SRHE *Society for Research into Higher Education*

Academic Integrity: Exploring Tensions Between Perception and Practice in the Contemporary University

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Summary

- There are no commonly agreed definitions of academic integrity or malpractice.

- Academics experience pressure to compromise their integrity and they employ individualised strategies to resolve such dilemmas. The particular areas in which such pressure occurs vary considerably according to institution and discipline.

- Academics at newer, more teaching focused universities are more likely to locate a lack of integrity in the 'system', especially the REF and university league tables, rather than the behaviour of individuals.

- Academics at older, more research focused, universities are more likely to see malpractice as an issue of 'rogue' individuals responding to institutional pressure. Some suggest that malpractice is legitimised or even encouraged by institutional managers.

- Using references to support predetermined arguments rather than illuminate debate was undertaken by 38.1% (± 5.1%) respondents. This was the most frequently reported incidence of malpractice.

- 36.0% (± 7.6%) of respondents reported self-plagiarising. This is more than one in three researchers.

- 17.9% (± 6.1%) of academics surveyed reported having fabricated (entirely invented) research data. This is almost 1 in 5 researchers.

- 13.6% (± 7.5%) of respondents reported having engaged in plagiarism.

- Reported incidence of falsification of data (manipulation of results) was near zero at 5.7% (± 5.1%).

- The lowest incidence of malpractice was in relation to the completion of ethics forms; -4.5% (± 6.4%) of respondents (indistinguishable from zero) reported completing forms for ethical approval in such a way as to 'complete the process' rather than fully disclosing all possible ethical issues.

Introduction

There is a growing body of research into the concept and practice of academic integrity (Macfarlane, Zhang and Pun, 2014). However, most work in this area relates to students (Mahmud and Bretag, 2014; Newton, 2016) and focuses particularly on the issue of plagiarism (Ewing, Anast and Roehling, 2016; Leonard et al., 2015). Integrity is less researched and less frequently discussed in relation to the practices of academics and researchers. The research discussed in this report explores academics' understandings and practice of academic integrity as it applies to their own work.

The global trend to shift the funding of higher education away from the nation state in the form of general taxation and on to individual institutions in the form of student tuition fees and private income generation (see for example Naidoo and Williams, 2015) has arguably led to an intensification of the academic environment. For individual academics and researchers, this is often experienced as increasing pressure to recruit, retain and credentialise students on one hand, and to publish, patent, and secure income streams on the other. Job security, personal reputation, and promotion prospects, are often made contingent upon quantifiable outputs.

In parallel with a changing higher education environment, misconduct in research practice is reported to have increased (Steen, Casadevall and Fang, 2013). It has been noted, for example, that 'the rate of retraction of scientific articles has risen sharply in recent years ... A substantial fraction of all retractions are due to research misconduct' (Steen, Casadevall and Fang, 2013, p. 1). The authors of one study in this area observe 'self-report of substantial levels of a range of behavior antithetical to high-quality science combined with sub-optimal levels of ideal research-related behavior' (Martinson et al., 2010, p. 77). It has been suggested that known cases of misconduct represent the 'tip of the iceberg' (Fanelli, 2009).

While occasional high profile cases of misconduct become newsworthy, there are inherent difficulties in ascertaining the prevalence of breaches of academic research integrity.

Defining misconduct is not straightforward (Macfarlane, Zhang and Pun, 2014). Determining the scale of malpractice by academics and researchers employed in UK universities is hindered by the absence of shared understandings. Even plagiarism, perhaps considered to be a relatively clear example of malpractice, may be understood in different ways according to the discipline, institutional status, and career-path of the individual. A further problem in determining the scale of misconduct is that research in this area is dependent upon academics self-reporting issues in their own practice. Given the potential risks to career and reputation, researching academics' accounts of malpractice is a highly sensitive area.

Various studies have sought to estimate the prevalence of academic malpractice. Reports of academic misconduct appear to occur most frequently in science disciplines and most often they are found in medical-related journals (Steneck, 2000). Fanelli's meta-analysis of scientific misconduct suggests between 0.3 and 4.9% of academics have engaged in serious malpractice such as the fabrication and falsification of results, and up to 33.7% of academics have undertaken 'other questionable practices' (Fanelli, 2009). However, it is unclear from the existing research whether the over-representation of misconduct in science is due to more instances of malpractice, easier detection, the potentially more serious consequences of misconduct, or more rigorous peer-review processes. There is evidence of plagiarism and other forms of malpractice within social science and humanities disciplines, perhaps the most famous instance being the Sokal Hoax (Sokal, 2008). In 1994, Alan Sokal, a physicist from New York University submitted an article to the journal Social Text which explored current topics in physics but also drew upon postmodern writers who question scientific claims to objectivity. His aim was to expose a decline in academic rigour.

Misconduct in research practice by academics is reported to be on the increase but there is little empirical evidence to verify such claims.

This research explores:

1. How academic integrity, misconduct and malpractice are defined by research active academics in British universities.

2. Whether understandings of academic integrity vary according to participants' career stage, institution or discipline.

3. Whether tensions arise between understanding and practice of academic integrity.

4. If the prevalence of academic misconduct varies according to career stage, institution or discipline.

Methodology

Many investigations into academic integrity meet the problem of securing the trust and cooperation of the researched. Determining the scale of misconduct is largely dependent upon academics self-reporting issues in their own practice or the practice of their colleagues. For the reasons outlined previously, researching academics' accounts of misconduct is a highly sensitive area and we found it difficult even to negotiate access to institutions, particularly more research intensive and science focused universities, in order to carry out this research.

Recognising the sensitive nature of this investigation, our primary aim in designing a methodology was to reduce risk to participants. As such, we employed a distinctive methodology previously trialled in a small scale investigation designed to test the effectiveness of a range of approaches to eliciting responses to sensitive research questions (see Roberts and St John, 2014 for a pilot of the methodology and see Droitcour et al. (1991), Glynn (2013), and Nuno and St John (2015) for a review of UCT and other related methods). We obtained full ethical approval necessary to carry out this research from the University of Kent's ethics committee in March 2015.

This project comprised two distinct phases, the first qualitative and the second quantitative.

Focus group interviews

The first part of this investigation explored the attitudes of research-active staff towards academic integrity and malpractice. We conducted five semi-structured focus group discussions at British universities with participants reflecting a diversity of gender, disciplinary background and career stage. We aimed to minimise the risk of participants divulging potentially incriminating information in the focus group discussions by not asking for accounts of malpractice that participants or their colleagues had been involved in. Instead, we asked people to consider more generally what academic integrity means,

behaviours considered to be misconduct, and whether some examples of academic malpractice are worse than others.

We initially identified key contacts at six universities and used a snowballing technique to select participants for the focus groups. Despite the safeguards that we had put in place (e.g. pseudonymising institutions and individuals; not asking people about their own experiences but asking them to talk about integrity in general terms) arranging the focus groups was not straightforward. Institutional gatekeepers were reluctant to allow us access to conduct our research. For this reason, our investigation was carried out at five universities (rather than the planned six) and ended up being more skewed towards newer universities than we had initially intended. In addition, we found it more difficult to recruit participants from science disciplines than from social science, arts and humanities. We carried out one focus group at 3 post-1992 universities and two pre-1992 universities. The age of the universities is significant because the post-1992 universities were more explicitly teaching focused whereas the two older universities were more research intensive. This had an impact upon the views of participating academics. Each focus group comprised between four and seven academics.

The focus groups were all led by Joanna Williams and followed the same structure. Participants were first asked to talk about what they considered to be good academic practice and what they understood by academic integrity. The discussions each then developed into a more open-ended exploration of the tensions between participants' understandings and practices of academic integrity. We explored which behaviours academics consider to be examples of malpractice and, within this, which were thought more serious than others. We also discussed the reasons why academics may engage in malpractice.

Having undertaken this qualitative investigation, we used the behaviours respondents had identified as examples of misconduct to compile a more extensive quantitative investigation into the realities of academic integrity as practiced by researchers today. For this we employed an innovative methodology specifically designed to elicit responses to sensitive questions.

On-line survey

The questions in the on-line survey which formed our quantitative study were based primarily on data gathered from the previously held focus groups. The survey included 27 questions (excluding the consent and comment boxes); 11 general demographic questions; 8 questions unmatched-count technique (UCT) questions (described in detail below) and 8 direct questions (DQ). The UCT and direct questions were used to investigate 8 areas of academic malpractice identified by academics in the focus group interviews, namely:

1. Fabricating (making up) research
2. Falsifying (manipulating) research methods or results
3. Plagiarising other people's work
4. Completing research ethics forms dishonestly in order to secure approval
5. Self-plagiarising
6. Authorship on a paper despite having done little to deserve it
7. Knowingly splitting results to maximise the number of publications (i.e. 'salami slicing')
8. Seeking references to support rather than illuminate an argument

We limited the survey to these eight sensitive topics so as to maximise the number of forms of misconduct that could be investigated while maximising the likelihood that participants would complete the survey. The order of the questions was designed to elicit a response. For example, if people are directly asked the sensitive question at the beginning of the survey they are less likely to complete the rest of the study. Likewise, if general questions are asked before moving on to more experimental methods then participants may abandon the study at this point (Nuno and St John, 2015).

The survey was placed on SurveyGizmo (www.surveygizmo.com) and the link sent to UK academics via a number of disciplinary specific mailing lists, social media and the Research Administrators and Managers Association email group. Additionally, academics were encouraged to disseminate the link via their own professional networks. In this way we aimed to access as large a proportion of the academic community in the UK as possible.

The survey of academics was conducted over a period of 4 weeks between 11th March and 8th April 2016. Prior to the survey being sent out to the academic community, it was sent to 15 colleagues at the University of Kent to identify any potential issues.

Unmatched-count technique

Variants on the unmatched-count technique (UCT), such as list experiment, have been used by researchers for over 30 years to investigate sensitive topics across a number of fields including attitudes to race (see Kuklinski et al. 1997 and Droitcour et al 1991 for a full discussion of this method), health risk behaviours (Hubbard et al. 1989), and illegal wildlife trade hunting (Hinsley et al. submitted). The method involves randomly assigning participants to one of two groups: the control (baseline) group or the treatment group.

The control group was given a list of non-sensitive statements such as, 'Last year I published fewer than 3 papers.' Participants were then asked to indicate how many - but importantly not which - statements applied to them. The treatment group received the same statements but this time with the addition of a sensitive statement such as, 'In the past 5 years I have fabricated (made up) research that was then published.' They were also asked to indicate how many, but not which, statements applied to them. Participants in the treatment group are more likely to respond truthfully due to the protection the method affords them (see Glynn, 2013; Nuno and St John, 2015 and Kuklinski et al 1997 for a full account of this methodological approach).

It should be noted that the list of statements is very important. Firstly, statements need to be formulated so that respondents will always have at least one non-sensitive statement in order to provide a level of protection for those in the treatment group. Likewise it is not appropriate for respondents to have all the non-sensitive statements apply to them because if the sensitive statement also applies then the respondent would have to indicate all statements and thus risk identifying themselves as involved in sensitive behaviours. This prevents what is known as floor and ceiling effects. The inclusion of negatively correlated statements (i.e. if a respondent has done one then he/she is highly unlikely to have done the

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other) not only helps prevent floor and ceiling effects but also helps reduce the sample variance (see Glynn, 2013).

In this study, 8 treatments were developed with associated controls around the selected sensitive behaviours. Each control contained 4 non-sensitive statements associated with academia and research in the UK. During the survey, participants were randomly assigned to each question (i.e. each of the behaviours being measured), rather than being assigned to the control or treatment from the start; this was to reduce the chance of a respondent receiving all 8 sensitive treatments, which may have resulted in them not completing the survey. Appendix 1 contains all 8 control lists; the treatment lists being the same as the control plus the sensitive statement.

The proportion of the sample engaged in a particular sensitive behaviour was calculated as the difference in the mean number of statements between the control and treatment groups. The mean difference is typically reported along with the standard error (SE) which is the sample standard deviation (s) divided by the square root of the number of respondents (n). Responses may be split further depending on the sample size to investigate variables of potential interest, in this case say discipline or academic position.

Originally we had planned to investigate other sensitive question methods such as the crosswise method and the randomised response technique. However given the constraint on the number of questions participants are likely to answer, it was felt it was more important to maximise the number of sensitive behaviours that are investigated rather than asking the same question using different methods.

Direct questioning

At the end of the questionnaire participants were asked directly whether they had ever engaged in the following behaviours (see appendix).

1. Fabricating (making up) research
2. Falsifying (manipulating) research methods or results

3. Plagiarising other people's work

4. Completing research ethics forms dishonestly in order to secure approval

5. Self-plagiarising

6. Authorship on a paper despite having done little to deserve it

7. Knowingly splitting results to maximise the number of publications (i.e. 'salami slicing')

8. Seeking references to support an argument rather than illuminate it

If presented earlier in the questionnaire such direct questions could have resulted in participants abandoning the survey prematurely (Nuno and St John, 2015). Their inclusion was intended to provide measure against which to compare the estimates produced by the UCT; typically, if a method produces a higher estimate of the behaviour than direct questioning, then it is deemed better as more participants have responded truthfully to a sensitive question.

Non-sensitive questions

Participants were asked a series of non-sensitive demographic questions related to academic research and ethics (see appendix) to gain an understanding of the structure of the sample and to provide variables of potential interest for comparison with the results of the sensitive questions.

Statistical analysis

The results of the survey were downloaded from SurveyGizmo as a CSV document and analysed using Microsoft Excel 2008 for Mac, Version 12.3.4.

Exploring research integrity and malpractice

In the focus group interviews we explored how academics define integrity, what issues they consider to be most relevant to a discussion of integrity, which behaviours they consider to be examples of malpractice and the reasons why academics might engage in malpractice. In our subsequent analysis of the focus group transcripts we considered possible correlations between attitudes towards academic integrity and the discipline, status, and institutional affiliation of the respondent. In order to protect the identity of our participants, data has been coded solely on the basis of institutions and we have not identified individual participants by gender, discipline or career stage. Such issues are discussed in the analysis of the data only if and when participants raised them directly. We have grouped institutions according to age, e.g. NewU (post-92) and OldU (pre-WW2).

Nine key themes emerged from the data:

1. **Uncertainty**

Academic integrity is not a straightforward topic to discuss as there is little agreement over the definition of key terms or what counts as misconduct or malpractice. The data we gathered from focus group interviews concurs with Macfarlane et al's assumption that, 'In English [integrity] is often used as a synonym for honesty, although by implication, it suggests something more far-reaching' (2014, p. 2).

Many participants wanted to make clear that the behaviour of individual academics cannot be considered in isolation from institutional expectations and practices.

> These procedures are set in place and I don't know if we can distinguish so clearly between the person and the procedure because the procedures are a way to regulate personal integrity. I think it's an interesting, strange, unbridged gap. (OldU2)

This concurs with Baier and Dupraz's acknowledgement that academic integrity concerns 'the dual issue of the researcher's individual liability on the one hand and the institutional liability of the structures on the other' (2007, p. 28).

> 'You're going to be guided by the norms of the institution you're in and in an environment that's not very conducive to research, there are temptations perhaps to do things that are cheap and cheerful, or to cut a corner here or there, not manipulating data, not doing anything wrong, but just slicing a little bit because you know it's economical. (NewU1)

This confirms research conducted by Martinson et al which suggests, 'perceptions of fair treatment in the work environment appear to play important roles in fostering - or undermining - research integrity' (2010).

A particular institutional or departmental culture can lead to some issues being presented as a matter of research integrity that are not considered to be so elsewhere:

> There's a very strong epistemological standpoint in this department around positionality, which if you don't disclose in your research publications, your positionality, it's not overt but there's an ethos which says that's unethical because you're not disclosing those power dynamics around your research and there are about three of us who disagree with that stance very strongly, we just don't talk about it, it's just one of these unspoken differences. (OldU1)

2. **Institutional Differences**

Institutional differences were most apparent in the nature of the issues that were encompassed in a discussion of academic integrity. In pre-92 universities integrity was mostly understood in relation to research whereas in post-92 universities discussions of integrity tended to focus more upon teaching:

What has happened in the past is that there's a bit of a nod and a wink culture about teaching some postgrads, especially from particular regions. We get sort of, 'Would you like this PhD student?' 'Why? What are they doing?' And the problem is if you accept them, sometimes they're very nice and they're very willing to work, but often they can't speak English well enough so the easiest thing for you to do is to help them formulate their work in a slightly better way and it's actually less work for you in the end. (NewU2)

3. Plagiarism

The most frequently discussed issue in all the focus groups was plagiarism. Several different concerns with plagiarism came to the fore. Plagiarism was considered an issue in relation to teaching:

I've taught on other programmes here as well, especially postgraduate ones with international students, where I was actually told in reasonably straightforward terms, not to investigate what I thought was plagiarism because of the implications it would have for recruitment from that part of the world, and how much they paid, and how much they'd done to get here. … I have a serious problem with that and being from an applied social sciences background, and being old, I resisted because in some ways, I don't play that game. I won't go along with it. I'll say I'm not doing it but I'm aware of the fact I can do that because of my background but also because of my age. (NewU2)

When it came to research all participants agreed that plagiarism was unacceptable.

P1:   Even worse than that is quoting without citing, that would be just pure plagiarism, just lifting ideas or sentences.
P2:   Yes, that would be really bad.
P3:   Lifting ideas is very bad and that seems to be incredibly common, the stories I've heard about that. (OldU1)

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Sometimes however the definition of plagiarism was not considered obvious:

> The extent to which one acknowledges other people's work or ideas is not straightforward ...I think failure to acknowledge explicit input - we can all agree that is malpractice, but the extent to which you acknowledge ideas that have influenced you as a footnote in the acknowledgements, or simply just by referencing them, is a very vexed question. (OldU2)

There was a great deal of concern and uncertainty about self-plagiarism in all the focus group discussions. For some participants self-plagiarism was simply an efficient and common sense means of writing:

> I don't think that self-plagiarism or the re-writing of stuff that you have already said is the unethical thing; the unethical thing is the structural over-production that forces these things. (OldU1)

Whereas others reported even feeling uncomfortable with referencing their own work in other publications:

> P1:   If I draw on data I have already published, I will reference myself, yes? That's the…
>
> P2:   I always think that's a good thing because then you're referenced again, so it never hurts to do that.
>
> P3:   I feel a bit crap about it.
>
> P1:   Yes it does look a bit…
>
> P3:   "Oh look at me!" I don't like that very much. (NewU2)

3. **Authorship**

Issues concerned with authorship comprised the next most frequently cited concern with academic integrity. Many participants were keen to discuss who counts as an author:

I do get somewhat frustrated sometimes with people when they have a very, it's not necessarily a novel idea, but because they may have said it first, then they wish to have acknowledgement for that forever more. (OldU2)

P1:   What particularly annoys me is when people get themselves on papers who haven't had anything to do with the research. So we did some work which we needed to use a facility at the university … and the person who headed that facility wanted to be on the paper. I said "No, you just run the facility", but I didn't say that, that's what I said in my head …

P2:   And did their name go on?

P1:   Of course it did, I wouldn't have dared not, I wouldn't have been able to use the facility; this was absolutely explicit from the start. (OldU1)

In psychology, it would be absolutely unheard of not to have the supervisor on the paper but for good reason because it's absolutely unheard of for the supervisor not to have an input into the paper! (OldU1)

There was a sense that the REF had made issues of authorship take on a far greater significance:

The REF has really changed the game a little bit … I hold my hands up, I do this because it's a game that you're playing, I ask the question, is it possible for me to be a joint last author because then I can include that in my REF submission? And sometimes people say yes and sometimes people say no but when it's your career on the line, you need to get something into the REF. (OldU2)

4.   **Disciplinary Differences**

Disciplinary differences emerged in the understanding academics had of issues around academic integrity. This is apparent in the discussion of authorship:

> I don't think in History it matters, if I'm putting in a REF submission, I don't care which author is first, because there's only likely to be two authors. It's only an issue in sciences where you have twenty five authors on a paper and people reference it 'Someone et al' and I wouldn't particularly want to be the 'et al'! (NewU2)

In quantitative disciplines, the fabrication of data was more of a concern than in social science disciplines.

> As a quantitative researcher, which I am largely, you throw in the bad data because the bad data is just as … if anything it is more important, and that's one of the ways you spot bad papers, when people have stuff that's perfect, you can tell there's something wrong. … It's actually almost harder to fabricate data than to use real data. (NewU1)

One social science researcher discussed having interviewed herself for a research project. There was a general agreement that this was not straightforward fabrication but more akin to critical reflection.

In other instances within social science integrity took on a greater significance in relation to teaching:

> Our programmes lead to a professional accreditation, that means we look at academic integrity in the context of professional conduct; it has another dimension to it. We're saying 'if you think cheating is the best way out of a problem… then maybe you're not the best person to be working with vulnerable young people.' (NewU2)

5. **Career stage**

Different attitudes to academic integrity emerged in relation to age and career stage. People at the beginning of their careers tended to be far more open about suggesting academia was 'just a game' with distinctive rules they had to follow rather than seeing integrity being a

personal issue. People towards the end of their careers were more likely to see integrity as a personal responsibility and to question the institutional expectations placed upon them.

> Digging your heels in because of, I don't know, principles, is something that is more easily done at different times of your life, I would say. … I have no idea what it would be like now if I was in my early thirties and I had my whole career ahead of me. I'd think 'Oh God, I'll be out of a job.' This is no longer an issue for me and I think in some ways, I feel almost a moral obligation because of that to say, because I can open my mouth and I do, and that's because not much can happen to me now really. (NewU2)

> You become much more confident when you say 'I have these standards. I will not step beyond this point.' Even though I've got a reasonable amount of time left teaching I've got to the stage where I've decided you can't breach your moral standards for someone else. I think that does come with middle age. (NewU2)

Tensions regarding academic integrity often emerged in the mentoring of junior colleagues:

> In my role I have to mentor younger colleagues and the big ethical dilemma I have, is do I really encourage them to do the stuff they really want to do that's interesting, exciting, dynamic, or do I say 'Come on then, you've got five book chapters and not one REF-able, to use that dreadful word, "paper"'? So then you start to get pushed in your relationship with colleagues about how to mould them. (OldU1)

> The really hard thing for me is that the push for 4 star papers often runs against the education of younger staff because your 4 star papers are often not the work you're doing with your PhD students, so when they say to you 'Stop writing 1 and 2 star papers', do you say to your poor PhD students, 'I'm not helping with your paper anymore? Because I'm only focusing on this paper this year'? We're an educational institution, so that puts you in a difficult position. (OldU1)

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6. Salami-slicing and game-playing

The ethics of 'game-playing' were a major topic of discussion. There was considerable disagreement as to whether academic integrity demanded playing the REF game in an ethical manner, or rejecting it altogether.

> I've been at meetings with the Faculty of Social Science, where the head of that faculty is overtly starting to push us in those directions, they're not even ethics, they're just ways of gaining the REF basically. (OldU1)

> The REF should really be called the PEF because it's not about research, it's about publication which is a completely different thing actually and I would say we're at an interesting point in the development of this institution, I think we have been research focused but not necessarily REF focused. (NewU3)

This focus on the REF led to complex personal dilemmas regarding publications.

> I'm still naive, no, not naive, I have a bit of integrity in me that says actually, unless I've got something important to say I'm not going to say it! (NewU2)

There was tension between individual perceptions of integrity and an awareness that not everyone else may be operating to such high standards. Acting with integrity carries considerable risk to career and status if other people are not behaving in the same way.

> By referencing yourself so much … you're telling all the reviewers, 'This is who's writing this paper and how dare you turn me down.' … When I'm writing for certain journals, I reference my own work because I want people to know that's my paper coming through because I know who one or two of the publishers or editors are. So, is that a lack of integrity on my part because I decide to play a game which everyone else is playing? (NewU1)

Participants suggested pressure for quantity over quality of publications led to research being 'salami-sliced' and spread thinly although again there was uncertainty as to whether this was unethical.

> Here's a confession, I have found myself writing something and thinking, 'If I don't make this point now, I can make it separately somewhere else.' And I thought that an interesting thought process in my own head because it wasn't a question of saying 'I won't make this point because I haven't got enough words left' but more that I could *strategically* not make this point now and keep it for a different piece of writing. (NewU2)

The pressure to spread research thinly can lead to the misuse or misrepresentation of research data.

> The big thing for us in Psychology is selective reporting, so you do a great big study, say you include 20 questionnaire measures, only five of them work out the way you wanted so you just say you've measured five of them, so you haven't written anything that's incorrect in your paper, your paper is correct, you measured those five things and these were the relationships between them but you also measured 15 other things that didn't work out. (OldU1)

7. **The 'system' versus individuals**

Many participants expressed a sense that a lack of academic integrity lay at the heart of 'the system'. It was suggested that academics were pushed into acting in ways that were, if not unethical, then at least lacking in integrity because of the pressures put upon them:

> If you want to talk about integrity in research, you need to start at the top and not with individual researchers. You have to talk about the whole system. The system has no integrity. (NewU1)

The REF panels have no integrity because they don't tell us what they're looking for. So you're playing a blind game … and all this rubbish about, what's it called? Environment? There's no integrity to that whatsoever because what it's doing is it's rewarding people who are in large research environments. It is totally a system which is biased, so it has no fairness to it whatsoever. (NewU1)

Some expressed feeling disempowered in the face of institutional mechanisms designed to improve a future REF return.

I've got colleagues, and I include myself, who want to write good book chapters, want to do blogs, want to do journalism and we're being told, 'Stop doing that, concentrate ... and we don't just want four papers, we want eight to choose from and they've all got to be 4 star'. And then the faculty says, and they're about to introduce this, 'Here is a template for how to write a 4 star abstract and when reviewers read it, they will think this is a 4 star paper.' So research becomes just like meeting A Level or GCSE criteria. (OldU1)

9. **Ethics, procedures and regulations**

Many focus group participants were unconvinced that systems designed to take greater account of ethics in academic work were successful. Some concurred with McNay's finding that, 'policies aimed at improving quality may be having the opposite effect by being manifest through regulation, and corporate drivers that undermine collegiality, creativity and enterprise' (p 4).

It's more about doing ethics as a process, which doesn't necessarily involve being ethical and finding ways to appear original because I don't suppose anybody really is very much. So I think it's a bit like quality, the more unsure of it we are, the more processes we put into place to give the appearance of quality and ethics. (NewU3)

I was at the university around the time when the ethics committees began, it became quite formal and I often see it as being almost a stumbling block for people moving forward and carrying out research. (NewU3)

Key points

A primary aim of the focus group interviews had been to garner a list of key issues that could feed into the quantitative survey. The major issues we took from the focus groups were:

1. Fabricating (making up) research
2. Falsifying (manipulating) research methods or results
3. Plagiarising other people's work
4. Completing research ethics forms dishonestly in order to secure approval
5. Self-plagiarising
6. Authorship on a paper despite having done little to deserve it
7. Knowingly splitting results to maximise the number of publications (i.e. 'salami slicing')
8. Seeking references to support an argument rather than illuminate it

Other issues of note to emerge:

- There are no commonly agreed definitions of academic integrity and malpractice.
- Academics at newer universities tend to interpret academic integrity in terms of their work with students in a teaching environment whereas academics at older universities are more likely to consider academic integrity in terms of their research work.
- Academics do occasionally experience pressure to compromise their integrity and they employ individualised strategies to resolve such dilemmas. The particular areas in which such pressure occurs, and the main issues considered pertinent to academic integrity, vary considerably according to institution and discipline.

- Academics in science disciplines tend to be most concerned about issues of authorship (whose name should appear on a paper, on what basis, and in which order) and falsification of data (or failing to report on 'inconvenient' results).

- Academics in social science, arts and humanities disciplines tend to be most concerned about issues of plagiarism, including the possibility of inadvertent self-plagiarism, particularly when under pressure to 'salami slice' their research for the purposes of the REF.

- Academics at newer universities are more likely to locate a lack of integrity in the 'system', especially the REF and university league tables, rather than the behaviour of individuals.

- Academics at older universities are more likely to see malpractice as an issue of 'rogue' individuals prompted by institutional pressure. Some suggest that malpractice is legitimised or even encouraged by institutional managers.

The nature and prevalence of research malpractice

Summary of data

The on-line survey we conducted was open for 4 weeks from 11th March 2016. During this period 394 surveys were started. Of these, 34 were excluded as they were completed by people from outside of the UK, 5 were excluded as the respondents had not ticked the box to consent to take part in the study, and a further 26 were duplicates. This left 329 surveys to be analysed, 83.5% of the total. Of the 394 surveys, 54.6% (n = 215) were fully completed (NB completion of the demographic information was not compulsory in terms of the setting used in SurveyGizmo and therefore are considered here as complete).

Non-sensitive questions

In terms of gender, there was as a roughly even split with 108 (50.2%) reporting as female, 98 (45.6%) as male, 3 (1.4%) as other, and 6 (2.8%) left the question blank.

The average age of respondents was 46.6 years old; one response was excluded as they had indicated their year of birth as 2016.

The majority of the academics who responded to the survey (70.2%) gained their first degree in the UK, with remaining respondents gaining their first degrees in Australia (3), Brazil (1), Canada (5), China (1), Cyprus (1), Denmark (1), France (3), Germany (7), Ireland (2), Italy (5), Netherlands (2), Pakistan (1), Peru (1), Portugal (1), Russia (1), Sweden (1), Turkey (1), and the US (13); 10 left this question blank.

Over 50% of responses (56.7%) were at the lecturer or senior lecturer level (postdoctoral researcher/fellow 11.2%, lecturer 27.9%, senior lecturer 28.8%, reader 10.7% and professor 16.7%, 4.7% did not provide a response).

In terms of discipline, 13 (6.0%) situated themselves within the Arts, 45 (20.9%) within Humanities, 54 (25.1%) within the Natural Sciences and 99 (46.0%) within the Social Sciences; 4 did not complete the question.

On average, respondents published their first paper in 2001. All respondents had published at least one academic paper in the past 5 years. The majority had published on average one paper per year in the past 5 years (42.7%). This percentage declined as the average number of papers published per year increased: 22.5%, 21.1%, 1.8% and 1.4% reported having published 2, 3-5, 6-9 and 10 or more papers per year in the past 5 years respectively; 9.2% did not provide a response.

Less than one-fifth (18.1%) of respondents received the majority of their research funding in the past 5 years from Research Councils UK (5.1% did not provide a response). 118 (54.9%) said that they had attended a research ethics training session. When asked if their institute provided such training, 40.6% said they did, while the vast majority said no (12.3%), did not know (22.1%), or did not leave a response (25.0%). However, 39.4% of respondents said that they must submit grant proposals to an institutional ethics committee for approval prior to submission; 28.0% did not have to do this, 15.4% did not know and 17.3% did not provide a response.

Estimation of unethical behaviour

Two different methods of investigating sensitive behaviours were used, unmatched-count technique (UCT) and direct questioning (DQ). UCT generally gave the highest estimates of prevalence of sensitive behaviours when compared with DQ; the exceptions being ethics form completion when all data was used, and ethics form completion and falsification when only completed surveys were used (see Table 1). However, there was no significant difference ($\alpha = 0.05$) in the estimates of prevalence using all the data and completed surveys for the UCT, based on the standard errors (SE). Considering all data, significant differences were seen between UCT responses and DQ for fabrication, plagiarism, ethics form completion and 'salami slicing'. When considering only completed surveys, only two were significantly different, again fabrication, but this time self-plagiarism. This lack of consistent

significant difference is partly due to the high variance, with standard errors ranging from ± 5.1% to ± 7.9%, resulting in only 6 out of a possible 16 comparisons between UCT and DQ being statistically indistinguishable. However, the reported prevalence of some sensitive behaviours was extremely low suggesting that few are engaged in such practices or respondents do not consider the particular behaviour to be sensitive.

Table 1: Percentage prevalence of questionable researcher behaviour amongst UK academics.

Sensitive statement	Response prevalence (%)			
	Unmatched count technique		Direct questioning	
	All	Completed	All	Completed
Fabrication	26.2 (± 5.2)	17.9 (± 6.1)	2.3	2.3
Falsification	10.2 (± 4.8)	5.7 (± 5.1)	5.9	6.1
Plagiarism	20.5 (± 7.9)	13.6 (± 7.5)	1.8	1.9
Ethics forms	-15.0 (± 5.8)	-4.5 (± 6.4)	3.2	3.3
Self-plagiarism	26.5 (± 6.8)	36.0 (± 7.6)	15.3	15.6
Authorship	12.0 (± 7.0)	21.7 (± 7.7)	8.7	8.9
'Salami slicing'	32.0 (± 7.1)	20.8 (± 7.1)	15.5	15.9
Support references	40.6 (± 5.5)	38.1 (± 5.1)	37.9	38.3

Results are presented as a percentage of the sampled population (± SE) for the two methods: unmatched-choice techniques (UCT) and direct questioning, and for all respondents (All) and those that completed the survey in full (Completed).

While UCT and DQ results were in the main not significantly different, UCT gave consistently higher estimates of prevalence for most sensitive statements and therefore we will focus on UCT results for completed surveys here.

- The lowest incidence of malpractice was in relation to the completion of ethics forms. Based on UCT, -4.5% (± 6.4%) of respondents (indistinguishable from zero) reported completing forms for ethical approval in such a way as to 'complete the process' rather than fully disclosing all possible ethical issues.
- Reported incidence of falsification of data was also near zero at 5.7% (± 5.1%).

- 13.6% (± 7.5%) of respondents reported having engaged in plagiarism.

- Using references to support predetermined arguments rather than illuminate debate was undertaken by 38.1% (± 5.1%). This was the most frequently reported incidence of malpractice.

- 36.0% (± 7.6%) of respondents reported self-plagiarising. This is more than one in three researchers.

- Self-plagiarism had the second highest prevalence based on the results of the UCT. This was significantly different from the estimate gained from direct questioning suggesting that this behaviour, while common, may be sensitive for researchers.

- 17.9% (± 6.1%) of respondents reported having fabricated research data. This is almost 1 in 5 researchers.

- The prevalence of fabrication of data reported using UCT was significantly different from direct questioning suggesting that is indeed a highly sensitive topic for researchers.

The high variance in the UCT results meant it was not possible to investigate potential explanatory factors from the answers provided to non-sensitive demographic questions.

The UCT results may have been skewed by floor and ceiling effects where a respondent records a zero (i.e. none of the statements apply to them) or all the statements apply to them. In this study, based on completed surveys, floor scores (i.e. occurrence of zero) ranged from 3.7% to 49.3% while ceiling scores (i.e. occurrence of maximum number of items) was less frequent ranging from 0.0% to 5.1%. While the occurrence of ceiling scores was comparatively low, it ranged from 0.0% to 1.9% in the sensitive treatments, which is concerning and therefore reduces protection. However, given that in the main UCT did not significantly differ from direct questioning, and that some respondents admitted to fabrication, falsification and plagiarism in the direct questioning, it suggest that online surveys may be perceived to provide sufficient protection.

Conclusions

- There are no commonly agreed definitions of academic integrity and malpractice.

- Academics at newer universities tend to interpret academic integrity in terms of their work with students in a teaching environment whereas academics at older universities are more likely to consider academic integrity in terms of their research work.

- Academics do occasionally experience pressure to compromise their integrity and they employ individualised strategies to resolve such dilemmas. The particular areas in which such pressure occurs, and the main issues considered pertinent to academic integrity, vary considerably according to institution and discipline.

- Academics in science disciplines tend to be most concerned about issues of authorship (whose name should appear on a paper, on what basis, and in which order) and falsification of data (or failing to report on 'inconvenient' results).

- Academics in social science, arts and humanities disciplines tend to be most concerned about issues of plagiarism, including the possibility of inadvertent self-plagiarism, particularly when under pressure to 'salami slice' their research for the purposes of the REF.

- Academics at newer universities are more likely to locate a lack of integrity in the 'system', especially the REF and university league tables, rather than the behaviour of individuals.

- Academics at older universities are more likely to see malpractice as an issue of 'rogue' individuals prompted by institutional pressure. Some suggest that malpractice is legitimised or even encouraged by institutional managers.

- The lowest incidence of malpractice was in relation to the completion of ethics forms. Based on UCT, -4.5% (± 6.4%) of respondents (indistinguishable from zero) reported completing forms for ethical approval in such a way as to 'complete the process' rather than fully disclosing all possible ethical issues.

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Appendix

Online questionnaire

Page 1

Academic Integrity: Exploring tensions between perception and practice in the contemporary university

Thank you for your interest in our SRHE (Society for Research into Higher Education) funded research project. Our aim is to explore how research integrity is understood by academics and to explore the prevalence and cause of research malpractice within higher education today.

In this questionnaire we are investigating the extent of certain forms of misconduct. We recognise that this is potentially a sensitive area and therefore all responses of participants will be anonymised. Participants are free to withdraw at any point during the questionnaire. By ticking this box you consent to take part in this questionnaire and for the data to be used by the investigators. <Tick box here – required to continue>

Thank you very much for taking part in this research project. Should you have any questions please contact Dr. Joanna Williams, Centre for the Study of Higher Education, University of Kent, J.G.Williams@kent.ac.uk.

Page 2-9 (sensitive statements are marked in red, no returns to previous questions allowed throughout; compulsory question for this section only)

1) How many of the following statements apply to you?
- I am actively involved in research
- Last year I published fewer than 3 papers
- In the last 3 years I have received funding from one of the UK Research Councils

- Most of my research is lab-based

Sensitive statement added randomly within the list
- In the past 5 years I have fabricated (made up) research that was then published

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

2) How many of the following statements apply to you?
- My university provides training specifically on Ethics in Research
- I have NOT attended a training session in research ethics
- Before submitting a grant proposal it has to be passed by an ethics committee
- I always get a colleague to independently read over my grant proposal

Sensitive statement added randomly within the list
- In the past 5 years I have completed a research ethics form dishonestly in order to secure approval

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

3) How many of the following statements apply to you?
- I currently supervise fewer than 5 PhD students
- All may PhD students must have at least 2 supervisors
- The UK Border Agency has not had a negative impact on postgraduate research
- As part of postgraduate research training all my students are required to complete a course on research ethics

Sensitive statement added randomly within the list
- In the past 5 years I have been listed as an author on a paper when I did little to deserve it

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

4) How many of the following statements apply to you?

- I have a senior admin role within my school/department

- My admin role does NOT impact on my research

- I convene a postgraduate module

- My research informs my teaching

Sensitive statement added randomly within the list

- In the past 5 years I have self-plagiarised my own work into a subsequent publication

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

5) How many of the following statements apply to you?

- I have worked on a grant application with a PhD student

- I have worked on a publication with a PhD student

- I generally do not accept students who come to me with their own research projects

- I hold formal meetings with my PhD student/s at least every two weeks

Sensitive statement added randomly within the list

- In the past 5 years I have knowingly split results to maximise the number of publications (i.e. 'salami slicing')

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

6) How many of the following statements apply to you?

- I feel like I have little time to undertake research

- The move by research councils to large consortium grants is a positive step

- I do NOT find it difficult to juggle work/private life balance

- I subscribe to Times Higher Education

Sensitive statement added randomly within the list

- In the past 5 years I have falsified (manipulated) research methods or results that have subsequently been published

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

7) How many of the following statements apply to you?

- It is not becoming more difficult to get research papers accepted by peer reviewed journals
- The loss of UK Research Council small grants rounds will have a negative impact on my own research
- Young investigators require more funding opportunities from the Research Councils UK
- I always try to include junior investigators on grant applications as co-PIs to help their career
-

Sensitive statement added randomly within the list

- In the past 5 years I have plagiarised someone else's work in a publication

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

8) How many of the following statements apply to you?

- My research field sites are mainly outside the UK and EU
- I am worried that the Freedom of Information Act will impact my research
- I am a member of the Research Councils UK review college
- I do not believe it is becoming more difficult to get research grants from Research Councils UK
-

Sensitive statement added randomly within the list

- In the past 5 years I have used references to support an argument rather than illuminate it in a publication

Please enter a number between 0 and 4 <box>

Please enter a number between 0 and 5 <box>

Page 10 (non-compulsory question for this section only)

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Please answer the following questions

1. In what year were you born? <drop down list of years>

2. Which gender do you assign yourself to? <drop down list of Female, Male or Other>

3. What is your current position? <drop down list of Post doc/Research Fellow, Lecturer, Senior Lecturer, Reader, or Professor>

4. In which country did you do your first degree (e.g. BA, BSc, etc)? <drop down list of countries>

5. Within which discipline does your research mainly fall? <drop down list of Arts, Humanities, Natural Sciences or Social Sciences>

6. In which year did you publish your first peer-reviewed paper? <drop down list of years>

7. On average over the past 5 year how many papers have you published each year? <drop down list of 0, 1, 2, 3-5, 6-9, 10 or more>

8. In the past 5 years has most of your research funding come from UK Research Councils? <drop down list of yes or no>

9. Does your university or institute provide training specifically on Ethics in Research? <drop down list of yes, no or don't know>

10. Have you attended a training session on research ethics? <drop down list of yes or no>

11. Before submitting a grant proposal are you required to have it be passed by an ethics committee? <drop down list of yes or no>

Page 11 (compulsory question for this section only)

To the following statements please answer yes or no

1. In the past 5 years I have fabricated (made up) research that was then published <tick boxes with Yes and No>

2. In the past 5 years I have falsified (manipulated) research methods or results that have subsequently been published <tick boxes with Yes and No>

3. In the past 5 years I have been listed as an author on a paper when I did little to deserve it <tick boxes with Yes and No>

4. In the past 5 years I have knowingly split results to maximise the number of publications (i.e. 'salami slicing') <tick boxes with Yes and No>

5. In the past 5 years I have plagiarised someone else's work in a publication <tick boxes with Yes and No>

6. In the past 5 years I have self-plagiarised my own work into a subsequent publication <tick boxes with Yes and No>

7. In the past 5 years I have completed a research ethics form dishonestly in order to secure approval <tick boxes with Yes and No>

8. In the past 5 years I have sought references to support an argument rather than illuminate it in a publication <tick boxes with Yes and No>

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Thank you very much for taking part in this study. Should you have any comments please enter them in the box below.

<Text box here>

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