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# Epistemic decentering in education for responsibility: revisiting the theory and practice of educational integrity

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## Abstract

There is no consensus on definitions of educational or academic integrity, and their philosophical relationship with the notion of responsibility is complex. Here, we aim to i) disentangle these three notions. We lean on a philosophical framework of ethics and our method involves different kinds of reasoning and the modeling of complex thinking. We combine this frame with a three-level epistemic dimension to allow us ii) to model the psycho-epistemic (level 1), epistemological (level 2), and phenomenological (ground 0) ways in which subjects interact with their own norms and knowledge and with those of the surrounding institutions. Finally, iii) we also aim to propose concrete educational means by which to implement educational integrity. Our theoretical findings lead us i) to consider responsibility as a process that consists of establishing a dialogical relationship between one's inner and outer worlds, which relies on an epistemic decentering. Based on this, we argue that education for responsibility founds a new, expanded definition of educational integrity. Moreover, ii) empirical evidence suggests that this model can be operationalized by psychological indicators such as critical and complex thinking, cognitive flexibility, contextual relativism, and decentering, all of which are skills that can be fostered in spite of simplifying thinking, dogmatism, naive epistemology (and dualism) and cognitive fusion, respectively. It points to iii) the benefits of an educational approach in which subjects are encouraged to practice different types of meditation and to feel free to break institutional rules. Therefore, promoting educational integrity may require methods that lie beyond the obvious choices. After discussing the scope and limitations of our results, we propose a new research agenda for educational integrity, which could ground a field of research broader than just academic integrity, but complementary to it.

**Keywords:** Academic integrity, Educational integrity, Responsibility, Ethics, Institutions, Mindfulness meditation, Soft skills, Reflexivity, Epistemic decentering, Dialogism

## Introduction

### Stakes of educational integrity (EI) research and implementation

EI has been distinguished from academic integrity (AI) as concerning all levels of education (including schools and universities), whereas AI only focuses on higher education



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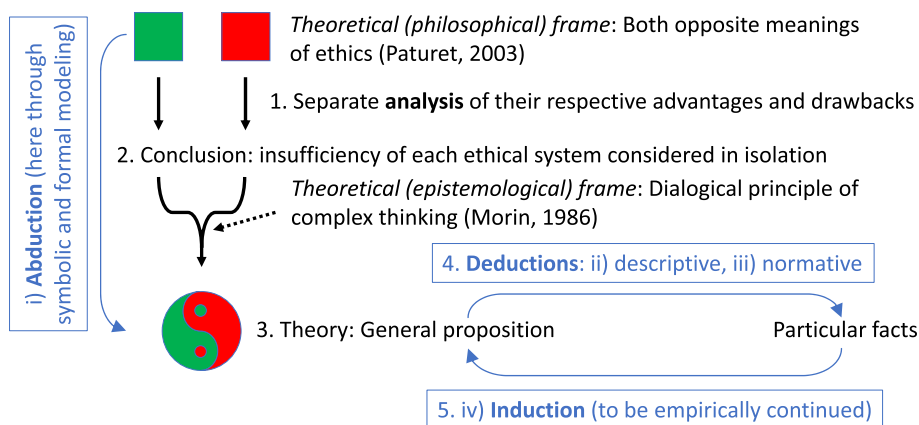
institutions (Joyce 2007). However, most of the literature uses the term AI, that some authors have used as interchangeable with EI (Eaton and Edino 2018). Although it is presented as complex (Bretag et al. 2011), few researchers seem to have properly defined AI: it has usually been considered as an institutional quality that results from perfect obedience to academic rules, or has even been reduced to the notion of a moral realm free of intentional cheating behavior by students (Jamieson and Howard 2019). Some authors have partially based it on the notion of responsibility (Manly et al. 2015; Bretag et al. 2011), which is our privileged prism for analyzing educational issues.

In this area, no consensus on a definition has emerged so far, and the term “integrity” is no exception (Eaton and Edino 2018). Individual integrity would entail a firm adherence to one’s personal rules based on a principled ethical ideology (Schlenker 2008). More generally, the notion of integrity seems “inseparable from these ideas of a kind of wholeness of self or of a moral identity, which can be forfeited or violated by certain actions” (Diamond 2001, p. 864). It is thus linked to the notion of responsibility in that the latter requires the following conditions: the freedom to act, the intention to act rightly, and an awareness of the moral character of the action (Zimmerman 2001). *Responsibility* is a primary goal in any *education* and lies at the core of *ethics*: the three corresponding notions are thus co-substantial (Paturet 2003; Hagège 2019). Both responsibility and integrity are concerned with acting rightly and moral commitment. However, whereas integrity emphasizes the primacy of the a priori frame over individual preference or reflection, responsibility foregrounds consciousness, freedom of choice, and attentiveness to the consequences of the actions (Hagège 2019; King and Carruthers 2012). Due to this discrepancy, systematic obedience to the institutional rules may even appear to represent irresponsibility (Henriot 2015). So, this last simplified conception of AI would appear to be contrary to responsibility, and there is therefore a clear need to define these terms properly, *i.e.*, with the necessary complexity (Eaton and Edino 2018).

In any case, AI matters because it is a cornerstone of the value of qualifications and it conditions the skills and ethics of tomorrow’s professionals (McCabe et al. 2012). Cheating seems to have become fairly widespread and even trivialized (McCabe et al. 2012; Stephens and Wangaard 2013). Thus, several propositions have been made to counter it, such as developing a culture of integrity at the institutional level (McCabe et al. 2012; Stephens and Wangaard 2013), using plagiarism detection software (Villano 2006), active pedagogies, and innovative assessment methods (Khan et al. 2021), or different kinds of tutorials (reviewed by Stoesz and Yudintseva 2018). The latter study mainly revealed a short-term efficacy in reducing plagiarism and improving students’ knowledge about academic writing (*ibid.*). Nevertheless, empirical studies assessing the efficiency of other approaches are still scarce.

#### **Aims, frame, and method of the present article**

Consequently, the following questions remain open: First, what does “EI” mean? What are its theoretical relationships with AI and responsibility? And, how should it be defined in a non-simplified way? Second, how can it be improved? Providing scientific elements of answers to both questions would require i) conceptualizing (or at least defining) EI in a reasoned way; ii) empirically operationalizing this theoretical frame into relevant studyable indicators; iii) identifying the actions that are hypothesized to trigger them;



**Fig. 1** Sequence and relationship of reasoning methods used in this article—focus on the dialogical principle. The three phases of scientific discovery given by Peirce are represented here (in the blue boxes). In the first phase, abduction (i), we argue for the need to conciliate both opposing kinds of ethics (1 & 2). For this purpose, we use the dialogical principle of complex thinking, which allows two antagonistic notions which are mutually exclusive and non-dissociable of the same reality to coexist: as with the Yin and the Yang, formally, one is part of the other, and symbolically gives it its significance (as the notion of rationality makes sense thanks to that of madness, and vice versa; Morin 1986). *Dialogical* etymologically means *which concerns a speech between two*. We thus obtain a formal and symbolic model (3). In the second phase, we detail in the article both kinds of deductions: descriptive (ii) then normative (iii), whereas the potentiality of the third phase (induction; iv) is evoked in the conclusion. All of these phases contribute to an iterative process that specifies the theory

and iv) integrating previous elements in a rigorous methodology until evidence emerges of EI enhancement.<sup>1</sup> In the present conceptual article, we take a detour through the notions of ethics and responsibility, in order to propose elements of answers to both sets of questions, with the outline of our text following the order of points i) to iii), leaving the fourth point (iv) to be addressed in the conclusion.

We previously theorized responsibility as leaning on five types of soft skill (Hagège 2019) or psycho-sociological dimensions, and we focus here only on the epistemic dimension. *Epistémè* means “knowledge” in ancient Greek. To us, the epistemic dimension of our relationship to the world has three levels (Hagège 2019). “Level 1” is the information contained in our thoughts, ideas, beliefs, etc., and level 2 is present in level 1 and above it. It pertains to the specific contents that concern our relationship to knowledge and thinking (metacognition, personal epistemology, etc.), for example our beliefs about learning and knowing. Finally, ground 0 is the immediate level of our phenomenological relationship to thoughts, information, or knowledge. Here, the term “phenomenological” refers to the consciousness, so this last ground level indicates how we subjectively experience having or hearing one idea or another; for instance, if we feel more or less identified with it. The framework of our article consists of the combination of points i) to iv) with the three epistemic levels (1, 2, and ground 0).

As far as our method is concerned, we create knowledge through different ways of reasoning (highlighted in bold below; see Fig. 1). Importantly, “Peirce maintained that the logic of scientific inquiry is divisible into three fundamentally irreducible phases or

<sup>1</sup> Throughout the article, we use this numbering to refer to these same elements.

modes of inference: (1) abduction, or innovative inference; (2) deduction, or explicative inference; and (3) induction, or evaluative inference" (Turrisi 1990, p. 466). Deductive reasoning consists of starting from a postulate (which has been created by abduction) to infer an explanation of particular cases, while inductive reasoning, in contrast, uses concrete data to establish the validity of a theory. The framework of our article (from i) to iv)) broadly follows the logical sequence of these modes of reasoning (see Fig. 1), even though they are not exclusive of each other (because some induction from empirical data has been used in our abduction phase, for instance).

In the first part, at epistemic level 1, i, our abductive reasoning is based on an analysis that leads to modeling an ethics of responsibility (see Fig. 1). The notion of a model has been defined as a "systemic and hypothetical representation of a part of reality, bounded by thought according to a problem to be solved" (Genzling 1991, p. 49, author's translation). It establishes a correspondence between the elements or processes of an empirical register (the phenomenon that the model explains and which it accounts for, here 'ethics-in-action' observed in empirical studies) and an explanatory register (the world which gives meaning to the model and allows it to be manipulated intellectually; *cf.* the frames in Fig. 1). Orange (1997) distinguished several methods of modeling. Here, our approach is on the one hand symbolic, because it brings out a meaning where the explanatory process (complex thinking) is part of the phenomenology to be explained (EI, ethics, and responsibility, see below), and on the other hand, it is also formal because it highlights the structure and the nature of the relationships between the elements of the model (both types of ethics in Fig. 1). This approach makes it possible to reconcile the notion of education for responsibility with that of EI, and even to propose it as a foundation of the definition of EI.

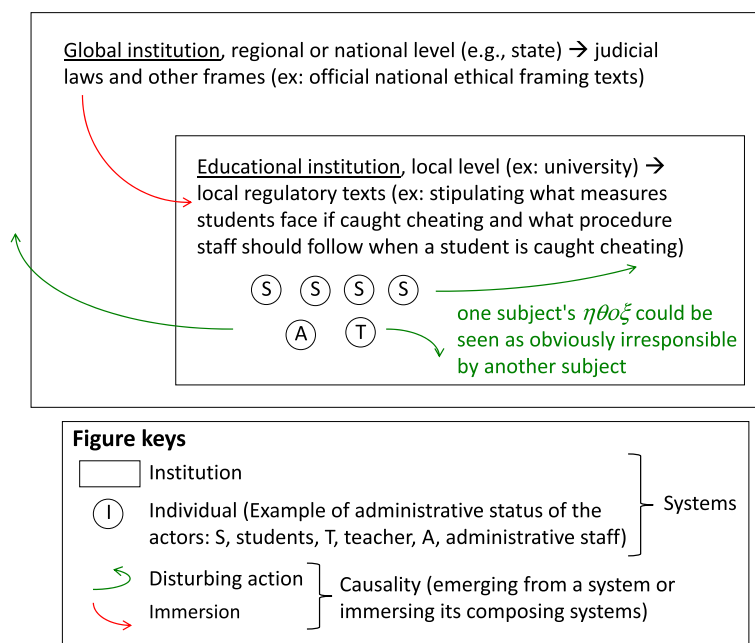
Second (comprising the following three parts, epistemic levels 1, 2, and ground 0; ii), we then draw on this theoretical framework to analyze the obstacles and facilitators of education for responsibility (thus EI) in respective terms of each level: this deduction is an explicative inference of a *descriptive* nature because its function is to detail the psychological and phenomenological translations of the theory created in the first phase.

Third (in the fifth part, iii), as we focus on educational institutions, we deduce from our theoretical and empirical arguments the educational guidelines that should help promote responsibility *and EI*: this deduction is an explicative inference of a *normative* nature because its function is to propose new ways in which to implement the principles of the theory.

Having done all that, we discuss these proposals in relation to the literature. Finally, we conclude by proposing an agenda for research about EI (point iv), which could allow original inductive inferences to be made (see Fig. 1).

### **Level 1, i) A philosophical operational frame to conceive education for responsibility and define EI**

Several authors link the notion of responsibility to that of harmony through the ability to act in a way that is beneficial to the whole (*i.e.*, to oneself, to others, and to the entire non-human environment) (Hagège 2019). Historically, two antagonistic senses of



**Fig. 2** Schematic representation of a pure  $\eta\theta\omicron\xi$ . If the behavior of an individual is too disturbing, then immediate disharmony may appear; but its impact on the institutional functioning is expected to affect only the individual or the local scale, because it arises a priori from a single actor or a small group of actors

responsibility can be drawn from the two primary meanings of the word *ethics* (Paturet 2003). These are now discussed in turn.

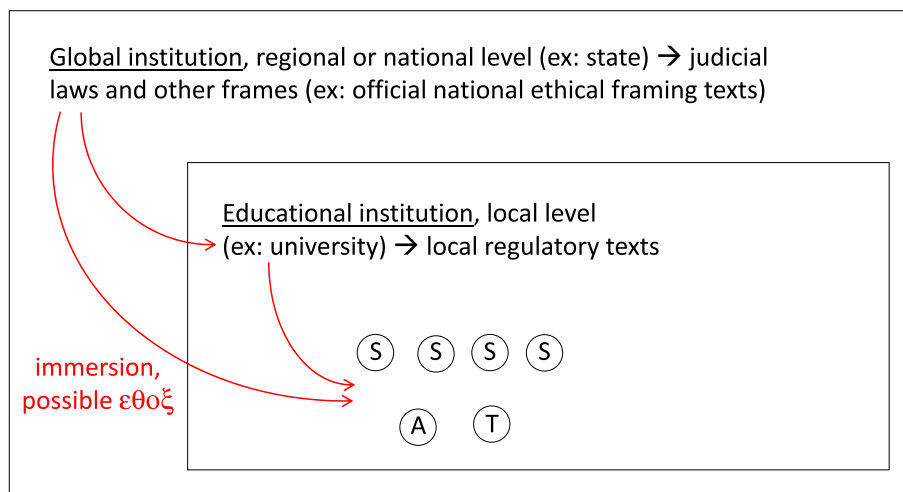
### A first meaning of ethics and its limits

The first one, *ethos* with an  $\eta$  ( $\eta\theta\omicron\xi$ ), is of Platonic origin (Paturet 2003). Given this  $\eta\theta\omicron\xi$ , responsibility corresponds to the choices and actions which engage the specific character of the subject, and which appeal to them to surpass themselves and the norm (*ibid.*, Fig. 2). Thus, this meaning underlines the possibilities and the freedoms of an autonomous individual.

We can understand how this kind of responsibility may be relevant in some situations. For instance, nowadays we consider the French Resistance fighters under the Vichy regime during the Second World War to be responsible people, because they confronted the German invaders, thereby breaking laws of the French state at that time. In doing so, they surpassed their contemporary norm.

However, this sense of responsibility raises the following problems.

Firstly, how can someone emancipate themselves from their context and act purely according to a proper inner point of reference? Social psychology has accumulated results highlighting the strong influence of the environment (or the situation) on subjects' functioning (Myers 2009). For instance, after their crucial experiments, Asch (1956) and Milgram (1965) thought of this automatic reaction respectively in terms of a relinquishing of responsibility onto the authority and as a strong tendency to conform, respectively. Not only is the group able to modify and distort someone's prior judgments, but non-human elements can also prime unconscious goals (reviewed by Custers and Aarts 2010). Moreover, most individuals unknowingly act against some of their



**Fig. 3** Schematic representation of a pure  $\epsilon\theta o\xi$ . In this ethos, subjects perfectly submit to the frames arising from the top and their environment. This corresponds to a simplified conception of institutional integrity (AI or EI, at this stage of the article), by which individuals are implicitly considered as objects who must blindly obey the rules. In this case, if the collective behavior (normed by the rules) turns out to be ethically inappropriate, then long-term disharmony will develop, at a global scale. *Note.* Figure keys: see Fig. 2

declarative values due to implicit attitudes that express cultural stereotypes (reviewed by Pearson et al. 2009), and this is problematic for responsibility (Levy 2014). This seems to be a mere consequence of our illusory perception of reality, including of ourselves (see later in the text on the notion of projection). Altogether, we are conditioned in many ways by our context, and it is no easy task to emancipate ourselves from it.

Secondly, how can someone know a priori what actions will bring harmonious consequences in the future? A person's belief that they are able to save others, for instance, might be dangerous. This kind of motivation was that by which Western people historically oppressed other peoples "for their own good" (Hagège 2013). Thus, it is difficult, if not impossible, to accurately foresee all the potentially positive and global long-term consequences of our actions. Also, if a person mainly just considers their inner world, they could kill someone (as French Resistance fighters did) to defend their values. So, clearly, the context must be considered.

### An opposite meaning of ethics and its limits

The implicit or explicit rules of society (such as the prohibition of murder) or of certain institutions represent easy points of reference for an individual's responsible behavior. This meaning of obedience to rules and conformity to social customs corresponds to the idea of the  $\epsilon\theta o\xi$  (ethos with a "ε"; Paturet 2003), to spontaneous conceptions of responsibility (Such and Walker 2004) and to the scholarly one of AI (Jamieson and Howard 2019). Given the latter, people should be responsible in the sense of an  $\epsilon\theta o\xi$  and integrity is disrupted when educational actors (e.g., students and teachers) break a rule (see Fig. 3).

So, whereas the first responsibility (coherent with an  $\eta\theta o\xi$ ) undoes the habits, and breaks the molds and models, the second one (given an  $\epsilon\theta o\xi$ ) links, channels, and structures (Paturet 2003). However, this last conception also has at least two limitations.

Firstly, how can someone know that a particular behavior considered normal today (like going to school, taking a shower, or driving a car) will not be considered unethical in the next century? If ecologically catastrophist views turn out to be accurate, then future generations might think of us as we today consider Vichy collaborators: as irresponsible people who indirectly or directly caused the suffering and death of many people, even if not everyone was aware of these dramatic consequences.

Secondly, adopting this view of εθoξ can easily give rise to the temptation to adopt a top-down simplifying conception of institutional integrity, depending on which rules are imposed on students, who “have no choice” but to follow them (Fig. 3). However, several studies have presented evidence of the counter-performative effect of such a conception. On the one hand, in one study elementary school children were left alone in a room with an appealing toy that they were forbidden to touch under either a severe or mild threat (Freedman 1965). Then, several weeks later they were left with the same toy without any instructions: three-quarters of the children who had earlier received a severe threat played with the toy, whereas two-thirds of the other group still *resisted* playing with it. That result suggests that for the first group, their cognitive dissonance (between the external rules and their personal desire) was too strong, whereas the weakness of the sanction allowed the other children to feel freer: having consciously chosen their behavioral line (rather than having felt obliged to do so) meant it was easier for them to internalize, maintain, and act according to their decision.

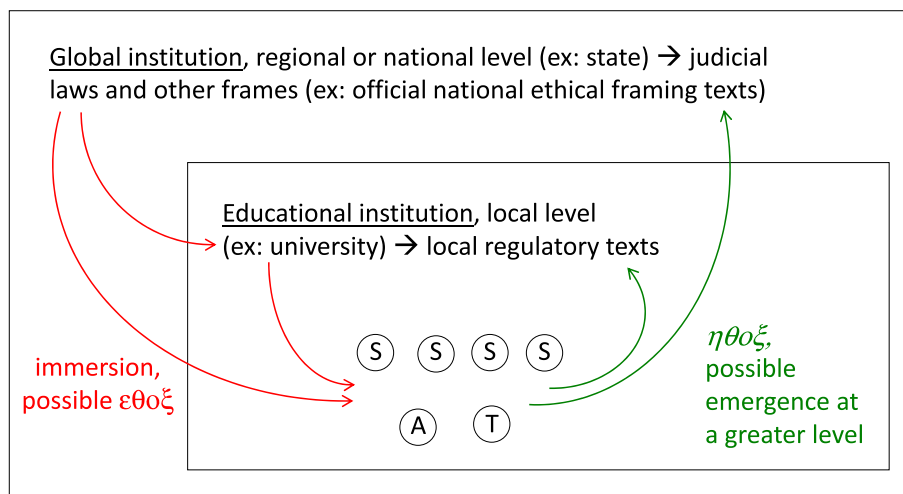
On the other hand, in the first experiment in another study, adults either read a neutral text or a text arguing that free will is illusory (Vohs and Schooler 2008). Those who read the second text then cheated more afterwards in a task (thanks to a security flaw in the program). Those who believed in free will the least cheated the most. This suggests that they took less responsibility for their actions – because they believed it was the “fault of determinism”. In the second experiment, subjects who had read deterministic proposals cheated by awarding themselves supernumerary points after a cognitive task, while subjects who had read assertions advocating free will cheated less (*ibid.*). We can therefore conclude that believing in the free will and ethical capacity of subjects (including ourselves) and acting in conformity with this belief not only seems performative, but also inclines us to behave honestly, and to comply with the (fair) rules of the context.

### **A resulting dialogical basis of responsibility**

Given the limits we have underlined for both senses of ethics, we can highlight a huge problem that to us, is the fundamental question of responsibility: how can a subject, in a given context, in the present moment, while they are acting, thinking, and feeling emotions, find consistent ethical points of reference with which to orientate their acts?

This tension between what takes place at the individual’s scale (for instance, their own personal desires and security) and what takes place in their environment (e.g., institutional norms but also others’ desires and security) cannot be solved in a synthesis:

*“The crushing weight exerted on a being reduced to nothing by a group that is now everything; the wild outburst of a will for which anything goes: these are the two extreme theoretical figures of irresponsibility, one of which falls short, while the other goes beyond the bounds [of responsibility]. Of the two antithetical but complementary poles of the field, neither can be favored, neither sacrificed. The*



**Fig. 4** Schematic representation of the integration of an εθοξ and an ηθοξ in an ethics of responsibility. This integration makes the emergence of new laws or rules possible. When considered as responsible subjects, if individuals disagree with rules, they might try to seize control of institutional decision-making bodies to try to change the framework of the institution (for instance, through councils where students have representatives). If they do not, they will be inclined to follow these rules. Of course, this possibility of the emergence of new rules already exists in many universities, but how many subjects really feel concerned by it and really make conscious and deliberate choices about their compliance with external rules? EI can always be improved via higher consciousness of the process, self-consciousness, and subjects’ empowerment, thus responsibility can still grow. *Note.* Figure keys: see Fig. 2

*destruction of the subjective pole causes the situation to deteriorate into a form of unilateral constraint. In the absence of the objective pole, we witness nothing more than the flourishing of a will denying all jurisdiction and whose subject takes itself for the measure of all things. The field of ethics coincides with that of responsibility. [...] Within it lies the possibility of deliberate refusal” (Henriot 2015, authors’ translation).*

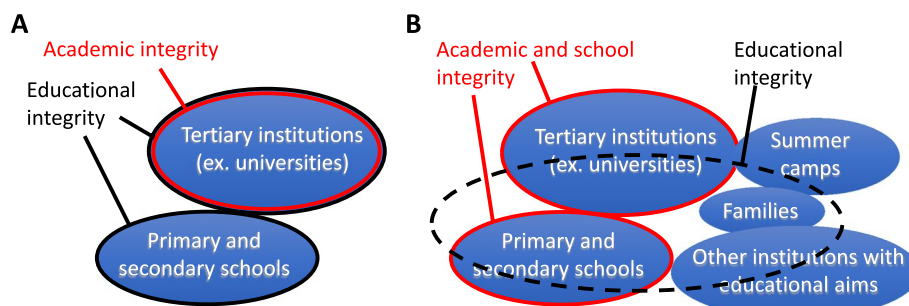
Thus, we believe education for responsibility should favor the development of a dialogical relationship between the ηθοξ and the εθοξ (see Fig. 4), which means that the subject makes both *ethoses* consciously coexist and exchange together (Fig. 1). Also, close attention should be paid to the consequences of one’s own actions; indeed, this last characteristic grounds the ethics of responsibility (Hagège 2022).

Now, how can we characterize the relationship between this ethics of responsibility and EI?

**Towards a complex and specific definition of EI**

EI deals with educational institutions. In the broadest sense, “institutions” are philosophically defined as models and “principles which organize most of the activities of individuals in a society into definite organizational patterns”; as such, they include families, schools, states, etc. (Pettit 2001, p. 858). Integrity describes an institution that is honest, which means that it “does its job” to the best possible level. What, then, are the respective jobs of academic and educational institutions? The former mostly aim at training and instructing, a process that can appear as antagonistic with the goals of education





**Fig. 5** Possible fields of application of different conceptions of EI. **A** In the delimitation that is apparently currently accepted in the literature, EI corresponds to the same notion as AI, but is also extended to K-12 (i.e., from Kindergarten to high school). **B** Here, we propose to regroup EI and AI as they generally correspond to establishments that are organized on a regional or even a state level. Also, we emphasize a new scope of relevance for EI, based on its semantic meaning, which potentially encompasses all kinds of institution that have an explicit or official educational purpose

(Hagège 2013). They might therefore be satisfied with an  $\epsilon\theta\omicron\xi$ , whereas, as a responsibility, education absolutely also requires the integration of an  $\eta\theta\omicron\xi$ : academic institutions can optionally seek to educate (most state institutions under totalitarian political regimes probably have weak educational purpose). So, academic and educational goals are complementary, but also potentially dissociable.

Therefore, here we propose a novel definition of educational integrity: *the quality of any institution (such as a university, school, family, etc.) that has an explicit or official purpose of education (not to be confused with training or instruction) and that implements efficient means to educate for responsibility*, thus in the sense of favorizing a dialogism between both forms of *ethos*<sup>2</sup> (see Fig. 5).

We can assume that ethics starts in individuals (De Waal 2014); so, in what psychological transformation does the development of the epistemic dimension of dialogism occur?

**Level 1, ii) Psycho-epistemic translation of this theory**

An actual dialogism between  $\eta\theta\omicron\xi$  and  $\epsilon\theta\omicron\xi$  would require that subjects feel committed to embodying this dialogism and implementing an ethics of responsibility (Table 1). At the subjective epistemic level, this dialogism involves the confrontation of a person’s *inner world*<sup>3</sup> (their personal ideas, beliefs, norms, etc.) and their *outer world*<sup>3</sup> (their perceived environment and its norms, etc.). Consequently, we think the first objective of education for responsibility should be to unravel and to bring to consciousness both worlds and their tensions in the process that leads to action. This would involve knowledge and critical consideration of institutional rules as well (i.e., not simply following them blindly). Indeed, in our complex conception of EI, individuals are considered as subjects who *can* break the rules (even if they are not officially allowed to do so). They are encouraged to know the rules of the outer world and to consciously choose

<sup>2</sup> This last point makes it possible to precisely characterize education in relation to instruction or training, which instead focuses on  $\epsilon\theta\omicron\xi$ .

<sup>3</sup> This terminology is taken from Jung (1933/1986).

**Table 1** Summary of the article's original content: forms and roles of the epistemic dimension of dialogism in education for responsibility and EI

Level of the epistemic dimension	Level 1	Level 2	Ground 0
Object of the level	Representation	Meta-representation	Phenomenological relation to the representations
i) Theoretical attributes	Choices informed by dialogism between $\eta\theta\omicron\xi$ and $\epsilon\theta\omicron\xi$	Contextual relativism, non-dualism	Consciousness of dialogism-informed choices <sup>a</sup>
ii) Psychological translation (Empirical indicators)	Commitment to implementing ethics of responsibility, knowledge of respective norms of the self and the environment; critical thinking about both	Complex thinking, critical thinking about knowledge and knowing, contextual relativist personal epistemology	Non-dogmatic and non-dualist thinking, cognitive defusion, cognitive flexibility, decentering
ii) Phenomenological translation	<sup>a</sup> Awareness of thoughts about inner and outer worlds, and conscious action based on the integration of information from both worlds	Awareness of thoughts with epistemological content (ex: "this is the truth") and of the contextual epistemological status of thoughts and ideas	No attachment to thoughts and representations due to simultaneous awareness of inner bodily sensations and perceived environment
iii) Pedagogical means to enhance EI	Performative educator's actions based on belief in free will and ethical capacity of actors (distinction between sanction & punishment, power & duty, etc.); education about conscious choices; diary, auto-confrontation...	Epistemology education (history of sciences, serious games, debates and teaching about status of knowledge...); learning to express non-dogmatically (use of "I" to diminish projections...)	Conjunction of different kinds of meditation, theory (how thoughts, beliefs, prejudices... function), exercises to foster self-inquiry and insight (Ex: MBER program)
iii) Target reflexivity	Dialogical and cognitive		Phenomenological

Points i) to iii) are explained in the introduction. Briefly, they correspond to i) the theoretical frame, ii) the study-able indicators (i.e., the empirical operationalization of this frame) and iii) the hypothesized educational means by which to implement the frame

to follow them *or not*, with full awareness of the consequences of their actions on all systems (themselves, others, institutions, and so on), and at best in total transparency with institutional authorities (at least in democratic contexts). This honesty implies that they justify the reason for their choice, so that they account for their action, *i.e.*, they are “response-able”. We hypothesize this way of functioning to be the most harmonious, over the short and long terms, and also to be the most compatible with personal *and institutional* ethical growth (see the possible emergence in Fig. 4); as we have argued, it would probably mostly favor respect for the rules and marginally assist their improvement.

Now, to what does this transformation correspond at the epistemological level?

## **Level 2, ii) Subject’s epistemological barriers and facilitators to responsibility**

### **Dualism, a psychosocial obstacle to responsibility**

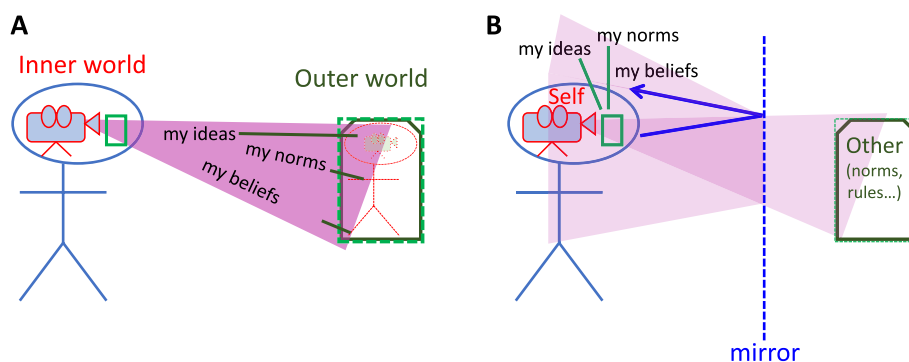
Perry (1999) has been one of the rare researchers in psychosociology to have linked responsibility and personal epistemology, the latter term referring to individuals’ beliefs and thoughts about knowledge and knowing (Hofer 2001). In the 1960s, he called the first stage of his developmental model “dualism”, which is the opposite notion to dialogism (Morin 1986). At this stage, subjects view knowledge in polar terms (as right or wrong), and tend to rely on authorities (e.g., professors). The latter is supposed to know the truth, which is implicitly considered as absolute. This simplified view is based on a duality between the knowledge and the person who knows it, and thus between someone’s own ideas and their behavior (“Do what I say, not what I do”; Hagège 2015).

We think that this implicit embodied conception of separability is one of the major obstacles to responsibility. This issue has been specifically addressed through inventive investigations which showed that ethicists do not behave more ethically than other professors (Rust and Schwitzgebel 2013) and that they sometimes even behave worse, and disrespect the basic rules of life in community (Schwitzgebel 2009). Because of the dualist background, knowledge tends to be more valued than the coherence between knowledge and action in Western societies. Also, such personal epistemologies can lead the subject away from a dialogical relationship between their view and another person’s, particularly if this other person is neither an authority for them nor someone who shares the same culture.

As a first conclusion, we thus note that responsibility implies a decentering from such epistemologies, and more generally from dualism. Would any alternative personal epistemology be more compatible with responsibility?

### **Contextual relativism as a potential lever for responsibility**

In more sophisticated personal epistemologies, knowledge can be considered as complex, contingent, and contextual (reviewed in Crahay and Fagnant 2007), as in complex thinking (Morin 1986). Nowadays, epistemologists are giving more credit to this vision (Coutellec 2015). According to Perry (1999), such contextual relativism (but not dualism) can give rise to an active commitment to responsibility (a jump which reaches beyond the epistemic framework of our article; see the discussion part). Indeed, such a vision links knowledge to human actions and values, and thus to responsibility (Fourez



**Fig. 6** From projection to reflexivity. **A** In the deforming and unconscious process of projection characteristic of subjectivity, there is the subjective impression that the outer world is, or should be, as the inner world conceives it. **B** On the contrary, by turning the gaze inwards, reflexivity enhances lucidity, as there is a more acute consciousness that the outer world is being perceived through a subjective filter and greater awareness of the biases inherent in this filter. Thus, both inner and outer worlds are more accurately perceived

2002; Morin 2014). Even so, a constructivist philosopher or a person holding a contextual relativistic view could still think in a dogmatic way and not make efforts to embody their beliefs (*cf.* the dualism between views and action), without being aware of this discrepancy. In other words, they could unconsciously lack internal coherence, or “congruence”<sup>4</sup> (Rogers 1995). The question which arises, then, is how to further characterize this epistemic obstacle from the psychological and phenomenological points of view?

### **From levels 1&2 to Ground 0, ii) Towards phenomenological epistemic barriers and facilitators to responsibility**

#### **Dogmatism and cognitive fusion as obstacles to responsibility**

In the literature, dogmatism has been depicted as a “closed-mindedness” and rigidity in thinking (Rokeach 1960). It is associated with a tendency to look for true knowledge, to trust authority, and to distrust those with different beliefs (*ibid.*). These dualistic characteristics are found in Perry’s first two stages of intellectual and ethical development (Perry 1999). So, dogmatism also has an epistemological dimension. A statistically significant positive correlation has been found between self-reported dualistic personal epistemology and dogmatism (Dang 2013).

Fundamentally, dogmatism relies on the projection of an individual’s beliefs on outer world manifestations (see Fig. 6): the obstacle lies in the manner in which the subject relates to their thoughts at the moment they arise in their inner world (Hagège 2019). Conspicuous dogmatism is obviously an obstacle to responsibility because it diminishes the possibility of taking otherness into account.

Now, from the phenomenological perspective, dogmatism relies on a consciousness that is absorbed in thoughts, and these thoughts contain beliefs to which the subject attributes an exaggerated value of truth. The subject’s attention to their thoughts is thus magnified, to the detriment of the attention they pay to other phenomena (*i.e.*, the

<sup>4</sup> From the point of view of responsibility, the important thing is to work on becoming aware of one’s own inconsistencies and to strive to reduce them. It does not seem realistic to be perfectly coherent right from the start, or all at once.

sensorial perceptions that convey emotional sensations or manifestations of the outer world). This grasp of thoughts has been named cognitive fusion, which has been defined as “the tendency for humans to get caught up in the content of what they are thinking and to take their thoughts literally, believing that these thoughts accurately describe how things are rather than seeing them as what they are: just thoughts” (Eifert and Forsyth 2011, p. 242). This process can negatively affect ethics, most strikingly in relation to certain thought-content (e.g., prejudices, belief in the rightness of cheating, of violence, and so on).

As a second conclusion, dogmatism and cognitive fusion prevent dialogism between inner and outer worlds by overemphasizing the importance of some inner world phenomena (namely, a person’s thoughts) in their subjective reality. Thus, the question is: what epistemic psychological and phenomenological alternatives would be more compatible with responsibility?

### **Cognitive flexibility and cognitive defusion as levers for responsibility**

Cognitive flexibility has been negatively correlated with dogmatism and aggressiveness, and positively correlated with tolerance for disagreement, responsiveness, and adaptability (Martin et al. 2011). It refers to the “awareness that in any given situation there are options and alternatives available, willingness to be flexible and adapt to the situation” (*ibid.*, p. 275). Thus, it seems necessary to favor a dialogical relationship between inner and outer worlds. Cognitive flexibility is indirectly evoked in the “contextual relativist” position of Perry’s intellectual and ethical development theory (1999), in the form of the cognitive comfort of shifting from one context to another.

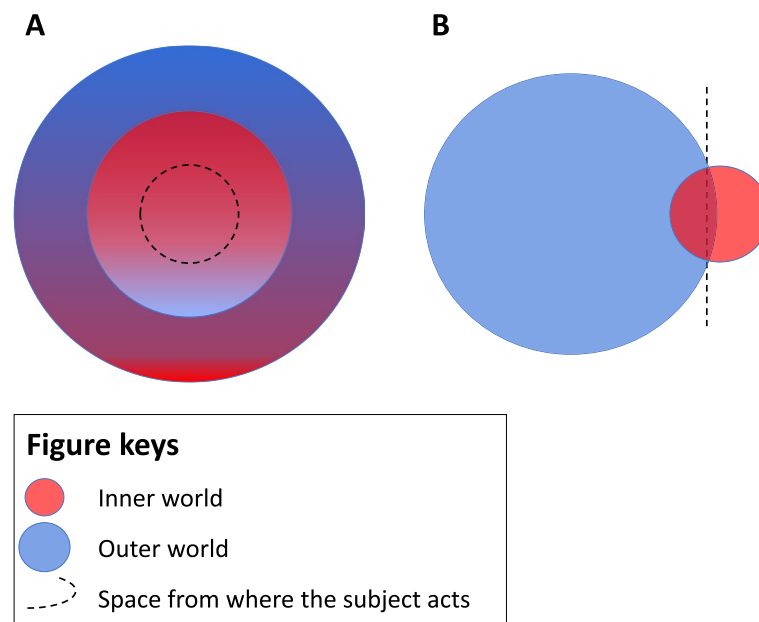
From the phenomenological point of view, shifting from one thought to another or to a bodily sensation relies on cognitive defusion (Blackledge and Hayes 2001). This last notion is included in the concept of decentering, which consists of looking at thoughts and emotions as transitional and objective events, accepting them as they are without judgement (Fresco et al. 2007), grasping them, rejecting them, but not being unconscious of them (thus letting them go, accepting them, and being conscious of them). It is a question of not identifying with them and not mistaking them for reality in some way (see Fig. 7).

Now, how do we create conditions that favor overt and covert contextual relativism, cognitive flexibility, overall epistemic decentering, the integration of both forms of *ethos* to find consistent points of reference — and thus responsibility and EI?

### **iii) Pedagogical means to educate for responsibility and thus trigger dialogism and EI...**

#### **... by Psycho-epistemic decentering (Level 1)**

On the one hand, the educational process should trigger a better way of knowing the outer world and stepping back from it. Of course, this would not mean forcing students to follow the guidelines. Given this latter perspective, an *instruction* to maintain integrity could be dogmatic and favor submission (obedience),  $\epsilon\theta\omicron\xi$  (*ethos* in the second sense), dogmatism, and dualism (between outer rules and inner norms for instance): “These are the rules. You cannot break them. If you do it anyway, you will be *punished*”. On the contrary, *education* for responsibility is an education for freedom and choice.



**Fig. 7** Phenomenological role of epistemic decentering in dialogism. **A** In the ordinary subjective functioning, the inner world is embedded in the outer world – they are confused – and paying attention to one of the two worlds comes at the expense of the other. **B** On the contrary, epistemic decentering allows more lucid consideration of both worlds, on an equal footing

As such, it requires distinguishing between duty, right, and power on the one hand, and between punishment and sanction on the other hand: “These are the rules. You *must* respect them [duty], you are *not allowed* to transgress them [right], but you *can* transgress them [power]. This is your choice [and this is a realistic capacity]. If you do so, you will be accountable for it, and you will have to deal with the consequences (for example *sanctions* if you cheat)”. That is why it is also important for staff and professors to strive to improve their responsibility, which most of the time would probably imply the strict application of sanction procedures against students when they break rules without the approval of the educational community. This consequence should be clear and communicated as information (rather than as a threat). When someone transgresses a rule of the group, the sanction is a way to reintegrate them back into the group, whereas a punishment serves to make them feel bad – and does not foster personal growth (Favre 2007). Given this, EI is not disrupted when one educational actor breaks a rule, as long as that event is processed by the institution. Moreover, simply stating the rules is not sufficient. As far as the EI is concerned, it means that the educational institution supports subjects (students and staff) in learning about its rules and fosters their ability to think critically towards them (and more generally towards their outer world; see Fig. 4). So, any means known to trigger critical thinking (reviewed by Pithers and Soden 2000) can be applied to institutional rules here.

On the other hand, educating for responsibility favors better knowledge and distancing from the inner world. Subjects might be invited to carefully consider the motivations and consequences of their actions, by asking: “What tendencies and norms would these different possible actions elicit in you and in the world? What outcomes would they bring to your life? Do they correspond to what you would want for yourself and to

the world you want to live in?" This is thus a matter of helping the student to become a person, in line with humanistic psychology (Rogers 1995).

These propositions do not refer to a speech to be recited, but to a performative attitude to be embodied, with the real consideration that the subjects are free to make their own choices.

In terms of pedagogical procedures, a way to enhance insight and decentering consists of what we have called cognitive and dialogical reflexivity (Hagège 2015, 2019; Table 1; Fig. 6). Several methods can be used, such as diaries (Hagège 2015; Hess 1998), auto-confrontation methods (Leblanc 2007), and others. In this process, subjects are invited to:

- become fully aware of their functioning and corresponding motivation and justifications;
- question their own functioning, as well as its consequences on the environment (human and non-human);
- clarify their explicit and implicit norms;
- choose and formulate the goals that they find right for themselves;
- compare their actual behavior with these goals; and
- identify and implement the means needed to serve these goals.

Finally, in order to conjugate epistemic decentering in the dialogism of ethics of responsibility (see Fig. 7), the result of this introspection is confronted with otherness in debates, or collective feedback as, for instance, has been promoted in psychoanalytical approaches in teacher training (Blanchard-Laville et al. 2005), in which others further play the role of a mirror (Jorro 2005).

In this process, the educator can introduce elements of reflection about what we have highlighted in this article (e.g., personal epistemology, cognitive defusion, etc.) and lead subjects to compare their own functioning with this teaching, for instance through the use of a diary.

#### **... by Psycho-epistemological decentering (Level 2)**

All the means that we cited in the previous section can be used to foster epistemological development: instead of being applied to outer and inner norms, they are concentrated in this perspective on knowledge, knowing, etc. In our pedagogical experience, we have also frequently used debates (about the nature of knowledge, observation, objectivity, etc.) and taught the history of sciences to foster scientific epistemological critical thinking, which is a first step towards epistemological decentering. Debates can constructively favor socio-cognitive conflicts that trigger learning when they follow some basic rules (Reynaud 2008). We have previously published an example of teaching sequences and their associated paper resources to lead debates in the classroom (Beaufort et al. 2015). Many other means, such as serious games, can also be used. Indeed, we have shown that a computer game mimicking a Popperian epistemology can help to add sophistication to the epistemology of science students (Hagège et al. 2007). We also developed a directed work in which the students must develop a textual analysis grid (see, for example the grids published by Favre 2007 and Favre and Rancoule 1993), based on three texts which

present roughly the same information, but with different intentions (to inform critically, to convey a simple idea, or to promote social behavior, as in propaganda), and a more or less scientific form (depending on the presence of references, questions, hypotheses, elements of the context, etc.). This serves as a basis for collective reflection on the status of knowledge, its mode of production and validation (especially in science), and the link to an accurate way of accounting for it through language. Then, the students use their grid of language indicators to characterize popularized texts and reformulate them, either in a more dogmatic way, or a more scientific way.

In line with this, the epistemological training outlined above could also be circumvented by a more accessible education for (general) non-dogmatic thinking (that also concerns level 1 and ground 0), which has been proven to help to regulate behavior (Favre and Simonneau 2011). This approach includes a reflection on the words used to talk and think, in terms of their meanings and underlying emotions. For instance, instead of “this is true” or “this colleague is an upstart!”, a person can learn to say or think respectively “I think that this is true / a reliable view” or “I’m uneasy about how my colleague got his promotion; it doesn’t inspire me with confidence”, by being trained to reformulate sentences and observing the inner and outer consequences of each relationship to knowledge (Hagège 2022; Favre 2007). Moreover, assuming the inner origin of an idea by saying “I” is an important step in taking responsibility for one’s own thoughts and ideas, by minimizing their projection on the outer world (*ibid.*; see Fig. 6). Coupled with an education for complex thinking, this kind of learning could facilitate the overcoming of dualism.

These considerations now lead us to consider the intimate relationship we have with our thoughts and ideas.

#### ... by Epistemic phenomenological decentering (Ground 0)

A step forward is needed for coherence (or “congruence”): that of phenomenological decentering. Indeed, holding one view does not guarantee that we systematically (or indeed ever) act according to it (as the above discussion explained).

As we have argued, decentering implies self-knowing, and observing one’s own subjectivity in action thanks to self-inquiry, giving rise to insight (Dahl et al. 2020) and “phenomenological reflexivity” in our nomenclature (Hagège 2019). Its difference from dialogical or cognitive reflexivity is that it concerns the direct and immediate conscious experience we have of phenomena (*i.e.*, thoughts, ideas and our own actions), not only the mental representations we have of them. Many meditation techniques are specifically designed to favor an acute awareness of the present moment (Lutz et al. 2008). Meditation (*ibid.*) and contemplative practices (Dahl et al. 2020) comprise a vast family of experiential techniques that can trigger inner world and outer world awareness. The most widely-known set of meditation techniques are those of secular mindfulness meditation, which promotes self-knowing and behavioral regulation while also, more broadly, fostering cognitive defusion and decentering (Blackledge and Hayes 2001; Shapiro et al. 2006).

Indeed, empirical data shows that meditation can improve decentering (Johannsen et al. 2022), cognitive flexibility (Moore and Malinowski 2009), connection with others (Sedlmeier et al. 2012; Seppala et al. 2014), and non-dual awareness (Hanley et al. 2018).



It is therefore able to promote a dialogical relationship between inner and outer worlds. Moreover, mindfulness meditation can foster prosocial behaviors (as meta-analyzed by Berry et al. 2020), and meditation tends to trigger greater awareness of personal values and congruence with them, the effect of which is indeed mediated by decentering (Franquesa et al. 2017). There are also some (as yet less-investigated) meditation techniques that are specially designed to trigger insight or to implement purposes (Dahl et al. 2020). Among these insight-based meditations, some aim at developing non-duality (Hagège 2022) – and thus at overcoming the obstacle of psychological duality highlighted above. Also, although the literature is still scarce, some evidence suggests that explicitly ethically-oriented meditation might be more effective for this than health-oriented meditation (Chen and Jordan 2020), which could nevertheless improve ethical decision making (Shapiro et al. 2012). These meditations thus seemingly support the pedagogical processes highlighted in the previous educational sections, by facilitating a coherence between norms and action.

We have already taken some initial steps in this direction, having developed a 25-h secular Meditation-Based Ethics of Responsibility program (MBER program, fully described in Hagège 2022), which we taught for several years at the university level, and which includes the use of a diary as well as awareness, insight, and purpose-based meditation, whereas non-duality is integrated into the global framework. The first study of the program's impacts on epistemic features is encouraging, as it seems to improve epistemic decentering and other soft skills required to foster responsibility (in prep.). It could, accordingly, help to frame educational curricula that foster responsibility *and EI* in adult training programs.

This module was inserted in the curriculum of science students, and has been adapted in a Master's degree dedicated to the long-life learning of adult trainers, by starting to foster dialogism with their professional institution (see Table 2).

## Discussion

### i) Theorization of EI (Level 1)

In level 1 of the epistemic dimension, we philosophically integrated the notions of ethics, responsibility, integrity, and education in a unifying theory (see Table 1, Fig. 4).

In the literature about AI, some extant theories run counter to our proposition. For instance, an honor code has been proposed in a seemingly top-down approach, in order to favor a “strong ethical environment” in which all actors should adopt the same institutional values (Stephens and Wangaard 2013). Along the same lines, ethics have been considered to require applying rules regardless of individual beliefs about what is right (Sivasubramaniam et al. 2021). Conceptualized as “generally uniform... guiding principles” of “right and wrong conduct” (*ibid.*, p. 9), these ethics thus equate to an *εθoξ*. However, they would nevertheless imply a “freedom to think and choose” (*ibid.*, p. 9); as such, they are (also?) an *ηθoξ*. The authors do not highlight this apparent contradiction. As we consider this tension between both forms of *ethos* as inherent to the notions of ethics and EI, we assume that overt theoretical consistency requires this tension to be made explicit: complex thinking allows this, in contrast with dualistic approaches that simplify this notion by exclusively (and often implicitly) considering only one form of both

**Table 2** Example of implementation of dialogism in trainers' training in a course on the ethics of responsibility within a Master's 2. Activities 1 to 3 correspond to the academic contextualization (introduction) of the course at the university level. Activities 4 to 9 focuses on dialogism with the educational institution (in the example, the trainers' professional context). Activity 10 is, in fact, a set of generic activities that are organized in a program

# (level)	Focus	Generic Aim of the Educational Activity	Example of Educational Activity
1 (1)	IW	To draw out the subjects' a priori conception about the topic of the course	The trainers write their personal views about ethics and responsibility for themselves
2 (1)	OW	Learn the scholarly knowledge about this topic	They study academic conceptualizations of these notions
3 (1)	DR	Psycho-epistemic decentering then integration of types of knowledge	They confront both in debates and integrative writing
4 (1)	OW	Knowledge of the frame of the educational institution	They gather the texts that deontologically or legally frame their professional activity
5 (1)			They study these texts attentively
6 (1)	IW	Identification of a personal case study	They choose concrete cases that they have encountered where they lived ethical dilemmas
7 (1)	IW DR	Better knowledge of their personal norms & contrasted analysis with institutional rules or norms	They analyze these "grey zones" (Johansen et al. 2022) and how their personal views or norms eventually conflicted with the institutional frames
8 (1)	DR	Mental / psychological epistemic decentering	On this basis, they critically think about their own views and the frame
9 (0)	DR	Phenomenological epistemic decentering and integration of both <i>ethoses</i>	They are trained to feel the fairest solution in this context, thanks to a technique originating from acceptance and commitment therapy (Polk and Schoendorff 2014), in relation to concrete cases they have encountered
10 (1, 2, 0)	IOW DR	General levels 1, 2, and ground 0 epistemic decentering, ethics of responsibility	They follow the MBER program (Hagège 2022)

*IW* Inner World, *OW* Outer World, *IOW* Inner and Outer Worlds, *DR* Dialogism and Reflexivity

*ethoses*. This is how we propose to meet the challenge of conceptualizing these notions in a non-simplified manner.

Our approach has also allowed us to theorize EI and responsibility as synergistic, despite their apparent initial philosophical discrepancies. In the literature about AI, different epistemological statuses have been covertly attributed to the notion of responsibility. For instance, it has been considered as an institutional value with which to guide AI (Stephens and Wangaard 2013), a virtue that grounds AI (Manly et al. 2015), a quality of context-specific tasks that involve the ethics of a researcher (Sivasubramaniam et al. 2021), or a core element of exemplary AI policy (Bretag et al. 2011). But to the best of our knowledge, this is the first time that such a distinction has been drawn between EI and AI: to us, these two notions differ not only in their scopes of application (see Fig. 5), but also qualitatively in terms of their goals (respectively educating subjects *vs.* delivering diplomas or training students).

Responsibility and integrity have also already been overtly philosophically reconciled in an ethics of integrity that "is constituted by the principles of respect for the dignity of persons, and the acceptance of responsibility for the consequences of our moral choices" (Mason 2001, p. 47). Our approach is convergent with the latter one,

even if we would rather put forward an ethics of responsibility – a notion that we further develop elsewhere (Hagège 2022).

### ii) Empirical indicators to assess EI

We propose to operationalize this theoretical frame into several psychological indicators (see Table 1). In level 1, critical thinking is central. It is one of the ten fundamental “skills for life” identified by the World Health Organization (Division of mental health 1993), and several authors have advocated its general importance in AI (Jamieson and Howard 2019); indeed, some, as is the case here, insisted on its application to institutional rules, which was found to enhance self-reported AI among students (Trautner and Borland 2013). However, the other indicators are quite innovative in the area. In level 2, we put forward non-dogmatic and complex thinking, and contextual relativism (see Table 1). On the latter, a study has shown that teachers who hold a sophisticated personal epistemology tend to boost children’s moral development (Brownlee et al. 2012). We also identified several constructs that are quite close to dogmatism (such as mental rigidity and a need for closure), and further investigation might highlight the most suitable one with which to assess EI. The same kind of potential limits can be highlighted in regard to ground 0 indicators (decentering, cognitive flexibility, and defusion; see Hagège 2019; Table 1).

Of course, none of these indicators are sufficient to assess responsibility or EI, and they should be combined with some other indicators that have already been used in the literature (e.g., Stephens and Wangaard 2013) and also social emotional ones, among others (see Hagège 2019; Hagège et al., in prep.). In particular, as far as contextual relativism is concerned, the jump towards commitment to responsibility notably relies on axiological skills, which lie beyond the realm of the epistemic dimension which has been the focus here, as Perry (1999) stated:

*“In even its farthest reaches, then, reason alone will leave the thinker with several legitimate contexts and no way [...] that he can justify through reason alone. If he then throws away reason entirely, he retreats to the irresponsible in [the previous developmental stage...]. If he is still to honor reason he must now also transcend it; he must affirm [...] his values [...] or abrogate responsibility.” (p. 150-151)*

So, the “choices” mentioned in Table 1 of course do not rely solely on epistemic skills. We have discussed this point and detailed the axiological (and other) skills required for responsibility elsewhere (Hagège 2019).

### iii) Pedagogical means hypothesized to enhance EI

Now, we have argued that the dialogism between a subject’s outer and inner worlds leans on acute knowledge of both worlds and involves taking distance from them.

On the one hand (level 1), a better knowledge of institutional rules is indeed required for EI, because secondary students mistakenly believe that they know the institutional rules (Johansen et al. 2022) and university students can improve their knowledge of them (reviewed by Stoesz and Yuditseva 2018). Instructions (Froese et al. 1995), practicing paraphrasing (Barry 2006), and academic research about plagiarism (Estow et al.

2011) have all been shown to improve students' honest writing and their knowledge of the academic rules, at least in the short term (reviewed by Stoesz and Yudintseva 2018). Here, based on our pedagogical experience, we propose complementary means, such as autonomous research into these rules and tutored critical thinking towards them (see Tables 1 and 2). In line with this idea, critical thinking has been argued to be facilitated by active learning, which would help to uphold AI (Khan et al. 2021). Many other means have also been identified to enhance critical thinking (as reviewed by Pithers and Soden 2000).

On the other hand (at level 2 and ground 0), epistemic decentering implies specific reflection on the status of knowledge and on the ways in which subjects and knowledge interact, and a consciousness of our own ways of functioning. In line with this, moral development theories underline the important respective roles of complex and critical thinking and of self-knowing in order to consistently behave according to one's own convictions (as reviewed in Swaner 2005). This broadly matches what we call 'cognitive reflexivity' for 'coherence' (Hagège 2019).

Finally, beyond a psychological epistemic decentering, a phenomenological one (ground 0) which can be triggered by meditation techniques would allow subjects to act on the basis of what they perceive from their inner and outer worlds, as an "organic feeling" (Rogers 1995), rather than on more or less conscious personal ideas or a submission to external rules or others' norms. We hypothesize that this personal (bottom-up) approach was missing in the overly top-down approach based on honor codes, and this omission could explain why the latter "did not appear to significantly affect students' perceptions, beliefs, and behaviors related to academic integrity" (p. 175; Stephens and Wangaard 2013). Indeed, self-determination is widely regarded in psychology research as a fundamental factor in optimal human functioning and motivation, where autonomy is seen as a basic psychological need that should be favored by education (Deci and Ryan 2008). In other words, EI requires the subject's subjectivity to be actively considered.

## Conclusion and perspectives

Our argumentation emphasizes how important it is, in order to favor EI, to educate for responsibility through developing a middle way between the primacy of the institutional rules ( $\epsilon\theta\omicron\xi$ ) and the primacy of individual freedom ( $\eta\theta\omicron\xi$ ): a way of consciousness widening, based on improved awareness and the active integration of inner and outer worlds. Our theorization of EI enlarges the realm of research about AI by including all educational institutions (not only primary through to tertiary "educational establishments"; see Fig. 5) and by focusing on their educative purpose (which is dissociable from the academic one, but might also include it). This opens up new research perspectives (see Table 3), which our proposal has raised, and to some of which it has provided new preliminary answers: a new field of research on EI could thus develop which is complementary to that on AI and broader in scope.

### Abbreviations

AI	Academic Integrity
EI	Educational Integrity
MBER	Meditation-Based Ethics of Responsibility

**Table 3** Research agenda for broadened knowledge about EI theory and practice

Area of Progress	Examples of Research Questions to Be Further Investigated
i) Theory	<ul style="list-style-type: none"> <li>- What ethics would be most suitable for EI? (of responsibility, virtues...)</li> <li>- What is the relationship between EI and AI?</li> <li>- What are the dimensions, structure, and determinants of EI?</li> <li>- What EI lessons can be transferred from one institution (ex. family) to the other (ex. school)?</li> </ul>
ii) Empirical procedures	<ul style="list-style-type: none"> <li>- What indicators should be used to assess EI?</li> <li>- What methods should be used to assess EI?</li> <li>- What research paradigms should be used to assess EI? (intervention research...)</li> </ul>
iii) Educational means	<ul style="list-style-type: none"> <li>- How does the institution communicate about its rules?</li> <li>- What is the impact of a particular program or intervention on EI?</li> <li>- What are the similarities and differences in EI in different educational institutions?</li> <li>- What does the cultural specificity of EI mean? (discipline, country...)</li> <li>- How might parents and staff enhance EI and be trained for that purpose?</li> </ul>
iv) Empirical studies	<ul style="list-style-type: none"> <li>- How do staff, including secondary teachers and university professors, know their (global and) institutional deontological frames?</li> <li>- What are the natures and roles of implicit and explicit rules and sanctions in different educational institutions?</li> <li>- What are the subjective relationships between staff, students, and both kinds of rules and sanctions?</li> <li>- What are the impacts of these factors on EI?</li> <li>- What other possible determinants or factors influence EI?</li> </ul>

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**Author's contributions**

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