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Education and the Ethics of Neuro-enhancement

9

Johannes Drerup

Abstract

The potential and factual use of pharmacological neuro-enhancement in the educational system has raised pedagogical, political, juridical, and ethical controversies. In this paper, I will address some of the systematic theoretical questions that permeate these debates. Since advocates of the educational use of neuro-enhancement often do not theoretically clarify what they mean by “education,” I am *first* going to analyze different conceptions of education (e.g., value-based vs. technological conceptions) to develop a more complex theoretical picture of the “educational status” of neuro-enhancement (Sect. 9.2). *Second*, I am going to discuss two central problems of an ethics of the educational use of pharmacological neuro-enhancement (Sect. 9.3). Beginning with an analysis of the limits of consent-based and autonomy-oriented forms of justification of cognitive neuro-enhancement in education (Sect. 9.3.1), I am going to provide a theoretical reconstruction of (potential) ethical implications of the use of pharmacological neuro-enhancement for central educational categories and practices (achievement, responsibility, and authenticity) (Sect. 9.3.2). My major argumentative aim is to clarify and question fallible empirical and conceptual assumptions that are used to frame rationales for and against the introduction of neuro-enhancement in the domain of education.

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9.1 Introduction¹

Public and scientific controversies about the educational relevance of the results of neuroscientific research oscillate between enthusiastic appraisal and fierce criticism (cf. Terhart 2006). These ambivalences also express themselves in contemporary debates about different forms of neuro-enhancement. Neuro-enhancement (NE), accordingly, constitutes an object of cultural criticism and of hopes suitable to renew traditional forms of pedagogical optimism. This paper addresses some of the systematic questions that are raised by the pedagogical, political, and ethical controversies between advocates and critics of the widespread use of pharmacological NE in the educational system. The current debate about the educational prospects and dangers of NE is marked by a lack of clarity with regard to the theoretical, conceptual, and empirical issues at stake—some scholars thus even speak of a “phantom debate” (Quednow 2010; cf. also the critique of Zohny 2015). Therefore, I am *first* going to outline conceptual differences and similarities between NE and educational practices that are often ignored especially by advocates of the educational use of NE. Based on an analysis of the concept of neuro-enhancement, I am going to distinguish different conceptions of education (e.g., value-based vs. technological conceptions) that operate with competing distinctions and criteria to determine the “educational status” of NE. The analysis of these distinctions is going to show the difficulties for educational scientists to keep NE conceptually, normatively, and empirically out of the realm of education. Moreover, it will elucidate some of the difficulties to establish well-founded normative judgments concerning the educational implications of NE. These difficulties are partly due to the fact that some advocates of the widespread introduction of NE into the domain of education operate with a reductionist conceptual framework that does not allow for an adequate theoretical understanding of the normative and practical role of NE in educational settings (Sect. 9.2). *Second*, I am going to discuss two central problems of an ethics of the educational use of pharmacological NE (Sect. 9.3). Beginning with an analysis of the limits of consent-based and autonomy-oriented forms of justification of cognitive NE in education (Sect. 9.3.1), I am going to provide a theoretical reconstruction of (potential) ethical implications of the educational use of pharmacological NE with regard to educational categories and practices (achievement, responsibility, and authenticity) (Sect. 9.3.2). My major argumentative aim is to clarify and question fallible empirical and conceptual assumptions that are used to frame rationales for and against the introduction of neuro-enhancement into the domain of education.

9.2 Neuro-enhancement and Education

In the bioethical debate, NE is often understood as the use of pharmacological or biotechnological means that aim at the improvement of emotional, cognitive, moral, or other capacities or states of healthy individuals or groups (Schöne-Seiffert and

¹Many thanks to two anonymous reviewers for their detailed feedback and their helpful comments.

Stroop 2015; Nagel and Stephan 2009; for an overview on different conceptions of NE: Suhr 2016). Moreover, one can distinguish between *radical* and *moderate* forms of neuro-enhancement. While the former aim at the expansion of human capacities beyond what can currently be achieved via established means such as education, training, or psychotherapy, the latter only aim at forms of improvement that could also be realized by functional equivalents such as training and education (Gesang 2009). *Compensatory* forms of enhancement are called applications of bio-medical means that (without being genuinely therapeutic) try to compensate non-pathological deficiencies which are defined relative to social conventions of what counts as normal functioning. *Expanding* forms of enhancement aim at the realization of capacities that exceed these standards of normality (Birnbacher 2016). Typically, the debate about the conceptual characterization of NE primarily focuses on the problem of drawing clear-cut conceptual boundaries either between the categories of therapy and NE, health and illness, normal and less than normal functioning, or artificial means employed by NE and other “natural” means (Suhr 2016). The criteria that may allow us to identify qualitative differences between “natural” (e.g., healthy food) and “artificial” means of improvement (e.g., different forms of medication), between health and illness (e.g., the overview in Schramme 2012), or between normal and less than normal functioning relative to a certain threshold are usually hotly disputed or even essentially contested. As a result, the *general* concept of NE regularly seems to become less clear when it is applied to *particular* examples. One way to reduce the conceptual scope of NE is, for instance, to qualify more states and capacities as pathological relative to a conception of health that operates with strong requirements. Along these lines, a medicalization of types of behavior that beforehand were regarded as targets of ordinary educational interventions is often diagnosed with regard to current tendencies in the educational system (e.g., the debate about ADHD). Analogously, one can extend the conceptual domain of NE by extending the scope of what is to count as less than normal, but nevertheless non-pathological functioning, relative to more or less contingent, socially constructed standards. Given that the scope of the umbrella concept NE varies relative to the scope of the conceptions that are included under the umbrella, there is a considerable gap between attempts to define *general* criteria of the concept and its *context-dependent use* in particular social domains and with reference to concrete examples. Moreover, forms of medication that are *officially* classified and justified as a form of compensation for a pathological condition, in *practice*, can turn out to be at least partly practices of NE, because the agents involved (e.g., parents and their children) regulate their medication relative to social norms that aim at a level of functioning beyond the therapy of a diagnosed illness (cf. the examples of children diagnosed with ADHD in Liebsch 2009). In light of the often primarily hypothetical character of the current philosophical debate and the lack of quantitative and qualitative social research (Quednow 2010) that takes the *self-interpretations* and the *social attributions* of the agents involved into account, the heuristic value of alleged paradigmatic examples brought forward in form of idealized scenarios may be rather limited in the endeavor to reconstruct the social and ethical implications of practices of NE.

More or less plausible idealized examples, analogies, and comparisons are also used by advocates of the widespread mandatory use of pharmacological NE in the educational system with the intention to normalize practices of NE (“it is not new and human beings always did it, so it cannot be wrong”) by rhetorically relativizing important differences between NE and other practices, such as education. Buchanan, for whom it does not really matter if NE is to be subsumed under the concept of education or not (Buchanan 2011), states:

Education, like science, is an institutionalized, nonbiomedical cognitive enhancement. In developed countries, this institutionalized cognitive enhancement is available to all citizens. Given that cognitive enhancement is a proximate goal of education, it is surprising that the copious literature on the ethics and social implications of biomedical enhancement has done little to explore the implications of biomedical enhancement for education (ibid.: 146).

Equally surprising from the standpoint of educational theory, however, is the attempt to clarify the ethical and social implications of NE for education without a theoretical explication of the concept and different conceptions of education itself. Since problems of an adequate conceptual demarcation between practices of NE and other social practices are regarded as one of the reasons for the perplexity of the normative debate (Biedermann 2010: 319), it cannot be irrelevant for a theoretical and empirical reconstruction of the *educational* implications of NE whether the concept NE can be subsumed under the concept of education or not. Thus, in the following, I will draw on established theoretical distinctions of philosophy of education to develop a conceptual framework that allows for a more fine-grained analysis of the educational status and relevance of practices of NE.

Educational practices are usually oriented at and justified with recourse to the present and future well-being and/or autonomy of individuals or groups.²

In contrast to technological practices that allow for a clear-cut 1-to-1 attribution of causes to effects and corresponding means and ends, educational practices are descriptively characterized by a “technology deficit,” education *is* no technology (Luhmann and Schorr 1982), and normatively by a “technology verdict,” education *should* not be a

²This orientation is one structural core element of paternalist rationales that are used as justificatory frames for regulations in different societal domains: e.g., the educational system (Giesinger 2007), the health care system (Nys 2008), and a variety of other fields (Sunstein 2016). Kalle Grill has distinguished four core elements which are characteristic of most conceptions of paternalism:

- “1. An *interference condition* which delimits the kind of action that may be paternalistic, most often excluding nonintrusive actions such as greeting someone in the street (when this is not a sign to fellow paternalists to capture the person and force her to be more prudent)
2. A *consent condition* which limits paternalistic actions to such actions as have not been consented to—excluding actions that are performed in response to explicit consent, and possibly also tacit and inferred consent
3. A *benevolence condition* which limits paternalistic actions to such actions as are motivated, and perhaps also justified, by the good of the person(s) interfered with. Very often, there is also:
4. A *superiority condition* which restricts paternalism to such actions as are performed by an agent who considers herself in some way superior to the person(s) interfered with” (Grill 2012: 4f).

technology, because technologies can also be implemented *irrespective* of the values attached to the means and ends employed. This traditional theoretical framework,³ which is often used to distinguish educational practices from other practices due to their basis in values (Biesta 2010), rests on the assumption that educational practices are and have to be based on normative criteria and judgments concerning the means *and* the ends of education. Since these criteria are sometimes interpreted as *constitutive* normative conditions of the concept and practice of education, any attempt to identify particular practices *as* educational practices has to take recourse to these normative criteria (Biesta 2013). This is why the question whether NE is justifiable in educational contexts and the question whether NE itself is to be understood as a form of education (or as “truly” educational) cannot be easily kept apart. Practices of NE accordingly could only be interpreted as instances of education (understood as an evaluative concept), if they conform to the normative criteria constitutive of education. In light of the traditional framework, one may interpret the means or the ends of NE as noneducational and/or practices of NE as “technological practices” and therefore not as educational practices.

An *ends-based* differentiation between NE and education seems *prima vista* not possible because there seems to be no qualitative difference between the *ends* of NE (e.g., autonomy) and the ends of education (Buchanan 2011; Flanigan 2013). The evaluative convergence between the goals of NE and educational goals is, however, only superficial: Even though there is considerable disagreement concerning the most adequate reconstruction of the normative structure of educational practices (cf. Drerup 2016) and concerning the question *what* particular practices should count as “good” and “well-functioning” in light of more abstract educational goals (e.g., autonomy), there is no disagreement concerning the assumption that it makes and has to make a central normative difference *how* general educational goals are *realized* and *specified* in the context of concrete educational practices. It makes an important *normative* difference, for instance, whether we are realizing the goal of an autonomy-promoting education by giving a pill to the developing agent, by summoning him to self-activity (Benner 1987) or by exhibiting and explaining something to him (Prange 2005). Likewise, it will have important implications for the normative structure of educational practices and the normative self-understanding of the agents involved if children are seen primarily as objects of a pharmacological intervention or as self-reflective and (developing) autonomous subjects. Even if one would argue that both cases could be subsumed under the broad umbrella of the principle of respect for autonomy, the practical meaning and normative content of the principle of “respect for autonomy” certainly are not identical in the case of ordinary and sound educational practices (“you should think this through”; “I will explain this to you”) and practices of NE (“you did not take your pills today, did

³This position, criticized by Luhmann and Schorr (1982), is part of the argumentative toolbox of the old German tradition of “Geisteswissenschaftliche Pädagogik” (“Geisteswissenschaft” is the German translation of “moral science” (Mill)). The position is also adopted by contemporary philosophers of education who criticize technological ambitions currently influential in educational science (e.g., Biesta 2010). Both claims (technology deficit/technology verdict) are subject of an ongoing discussion in the humanities (cf. Tenorth 2002).

you?”). Educational aims thus have to *express* themselves in particular forms and ways in educational arrangements and practices to count as sound and legitimate (and thus as “educational”). Therefore, it is deeply misleading to simply equate the normative quality of practices of NE with educational practices solely based on superficial analysis of educational aims.

A *means-based* definition, on the other hand, would qualify practices of NE qua definition not as educational if educational practices are interpreted as *natural* methods of improvement in contrast to the *artificial* means employed by NE. This distinction is not accepted especially by advocates of NE who try to construct a continuum between older (education) and newer (NE) forms of improvement and thereby question the alleged qualitative difference between both types of means (e.g., Buchanan 2011). Since education is certainly no less an “artificial” and “cultural” practice than practices of NE and since it indeed seems at least questionable if there is a qualitative difference between the invasiveness of, for instance, a better nutrition and the use of pharmacological means to improve certain capacities and states, it seems that the corresponding difference between the alleged natural domain of education and the artificial domain of NE stands on rather shaky grounds (Suhr 2016). While the alleged naturalness or artificialness of certain means tells us nothing about their normative quality (cf. the detailed analysis of: Birnbacher 2006), this is not necessarily the case with regard to the *normative* dimension of different means that expresses itself in their social implications for the design of educational constellations as essentially *social* interaction orders (Bellmann 2014). Apart from the educational truism that not all means to enhance the capacities of children (e.g., violence) are equally functional and equally legitimate (or “educational”), it is important to note that decisions about adequate *means* are not a value-free enterprise (a fact that is usually overlooked in the traditional theoretical framework) which could be dealt with *after* the value-based reflection and justification of the ends. Decisions about means need additional *normative* criteria that are not contained in the decision about the ends (Luhmann 1973: 44f). Moreover, means as *educational means* themselves usually incorporate *educational ends*. The normative and social status of educational aims (and therefore the aims themselves) changes relative to the specifically *educational normativity* (Biesta 2015: 675)⁴ of the concrete practices used to realize these aims. The same claim holds for the means (and the ends they incorporate) employed in the context of a practice. If it could be shown that the *individual* or *social impact* of means employed by NE is detrimental (relative to a sound educational aim) to the way educational interaction orders are structured and thus has—as *means incorporating ends*—negative implications for given educational ends that express themselves in the way educational practices are realized (e.g., in the way children are treated and recognized as agents), it could be argued that relative to a normative conception of education, practices of NE are to be qualified as *noneducational*. This even holds if the means employed have

⁴“(…) I contend that the normativity of education is not ethical or moral but has to be understood as an *educational* normativity because teachers who engage with their students in an ethical way do not automatically act in a way that is *educationally* significant” (Biesta 2015: 674).

favorable effects on *long-term* goals of education without changing the normative status of these goals. Irrespective of the question whether the means of NE are educational or not, it is moreover likely that the means of NE, if implemented as (mandatory or nonmandatory) options in educational interaction orders, will function as “game changers” that transform the moral environment of educational practices and the ethical self-interpretations of the agents involved and thereby change the normative structure of educational practices.⁵

If the practices and means employed by NE would be regarded as sufficiently sound and legitimate substitutions or supplements of other educational practices and if they moreover would allow for a 1-to-1 attribution of cause and effect and means and ends, NE may—in accordance with the optimistic futurological scenarios of its advocates—count as new forms of “educational technologies” and hence could not easily be qualified as noneducational solely based on the results of normatively guided conceptual analysis. At the present moment, it seems questionable though whether such an empirically informed correspondence of causes and effects of NE could be provided for in the case of an extremely complex practice like education (e.g., due to the problem of the isolation of different causal factors and side effects, the differentiation between effects of NE in combination with other influences of different educational methods and arrangements,⁶ the fact that NE is supposed to transform the capacities of *individuals* (Quednow 2010: 154)). Even if NE could provide sufficiently efficient technologies, it is questionable whether these technologies could—on a *functional* and *normative* level—realistically compete with established educational technologies (in a wide sense of forms of technologies that allow for probabilistic and not deterministic assignments of causes and effects) that are already practiced in form of the social and temporal organization of educational practices (Tenorth 2002).

In short, it is certainly normatively relevant whether NE “qualifies as an instance of education” (Buchanan 2011: 147) or not. While it remains questionable whether NE will one day provide new *educational* technologies, the educational status of practices of NE cannot be determined solely on the basis of the postulation of an abstract convergence of general educational aims that ignores qualitative normative differences between pharmacological interventions and the norms that structure educational practices. Likewise, the question whether the means employed by NE

⁵In his insightful discussion of problems concerning the use of NE in the context of university education, Danaher (2016) divides human activities in two general types—practice-oriented activities (practices which are combined with particular performances and which are associated with internal goods) and goal-directed activities (practices which are associated with particular kinds of outcomes and external goods). A man rollerblading up a sprint track of 100 m would certainly reach the end of the track but subvert the practical sense and the internal goods of this practice-oriented activity. Danaher argues that the potential subversion of internal goods associated with educational practices may provide good reasons for regulatory interventions targeting the use of NE in the field of university education (ibid.: 570).

⁶Of course allegedly clear-cut dichotomies between “traditional education” and NE understood as “popping pills” are misplaced. NE might form a *part* of very different educational methods and arrangements that may have a different intensity and scope.

are educational or not has to take into account an ethical analysis of their impact on the normative structure of educational practices as essentially social practices and cannot be adequately answered solely with reference to their alleged artificialness or naturalness.

9.3 Children and the Ethics of Neuro-enhancement

The reasons why grown-up and sufficiently autonomous persons decide to use cognitive or emotional neuro-enhancers, for instance, vary from mere lifestyle choices to the compensation of a subjectively, socially, and/or objectively diagnosed non-pathological deficit (Quednow 2010: 155). Thus, one may decide to use neuro-enhancers because one feels alienated from a certain aspect of one's personality, because one just wants to feel better, or because one wants to become a better functioning and more autonomous agent (cf. the examples in: Betzler 2009). The pressure to be autonomous and to choose autonomously between large numbers of various options to improve oneself then may become a burden that itself endangers the person's capacity for autonomous choice (Nagel 2010). In the case of children, however, a plausible justification of NE has to take into account the *asymmetrical* character of educational institutions and relationships and the fact that children are not yet able to *consent autonomously to neuro-enhancement*. The central question of an ethics of the educational use of NE therefore is whether and to what extent central normative conceptions (autonomy, authenticity, well-being) that are usually applied to adults can also be plausibly utilized as adequate normative yardsticks for the interpretation and evaluation of forms of NE that aim at developing agents that are only *locally autonomous* and have not yet acquired a *stable practical identity*. In what follows I will first analyze the limits of consent- and autonomy-based justifications of cognitive NE in the case of children (Sect. 9.3.1). Second, I will discuss some of the (potential) ethical implications of the educational use of pharmacological NE for our understanding of central educational categories and practices (achievement, responsibility, and authenticity) (Sect. 9.3.1).

9.3.1 Consent- and Autonomy-Based Justifications of Cognitive Neuro-enhancement

Paternalism toward children⁷ is often justified on the basis that they are not yet able to consent (Schaber 2017). The intricate nexus between autonomy as a condition of consent and autonomy as an aim of education constitutes one central element in standard liberal justifications of education. In the debate about the acceptable limits of the

⁷Since there is considerable disagreement in the academic debate concerning the moral status of children and childhood and concerning constitutive elements of what it means to be a child, I use the notion of children in a broad sense, referring to all persons under the age of 18 (cf. The UN Convention on the Rights of the Child). Thus, the scope of my argument is limited to this age group.

educational use of NE, the instrumental or intrinsic value of autonomy functions as a normative basis to justify pharmacological interventions in form of an autonomy-enhancing paternalism (Flanigan 2013: 334f). Autonomy, in this case, is not understood as *minimal autonomy* in the sense of a threshold concept, but as a *maximalist* variant of autonomy that is either specified via competency or authenticity conditions and/or via the normative quality of the options available to the agent (Raz 1988). Consent-based models of justification justify different forms of autonomy-enhancing NE either based on the actual and present consent, the hypothetical consent (under ideal epistemic circumstances), or the future consent of the agent.

In the case of children, even though they are often locally autonomous with regard to specific domains, the assumption of present consent to NE is usually highly problematic, especially if the decisions made have primarily unknown and potentially *irreversible* effects.⁸ Usually, children are less able than adults to escape from social pressures either exerted in the context of asymmetrical interaction orders (e.g., in parent-child, teacher-pupil, or physician-child relationships) or by the social context in which the decision takes place. Even though children's opinions about matters affecting their life should certainly be heard and have an important consultative function (Brighouse 2003) concerning the ex ante conditions and ex post effects of the use of NE, the attribution of the ability to decide on important and socially controversial issues such as NE goes along with an enormous shift of responsibility, a responsibility that children as children should not be forced to carry. A central feature of the value of childhood (understood in the sense of a *modern* conception of childhood) is constituted precisely by the fact that children *do not have to* act as fully responsible agents (Giesinger 2017). If grown-ups and even scientists that work on NE cannot adequately estimate the risks and consequences of NE, how should an unexperienced teenager do? It is more likely that a legalized expansion of access to NE for minors justified by a libertarian pharmacological agenda will pressure parents and their children to conform to the changing contexts of choice and will thereby produce its own justificatory basis in the form of "consent." A pharmacological policy that aims at the improvement of the "whole patient" (Flanigan 2013: 331)⁹ and her "whole" well-being but ignores the (never neutral)

⁸ It should be noted that my arguments against consent-based justifications of NE could also be applied to the case of the justification of education. I am generally skeptical concerning consent-based justifications because I believe that education cannot be justified without reference to perfectionist conceptions of well-being and the good life. My arguments against consent-based justifications of NE are based on the (debatable) premise that—given the lack of evidence concerning alleged beneficial long-term effects of NE—the justificatory burden should be much higher in the case of NE compared to the case of an established social practice like education.

⁹ The title "Adderall for All: A Defence of Pediatric Neuro-enhancement" Flanigan adopted for her paper sounds like a slogan for an advertising campaign to promote the access to these stimulants as "not only permissible" but sometimes as "morally praiseworthy" (Flanigan 2013: 326). According to Flanigan's approach, NE promises to deliver ready-made remedies against failing schools, failing parents, failing children. Her recommendations ignore the (certainly relevant) current lack of evidence about efficacy and safety of NE and instead accentuate the dangers of *limits on access* to nonmedical stimulant use: "Critics of pediatric neuro-enhancement have emphasized the dangers of providing medication to healthy children but overlooked the dangers of denying healthy patients a legitimate path to access for neuro-enhancement" (ibid.: 333).

effects of changing choice environments (Drerup and Dessauer 2016) on the free “choice” and “consent” of agents could serve as an ideological basis for an in principle limitless paternalistically motivated medicalization of the life of children. Accordingly, the myth that even smaller children are in fact able to fully consent, sometimes advocated in the name of “autonomy” by well-intentioned child liberationists, has a long and dark history (e.g., the disclosures of child abuse cases in Germany, where those most eager to advocate children’s liberation were also those most eager to misuse the notion of consent: cf. Oelkers 2011). This is one of the reasons why a conception of autonomy suitable for the application in educational constellations has to operate not only with procedural but also with substantive standards that are not abstemious with regard to the normative content of particular decisions and their likely effects on different transformations of the self.

Conceptions of hypothetical consent are based on the assumption that an agent who is not factually able to consent at a time t_1 would consent at t_2 if she was completely rational or if the decision was made under ideal epistemic conditions. Ideals of hypothetical consent, even though irreplaceable in many bioethical contexts, however, lead to difficulties in making plausible why an agent should feel obligated to conform to an ideal of rationality or of the rational autonomous self, an ideal which is usually itself controversial. Furthermore, ideals of hypothetical consent under ideal epistemic circumstances usually beg the question why and how they allow for the deduction of particular normative decisions.

Conceptions of future consent assume that children will appreciate what has been done to and for them at some time after the intervention. Some conceptions of NE accordingly operate with success conditions: The agent herself has to understand the result of the intervention as an improvement (Suhr 2016: 29). Usually, it remains unclear, however, at what time such a retrospective justification should take place and how the paternalist could be in an adequate epistemic position to anticipate the consent. If the empirical assumption is correct that there exists a qualitative difference between influences of education and socialization on the one hand and the influences of pharmacological interventions, especially forms of NE seem to be prone to lead to self-fulfilling prophecies that create the normative conditions that they are supposed to rely on in the first place. Children’s normative commitments could be shaped according to certain standards, for instance, in the form of ideals of the achievement-oriented autonomous person, and these commitments could then provide the basis for a justification for the ideals in question. Since consent-based justifications are confronted with problems of inescapable circularity in the case of children, justifications of autonomy-enhancing forms of NE in educational constellations will have to be based on substantive conceptions of a good life and a good childhood.¹⁰ Despite the different weaknesses associated with consent- and autonomy-based justifications, proponents of the educational use of cognitive NE argue that “if cognitive enhancement drugs were routinely used to facilitate

¹⁰Postulates of “ethical and epistemic abstinence” or “liberal neutrality” concerning value judgments about particular conceptions of the good usually ignore that fundamental decisions about values are already embedded in the structure and order of liberal societies (Jaeggi 2014: 40).

learning, there is no reason to believe that engagement with the student's will or human interaction would be detrimentally diminished" (Buchanan 2011: 157). By reducing "the amount of rote learning of basic facts in a domain of learning, they would thereby free the student to exert effort on more challenging tasks" (ibid.: 157). This statement indicates that a justification of NE—like every theory of education—has to deal with the problem of *selection* (Bellmann 2010), i.e., with the problem of the weighting of the normative costs of different transformations of the agent induced by pharmacological means (Lenk 2009: 100; Quednow 2010). Because it is impossible to cultivate and realize all valuable capacities and practices at the same time, both the ideal of a universally literate and educated individual and the ideal of a universally pharmacologically enhanced individual represent a pedagogical and political myth. Likewise, especially in the case of a routine usage of NE, it is illusory to assume that the effects of pharmacological interventions targeting one particular domain could be completely isolated and limited in their effects on other domains (e.g., interdependencies between cognitive and non-cognitive states; Zohny 2015; Quednow 2010). The same holds for the alleged possibility that NE could serve as all-purpose means that are entirely neutral with regard to their practical and normative effects on a particular capacity. Therefore, it is important to keep in mind that autonomy is certainly not the only value to be facilitated in the educational constellations. Even if NE can contribute to the development of capacities and practices facilitative of a maximalist conception of autonomy, an important aspect of autonomy remains the ability to question the particular values associated with an autonomous form of life. The major focus on autonomy, understood as a cognitive and psychological capacity, characteristic for major branches of contemporary liberal philosophy of education, has been criticized for its neglect of other important intrinsic goods of childhood, like unstructured free time, play, or imagination (Honneth 2015). Thus, one of the dangers of the widespread use of cognitive NE lies in the propagation of an autonomy-oriented reductionism that equates individual cognitive development induced by pharmacological shortcuts with the experience-driven, socially embedded development of the capacity for critical self-reflection in the context of communicatively structured interaction orders. Under the guise of the value of "autonomy," this could lead to the enforcement of societal values of radical self-optimization, incompatible with the safeguarding and maintenance of central intrinsic goods of childhood (Gheaus 2015), the legitimate diversity of educational purposes (Biesta 2015) in different domains (e.g., university; Danaher 2016), and an educationally sound conception of *autonomy* (Drerup 2015). In the case of agents who do not yet possess a stable conception of the good, cognitive NE—even though officially aiming at the promotion of capacities central for an ideal of autonomous *personhood*—is likely to be used as an ideological vehicle for the pharmacological promotion of particular *personality types* which are based on *particular values* expressive of what it means to be a well-functioning adult in a competitive market society.

Therefore, it may be *prima facie* plausible to argue that in the case of children, autonomy-enhancing forms of cognitive neuro-enhancement that aim at the realization of capacities that exceed those necessary for minimal autonomy are only

legitimate if they are conducive to the well-being of the agent and do not diminish other important intrinsic goods of childhood. In light of the facts, however, that we know relatively little empirically about the developmental presuppositions and effects of an autonomy-promoting education (Schinkel 2010; Drerup 2015) and that we know almost nothing about the alleged contributions of cognitive NE for a maximalist ideal of autonomy (Quednow 2010: 154), at least at the present moment, it seems more reasonable to put NE from the optional menu in educational contexts, to favor non-pharmaceutical alternatives in education instead and to stop bothering children with adultist pharmacological phantasies.

9.3.2 Education, Achievement, and the (Enhanced) Authentic Self

One of the central ethical questions raised by the NE of children is whether the widespread use of NE in the educational system renders established educational categories such as achievement, responsibility, and authenticity problematic or even obsolete (Schöne-Seifert 2009; Schäfer 2015). In the following, my primary focus is not on issues of educational justice or the question if the use of NE may be a potential danger for the developing authenticity of minors (cf. for this controversy: Graf et al. 2013). Instead, I am primarily interested in the potential ethical implications and transformative effects of a supposed *widespread and increasing* use of NE¹¹ on the way *how* attributions of achievement, responsibility, and authenticity function and operate in the context of educational practices and interaction orders. This approach is based on the assumption of the relative robustness and stability of basic norms that regulate educational practices. Thus, I assume that it is rather improbable that a technological innovation like NE may *entirely* change the way how established forms of attributions in educational contexts work. In contrast to defenders of NE, however, I think that there is more to be said about the ethical implications of likely *modifications* of the evaluative quality of educational attributions that may be induced and strengthened by a routine use of NE in educational constellations.

Modern educational systems have a selective function that serves as a justification of inequalities on the basis of notions of individual educational achievement. The idea of achievement as an egalitarian principle of inclusion is closely tied to the idea of a liberal society of free and equals that has abandoned the idea of a stratified social order based on privileges of birth (cf. Schäfer and Thompson 2015). Since the 1970s, a variety of sociological studies have questioned the idea of educational achievement as an ideological ideal of meritocratic societies that naturalizes social inequalities and reproduces the cultural hegemony of the bourgeoisie (Bourdieu and

¹¹There is a lot of controversy about valid statistical data concerning the current extent as well as past and future trends of the usage of NE among teenagers, children, and students (cf. Flanigan 2013; Danaher 2016). Quednow (2010) gives a short critical review of currently available forms of NE and of the empirical evidence provided by studies about the use of neuro-enhancers in modern societies since the last century.

Passeron 1971). Likewise, a variety of similar critiques has been brought forward against other concepts closely connected to the notion of achievement such as responsibility, authenticity, and autonomy. If radical versions of these critiques are adequate and if traditional educational aims indeed are to be regarded as power loaded ideologies and modern educational illusions, one wonders how they nevertheless could provide any defensible ethical and educational criteria for the critique of different forms of NE. If there is no authentic or autonomous self and if achievement is a historically contingent ideological construction and responsibility a modern fiction, these ideals also seem to lose their plausibility as evaluative points of departure for a critique of NE.

Many of the criticisms mentioned above certainly point to important problems, paradoxes, and intricacies associated with the notions of achievement, responsibility, and authenticity (cf. Schäfer and Thompson 2015; Giesinger 2011; Cuyper and Haji 2007). The relative robustness and stability of these ideals in the context of established social and educational practices, however, indicate the ethical and pragmatic limits of philosophical approaches that adopt a *radically revisionist* stance assuming that basic elements of our everyday practices and self-understandings are fundamentally wrong or questionable. This does not mean that radical critiques of a modern concept of responsibility, for instance, are without epistemic value. It solely suggests that the basic norms governing our attribution of responsibility may be too close to and too central for our self-understanding as human beings, to abandon them *entirely*. The same is likely to be the case when it comes to the widespread introduction of different forms of NE into the educational system. If it becomes a common practice and also common knowledge that *everyone or almost everyone* uses neuro-enhancers in schools, human beings as “self-interpreting animals” (Taylor 2016: 41; Reichenbach 2002) *probably*¹² will get used to this practice as a newly established standard and will accordingly *integrate the practice into their evaluative self-conception*. Likewise, in this case, standards of accountability of achievement will certainly neither become obsolete nor as a whole problematic. If *all* children would use different forms of NE, educational practices of attribution of achievement and responsibility would solely be *modified* in the sense that a responsible individual, for instance, is supposed to take her medication and to perform as expected. It is hard to imagine how educational practices as essentially social practices should function without *any* kind of standards of excellence that determine what counts as an achievement or without *any* kind of attribution of responsibility, a notion that is closely connected to conceptions of autonomy (Quante 2010). When it comes to the likely effects of the widespread use of NE on educational practices, the central question thus may not only be whether a person is *actually* authentic or responsible but whether she is *perceived* as authentic and responsible by others relative to variable social standards (Schöne-Seifert 2009: 358). Accordingly, a pharmacologically enhanced child may not only feel and interpret herself as authentic and responsible but also may well be regarded as authentic by her social environment, at

¹² It should be noted that since the ethical debate about NE is primarily hypothetical, also the following reflections are (*necessarily*) primarily hypothetical.

least if it is deemed normal and generally acceptable to use NE. Practices of the ascription of authenticity and responsibility are relying on normative social constructions that regulate social expectations and educational assumptions of what counts as a questionable form of alienation or manipulation or as an authentic and legitimate form of improvement. Thus, it is rather improbable that central educational categories like achievement, responsibility, and authenticity will become obsolete due the educational use of NE. They will probably be *modified* and be *adapted* according to the changing circumstances (this is also indicated by the empirical study on the self-understanding of children diagnosed with ADHD in Liebsch 2009). Thus, if the assumptions of the analysis above are sound, central normative categories that underlie the logic of modern school systems would not be abandoned entirely due to the use of NE. A widespread introduction of NE may nevertheless have far-reaching educational and ethical implications for the way agents interact and understand themselves based on modified and not necessarily educationally enhanced versions of these categories.

First, a *pharmacologically driven reform* of the school system will certainly not change the fact that the school system is a competitive system. It is very likely though that the values that underlie the promotion and justification of NE in educational contexts will enforce already existing tendencies of the school system that show a strong emphasis on the importance of achievement and thereby communicate “that competition is ultimately a more important value than cooperation” (Biesta 2015: 675; cf. Sandel 2008). Critics fear a pharmacological arms race, either between states, between schools, between parents, or even between children. As educational environments may become more competitive due to the mere availability of NE alone, the evaluative horizon of significance reproduced and presupposed in schools may accordingly be adapted and narrowed relative to the ideal of expected future pharmacologically induced achievement.

Second, it will be hardly possible to adequately limit the educational domains in which NE is used both due to the integrated “nature of the cognitive and non-cognitive aspects of our psychologies” (Zohny 2015: 261) and due to slippery slopes that are especially prone to unfold in competitive environments. The more traditionally educational domains are overgrown by different forms of NE, the more the ethos of the school is transformed in accordance with biopolitical standards.

Third, recent proposals to make neuro-enhancement a *mandatory* element of schooling (Buchanan 2011) are often based on the questionable empirical assumptions that NE is “efficient, agreeable and therefore, from an individual perspective attractive” and that the use of NE is generally on the rise¹³ and therefore the introduction into schools could not be prevented anyway. Even if NE became a widespread societal practice, this nevertheless would not speak in favor of also introducing

¹³Quednow (2010) criticizes these assumptions. These “pharmacological and epidemiological premises are unrealistic” (ibid.: 153). “(T)here is no genuine cognitive enhancer available to date” (p. 154). Therefore, a lot of the present ethical discussion is based on “dubious assumptions” about new technologies “before they are fully developed. At least this one time, ethics could be ahead of technology. However, do we really need a debate on a technology that will probably never materialize” (p. 155f)?

it into schools. On the contrary, a “pharmacological curriculum” designed to enhance the emotional and cognitive capacities of children is—*especially* when neuro-enhancement becomes a widely endorsed practice *outside* schools—conflicting with values and principles underlying the discontinuous ethos (Brighouse 2007) that should be cultivated between parents, society, and the educational systems of liberal democracies. Public schools should provide a space that should, to a certain extent, be kept as free as possible of questionable societal developments and demands that will influence children’s lives outside schools.

Fourth, the more NE is introduced into the educational realm, the more educational standards and means are mixed up with or replaced by medical standards and means. A corresponding medicalized reconfiguration of the field of education relative to the framework of values implicit in many practices of NE (self-optimization, achievement, etc.) has potentially problematic ethical implications for the way students are recognized and interpreted as developing agents and objects of NE by educational professionals (cf. Danaher 2016) and also for the way educational professionals understand themselves (e.g., from learning facilitator to pharmacological enhancer). Almost entirely absent in the medicalized picture of education advocated by defenders of NE, however, are the virtues of *educational imagination* (the fact that one may solve educational problems by different educational means without taking recourse to NE) and of *pedagogical self-restraint*. What is lost in this picture is that from an educational viewpoint, respect for children expresses itself primarily not as respect for some idealized notion of an enhanced self but as respect for their *present and concrete* authenticity meaning their concrete wishes and needs (Giesinger 2011).

Last but not least, a modification of our practices of attribution of responsibility, authenticity, and achievement does not just imply that developing agents will understand themselves *differently*. Their pharmacologically mediated self-conceptions will also have a different *evaluative* quality. These self-conceptions by subjecting children under the demands of pharmacologically induced self-optimization not only constitute a promise *and* an imposition (cf. Mayer and Thompson 2013) but also display a striking affinity and resemblance to neoliberal ideals of the self-reliant consumer, for whom NE is a lifestyle choice (e.g., the defense of NE brought forward by Flanigan 2013). Defenders of NE, however, by simply subsuming traditional educational practices under the broad umbrella term of “enhancement,” seldom clearly explicate these value orientations and thereby protect their position against critique. The question that we thus have to ask ourselves is if educators *as educators* can and should want to take *educational responsibility* for a pharmacological regime in which children are forced to understand themselves as self-reliant and responsible objects and subjects of chemically induced self-optimization.

9.4 Conclusion

In light of our present knowledge of the potential effects of NE, the future of its use in educational contexts may be much less spectacular than public and academic debates often suggest (Quednow 2010; Zohny 2015). Due to the lack of reliable empirical evidence, it is questionable whether many of the potential ethical questions

raised by NE can, at least at the present point in time, be adequately answered at all within the constraints of a necessarily hypothetical ethical analysis. The introduction of new technologies has often led to moralized overreactions (e.g., the telephone or the internet), but in the end, people adapted and accepted to the changing circumstances (Schöne-Seifert 2009). To a certain extent, the debate about the educational use of NE may be associated with the same problem. From a historical perspective, however, the debate about NE displays certain similarities to older twentieth-century debates about the creation of a “new man” (Lepp et al. 1999). Retrospectively, most of these ideas turned out to be political and pedagogical myths, whose attempted realization usually had disastrous consequences. Akin to the other “new men” also the “neuro-enhanced man” may suffer the same fate. It will grow old and one day become the object of historical research. A future historian may then conclude that the debate about NE reveals more about the *value orientations* of twenty-first-century liberal societies than about actual *technological* developments.

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