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Manifestations of research ethics and integrity leadership in national surveys – cases of Estonia, Finland, Norway, France and the Netherlands

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ABSTRACT

Background

A systems approach encourages the consideration of the national dimension of research integrity. National surveys provide a picture of a wider research community overarching research institutions.
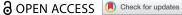
Material

We investigated how research ethics and integrity leadership (REI) is manifested in national surveys by conducting a cross-case meta-synthesis of national surveys of Finland, Estonia, Norway, France and the Netherlands using deductive thematic analysis. The REI leadership competence framework involves four central principles: "people's needs," "developing the community," "leaders' personal competencies,' and "open culture."

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Results

The principle "researchers" needs' seemed to be related to the support in the working environment, socializing for values and principles, leaders taking responsibility and the need for understanding for career planning, common practices and managing pressure. "Community development" was characterized through REI infrastructure, like guidelines and training, even though participation in training varied substantially across the countries. The principle "leaders" competencies' indicated that leaders should be role-models especially in acting appropriately when allegations of misconduct arise. "Open culture" was displayed through trust and courage to talk about ethics including whistleblowing.

Conclusions

Results indicated that observed misconduct was often not reported because of fear of retaliation, missing instructions or seeing no point in reporting. We provide recommendations for the development of REI leadership.

Introduction

The society has granted freedom and trust to higher education (HE) institutions to serve the greater good and contribute to the well-being of everyone (Bertram Gallant 2011). This trust can only be ensured by upholding the highest quality of research and teaching, including high standards of integrity (Martin 2017). Bertram Gallant (2011) has outlined a systems approach to academic integrity in HE and emphasizes that ethics and integrity are the result of the concurrence of the intertwined levels in the system: individuals, departments, institutions (or educational system) and the society. In our research, we aimed to look at the conditions of the research community on the societal (national) level, namely based on national research ethics/ research integrity (RE/RI) surveys.

The well-being and integrity of research community is related to leadership, which means anticipating problems, perceiving them

accurately and being ready to provide viable solutions (Bertram Gallant 2011; Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022). While there are international and national policies in place for REI, it is the role of leaders in HE institution to ensure their implementation (Pprinteger Statement 2018). This calls for analysis of REI leadership as displayed in national RE/RI surveys to provide insights of how those policies are implemented.

We use the term "research ethics and integrity" as this combines both rules and practices in research communities as well as leadership. For instance, some codes of conduct (e.g., Allea 2023) "outline responsibilities of leaders to provide guidelines, infrastructure and encouragement" (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022, 2). REI leadership means leadership on every level in the HE institution including supervisors, programme leaders, research team leaders, department heads to deans and rectors. A REI leader would match the "phases 3–5 in the Vitae Researcher Development Framework (2011), where the person would not only act as an exemplar and someone who sets high expectations, but who would also advise others and shape institutional policies and practices" (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022, 2).

With our cross-case meta-synthesis, we analyzed how REI leadership was manifested in reports of national REI surveys. The main reason to look at the display of REI leadership in the national level was to pinpoint leadership competencies that could be developed and provide support to leaders of various levels in academia to build the culture of integrity.
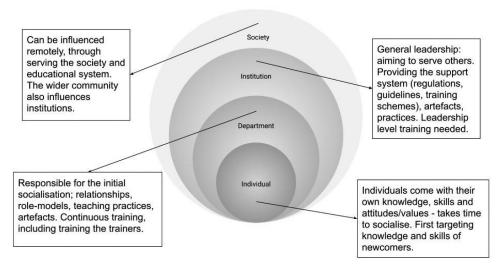

Figure 1. Systems approach to the culture of integrity (modification based on Bertram Gallant 2011).

Theoretical background: Leadership in research ethics and integrity

Systems approach to academic integrity posed by Bertram Gallant (2011) was initially set up to help analyze the status of ethics and integrity in an institution with the goal to develop an ethical academy. Bertram Gallant (2011) emphasizes that the focus in case of misconduct has mostly been on individual agency and institutional structures (sometimes punitive guidelines) and this approach has not been very successful in rooting out misconduct. This view is also outlined in Bretag et al. (2011) who found from their analysis of institutional integrity guidelines that most responsibility is put on individuals (responsibility on staff members alone 5%, staff members and students 36%, and students 21%), institutional responsibilities were present in 36% of the cases and a wider structure was mentioned in 3% of guidelines.

This called for a framework where various instances potentially influencing the culture of integrity are seen as a system (Bertram Gallant 2011; Eaton 2020). Figure 1 illustrates the interrelations of different levels in the research community. First, the individuals (both staff members and students) enter the system with their own knowledge, skills, and values and this calls for socialization into the research community. Second, most of this socialization takes place in the immediate research community, usually a department or faculty (we can also consider this as a micro level). Socialization rarely happens via direct training. Even though onboarding compulsory trainings may be in place in some institutions (Anderson et al. 2007; Bernardi et al. 2011; Fly et al. 1997), most often the values and culture are obtained through relationships, following role-models and common practices (e.g., Fisher, Fried, and Feldman 2009; Gray and Jordan 2012; L. Treviño et al. 2006). Third, the institutional level provides the wider support system (e.g., with ethics infrastructure) but the implementation of this system lies in leadership, that is, how leaders of different levels display their own knowledge and attitudes pertaining to ethics and integrity, and how they handle alleged misconduct. Finally, the relationship with the society may have several dimensions, the two most relevant being how the research institutions influence the society and contribute to general well-being at the same time upholding the quality of research and trust toward researchers and research institutions, we can consider this as a macro level. The society may also influence the institutions by setting criteria for quality (e.g., emphasizing on publishing, encouraging competition, and controlling finances). (Bertram Gallant 2011)

According to the systems approach, leadership in HE institutions plays a crucial role in building the culture of integrity. This has also been emphasized by the Printeger Statement (2018) outlining 13 responsibilities of research

organization and their leaders, namely: providing information about research integrity; providing education, training and mentoring; strengthening a research integrity culture; facilitating open dialogue; wise incentive management; implementing quality assurance procedures; improving the work environment and work satisfaction; increasing transparency of misconduct cases; opening up research; implementing safe and effective whistle-blowing channels; protecting the alleged perpetrators; establishing a research integrity committee and appointing an ombudsperson; making explicit the applicable standards for research integrity (Printeger Statement 2018).

In HE context the members of the institution have relatively more autonomy, and leadership is often distributed on different levels. Leading any group for a common goal requires leadership, which makes teachers, research team managers and programme heads, deans as well as supervisors and mentors leaders. In addition, early-career researchers may be considered as future leaders with their competencies and needs.

Even though leadership happens on different levels in a HE institution, leadership criteria for effective team-leading still apply, and both task-focused and person-focused leadership behaviors are important (Burke et al. 2006). Burke et al. (2006) indicate that task-focused behaviors, which involve managing task completion and ensuring clarity in roles and objectives, are moderately related to perceived team effectiveness and productivity, while person-focused behaviors, which focus on managing team interactions, empowerment and member development, are related to perceived team effectiveness, team productivity, and team learning. Task-focused behavior of leaders can be related to "initiating structure" aspect, and person-focused behavior can be connected with "consideration" aspect of leadership (Schriesheim and Bird 1979).

Leadership to promote research ethics and integrity

Schriesheim and Bird (1979) emphasize that leadership is situational – in specific situations and contexts different leadership styles may be needed. We can think of leadership styles as leadership principles that are more general than leadership competencies. Principles are materialized through leadership practices and behavior. Leadership principles are more applicable in our context in which we aim to analyze national reports, that is, the macro level. The national reports do not focus in detail on leadership behavior and practices, which are more accessible through meso and micro level analysis.

While much literature on leadership originates from the field of business and management, leadership in HE context differs from leadership in businesses, so we considered leadership styles that would be effective specifically

Table 1. REI leadership principles based on leadership behaviour, competence and focus.

Leadership behaviour examples (from Antes, Kuykendall, and DuBois 2019; Resnik et al., 2021; McIntosh, Sanders, and Antes 2020) Micro level	Competence (see references in the brackets)	Focus (Burke et al. 2006; Schriesheim and Bird 1979)	Principle (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022) Macro level
Tailoring approach to individual needs: Recognizing and accommodating individual differences in career goals, work styles, and personalities helps in fostering motivation and satisfaction, leading to more effective performance and ethical behaviour **Building relationships:** Expressing appreciation, communicating with transparency and respect, and showing personal interest in lab members. **Individualizing interactions:** Assigning tasks based on skills and interests and adjusting interactions according to individual needs.	Considering the people's needs Cardona (2000) Reaching out to the others' needs Cardona (2000) Contributing to the people's personal development (asking: 'do those served grow as persons, do they become healthier, wiser, more autonomous, more likely to serve others?') Cardona (2000) Being concerned with people themselves [empathy and connection with personal life] Cardona 2000; Crews (2015)	person-focused /consideration	Considering people's needs
Providing supervision and guidance: Being an accessible and engaged mentor helps in ensuring rigorous research and ethical conduct. Team leaders should provide scientific guidance, troubleshoot issues, and create an environment where team members feel comfortable discussing concerns and mistakes. **Expressing values and expectations:** Clearly communicating high standards for quality, integrity, and transparency ensures that team members understand the importance of ethical conduct and compliance with research regulations. **Addressing interpersonal conflict:** Proactively resolving conflicts in a fair and timely manner helps in maintaining a respectful and collaborative work environment. **Establishing rules and policies:** Leaders should establish and enforce clear rules, policies, and procedures that promote ethical behaviour and compliance with regulations	Training and engaging the research community to make common values and beliefs apparent Crews (2015); L. K. Treviño, Brown, and Pincus Hartman (2003) Making sure everyone knows the practices of the institution and actively participating in them Crews (2015); L. K. Treviño, Brown, and Pincus Hartman (2003) Being aware that only people who care about each other are able to disagree and give honest feedback Cardona (2000)	task-focused /initiating structure	Developing the community

(Continued)

Table 1. (Continued).

Leadership behaviour examples (from Antes, Kuykendall, and DuBois 2019; Resnik et al., 2021; McIntosh, Sanders, and Antes 2020) Micro level	Competence (see references in the brackets)	Focus (Burke et al. 2006; Schriesheim and Bird 1979)	Principle (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022) Macro level
Cultivating a positive team environment: Exemplary team leaders intentionally create a positive, team-oriented environment that fosters collaboration, respect, and trust among team members.	Having the competence to negotiate, create and communicate vision, making human interaction a habit Avolio and Gardner (2005)	person-focused /consideration	Developing personal competencies
Leading by example: Team leaders should model the behaviour they expect from their team members, including respect, hard work, and ethical conduct.	Showing integrity and capacity to think of others' needs before one's owns,' serving the community, serving first Cardona (2000)		
Communication: Effective leaders maintain open lines of communication, establish clear expectations, and hold regular meetings to discuss ethical issues and reinforce the importance of ethics in research.	If you as a leader reach your limit, you need to be able to forward the issue to a suitable person/institution Avolio and Gardner (2005); Crews (2015); L. K. Treviño, Brown, and Pincus Hartman (2003)		
Providing routine feedback: Offering timely positive and constructive feedback.			
Stewardship: Leaders should practice ethical stewardship by appropriately managing financial and material resources, ensuring sustainability, and avoiding waste.			

(Continued)

Table 1. (Continued).

Leadership behaviour examples (from Antes, Kuykendall, and DuBois 2019; Resnik et al., 2021; McIntosh, Sanders, and Antes 2020) Micro level	Competence (see references in the brackets)	Focus (Burke et al. 2006; Schriesheim and Bird 1979) task-focused /initiating structure and person-focused /consideration	Principle (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022) Macro level
Holding regular team and one-on-one meetings: Regular meetings help in reviewing data, coordinating tasks, and fostering open communication, which is essential for maintaining good working relationships and ensuring compliance with ethical standards.	Making yourself available (open door/move among your people/ participate in discussions as a partner) Crews (2015); L. K. Treviño, Brown, and Pincus Hartman)2003) Making sure people have the confidence and courage to turn to you (Avolio and Gardner 2005; Cardona 2000)		Focusing on open culture
Encouraging shared ownership and decision-making: Involving team members in decision-making processes and giving them ownership of projects promotes accountability and engagement, which are crucial for maintaining research integrity.			
Hiring team members cautiously: Carefully selecting team members who fit the collaborative and ethical culture of the research group is essential for maintaining a positive and productive environment.			
Promoting an ethical climate: Leaders should foster an ethical research climate by integrating ethics into all aspects of laboratory management, encouraging shared ownership, and ensuring adequate training and supervision.			
Encouraging engagement: Inviting feedback, involving lab members in key decisions, and giving credit for contributions.			
Creating a team atmosphere: Promoting collegial interactions and organizing team-building activities. Recognizing and celebrating successes.			
Addressing conflict: Helping resolve team dynamics issues and welcoming concerns.			

in this context. Moreover, we were interested in which leadership principles would specifically be effective in promoting the culture of integrity. Research ethics and integrity (REI) leadership is a more recent concept and aims to fulfil the requirements for leadership in HE context (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022). In Table 1 we visualize how the leadership behavior examples can be summarized as competencies. We also identify the focus of leadership, which includes task-focused (initiating structure) and person-focused (consideration) aspects of leadership competencies (Burke et al. 2006; Schriesheim and Bird 1979). REI leadership principles are based on elements from ethical, authentic, and transcendental leadership concepts which have empirical grounding and have been widely in use to describe leadership approaches. Ethical leaders display genuine interest in people by listening, showing concern and considering the greater good and long-term best interests of the organization (L. K. Treviño, Brown, and Pincus Hartman 2003). Ethical leaders align their words and actions which contributes to trustworthiness, and demonstration of commitment to the organization (Crews 2015). The characteristics of authentic leadership are self-awareness, building relationships, working sincerely, leading with a vision, aim and values (Avolio and Gardner 2005). To build an ethical academy (Bertram Gallant 2011) transcendental leadership contributes to an environment where the people become exemplars of their own (Cardona 2000).

Tammeleht, Löfström, and Jesus Rodriguez-Triana (2022) synthesize the leadership principles, which facilitate a culture of integrity as researchers' needs, developing the community, leaders' personal competencies, and encouraging an open research culture (Table 1). Competencies displaying the principle of considering researchers' needs includes paying attention to people themselves, their needs and contributing to their personal development. This principle is mostly person-focused and includes consideration of people in the organization. Developing the community means making sure everyone knows the practices and is able to commit to a common set of values of the team and the institution and actively live them. This principle also means that the leader is aware of the importance of caring and honesty in the team. This principle requires task-focused behavior from the leaders as well and initiating structure. Leaders' personal competencies include displaying integrity and serving the community but also enabling interaction through own example and seeking help when in need. This principle is again person focused and contributes to considerations. The principle of open research culture means that leaders make themselves available and encourage transparency. This principle can be both task-focused and person-focused – the leader needs to organize the working environment to encourage open culture but also inviting people to work in unity.

While there is ample research on the individual level of REI (e.g., Anderson et al. 2007) and some research on the institutional level (e.g., Geller et al. 2010; Robishaw et al. 2020) there has been less research on the display of REI leadership on national level. Leadership and its role in implementing good REI practices is not often studied as part of the national level studies. Nevertheless, national REI surveys provide information about a wider community in a country, and hence we posed the question: *How is REI leadership manifested in national surveys?*

Method

This research involves a meta-synthesis (also called meta-analysis) for a cross-case study of five countries: Estonia, Finland, Norway, France and the Netherlands. For the meta-synthesis we have used reports of national REI surveys of those five countries (see information on the reports in Table 3 in Appendix 1). We have consulted Ulloa and Schwerer (2024), Levitt (2018), Timulak (2009) and Noah (2017) for quality assurance. All resources provide generally similar steps for high-quality qualitative meta-synthesis/meta-analysis.

Qualitative meta-synthesis (the term is interchangeably used with *meta-analysis* by all our consulted resources, but *meta-synthesis* is claimed to be more suitable for qualitative interpretation) in our study refers to a method in qualitative research which aims to integrate results from multiple prior studies (in our case reports of national surveys) to derive interpretations or conclusions that are more substantive than those from individual studies (Noah 2017). It involves analyzing and synthesizing key elements from prior studies to construct a greater holistic interpretation of the researched phenomenon, beyond mere aggregation of data.

We aggregated the following steps based on various resources (Levitt 2018; Noah 2017; Timulak 2009; Ulloa and Schwerer 2024):

(1) We defined a research goal and formulated the research question – to see the manifestations of REI leadership principles in various national REI surveys.

(2) We selected reports of national surveys to be included in the study – five national REI survey reports were selected, our goal was to focus on European countries and reports that have been published in the past 5 years (the European Code of Conduct was published in 2017) and that were at least partially openly accessible (published) – we made a call in our network of researchers and country experts, researchers from five countries volunteered, so the reports of those countries were selected. The reason was that some survey reports were available only in the

native language (so native speakers were needed), in addition, the researchers from corresponding countries knew the research context best to conduct the thematic analysis.

(3) We analyzed the reports using a common framework (REI leadership principles described in the theoretical section), data was extracted from the individual survey reports based on the thematic coding template (see Appendix 2). The template served as a common coding tree for all country teams as the themes had to be general enough to be applicable on the macro level.

(4) We conducted deductive thematic analysis and synthesis of data. Thematic analysis allows researchers to look for latent themes, or non-semantic manifestations of these, that is, underlying ideas and assumptions (Braun and Clarke 2006). The national surveys and reports did not necessarily explicitly name leadership as their focus, but many of the issues discussed in the reports pertain to leadership, and more precisely, to the areas of the four leadership principles. Two coders from each country coded the content of the survey reports first individually (by compiling information from reports to a separate document under the four leadership principles and adding individual comments, these documents were usually 12–20 pages long). Then both coders together combined the synthesis of country results on a summative table where first one coder summarized their results and then the other added their results to the table with a different color (not repeating the findings that had already been identified by the first coder). Then the coders discussed if they agree to the themes they had found and wrote a chapter on the country results. We did not use a specific programme, information was text-based and MS Words was used for text modification.

(5) Cross-case synthesis followed. Our research design followed Yin's (2018) Type 3 multi-case study procedure, which means that we treated each national survey as a holistic case in its own context. The team in each country conducted their own synthesis based on the common framework. We then drew cross-case conclusions by scrutinizing commonalities and unique features of the country results. We also condensed all the findings into a set of recommendations for future national surveys as well as development ideas for REI leaders.

(6) Quality assurance was approached by various methods. Data analysis was conducted by at least two coders (both experts in the research environment and native speakers if relevant) for each country report by using deductive thematic analysis based on the thematic analysis template (see Appendix 2) and then collected into a summative table. As national surveys rarely directly ask about leadership aspects in

connection to research ethics and research integrity, we had two synchronization meetings with coders (one online, second individual consultations with individual coders f2f or online). This was necessary to understand and discuss the common framework as well as decide how to interpret information presented in the national survey reports. We considered all themes identified by individual coders equally relevant (and inter-coder agreement was not sought as outlined in Cofie, Braund, and Dalgarno 2022; O'Connor and Joffe 2020), the approach to analysis did not provide specific numbers of identified themes (the research does not follow positivist approach). We may deduct inter-coder agreement approximately (no numerical data was available, calculation is based on the themes added by the second coder) based on the summative tables with country results filled by both coders in different colors (the initial results): Finland – 90%, Estonia – 90%, Norway – 92%, France – 90% and the Netherlands – 80%. As the coders of each country reports had to discuss the identified themes and agree on their wording, we may even argue that the inter-coder agreement is 100% as consensus was reach for all themes. In addition, all the results were audited by an expert of the REI leadership framework.

Some examples of analysis: for the theme researchers' needs we identified content describing researchers' development needs explicitly, but we also identified content describing challenges to REI, the tackling of which would require researchers to develop their knowledge, skills and values. To gain insights about the community, we looked for themes pertaining to REI infrastructure (e.g., guidelines, trainings, RI advisors, supervision, team support). Leaders' competencies/characteristics became evident mostly from open answers (if they were present) or if there were direct questions about leadership. Research culture was interpreted from items displaying trust and/ or courage, for instance how researchers perceive dealing with misconduct and/or how they perceive support. Behaviour in the research community may indicate trends in the research culture.

Results

We present the results here as an overview table (Table 2). We also outline REI leadership aspects that are similar in countries in italics and indicate country-specific features in bold in the table. The detailed descriptions of results can be found in Appendix 3 (accompanied with the country profile based on the ENRIO database to provide the context to the results but which was not part of the analysis). The varied display of the results (occasionally

Table 2. Overview table of case results.

Country	Researchers' Needs	Community	Leaders' Characteristics	Research Culture
Finland	• *Pressure to publish* • *Find funding* • *Career uncertainty* • *Need for knowledge on rights and guidelines*	• *70% know guidelines* • *50% aware of RI advisers* • **56% trained** • **Leaders should emphasize guidelines**	• **Half see leaders as ethical role models** • *Need for open decision-making* • **Serious handling of misconduct**	• **70% content with community support** • *13% reported misconduct* • *Issues with publishing and authorship*
Estonia	• *Career advancement stress* • *Some guidance is lacking, e.g., for whistleblowing and ethics review in humanities and social sciences* • *Lack of REI training* • **Need for supportive work environment that values ethics**	• *70% know guidelines* • *61% know RI advisers* • **44% say training available** • **56% lack REI training**	• **REI competences are not considered important by leaders** • *Need to recognise ethics as part of leadership competences* • **Recognising the importance for equal treatment by leaders (including prevention of bullying and harassment)**	• *Of those who observed FFP/QRPs:21% did nothing* • *9% have reported questionable practices/misconduct* • **Unclear reporting procedures** • **Fear of retaliation for whistleblowing**
Norway	• *Lower publication and funding pressures* • *Need for ethics training* • **Transparency from leadership** • *Need for continuous ethics training*	• *Significant gaps in ethics training* • **Checklist approach criticized**	• **Leadership norms vary** • **Issues with power dynamics and authorship practices** • **Need for fair authorship**	• *Importance of open research culture* • *Awareness of misconduct* • *Underreporting* • **Need for transparency**

(Continued)

Table 2. (Continued).

Country	Researchers' Needs	Community	Leaders' Characteristics	Research Culture
France	• Awareness about RI measures • **Overloaded schedules** • *Pressure to publish* • **Need for changes in assessment**	• **RIOs aware of their role** • **Need national support** • **Training/workshops on research assessment** • *Open science*	• **Challenges in role clarity** • *Leaders/RIOs need training in sensitive tasks* • **Support for coordinating awareness**	• **Complexity in handling misconduct** • **Emotional burden** • **Need for rapid responses** • **National survey for insights**
Netherlands	• *Need for knowledge and good research practices* • **Support for early-career researchers** • *Lowering publication and funding pressures* • **Need for support for supervisors**	• *Leaders should focus on training and promoting adherence to scientific norms* • *Increasing transparency via open science*	• *Supervisory practices need development* • **Responsible mentoring** • *Addressing organizational justice* • *Creating transparency* • **Need for collaboration**	• *Need for open discussion of mistakes* • *Enhance safe and supportive learning environments* • *Promoting open science* • **Support for slower and meticulous research** • *Addressing publication pressure*

percentages, mostly as topics) is caused by the differences in the national surveys and how the reports displayed those results. Table 2 is followed by a description of similarities and differences between country results.

The results indicate various topics that are similar in the countries:

Pertaining researchers' needs all countries report significant pressure to publish and secure funding, which is linked to various questionable research practices (QRPs) and stress among researchers. Both Finland and Estonia highlight career advancement and workplace stress as significant issues. Similar concerns are noted in Norway and the Netherlands. There is a common need for more training in research ethics and integrity across all countries. Researchers often report insufficient training or lack of awareness about existing guidelines.

Pertaining community, a notable percentage of researchers in Finland, Estonia and Norway are aware of research integrity guidelines and training, but participation rates are generally low. France and the Netherlands outline the importance of open science. Moreover, Finland and the Netherlands indicate the importance of leaders focusing on promoting guidelines and training attendance.

Pertaining leaders' characteristics in Finland and the Netherlands, researchers expect leaders to be transparent in their decision-making. In addition, France, Estonia and the Netherlands outline the need for leaders to receive training and support to develop their ethics competence.

Research culture is seen though open communication – Finland, Norway, and the Netherlands emphasize the importance of open and a supportive research culture where mistakes can be discussed without fear of retaliation. In Finland, Estonia and Norway, there are concerns about underreporting of misconduct due to fear of retaliation or lack of clear procedures. Finland and the Netherlands emphasize the importance of addressing publication issues and Norway includes awareness of misconduct.

Country-specific features are:

Pertaining researchers' needs, Estonia and Norway indicate stress and competition in the workplace and a need for more transparency for leaders. France, based on RIOs' perspectives, points to the challenges in implementing research integrity measures due to researchers' overloaded schedules as well as a need to change research assessment. The Netherlands outline the need for support to early-career researchers but also for supervisors.

Pertaining community, Estonia reports a relatively modest perceived competence in REI and a lack of clear guidelines for specific topics. Norway highlights the bureaucratization of research ethics, which can hinder day-to-day activities. France emphasizes the need for national support and coordination for RIOs. In addition, Finland and Estonia have a notable percentage of researchers aware of research integrity advisors, but usage rates vary.

Leaders' characteristics are perceived as follows: in Finland, about half of the respondents think that ethicality comes from leadership, while in Estonia, leaders are not perceived as leaders of REI. Norway highlights the influence of social relations and power dynamics on leadership norms. In France, RIOs face challenges in finding their place within the organization and need support for sensitive tasks. The Netherlands specifically highlights the impact of supervisory practices on QRPs and the need for responsible mentoring as well as addressing organizational justice and collaboration.

Research culture is seen through handling misconduct, and common practices and norms. Finland, Estonia and Norway report that formal notifications of misconduct are rare, and there are concerns about unrecorded cases. Estonia highlights the lack of clear procedures for reporting misconduct. France focuses on the emotional burden of handling misconduct cases for RIOs. Norway and the Netherlands point out the normalization of unethical behaviors and the need for a culture of openness and transparency. Finland emphasizes the importance of community support and encouragement by leaders. The Netherlands also suggests that support for slower and more meticulous research would support open culture.

All in all, while there are common themes across the five countries regarding the pressures faced by researchers, the need for better training and guidelines, and the role of leadership in fostering an ethical research culture, there are also distinct differences in how these issues manifest and are addressed in each country.

Discussion

In this meta-synthesis, we looked at how REI leadership was manifested in national surveys. We did this by focusing on four REI leadership principles: researchers' needs, community, leaders' characteristics and research culture.

Researchers' needs were displayed in various ways in national surveys. The most prevalent need pertaining REI leadership outlined in all national reports was managing pressures, especially related to the pressure to publish (all reports). Other pressures outlined were the pressure for funding and for career advancement (competition) and stress at the workplace (Finland, Estonia, the Netherlands). Reports outline the need to discuss misconduct/ QRPs (Finland, Norway) and highlight the importance of REI (France). In addition, emphasizing common values and practices (Finland) as well as improving the RE infrastructure, including training (Finland, Estonia, Norway) were expressed as needs. Moreover, high quality of supervision/ mentoring was identified as a need to increase RRPs of early-career researchers (the Netherlands). Indeed, this principle is person-focused and includes

consideration of people in the organization (Burke et al. 2006; Schriesheim and Bird 1979).

Community was manifested through monitoring the REI infrastructure. All national reports outlined the need for further training on REI. Reports outline the availability of help and advice for REI that could be communicated to the community more clearly (Finland, Estonia, France). This principle can be both task-focused and person-focused (Burke et al. 2006; Schriesheim and Bird 1979) as it includes organizing structures as well as encouraging people to participate.

Leaders' characteristics were seen as important and leaders were considered as ethical role models (Finland, Estonia, the Netherlands), influencing the behavior of other researchers through values, behavior, decision-making and adherence to norms. Supervisors as REI leaders need to address the power relations and dynamics in the teams and find the balance in providing autonomy, negotiating authorship, and survival vs responsible mentoring (Finland, Norway, the Netherlands). REI leaders should recognize their responsibility in nurturing future REI leadership (Estonia). National codes of conduct also emphasize the need for organizations to ensure supportive and harassment-free working environment. This principle is mostly person-focused as it pertains consideration and involvement (Burke et al. 2006; Schriesheim and Bird 1979).

Research culture was scrutinized through the misconduct and questionable practices lens. National reports outlined that misconduct was not always reported within the organization, for example due to fear (Finland, Estonia) or not being aware of whistleblowing procedures (Estonia). It was outlined that the way leaders deal with misconduct and build the culture of integrity may have an impact on how trust is achieved. Reports outline that leaders should initiate and encourage open discussions about QRPs and other issue in the research process (Estonia, Norway, the Netherlands). The culture of trust is seen to enable discussions about mistakes and errors, enhance transparency and continuous learning, diminish competition as well as increase awareness of QRPs (Norway). Communication, clear procedures, open discussions, open science as well as slower research encouraged by leaders may help build open research culture (Estonia, Norway, the Netherlands). Again, as indicated by Burke et al. (2006) this principle is both task-focused and person-focused – the leader needs to build the environment to encourage open culture, but also invite people to work together. Overall, we can display common themes across all countries:

- Researchers' needs: publication and funding pressure, career advancement stress, need for more training and guidelines.
- Community: awareness of RI guidelines, need for supportive environment.

- Leaders' characteristics: ethical role models, serious handling of misconduct.
- Research culture: open communication, misconduct underreporting.

Unique aspects for each country are:

- Finland: moderate training participation, community support.
- Estonia: low training participation, leaders not perceived as REI leaders, lack of clear procedures.
- Norway: bureaucratization concerns, influence of social relations, normalization of unethical behaviors.
- France: national support for RIOs, RIOs need support, emotional burden for RIOs.
- Netherlands: continuous ethics training, responsible mentoring, normalization of unethical behaviors.

It seems that even though guidelines are available about organizational responsibilities to support the culture of integrity (ALLEA, PRINTEGER Statement, several national guidelines) this may not guarantee their successful implementation. As the researchers are mostly influenced by their immediate research community (i.e., their institution), leaders may need support and guidance of how to implement the aspects outlined in the guidelines.

Various guidelines focus on proactive aspects of leadership – this is also the case with REI leadership principles. The REI leadership framework is theoretical and is meant to be proactive supporting responsible conduct in research. Reactive aspects are focused on action and specific behavior, which was not part of the study here. Moreover, countries may have different guidelines for handling misconduct, so advice on how to react in certain instances may not be applicable everywhere. We believe that the REI leadership principles are not in conflict with national guidelines and procedures for handling allegations of misconduct, but this may also warrant further research analyzing national guidelines in light of REI principles.

The analysis indicated that REI leadership is displayed to various extent in different national surveys, even if the surveys did not focus on leadership *per se*. Indeed, future surveys could include questions about various levels of leadership in RE/RI surveys to get a holistic view of the entire research community in a country. Our research suggests that the REI leadership framework can be used to evaluate the REI leadership principles and competencies (Tammeleht, Löfström, and Jesus Rodriguez-Triana 2022). Based on the results, we have revised

the framework (see Appendix 4) to encourage thorough REI leadership analysis in the future.

Limitations

We recognize limitations in this study. National surveys focus of different aspects which makes comparisons challenging. Therefore, we approached the research task from a case study approach, in which we do not compare countries *per se*, but try to offer a snapshot of five different contexts in terms of what may be understood about REI leadership through their national surveys. Future studies could focus on using national surveys provided in the same country to see the longitudinal trends. In addition, future studies could also focus on quantitative meta-analysis of national surveys to provide a more holistic comparison of various surveys.

Conclusions and recommendations

Leadership has a crucial part in the systems approach and directly contributes to building the culture of integrity. National surveys provide a wider picture of the research community in a specific country. Based on the five cases outlined in the article it can be said that leaders in HE institutions have various possibilities to support REI.

Researchers need support to deal with external pressure (e.g., publishing and funding pressure). Leaders, especially if they are tasked with team leader responsibilities involving work planning, must be aware of how external pressures are perceived in the research team and what kind of implications this may have on REI. Leaders may not be in a position to influence the pressures but can create space for mutual discussion how everyone in the team is individually and together handle the pressure.

Leaders play an important role in communicating strategic decisions in their research communities, but in the same vein, also help to communicate the voice of the field to the forums in which strategic decisions and priorities are made, and in which the leaders themselves may participate in.

It is important that REI does not remain an issue of checklists and compliance, but the discussions and the advising of others is always connected with the broader objectives of ensuring ethical, honest and fair research practices. As individuals who are often close to researchers and their every-day life, leaders are in a position to engage in discussions with authorities, administrative bodies and other entities, and can explain how and why some requirements may be perceived by researchers as challenging or problematic.

While researchers perceive FFP as serious misconduct, there is a need to also clarify QRPs. Leaders should open a floor for discussing various QRPs and help clarify their impact on the quality of research. There are some QRPs that may involve aspects of good work conduct in general (e.g., harassment).

Leaders should communicate common values and principles, especially pertaining to REI. The way the leaders display their attitudes and beliefs toward REI may have implications on how researchers perceive the importance of REI. Leaders' behavior and practices may influence the level of trust in the community (which is a prerequisite for open and honest work culture). REI infrastructure includes guidelines, procedures and training, leaders are expected to be attuned to what the infrastructure has to offer and make use of the structures and resources which are in place.

Supervision and mentoring play a crucial role in socialization and behavior of early-career researchers (ECRs) – leaders should make sure that also supervisors receive help and support when necessary. Leaders (including RIOs) may also need support and training to improve their knowledge of REI as well as leadership quality.

The way the members of the community perceive fairness and justice may influence the culture of integrity. There may be more vulnerable groups in the community, such e.g., ECRs whose situation warrants more attention. Transparency in decision-making may help leaders strengthen experiences of justice, as individuals understand the basis of the decision-making.

We make recommendations based on the level of leadership to enhance REI leadership at various levels, fostering a supportive and ethical research environment.

Supervisors

(1) Addressing power dynamics: supervisors should actively manage and address power relations and dynamics within their teams to ensure a balanced and fair working environment.
(2) Providing autonomy and mentoring: finding alignment in providing autonomy to researchers and responsible mentoring, particularly in negotiating authorship and career development.
(3) Encouraging open discussions: initiate and encourage open discussions about QRPs and other issues in the research process to foster a transparent and supportive research culture.
(4) High-quality supervision: ensure high-quality supervision and mentoring to increase responsible research practices (RRPs) among early-career researchers.

Programme leaders

(1) Training and development: implement and promote training on REI to enhance competence and adherence to REI guidelines.
(2) Communicating commitment: clearly communicate the programme's commitment to national REI guidelines and ensure adherence by all members.
(3) Building a supportive community: foster a supportive work environment that prioritizes quality of research over quantity and questions obsolete practices.
(4) Handling misconduct: ensure that procedures for handling misconduct are implemented and all team members are aware of whistleblowing procedures and feel safe to report issues.

Department heads

(1) Managing pressures: help manage pressures related to publishing, funding, and career advancement by supporting researchers to focus on the quality of research (as opposed to quantity).
(2) Promoting ethical leadership: act as ethical role models, influencing the behavior of researchers through values, decision-making, and adherence to research norms.
(3) Supporting RIOs: provide support to RIOs and ensure they have the resources needed to handle cases effectively and with minimal emotional burden.
(4) Creating a trusting environment: build a culture of trust where mistakes and errors can be openly discussed, enhancing transparency and continuous learning.

Deans/Rectors

(1) Institutional support and resources: ensure the institution provides the necessary support and resources to foster a culture of research integrity, including infrastructure, training, and transparent procedures.
(2) Strategic implementation: develop and implement strategic plans to embed REI principles across the institution, ensuring alignment with national and international guidelines.
(3) Encouraging open science: promote open science practices and slower research processes to enhance the quality and transparency of research.
(4) Monitoring and evaluation: regularly monitor and evaluate the effectiveness of REI initiatives and make necessary adjustments to improve their impact.

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