that is expected by the editors of top journals, as well as by those in aspiring outlets that desire to become more selective. In return, Tourish argued that this undermines the relevance of research, exaggerates the need for theory development and opens doors to a discipline-wide crisis that comes with increased pressure for needless publications. This pressure is believed to play a major role in the widespread acceptability of questionable research practices that fall between what is considered ethical and unethical, such as playing with numbers, omitting data points, altering models, and modifying a hypothesis to fit into expected publishable standards (Butler *et al.*, 2017; Tourish & Craig, 2020). The end justifies the means if publication records are enriched and expectations of reviewers and editors are met.

Conclusion

In addition to declining freedom, many factors play a significantly detrimental role in the loss of meaning in academic life. The academic career has noticeably devolved over the last few decades from being guided by joy, curiosity and the intellectual pursuit of truth, to a job resembling that on a factory line, where everyone is expected to produce the same or similar output in isomorphic organisational structures where differentiation is neither permitted nor appreciated. As disappointing and discouraging as this may be, if the quantity of output is what matters, then the quality is compromised or even discarded in most competitive market structures.

Fraud is bad. Shoddy results should never be published. No one would ever dare to disagree with these statements. Besides, misconduct and questionable research practices are contagious and cheating spreads faster when the social acceptability of misconduct mushrooms. However, scapegoating is not a solution, and the discussion should not focus on those who have engaged in unethical practices. If the quantity is fetishised and favoured over quality, there will always be someone gaming the metrics or faking science. The core of the conversation about academic research fraud should be centralised around the institutional mechanisms and cultural issues that lead to polluted science

and broken research culture. A toxic culture in academia is created alongside the normalisation of unrealistic performance expectations, barriers to freedom, perverse incentives, excessive obsessions with metrics, and artificially constructed power hierarchies. In toxic cultures that collectively accept questionable practices, fraud is inevitable. Indeed, it is a natural response to and an obvious consequence of a malfunctioning research ecosystem, as argued also by Higginson and Munafò (2016) and Smaldino and McElreath (2016). Individual research fraud can be the tip of the iceberg, as their detection is much simpler compared to collective wrongdoings, misconduct and unethical practices.

Unfortunately, the existing mechanisms are built to support only short-term goals, as evidenced by the intensifying reliance on metrics. Arguably, metrics provide a means for easy and fast decision-making mechanisms, despite their many problematic issues (Tregoning, 2018; Brembs *et al.*, 2013). The rejection of metrics in career decisions is a game-theoretical problem. Unless collectively rejected, an individual rejection would be self-harming because the winners of the game would keep playing by rationalising the unacceptable (Pfeffer, 2016). What gets really damaged in this game is the trust in science and scientists, so that we create a brand-new world with fake news (Harvey, 2020). The examples provided in this commentary draw attention to the conditions that naturally select poor science and incentivise fraud (Smaldino & McElreath, 2016; Edwards & Roy, 2017). As Kerr (1975) has eloquently identified, goal displacements in higher education are more visibly commonplace today because vanquishing reward systems cherish research outcomes while punishes effective teaching.

It is often forgotten that journals are only channels for communicating research. Now that alternative channels are in place, other means of communication is theoretically possible but the broken culture also penalises the widespread use of these new channels. Declining academic freedom and increasing malpractice create a 'chicken and egg' problem that solidifies the borders of academic communication. These borders eventually impose the rules of the game, where fraudsters can push the boundaries of universally accepted academic standards. In a system wherein success is ill constructed, as Oransky of Retraction Watch says: 'The most likely outcome for someone who commits scientific misconduct is a long and successful career' (Bouffard, 2020). Without taking appropriate measures to ensure complete academic freedom, research integrity can remain as a teen fantasy.

While fraud cannot be fully avoided, understanding the factors that trigger it may lead academic leaders to address the right issues. In closing, as Harvey's analysis excellently confirms, there is a greater need for a more open debate to explicitly identify growing problems in academic research.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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