Promoting Integrity as an Integral Dimension of Excellence in Research

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The work floor perspective: Integration

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Task IV.4 – The work floor perspective: Integration

The purpose of this task is to integrate the findings in the empirical tasks in Work Package IV of the PRINTEGER-project into a general analysis of how integrity issues play out in the daily practice of research, from the perspective of those involved. Both of the empirical tasks can be found in standalone reports, where the results are analyzed and summarized individually (Mamelund, Breit, and Forsberg 2018; PRINTEGER, n.d.)[1]. In this task, the aim is therefore primarily to identify common ground between the main findings in the two reports.

This task is structured in accordance with the following topics[2]:

- The understanding of integrity and misconduct among researchers and research managers
- The conditions that might provide a pressure on researchers' integrity
- The conditions that might provide an incentive for focusing on integrity in the organizations
- The way integrity is discussed in organizations
- Currently used organizational measures to counter research misconduct in organizations, their perceived effectiveness, and experience with best practices for working with integrity

[1] The focus group report is not yet published at the time of writing, and its authors are therefore not listed. Both reports will be available at the PRINTEGER website, printeger.eu

[2] The choice of topics is based on the topics promised for this work-package in the PRINTEGER grant proposal

The empirical basis

Work Package IV involves two empirical activities: a survey and focus group interviews.

Focus groups

The PRINTEGER-partners from UK, Norway, Italy and Estonia each conducted four focus groups, 16 in total, each lasting 1.5 – 2 hours (4f)[3]. Participants from four different groups were interviewed: junior researchers, mid-level researchers, senior researchers and research administrators.

The focus group interviews had the following aims:

> *The central aim of the focus group study was to investigate research integrity and misconduct issues in practice from the perspective of individuals involved in research on the 'work floor', namely researchers, research managers and support staff. Among topics explored were understandings of the definition of integrity and misconduct, participants' experiences of misconduct, pressures in the research environment, and the existence and effectiveness of policies, guidance and training on research conduct* (4f)

The results of the national focus groups were first analyzed locally by each of the partnering universities and local reports were written. Subsequently, the Bristol PRINTEGER-team synthesized the local reports into a report combining the national results. The present report is based on this synthesis from the Bristol-team.

Survey

The survey was web-based, and was aimed at all researchers at all levels, in all of the eight institutions with participants in the PRINTEGER-project. The net number of respondents was 1126, which gave a response rate of 5.4 % (12s). The following topics formed the basis of the questions (10s):

- Organizational policies on misconduct and integrity
- Whistleblowing mechanism and attitudes
- Work environment features
- Perceptions of tensions and risks associated with misconduct
- Compromise of scientific quality
- Perceptions of integrity measures
- Non-self-admission of falsification, fabrication and plagarization (FFP) and "Questionable research practices" (QRP)
- First-hand knowledge of research misconduct (open ended/qualitative questions. The results of these are not presented in the survey-report, and will therefore not be a part of this report either)

[3] In this report, the bracketed numbers refer to page in the reports where the cited results can be found. An "F" after the page is a reference to the focus group report, while an "S" signifies that the reference is to the survey report

- Demographical questions (e.g. type of position, gender, institution)

For more information about the survey, its results, and further methodological considerations, see the survey report, which can be found at the PRINTEGER website.

Integration of the findings from the survey and the focus groups

In the following section, we provide input on the topics based on the empirical evidence in the survey and the focus groups.

How is research integrity and misconduct understood?

The definition of integrity was an explicit topic in the focus groups interviews. How integrity is understood is primarily a qualitative question, and the main source for this section will therefore be the focus group interviews. These will be supplemented with relevant results from the survey.

In the research integrity literature, one finds a broad spectrum of definitions of integrity (Shaw 2018). For example, policy makers tend to define it as compliance with certain rules and policies (Horbach and Halffman 2017). Researchers on the other hand, tend to define it broader, as virtues. This was also reflected in the empirical PRINTEGER-data, where several different concepts and topics were discussed with integrity as an umbrella term. When asked explicitly to define research integrity, many found it hard to come up with a clear answer (76f), in part due to cultural differences from field to field, and country to country. The focus group report gives the following summary:

> *Talk of research integrity identify three aspects: methodological: good research methods, social: threating people with respect and doing socially valuable research, personal: being a good, honest person and adhering to ethical guidelines and rules, despite pressures and even when no-one is watching* (69f)

Researchers also expressed different views on what constitutes good research. Some pointed to searching for the truth, openly and without partisanship (13f), and following proper methodologies. Others pointed to the knowledge the research produces and the utility of the research for society (20f). Interestingly, these definitions of good research were problematized during the interviews. The need for methodological innovation was raised as a reason not to tie the notion of good research too tightly to specific methodologies (12f, 13f). The methodologies we have today, must by necessity have emerged through deviation from other methods at the time.

In sum, the focus group study indicated that although researchers can highlight certain concepts that can make research good, the concepts are at the same time contestable and somewhat vague. There seems to be considerable room for ethical discretion within the concepts, including differing ethical interpretations between research fields and organization. This also involves deeper epistemological and methodological questions such as regarding the concept of truth as well as regarding questions of research utility and impact in the relevant fields.

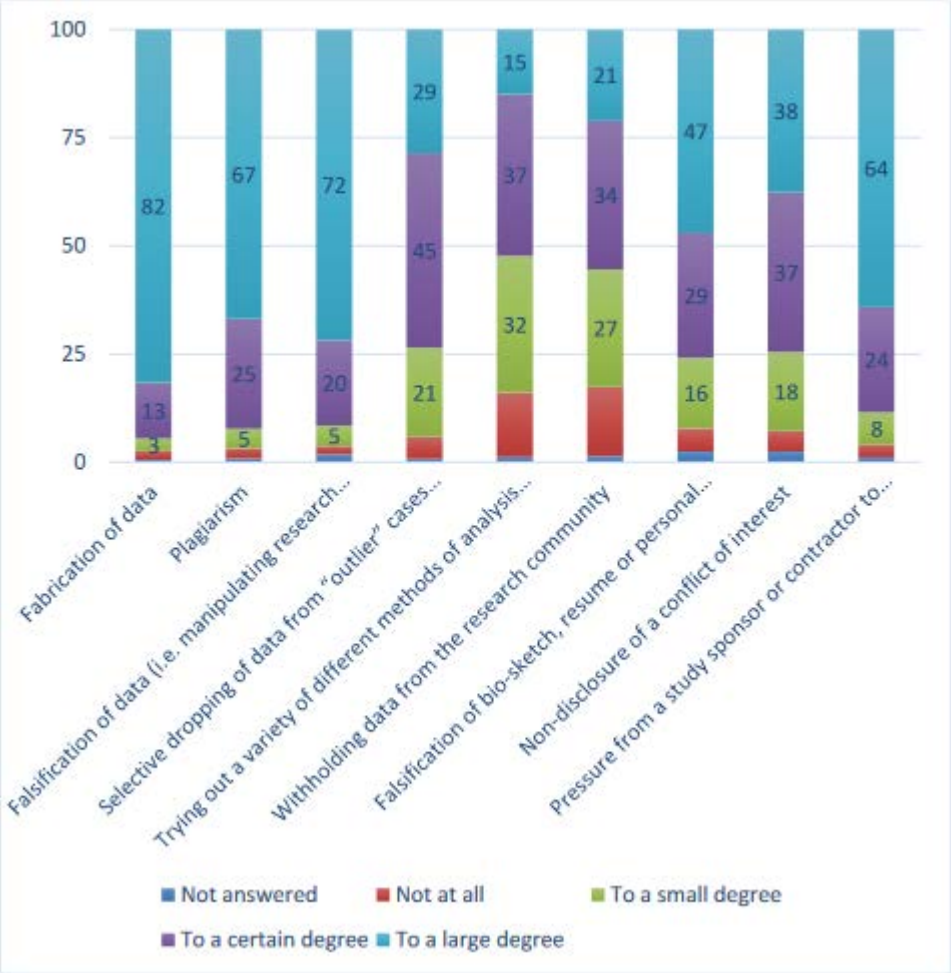
When asked to define bad research and misconduct, the informants pointed to a wide array of questionable practices. The report states that:

> *These included falsification and fabrication, plagiarism, self-plagiarism, salami-slicing, using incorrect methods, misinterpretation of findings, exaggeration, opportunistic topic selection,*

publication bias, poor peer reviewing, use of 'dodgy' journals, inaccurate reporting, lack of critical review, misattribution of authorship, and mistreatment of others (22f)

The relative seriousness of the different practices was discussed, where "serious misconduct was that which violate the central aims of research […] while practices that did not affect the validity of research itself […] were considered dubious, but not misconduct as such" (22f). Here too, the participants did not deliver a clear answer to the question, but gave an answer that show that judging the seriousness of different forms of deviating behavior is a complicated task.

A related question was asked in the survey, i.e. to what extent researchers feel responsible when it comes to reporting different forms of suspected misconduct (30s). This gives us an indication of how serious the respondents see different forms of misconduct, as one's commitment to reporting misconduct should increase with the seriousness of the offence. The following table represents the survey respondents' answers the question "To what degree would you feel responsible to report internally or externally the suspected misconduct if you witnessed any of the following" (30s):



In this table, we see that the respondents are significantly more likely to report the most serious forms of misconduct, falsification, fabrication and plagiarism (FFP). Researchers mostly feel obliged to report the other forms of misconduct listed as well, but it seems that the respondents agree with

the literature that FFP are among the most serious offences, and agree with the focus group participants when it comes to the belief that the different forms of misconduct vary in seriousness. The willingness to report pressure from research sponsors to alter the results of the research is perhaps an exception, which the respondents are about as willing to report as they are to report plagiarism. In the survey, it is classified as a form of QRP. However, one can argue that it could also be classified as FFP, as falsification or fabrication is its intended effect.

In sum, therefore, we can see that the concepts of integrity as well as different forms of possible research misconduct (FFP, QRP) have different connotations across different fields. While some features may be common and inherent, such as breach of truth and accepted scientific norms in specific fields, the vagueness of the concepts may involve practical challenges for researchers, perhaps especially younger researchers.

Conditions that might put pressure researchers' integrity

The conditions under which researchers might find themselves pressured to compromise their integrity was a topic in both the empirical activities.

In the focus groups, competition among researchers and pressure to publish was presented as an important driver of bad research, low adherence to methodological rules, and outright misconduct. The phrase "publish or perish" was used (49f) to describe this pressure. In order to succeed in an academic institution one must write and publish papers and quantity is rewarded more than quality (19f, 49f, and 78f). Researchers also have a large workload, which can be detrimental to the quality of the individual paper (107f), and some of the respondents reported not having enough time to focus on integrity, something that can lead to mistakes (94f).

Further, some researchers have short-term contracts, where they risk not getting their contracts renewed (95f). The Estonian focus groups discussed the potential for power abuse, especially when it comes to determining who should be listed as authors on papers or other academic work (39f). If one is a student, or in a low position in the academic hierarchy it can be difficult to resist senior researchers who demand a larger share of the credit than they deserve. According to one Estonian researcher, gender can play a role here, as women may be more reluctant to confront authorities in these situations (41f). In sum, the focus group participants blamed much of the research misconduct and breaches of integrity that happen on the system and its incentives.

These experiences can be supported with the findings of the survey, where economic incentives, pressure to commercialize research findings and strong hierarchies were found to be correlated with an increased risk of FFP (22s). Also, pressure to publish, economic incentives and time pressure was found to have the same effect on QRP (24s). Being a post doc, a temporary position, is associated with an increased risk of QRP, although there are several factors that might explain this, like lack of experience, in addition to the pressure that comes with such a work situation.

The survey also tells us the extent to which researchers experience the kinds of pressures reported by the focus groups (33s). 47.87 % of the respondents reported experiencing high or very high difficulty in obtaining tenure, 67.31 % experienced high or very high pressure to obtain external funding and 73.09 % experienced high or very high pressure to publish. This shows us that many researchers feel the kind of pressure that can lead to misconduct and questionable practices.

The combination of the focus group participants' experiences and the survey' findings that pressure correlates with misconduct and breaches of integrity in one's working environment gives us good reason to conclude that working with the incentive systems is key in promoting research integrity.

Incentives that promote integrity

Incentives can be *positive* or *negative*. They may reward good behavior, or they may punish unwanted behavior. When it comes to research integrity, most incentives are negative, and are in place to deter misconduct.

The survey indicates that perception of a high risk of getting caught for FFP, with perceived harsh punishments as a consequence, is a significant deterrent of this form of misconduct (22s). This effect was also found in the case of questionable research practices. Having mechanisms in place that makes it risky to engage in FFP and QRP, with appropriate punishment, therefore seems to be important when it comes to preventing various breaches of integrity. At least one of the Estonian participants in the interviews supported such a view (58f, 139f), and one lamented that researchers often get away with minor offenses, and that people are mostly only punished in big scandals. At the same time was acknowledge that determining a fair punishments could be a challenge.

One of the UK participants from the research governance advisor group in the interviews advised that sanctions should not be too strict, as this could create bad incentives (134f). Researchers make mistakes, and the research environment should allow them to be open about these, so that the problem can be addressed, without the researchers fearing for their jobs. With zero-tolerance, researchers will have plenty of incentives to be deceitful and cover up their mistakes or misconduct, and no reasons beyond their conscience to be honest. One of the Norwegian participants argued that punishment should be a kind of last resort, and warned that compliance systems could become an excuse for managers not to create good practices and a good working environment (127f).Having appropriate punishments for misconduct, is not enough

While the data gathering in this project has not identified positive incentives that are aimed towards preventing misconduct, good research can be incentivized, which in turn can give us more research with integrity. Examples from the focus groups are rewarding quality over quantity when it comes to publications (133f), and granting money to researchers who want to replicate scientific studies. When it comes to research oriented incentives, the survey suggests, as we have seen, that incentives to publish, to acquire funding, and to commercialize results, can have the unintended effect of increasing the risk of both FFP and QRP.

In sum, the empirical activities support compliance systems. The survey suggest that such systems have a deterring effect on misconduct and questionable practices, and several of the focus group participants voiced their support for compliance. At the same time, the focus group results suggest that compliance might not be enough, and that it must be supplemented with other good practices and a culture where one can be open about one's mistakes.

The way integrity questions are discussed in organizations

The question of *how* integrity is discussed in research organizations can best be approached through the focus groups, while the survey can tell us the *extent* to which such discussions take place. Both the survey and the focus groups can also tell us something about how discussions are related to the prevalence of misconduct and questionable practices.

In the survey, it was found that 32.77 % (35s) of the survey respondents agree or strongly agree with the statement "In my department there is a culture for open discussion about research misconduct and integrity". At the same time, open discussions were negatively related with both FFP (22s) and QPR (24s), indicating that more open discussions about integrity among colleagues would be a good

thing. Among the focus group participants there were mixed responses when it comes to whether or not discussions about integrity occur frequently (74f), something that can be supported by the relatively low number found in the survey.

In the focus groups, two themes were identified: difficult discussions and productive discussions (71f). The former is about barriers to discussions about research integrity, and the latter is about factors that can promote positive and educational discussions among researchers.

Hierarchies was mentioned explicitly as a barrier to good discussions, as it was believed that some senior researchers are difficult to challenge, as they feel that they deserve to be held in respect due to their titles (71f). Another issue that was raised was the risk that being too familiar with one's colleagues could make it hard to present serious criticism, as one might be afraid of hurting people one is close to (72f). Challenging people was seen as something that could be difficult due to the sensitivity and controversy of the topic (72f). Finally, fruitful discussions about integrity takes time (73f), which as we have seen is a limited resource.

The participants had some suggestions on how these barriers could be overcome. One participant claimed that good leaders are necessary in order to raise integrity questions, and encourage discussions about these (75f). Another participant suggested that opportunities for such discussions should be built into the system, by for example establishing regular group meetings where researchers from all the levels of the hierarchy meet in order to discuss each other's work (141f). Not only does this allow researchers to raise integrity questions regarding their own work, it also allows them to learn about resources, solutions to integrity dilemmas and potential pitfalls from others.

The data shows that there is much potential in facilitating for more open discussions, as only a third of the survey respondents agreed that such discussions take place, and the focus group participants had mixed experiences with the same. The focus groups suggest that systematizing discussions might be a productive approach.

Currently used organizational measures to counter research misconduct in organizations and their perceived effectiveness, and best practices

The questions about currently used measures to counter misconduct and best practices will be handled as the same question in this report. The survey offers two ways of answering this question. Firstly, it tells us that some factors and measures correlate with a reduced risk of misconduct. Secondly, the researchers were explicitly asked which measurers they believed could strengthen research integrity and/or reduce the risk of misconduct, and they were asked to rate the usefulness of a list of such measures. The results of the second approach are shown in the table below (42s):

Table 10. In order to strengthen research integrity and/or reduce the risk of misconduct, to what degree do you agree that the following measures are useful (in % and average score with minimum 1, strongly disagree, and with maximum 5, strongly agree)

	Not answered	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Average (Range 1-5)
Monitoring and sanctions							
Increased monitoring externally (for instance by research funding organisations)	2.13	11.01	25.67	29.22	26.29	5.68	2.90
Increased monitoring internally (by managers)	2.13	11.81	23.36	27.35	30.28	5.06	2.93
Increased monitoring internally (by peers)	2.49	5.24	14.48	20.52	46.36	10.92	3.44
Increased severity of sanctions	2.40	6.75	23.53	37.83	21.67	7.82	3.00
Focus on integrity and change of reward criteria							
Managerial emphasis and attention to research integrity	2.40	3.55	8.53	20.52	47.78	17.23	3.68
Change of performance criteria and rewards	2.66	2.22	7.28	27.98	36.41	23.45	3.74
Information and training							
Online training tools	2.13	7.02	17.94	31.44	30.55	10.92	3.21
Conventional training and education in research ethics	2.40	2.93	7.73	22.74	47.78	16.43	3.69
Ethical reflection groups and open dialogue	2.22	2.49	7.73	16.16	48.40	23.00	3.84
Information on ethical guidelines	2.22	1.60	6.22	15.63	50.44	23.89	3.91

Among the factors that correlate negatively with risk of misconduct, the following can be translated to specific measures, or are relevant when considering which measures to implement, by being actionable: high penalties, high risk of getting caught, open discussions and strong focus on research integrity from the management, understanding of rules and procedures among researchers, managerial support of rules and procedures among management, work-identity and well-being at work (24s). In addition to these factors, we find that when it comes to QRP, a strong focus on integrity and high expectations for research integrity from the management, along with a shared understanding of research integrity and misconduct, also are actionable factors that negatively correlate with a risk of misconduct and QRP.

When it comes to actionable factors that increase the risk of misconduct or QRP, we find pressure to commercialize results, economic incentives, strong hierarchies, lack of written policies, and time and workload pressure. Any measures that promote the factors that decrease the risk of misconduct, or that counters the risk factors can be counted as good answers to the question we are attempting to answer here.

While the researchers mostly supported the measures they were asked to rate (the lowest average is 2.9 on a rage of 1 - 5), it is worth noting that the least supported measures are external monitoring and increased punishment. The survey shows that such measures have a positive effect, but the researchers seem to prefer other measures, like information on ethical guidelines and open discussions, which were the measures rated the highest by the researchers.

The survey results overlap with the survey, but the focus groups offer some nuances that are not found in the survey. Overall, one of the most prominent topic in the focus groups when it comes to promoting integrity, is the belief that it needs to be worked into the culture (131f). This statement might be too vague to qualify as a measure, but it is important to remember the role of culture in promoting integrity. If the culture in general is detrimental to integrity, this could affect the efficiency of the measure in question.

Among the measures and factors found in the survey that overlaps with the focus groups, we find things like a positive working environment (21f), calls to reform the incentive system (56f) and training in codes of conduct (150f). As we have already seen, there was also support among some of the focus group subjects for stricter punishment.

The focus groups discussed some measures that were not covered by the survey. The need for role models and "integrity champions" was discussed (143f), as researchers are socialized into the practice of research, and imitate their peers. Training was also discussed (150f, 154f). The survey report did not check for correlations between risk and training, and we therefore lack quantitative data when it comes to this measure. Participants in several of the UK focus groups suggested that training needs to be based on real life examples, or on cases (154f), in order to be efficient. Another focus group suggested that training and codes of conduct need to be integrated (150f). This tells us that training is a broad category of measures, something that a quantitative analysis would have to take into account.

The survey shows us that the a lack of written rules can increase the risk of breaches of integrity. The focus group participants had suggestions on how such codes of conduct should be implemented. They warned against introducing such measures top-down (137f), as different fields have different cultures and methods. There is no one-size fits all when it comes to rules, and the participants therefore suggested that they need to be based on a process that include the researchers that will be subjected to them.

The presence of hierarchies is a risk factor, according to the survey, and the focus groups had some suggestions on how this problem could be mitigated. We have already seen that some of the focus group participants discussed how group meetings, where researchers meet across hierarchical positions could reduce hierarchy (141f). One of the Italian participants presented an interesting idea on hierarchies (79f). This participant claimed that although quantitative incentive systems are not perfect, they make it difficult for hierarchies to be nepotistic. Before the incentive systems, senior researchers and administrative staff could be more arbitrary and use more discretion in their decisions. Now, as one's merit is quantified, it becomes more difficult to for example hire a less qualified candidate, for nepotistic reasons. Both the survey and the focus groups point to pressure and incentive systems as drives of breaches of integrity, but if this participant is right, these systems are not necessarily purely detrimental, which tells us that the interplay between different measures is complicated, and that there might be unintended side effect when one introduces changes.

Concluding remarks

This task has shown that the two empirical activities in WP IV – the survey and the focus groups – generally provide complementary findings and conclusions. Both studies found that the publication system and incentive structures for researches is a crucial risk factors when it comes to misconduct and questionable practices. The studies also support many of the same measures to promote integrity and prevent misconduct, such as a focus on increasing researchers' knowledge and awareness, openness and ethical reflections, integrity champions and role models, and reducing pressure on researchers that may result from performance management.

In all, both studies find overwhelming support for targeting and developing the workplaces and work conditions as a means to develop integrity.

While there were many similarities, the results from the focus groups also nuance the survey results of the survey. The results from the interviews suggest that codes of conduct should be developed and implemented not solely by management but also involve the researchers to high degree. The codes of conduct should also take into account the substantial cultural differences between different research traditions and disciplines.

Results from the focus groups also suggest that although punishment and monitoring is important, compliance with existing systems (e.g. within a university) must not become an excuse not to continue developing an organizational culture of integrity. After all, it was emphasized, such a culture is not reinforced by codes alone, but by ongoing attention both by managers and researchers (as well as other stakeholders).

Furthermore, the focus group results highlighted that zero-tolerance against misconduct is not an optimal bad solution to develop a culture of integrity; rather, such a culture also involves a tolerance for (honest) mistakes. What is important is that such mistakes are not downplayed, but used for organizational learning and development.

The focus groups also showed that introducing open discussions about misconduct and integrity is difficult, and that successfully doing so requires systematic efforts from the management. A crucial barrier is time pressure on researchers, which can make it difficult for them to engage in practices that promotes integrity. On the other hand, the survey can quantify views expressed in the focus groups, and show that the experiences of the focus group participants are common.

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