

Integrity in Postgraduate Research: The Student Voice

Saadia Mahmud · Tracey Bretag

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Abstract There is a limited understanding of the student perspective of integrity in postgraduate research. This is of concern given that ‘research trainees’ may have a vulnerable position in formal investigations of research misconduct. This paper analyses qualitative data drawn from an Australian online academic integrity survey in a mixed methods research study. This analysis complements the quantitative survey data analysed earlier and sought to explore factors contributing to postgraduate research students’ satisfaction with policy and process, the ways institutions can support students’ understandings and practice, suggestions for improving breach processes, and students’ concerns. We found that integrity training and modelling of ethical behaviour by staff were key factors contributing to students’ satisfaction. Students would have liked more ‘hands-on’ integrity training, accompanied by consistent and transparent enforcement of policy. Respondents expressed concern about the credibility of research output and educational standards. We call for recommendations from the extensive literature on academic integrity policy and practice to be extended to the postgraduate research sphere.

Keywords Academic integrity · Misconduct · Policy · Postgraduate research · Research integrity

Introduction

Studies about integrity in research tend to focus on the misconduct of researchers (Martinson et al. 2005; Titus et al. 2008; Fanelli 2009), with understandings of

S. Mahmud (✉) · T. Bretag
University of South Australia, Adelaide, Australia
e-mail: saadiamahmud@gmail.com

T. Bretag
e-mail: tracey.bretag@unisa.edu.au

integrity in postgraduate research being limited to a handful of studies, none of which have included postgraduate research students¹ as the sole respondents (Kalichman and Friedman 1992; Swazey et al. 1993; Plemmons et al. 2006). Titus et al. (2008) acknowledge “we lack the views of ...graduate students”. This limited understanding of integrity in postgraduate research is concerning given the report by Parrish (2004) that the Office of Research Integrity (ORI) in the US made a finding of misconduct in over 80 % of allegations against graduate students. These findings of misconduct occur “a significantly higher percentage of time than cases in which ORI makes findings of misconduct against any other respondent population” (Parrish 2004, p. 484). In the efforts to promote research integrity (Anderson 2007; Mayer and Steneck 2012) and education for the responsible conduct of research (Mastroianni and Kahn 1998; Kalichman and Plemmons 2007; Steneck and Bulger 2007), we argue there is much to be gained by focusing on postgraduate research students as the researchers of tomorrow.

A recent Australian study on academic integrity (Bretag et al. 2013) found that postgraduate research students ($n = 1,186$) were the least satisfied amongst all the student respondents ($n = 15,304$) about the information they had received about how to avoid an academic integrity breach. To address this need we have proposed a policy and support framework for fostering integrity in postgraduate research (Mahmud and Bretag 2013b) that consists of: (1) a commitment to foster a culture of academic integrity; (2) academic integrity policy that includes the five core elements of exemplary policy (Bretag et al. 2011), i.e. access, approach, responsibility, detail and support; (3) policy on integrity in postgraduate research that meets the standards of exemplary academic integrity policy; and (4) measures to enact such policy including adherence to the *Australian Code for the Responsible Conduct of Research* (the Code), consistency in policy and practice, and socialisation of trainees, with researchers modelling responsible research practice.

This paper complements the earlier analysis of quantitative data from an online student survey on academic integrity at Australian universities (Bretag et al. 2013) by analysing the perspective of postgraduate research students on integrity using qualitative data from the survey. The authors advocate extending recommendations from the literature on academic integrity policy and practice to the postgraduate research sphere.

Research Methodology

The research study used a mixed methods approach (Butler 2006; Creswell and Plano Clark 2011) with “both qualitative and quantitative approaches or methods in a single study or program of inquiry” (Tashakkori and Creswell 2007, p. 4). Similar to earlier studies, the main purpose of the mixed methods approach in this study is complementarity (Bryman 2006) where the authors complement the analysis of

¹ In Australia, students undertaking research as part of a graduate degree program (such as Masters by Research, Doctor of Philosophy) are referred to variously as Higher Degree by Research (HDR) students, or postgraduate research students. We have chosen to use the latter term as this most clearly describes this cohort for an international audience.

quantitative data reported earlier (Bretag et al. 2013) with analysis of qualitative data from the survey to elaborate and clarify the results of the study (Greene et al. 1989).

The qualitative data collected in the study addressed four main research questions:

- (1) What factors contribute to postgraduate research students' satisfaction with academic integrity policy and processes at their university?
- (2) How can a university support postgraduate research students in their understanding and demonstration of academic integrity?
- (3) How can a university improve the way it deals with academic integrity breaches by postgraduate research students?
- (4) What concerns do postgraduate research students have about academic integrity at their university?

Survey Data

The data analysed in this study consisted of responses by postgraduate research students to four open ended text questions to the online student survey on academic integrity conducted by the *Academic Integrity Standards Project* (2010–2012). The qualitative data collected was “embedded” (Antle and Collins 2009) in the online student survey instrument that mainly consisted of questions seeking quantitative data.

The survey received a total of 15,304 responses, of which postgraduate research students comprised 7.7 % ($n = 1,186$). This is comparable with the proportion of postgraduate research students in the survey population ($n = 174,956$) of which postgraduate research students comprised 6 %. As reported earlier (Bretag et al. 2013), the online survey instrument (available at www.aisp.apfei.edu.au) was developed by the team and pilot tested with a small sample of students at one project partner institution. The survey was open to all students enrolled at the six universities participating in the project between June and August 2011 at various times in line with the student study periods.

Ethics protocols consisted of ethics approval at the lead institution (University of South Australia) and subsequent approvals by the Human Research Ethics Committees at each of the remaining five project partner institutions (The University of Adelaide, The University of Western Australia, La Trobe University, University of Wollongong and The University of Newcastle). In five universities, all students enrolled at the university were invited to respond to the survey, while in one university a sample of 5,000 students were invited. Participation in the survey was voluntary and solicited via email and student portals. The survey was promoted using posters, digital media and an opportunity to go into a separate lottery to win an iPad2. Around 10.8 % of the students ($n = 15,304$) responded to the invitation to participate in the survey from the survey population ($n = 174,956$).

Data Analysis

To further our understanding of the issues facing postgraduate research students, in the current study we analysed the qualitative data provided by postgraduate research students from the survey. The data consisted of the following four open ended text questions:

- (1) Please provide details of your level of satisfaction with the academic integrity policy and/or processes at your university.
- (2) Do you have any suggestions for improving the way that your university can contribute to your understanding and demonstration of academic integrity?
- (3) Do you have any suggestions for improving the way that academic integrity breaches are dealt with at your university?
- (4) Please share your ideas or concerns about academic integrity at your university.

Given the large volume of data generated by the survey, a full analysis of the qualitative data from postgraduate research students was not undertaken. To facilitate analysis, a random sample of 289 respondents was selected from the 1,186 postgraduate research respondents. The sample size was determined using statistical principles aimed to have a representative sample with a confidence level of 95 % and the confidence interval of 0.05. We are 95 % sure that our sample responses fall within 5 % of the range of responses of our population. A computer generated list of random numbers was used to select the sample. The responses to each open-ended question were manually analysed. The data from the text responses was coded and codes grouped into themes as they emerged. The themes identified by one researcher were cross-checked by the lead author for relevance and consistency in an approach used in our earlier work (Bretag et al. 2013).

Limitations of the Study

The limitations of the online student survey have been addressed earlier (Bretag et al. 2013). As we have noted, the arguably low response rate of 10.8 % is comparable to the response rate (10–15 %) of earlier academic integrity surveys (McCabe 2005; McCabe et al. 2001) based on a similar method of inviting student participation via email. As McCabe (2005) has concluded in relation to his own survey data, ‘while response rates and response bias are of concern, clearly this is still a very rich database’ (McCabe 2005).

The survey respondents ($n = 15,304$) were comparable to the survey population ($n = 174,956$) in terms of gender with 43 % of survey respondents being male and 57 % female while their representation in the survey population was 46 % male and 57 % female. However there was a lower representation of some student groups such as international students, part-time students and postgraduate course work students in the survey respondents as compared to the population. While international students formed 28 % of the survey population, they were 16 % of

survey respondents. Similarly, part-time students formed 26 % of the survey population but were 16 % of survey respondents. Interpretation of survey results needs to consider these limitations.

Other limitations include the possibility of a non-representative sample due to the self-selection bias and that the results may not be generalisable, given that the survey was conducted in Australia.

Findings

Research Question 1: What Factors Contribute to Postgraduate Research Students' Satisfaction with Academic Integrity Policy and Processes at Their University?

A majority of respondents (63 %, $n = 183$) chose to provide a comment in response to the question "Please provide details of your level of satisfaction with the academic integrity policy and/or processes at your university". Of the respondents that provided a comment to the question ($n = 183$), a majority (60 %, $n = 109$) of the respondents provided a comment that was coded as 'satisfied', while a quarter (25 %, $n = 46$) of respondents were 'dissatisfied', one tenth (10 %, $n = 19$) gave a comment coded as 'other' while a small 5 % ($n = 9$) gave a 'mixed' comment that had both a satisfied and dissatisfied element (see Table 1; Fig. 1 below).

Satisfaction Related to Training

Of the students that chose to provide a comment ($n = 109$) which indicated that they were satisfied with the academic integrity policy and processes at their university, training was specifically mentioned by nearly half ($n = 50$) as contributing to satisfaction. As one respondent stated, "I was made aware of

Table 1 Classification of sample respondents' satisfaction with academic integrity policy/processes

Response type	Number of respondents
Satisfied (S)	$n = 109$ 37.72 %
Dissatisfied (DS)	$n = 46$ 15.92 %
Other (O) ^a	$n = 19$ 6.57 %
Mixed (M)	$n = 9$ 3.11 %
No response	$n = 106$ 36.68 %
Total	$n = 289$ 100 %

^a Of the 19 responses coded as 'Other', two thirds ($n = 12$) said they had low awareness of the academic integrity policy and/or processes at their institution with responses such as "Have not read the full policy" and "I am not well aware about it"

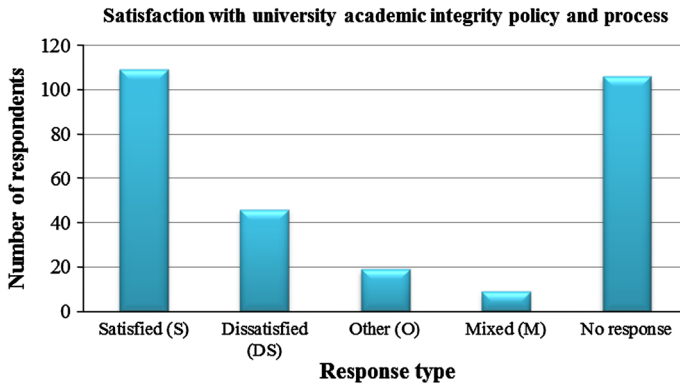


Fig. 1 Student satisfaction with academic integrity policy and process at university

academic integrity and what would happen if I breached it. I was also told what breaching academic integrity is. Being made aware of it made me feel better about it all”. Another respondent elaborated:

Before I came in Australia, I have been well informed in my pre-departure training in my home country facilitated by my scholarship sponsor that all education institutions in Australia seriously concerns with the issue of academic integrity. Before I started the session, I have a training facilitated by my sponsor in this university for 1.5 months. I was informed about plagiarism and how to avoid it during my study here. I also must pass the quiz, in which there are questions concerning plagiarism and how to avoid it. I must give the certificate in the training. These are really helpful.

Of the students who indicated they were dissatisfied ($n = 46$), just over a third ($n = 16$) cited lack of training, with one respondent stating: “I am aware of the policy but most of my knowledge and application of the policy have been self-taught. As an under-graduate and even post-graduate I did not receive any training regarding how to avoid plagiarism”. Another respondent indicated that the training he needed as a student only occurred as part of his teaching role: “I received this during my induction as a lecturer/staff member—I have not received as much information as a Higher Degree by Research (HDR) student”.

Satisfaction Related to the Modelling of Ethical Behaviour by Staff

Only two respondents specifically mentioned supervisors and these referred to supervisors playing a positive role in fostering academic integrity in postgraduate research through a variety of ways such as provision of information and discussions, and being good role models as researchers with high standards. One respondent stated “Talking to my supervisors before starting to write on my thesis left no doubt about, how to avoid plagiarism and therefore I am highly satisfied”. Another respondent stated “I think that an appropriate amount is being done. The

information is made available and students are directed to it as part of coursework and if required by research supervisors”. Another respondent elaborated on the modelling of ethical behaviour by staff:

I believe that teaching students about academic integrity is not only sufficient, but goes above and beyond—especially at the postgraduate level. Whilst it is relevant for all, I think it ‘hits home’ to students just how important academic integrity is once they begin postgraduate work and see that academic rigour and integrity go hand in hand, and have real impacts and implications on their own career. I am very satisfied with the policy, and I think that it is consistently reinforced to students throughout their progression at university.

Of the students who indicated they were dissatisfied ($n = 46$), just under a quarter ($n = 11$) cited issue of lack of ethical behaviour by staff, with respondents identifying a disparity in integrity standards for staff and students, and enforcement of academic integrity standards. As one respondent stated, “It seems there is a dual standard. I know of a case where an academic presented work downloaded off the internet as his own. This was reported and nothing was done”. Another stated, “For students I feel like academic integrity is good. But the same levels of integrity should be applied to staff members, in particular heads of departments. By setting a good role model in the rules around staff, this shows students that no forms of plagiarism are acceptable at any level”. One student suggested that academics need to be educated about academic integrity:

For plagiarism in particular, application of the rules is insufficiently enforced. This is partly through ignorance by academics of how to spot plagiarism, but also through going ‘soft’ on those cases that are referred. This is extremely frustrating for those students who do the right thing – knowing that people can cheat and get away with it, or with a mere slap on the wrist. Educating the academics is where the focus needs to start.

While not speaking specifically about either staff or student integrity, one respondent spoke of the need for a more holistic culture of integrity which goes beyond mere policy and processes: “I am sure the processes are fair and clear, but they seem to be an add-on, and not embedded in the culture of the university”.

Mixed Responses

A small number of responses ($n = 9$) were coded as ‘mixed’. A response was coded as “Mixed” where a respondent did not make a comment that was solely indicating satisfaction or dissatisfaction with the university academic integrity policy and process. Therefore where a student made a comment that included that were satisfied with one aspect of academic integrity policy and processes, but dissatisfied with another aspect this was coded as a “Mixed” response. As one respondent stated, “I am satisfied, but believe there are many facets requiring more work, particularly in the case of thesis examiners for postgraduate courses”. While others responded:

I find the level of information about academic integrity very sufficient and the training relevant and easy to understand for very good English Speakers. However I know many international students who seem to frequently breach this policy with no consequences. I do not know whether this is due to not understanding the policy or not. Perhaps they need further tuition on the subject but other students DEFINITELY do not.

The policy appears to be sound. I disagree with some of ideas regarding collusion, as I feel that with some subjects such as Maths where there is often only one solution, students who have helped each other can be technically guilty of collusion as they will have worked together and submitted the same answer, and so I feel that perhaps the policy should discuss situations where it is less applicable. It is unreasonable to expect students to not collude to some degree as the peer teaching offered can be more useful to some students than the lecture material. The policy is otherwise satisfactory.

Research Question 2: How can a University Support Postgraduate Research Students in Their Understanding and Demonstration of Academic Integrity?

In response to the question “Do you have any suggestions for improving the way that your university can contribute to your understanding and demonstration of academic integrity?” nearly half (47.75 %, $n = 138$) of the sample postgraduate research respondents provided a response. The respondents suggested workshops to “allow students to explore the plethora of scenarios associated with academic integrity breaches”, examples and case studies “in the form of a visual documentary comic showing breaches, consequences, and the importance of academic integrity”.

Other suggestions to enhance support included online modules, websites, library sessions, and training to use the text-matching software *Turnitin* as an educative tool. However one respondent cautioned against overloading students:

I don't think even more online quizzes and modules would help and could even be resented. There are enough. Perhaps also as a first tutorial for every unit—a think/pair share workshop devoted exclusively to academic integrity.

Respondents raised the need for additional support for English as an Additional Language (EAL) students, with one respondent suggesting “Have more in depth tuition about this for international students”. While another stated:

For plagiarism, it is not easy to tell especially for international students. I believe that most of the students don't want to involve in plagiarism. To be able to access the software that is able to check it before may help students to avoid it.

Research Question 3: How can a University Improve the Way It Deals with Academic Integrity Breaches by Postgraduate Research Students?

In response to the question “Do you have any suggestions for improving the way that academic integrity breaches are dealt with at your university?” most

postgraduate respondents chose not to provide any feedback, with less than half (40 %, $n = 117$) providing a response. The respondents proposed stronger enforcement of academic integrity policy with one stating “Follow guidelines. It sets a bad example for other students if people that cheat are not reprimanded”. Respondents expressed frustration with the lack of implementation of academic integrity policy: “Staff seem reluctant to pursue cases as there is pressure to pass students and get them out of the door. Quality students get the same mark as so-so students or those who cheat”.

Students also suggested that there should be stronger penalties, for both their postgraduate peers and for those undergraduate students for whom they were responsible as tutors, with one respondent stating, “Be stern but fair. No empty threats or raps on the knuckles”. While another said “Take them seriously. This is deliberate theft. The onus is on the academics, but they are letting all students down”. In addition, students called for consistency in dealing with academic integrity breaches, stating: “Have clear and consistent guidelines across all faculties for managing academic integrity breaches” and “Ensure that all breaches of academic integrity are dealt with quickly and consistently. Make sure the consequences outlined at the start of semester are actually followed through with”.

Students were generally unaware of formal outcomes for breaches and respondents suggested that outcomes should be made known to the broader academic community (including students). One respondent stated, “They should be made more public to ensure strict compliance to integrity guidelines”. Another respondent gave more detail:

I suggest that “case studies” anonymously describing the circumstances around investigated breaches and the outcomes/penalties to be included in university publications so people can read about real situations and the consequences of the behaviour.

Research Question 4: What Concerns do Postgraduate Research Students have About Academic Integrity at Their University?

In response to the question “Please share your ideas or concerns about academic integrity at your university” less than half (39 %, $n = 113$) of students responded. Postgraduate research students demonstrated a strong commitment to academic integrity on the basis that it underpins the credibility of research. As one respondent stated, “Academic integrity is a significant part of my university’s educational and research practices. This is the way it should be”. Another respondent expressed a need to consider the long-term:

We must always encourage students to think long term—to the peer review system of academia. This is not to discount academic integrity during undergraduate years, but to recognise that students may only start taking it very seriously once it has wide-reaching consequences that go beyond internal university discipline.

One concern raised about academic integrity was in relation to the perception that educational standards are potentially being undermined by accommodations made for the increasingly diverse student body.

I am concerned that international students who's grasp of English may be poor are perhaps given too much leeway if they have plagiarised large sections of text in their essays (I have seen this at undergraduate level—and I understand that there may not be a simple solution to this particular problem)

Respondents emphasised the responsibility of the university to foster academic integrity. As one respondent stated, “A standard of excellence and quality needs to be maintained, meeting the benchmarks of elite institutions”. While another respondent spoke of risk: “Working in postgraduate research, I am intensely aware of the risk of, inadvertently, breaching academic integrity. If my university allows breaches of academic integrity to proliferate, the value of my work and my degree is diminished”.

Discussion

We have consistently argued that a university's academic integrity policy should apply to all stakeholders, including postgraduate research students and academic staff (Bretag et al. 2013; Mahmud and Bretag 2013b). We maintain that academic integrity education provides the foundation for all levels and aspects of scholarship and it is therefore crucial not to regard it simply as an ‘undergraduate issue’ or one that focuses only on plagiarism. Furthermore, it is timely for the lessons from the extensive literature on academic integrity as a teaching and learning issue (Carroll 2002; James et al. 2002; Davis et al. 2009; McCabe et al. 2001, among others) to be extended to the postgraduate sphere. This is especially relevant in light of ORI findings which indicate that postgraduate research students are significantly more likely to have a case of research misconduct confirmed against them (Parrish 2004).

The data analysed in this paper is derived from an online survey which specifically asked student respondents about academic integrity policies at their respective institutions.² Our findings indicate that factors which contribute to postgraduate research students' satisfaction with their institution's academic integrity policy and/or processes include comprehensive and on-going training, as well as modelling of ethical behaviour by staff. Students' qualitative feedback supported quantitative findings reported elsewhere (Bretag et al. 2013) that postgraduate research students want a thorough induction to academic integrity, ongoing ‘hands-on’ workshops and training and sustained support to fulfill their

² Some may argue that postgraduate research students may not have equated the term ‘academic integrity’ with ‘research integrity’. However, the qualitative data provided by this group of students clearly suggests that the definition of academic integrity provided in the original survey—“Academic integrity is about mastering the art of scholarship. Scholarship involves researching, understanding and building upon the work of others and requires that you give credit where it is due and acknowledge the contributions of others to your own intellectual efforts” (University of Tasmania 2010)—encompasses research integrity. This is a view that the authors share.

arguably higher stakes integrity obligations. Respondents in our survey also underlined that international EAL students need additional consideration. In our previous work we have recommended early and sustained training for postgraduate research students (Mahmud and Bretag 2013a, b), customised to meet the needs of diverse students groups and with a particular focus on the needs of International EAL students (Bretag et al. 2013). We agree with other writers in the field (East 2009; Handa and Fallon 2006; Li and Vandermensbrugge 2011; McGowan 2005) that this group of students is particularly vulnerable in matters relating to academic integrity. While English language competence is clearly an issue, this group may also require induction into the new academic environment, with support and training to master academic conventions such as in-text citation and referencing. As we have argued elsewhere, international EAL postgraduate research students are potentially disadvantaged if adequate and ongoing academic integrity education, training and support is not provided (Bretag et al. 2013).

Supervisors were identified by respondents as playing a positive role in fostering academic integrity in postgraduate research through a variety of mechanisms such as providing information, having discussions, and being good role models with high standards in research. The crucial role of faculty in promoting academic integrity is repeatedly highlighted in the literature, with McCabe and Pavela (2004) reiterating that the role of the teacher “as guide and mentor” is one of the ten principles of academic integrity. Students’ desire for supervisors and other teaching staff to be exemplars of ethical behavior resonates with the recommendations by Kezar and Sam (2011) for “moral exemplars” at all levels of educational responsibility to contribute to a culture of integrity.

Somewhat surprisingly, given other work exploring the complexity of the supervisor/research student relationship (Howard 2008; Manathunga 2002; Lee and Williams 1999; Wisker et al. 2007), no students in the random sample specifically raised this issue in a negative way (for example, highlighting the often disputed nature of co-authorship) and only two students referred to the positive contribution of supervisors. In agreement with Howard (2008), we acknowledge that this remains a concern for many postgraduate research students.

While 60 % of the random sample who provided a response expressed unequivocal satisfaction with their university’s academic integrity policy and/or processes, a small number (5 %) of postgraduate research students simultaneously expressed satisfaction and dissatisfaction. This mixed response indicates a qualified form of satisfaction which may be a consequence of postgraduate research students holding multiple (and sometimes conflicting) roles as students, teachers and research assistants. Data suggested that while integrity education as students may have been lacking, respondents received more detailed information as staff members. This is in keeping with good practice guidelines by Whitley and Keith-Spiegel (2001) who have suggested that academic integrity training “is especially important for graduate students who teach their own courses” (p. 333)

Interestingly, while our findings in this study provide evidence for some of our proposed measures to enact exemplary academic integrity policy (Mahmud and Bretag 2013b) including the modelling of good practice, and the need to enforce

academic integrity policy consistently, students did not mention the *Australian Code for the Conduct of Responsible Research* (the Code). Given our previous recommendation regarding the importance of adhering to the Code (Mahmud and Bretag 2013b), the fact that no respondents referred to it in the context of academic integrity policy and practice is worth exploring. We have argued elsewhere that postgraduate research students do not necessarily receive the same grounding in the Code as staff members (Mahmud and Bretag 2013a). The Code is an arguably integral component of all research carried out in the Australian context, given the requirement for researchers to voluntarily comply with its requirements, particularly when conducting research using public funding. In this regard we continue to advocate for adequate induction and ongoing training during a student's candidature, especially in relation to the Code.

In addition, respondents did not raise the issue of the specific content of the academic integrity policy at their institutions. These results are not surprising given our earlier findings (Mahmud and Bretag 2013a) that only three in five (61.7 %) of postgraduate students in our survey said they knew their university had an academic integrity policy and they knew how to access it. Furthermore, a lower proportion of postgraduate research students (70.4 %) agreed that academic integrity policy is clearly communicated to students as compared to the proportion of overall survey respondents (79.9 %). However, in the current random sample of postgraduate research students, only 4 % of all responses and 6.5 % of valid responses indicated that postgraduate students were not aware of the academic integrity policy and processes at their institution.

When asked to provide feedback on how their university could improve academic integrity breach processes, 60 % of the random sample chose not to respond. The reason for this low response rate is unclear. However, lack of awareness of breach processes and outcomes may at least partially account for this. One of the findings from the original survey ($n = 15,304$) was that only 15.4 % of postgraduate research students stated that they "knew of someone who had received a penalty for an academic integrity breach". The number of postgraduate research students who reported having a meeting to discuss an academic integrity breach ($n = 22$, 1.9 %) closely mirrored the low number of overall respondents in the survey who had reported meeting to discuss a breach ($n = 252$, 1.7 %) (Bretag et al. 2013). It is clear from both the quantitative results from the full data set and the qualitative responses from the random sample, that postgraduate research students are similar to undergraduate students in that they are generally unaware of the academic integrity breach process and are therefore unable to comment or provide feedback.

This lack of awareness, coupled with a perception of poor enforcement of policy, may explain why respondents in the random sample were emphatic that systems need to be established to ensure a consistent and transparent approach to breaches of academic integrity when they do occur. The need for consistency in academic integrity breach decision-making has been the focus of much Australian (Bretag et al. 2011; East 2009; Yeo and Chien 2007) and UK based research (Tennant et al. 2006; HEA 2011) and is widely accepted to be crucial to engendering trust between staff and students and for creating systemic change. Alongside their undergraduate peers, postgraduate research students also suggested that consequences of breaches

should be made publicly available, although as we have noted elsewhere, this suggestion is not without controversy (Bretag et al. 2013).

Our analysis of the random sample from the student survey data indicates that there are a number of concerns relating to academic integrity which are of particular relevance to postgraduate research students. These issues include the credibility of research outputs and concerns about educational standards at students' institutions. In focusing on the role of academic integrity in ensuring credible research, student respondents may have been influenced by highly publicised plagiarism scandals of politicians, vice-chancellors, journalists and authors that had occurred around the time of the survey (ABC News 2011; Ross 2012; Dyer 2012), as well as recent studies indicating the relatively high proportion of scientists who admit to 'questionable research practices' (Martinson et al. 2005). During the period in which analysis of the survey data took place, other high profile cases of research misconduct at Australian universities were regularly featured in the media (Scott 2013; Worthington 2013). In this context, and in view of the increasingly diverse student body, student respondents expressed concern about maintaining educational standards, an issue shared by many commentators in Australian higher education over the last decade or more (Birrell 2006; Bretag 2007; James 2003; Kayrooz et al. 2001).

The findings from this study confirm some aspects of our integrity policy and support framework (Mahmud and Bretag 2013b), including an institutional commitment to foster integrity, training, modelling of good practice, and the need to enforce policy consistently. However students did not mention the specific content of academic integrity policies or the Code which are included in the framework. Our findings also suggest the need for a comprehensive and 'hands-on' approach towards training of postgraduate research students that both builds on undergraduate academic integrity education and is customised to meet the needs of diverse student groups. We encourage higher education institutions to apply the lessons from this research, coupled with recommendations for good practice that have been widely accepted in the academic integrity literature, to create tangible resources and processes specific to the needs of postgraduate research students in their own contexts.

Conclusion

Understandings of the student perspective on integrity in postgraduate research is limited despite the burgeoning literature on academic integrity, research integrity and research misconduct. This is of concern given that postgraduate research students as 'research trainees' may be particularly vulnerable in formal investigations of research misconduct given the power difference between these students and their supervisors and other academics, and the impact this potentially has on their capacity to speak openly and honestly. This study sought to address this gap and analysed a random sample of responses of postgraduate research students who participated in an Australian survey on academic integrity. We found that integrity training and modelling of ethical behaviour by staff were key factors contributing to

students' satisfaction with their institution's academic integrity policy and process. Respondents in our study had concerns about the credibility of research output and educational standards when academic integrity breaches are allowed to go unchecked. They raised the need for more interactive and targeted training and for their institutions to enforce academic integrity policy more consistently and transparently across all stakeholder groups. These recommendations have been consistently advocated by researchers and practitioners in the field of academic integrity for over two decades, and we now call for these lessons to be extended to the postgraduate research sphere.

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