Self-control enhancement in children

Self-Control Enhancement in Children: Ethical and Conceptual Aspects

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Abstract

Childhood self-control is currently receiving great scientific and public attention because it could predict much of adult's life success and well-being. Specialized interventions based on findings in social psychology and neuroscience potentially enhance children's capacity to exercise self-control. This perspective triggers hopes that self-control enhancement allows us to say good-bye for good to potentially unsafe psychopharmacological agents and electronic brain stimulants. This chapter provides an in-depth ethical analysis of pediatric self-control enhancement and points toward a series of serious conceptual and ethical concerns. First, it gives an overview of current psychological as well as neuroscientific research on self-control, and it presents longitudinal studies that emphasize the importance of childhood self-control for adult life success. Second, it critically discusses the concept of self-control presupposed in these approaches and points to crucial limitations. Going beyond an understanding of self-control as a sophisticated means of goal-achievement, I will argue for a comprehensive understanding that takes the inherent normativity of self-controlled behavior seriously. In that context, self-control enhancement appears as not necessarily desirable and occasionally even detrimental. Finally, this chapter questions the notion of childhood implicit in current research and how values typically put on this phase of life could get affected by self-control enhancement. I finish with an exploration of the conditions under which pediatric self-control enhancement is either impermissible, permissible, or maybe obligatory.

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3.1 Introduction

In their daily lives, children and adults alike rely on their capacity to control and rule their behavior. They know what they want or should do and then act accordingly. Great parts of their days, children sit still in classrooms and listen to the teacher but do not play computer games or stare out of the window. Adults deliberate not only over everyday commodities such as whether to go to the zoo or the swimming pool on Sunday afternoon; they also think about fundamental choices in their lives such as which career to pursue. Sometimes, both children and adults feel tempted to act contrary to their better judgment. They feel the urge to check their mobiles instead of paying attention in class; they want to eat another slice of pizza, even though they want to lose some weight for health reasons; or they are mad at another person and feel an upcoming desire to kick her. In order to overcome such temptations, we assume that people must and can exercise self-control. Children who stay concentrated, adults who leave the second slice of pizza, and everybody who turns away from people they are angry at are then considered to exercise self-control, while those who check the mobile, finish the pizza, or hit the other person are said to lack self-control.

During the last decades, the concept of self-control has received massive scientific and public attention. Initially, it has been discussed and investigated mainly by social psychologists (Baumeister et al. 1994; Carver and Scheier 1998; Mischel et al. 1989). More recently, it has also attracted the interest of neuroscientists and geneticists (Aron et al. 2004; Berkman et al. 2012; Casey et al. 2011). Moreover, popular media and the popular science literature is making the public aware of the paramount importance that self-control has on the route to success in life (Baumeister and Tierney 2011; Bund and Rudzio 2014; McGonigal 2012; NRC Handelsblad 2013). Particular attention is paid to childhood self-control as an apparently good predictor of self-control across the life span. Comparing the behavioral styles of young children with their lives and behavior in adult years, a series of longitudinal studies pointed out that those who had more self-control decades before have better physical health, are wealthier, and on average display less incidences of substance dependence, gambling, or criminal behavior (Casey et al. 2011; Loeber et al. 2012; Moffitt et al. 2011; Slutske et al. 2012).

Childhood self-control, however, is not fixed but flexible and changeable. A series of distinct skills and strategies have been pointed out that might help children to exercise and increase their capacity of self-control and render them able to achieve desirable outcomes like reducing sweet consumption or finishing homework (Duckworth et al. 2014). Moreover, neuroscience-based training programs have been suggested that specifically target those brain areas deemed relevant for self-control in an attempt to improve childhood self-control (Berkman et al. 2012). These measures are proposed not only for children with some mental disorder or behavioral disturbance but to be worthwhile also for children who develop in normal age-typical ways.

Against this background, this chapter proceeds from the assumption that interventions that teach skills and strategies to children to implement and foster their self-control development are distinct forms of behavioral and cognitive enhancement.

Whenever neuroscientific evidence lies at the bottom of possible brain trainings and changes in brain structure or function are explicitly aimed at, these are instances of pediatric neuro-enhancement. This outlook is well in line with previous assumptions according to which education is the most basic, if not even the main form of cognitive enhancement (Royal Society 2011). Moreover, it is congruent with the emerging field of so-called neuro-education in which educational science and neuroscience get linked in an attempt to improve educational instructions such that child learning can reach beyond traditional teaching methods (Ansari et al. 2011). However, while neuroscience-based learning in general and self-control enhancement in particular are coming up forcefully, to date, their ethical implications get hardly discussed. At first sight, this might indeed seem less pressing than taking account of other forms of pediatric neuro-enhancement based on psychopharmacological interventions (Gaucher et al. 2013; Graf et al. 2013; Singh and Kelleher 2010) or on direct brain stimulation (Maslen et al. 2014) that trigger a series of concerns regarding safety and unknown long-term side effects. Quite the opposite might be the case. In so far as self-control is crucial for adult life success and childhood self-control is a good predictor, the enhancement of self-control in children might even be a moral imperative for those involved in child education—like parents, teachers, child therapists, or youth care workers (Horstkötter 2017). Moreover, one might express the hope that if different or better educational strategies can do the job, we could say good-bye for good to potentially unsafe psychopharmacological agents or electronic brain stimulants. If one compared solely potential direct (psychopharmacological, tDCS) with indirect (educational strategy, brain-based or otherwise) means of enhancement and focused primarily on safety and side effects, an ethical analysis might indeed turn out rather brief and unequivocal. However, this chapter will dig deeper into the topic of childhood self-control and pediatric self-control enhancement and point toward a series of conceptual and ethical problems.

It will proceed in three steps. First, I will provide an overview of current psychological as well as neuroscientific research on the topic, present longitudinal studies that emphasize the importance of childhood self-control for adult life success, and elaborate on possible means of childhood self-control enhancement. Second, I will critically discuss current scientific approaches and investigate the concept of self-control presupposed herein. Currently, self-control is essentially conceptualized as the achievement of preset goals. I, however, will argue for a more comprehensive understanding of self-control that also requires the capacity to evaluate and set goals one deems desirable or appropriate and to treat these as reasons for action. Finally, this chapter will question the notion of childhood implicit in current requests for pediatric self-control enhancement. Departing from the assumption that it is safe and effective, I will investigate whether it is also ethically desirable for children to have their self-control enhanced. Is it good for their own sake or mainly for the sake of the adult they potentially will become? Does self-control enhancement undermine the potential intrinsic value of childhood with its emphasis on spontaneity, immediacy, and creativity? I will finish with a brief conclusion on the conditions under which pediatric self-control enhancement might be permissible, impermissible or maybe obligatory.

3.2 The Science of Self-Control and the Relevance of Childhood Self-Control

In the past decades, researchers from a variety of disciplinary backgrounds—social psychology, neuroscience, and philosophy—have discussed what self-control is and investigated how people exercise it, why and when they fail to do so, and whether, and if so how, self-control can be stimulated (e.g., Aron et al. 2004; Baumeister and Tierney 2011; Baumeister and Heatherton 1996; Hare et al. 2009; Henden 2008; Mele 1995). From the beginning of the 1980s, Carver and Scheier (1998) got interested in the question of behavioral self-regulation and described human behavior as goal-directed and controllable via informational feedback loops. They conceptualized self-regulation as a feedback process that reduces discrepancies between a person's goal or plan (the target-state) and her deeds or feelings (the actual state). This early model of controlled goal achievement laid down important fundaments for further research in social psychology.

Over the years, numerous experiments on behavioral self-control have given rise to two related models: the "strength model of self-control" and the "delay of gratification paradigm." In a series of early tests that have later become famous as "the Stanford Marshmallow Experiment," W. Mischel and various colleagues (Mischel et al. 1972) have investigated what young children do exactly when they exercise self-control and how they manage to wait for a second tasty marshmallow—hence the test's name—when they could get one at once (Mischel 2014; Mischel et al. 1989). On the basis of these and further findings, a series of distinct self-control strategies have been developed that should help parents, teachers, and other educators to instruct children to learn successful self-control and achieve desirable yet difficult outcomes like reducing sweet consumption or finishing homework in time (Duckworth et al. 2014; Strayhorn 2002). Strategies considered appropriate for school-aged children cover, for example, the conscious selection of supportive situations like choosing a way home that bypasses shops or joining a sports team with a demanding coach. Children might also modify their situation and take a seat farther away from talkative students or put tempting but distracting devices like cell phones or the television remote control out of sight.[1]

Another yet related approach to behavioral self-control has been developed by Baumeister and various colleagues who established the so-called strength model of self-control (Baumeister et al. 1994, 1998). In their work, they have impressively shown that people are able to exercise self-control and to actively guide their behavior and actions. However, they have also found that when people are asked to carry out several subsequent, yet unrelated, acts of self-control, their later

[1] Sometimes a difference is drawn between so-called *synchronic* and *diachronic self-control* (Kennett 2001). Synchronic self-control is self-control *at a time*, exercised at the same moment when one is tempted to give in, consisting in successful withstanding. Diachronic self-control is self-control *over time*, exercised before and in expectation of moments of temptation in order to deliberatively avoid them and thereby to overcome temptation successfully. Many of the strategies described in the context of childhood self-control fit into this latter understanding of self-control: They make use of and foster capacities of diachronic self-control.

performances decline in quality. People who first were asked to not think of a white bear (thought control) or to suppress their emotional reaction to a disgusting movie (emotion control) seemed to perform worse on a subsequent task to squeeze a handgrip than those who had not been asked to exercise control (Muraven et al. 1998). The former but not the latter got ego-depleted (Baumeister et al. 1998). These findings led to the conclusion that self-control works like a mental muscle that becomes depleted after exertion but also replenishes after a rest. In addition, overall self-control turned out to be trainable; that is, people who exercise self-control on a regular basis increase their performance in the long run (Hagger et al. 2010; Muraven and Baumeister 2000). These findings might likewise lead to self-control enhancements. One could develop interventions in which people exercise self-control and go through self-control demanding situations on a regular basis. These might allow them to practice and gradually strengthen their self-control "muscle" (Baumeister and Tierney 2011).

In the last 10 years, research in neuroscience has added to what previously had been a topic for psychologists only. In neuroscience, self-control is typically operationalized in terms of inhibitory control, referring to the capacity of people to stop ongoing or terminate intended behaviors or override a dominant response in favor of a subdominant one (Aron et al. 2004; Berkman et al. 2012). Typically, it is taken to denote "the ability to suppress competing inappropriate thoughts or actions in favor of appropriate ones" (Casey et al. 2011: 14998). An important means of investigation are brain-imaging studies and studies that compare the workings of healthy brains with those that manifest relevant lesions. Conditions under which people get brain-scanned typically involve well-defined experimental tasks. In the go/no-go task, people are shown, for example, a series of letters that rapidly follows one after another, and are asked to respond [go] to some of these (e.g., A, C, and E) but to not respond [no-go] to other letters (e.g., B, D, and F). The number of errors people make is then considered a function of their level of self-control. Concurrent brain scans deliver information about the brain regions involved and the brain activity correlated with either high or low performance. In this way, various regions in the prefrontal cortex have been identified as playing a major role (Aron et al. 2004) not only for cognitive processes but also for people's capacity to exercise inhibitory control. Moreover, the ventral striatum, which is part of the deep brain system and responsible for the processing of emotional cues, has been shown to be important as well (Casey et al. 2011). When the ventral striatum is highly active, people seem to be more sensitive to emotional cues and less well able to suppress or regulate them. Overall, these findings brought researchers to the conclusion that differences between people's behavioral self-control can be found back and are explainable at the neural level. Berkman et al. (2012) went a step further than merely describing what is going on in the brain. They sketched a series of possible interventions that could be used in clinical or semi-clinical practice. Most prominently, brain trainings should be developed that specifically target those brain regions previously identified by imaging experiments. These trainings should indirectly change and enhance brain function and/or structure and thereby contribute to consecutive behavior changes, enhancing people's capacity to exercise self-control. Another application

of suchlike imaging studies might consist in intraindividual differentiations between children's self-control capacities and the identification of children who are either particularly in need of or, for neurological reasons, not—yet—ready for self-control enhancement interventions.

The above findings emphasize *that* self-control is possible and important and lead to suggestions on *how* it could be fostered and improved. However, they do not stand on their own. Even more important is the question *why* one wants to have or even enhance self-control in either children or adults. Frequently, the capacity of self-control is considered to be of crucial importance for achieving well-being and success in life in a variety of areas (Baumeister and Tierney 2011; McGonigal 2012). Contrarily, lack of self-control has been pointed out as the cause of much social and personal misery and to be responsible for many problems of our times, covering health issues, fragile personal relationships, low school and job performances, and economic troubles, and even public safety concerns get mentioned. Primarily, this seems to hold true for adults. However, in the recent past, a series of longitudinal studies have investigated the relationship of early childhood self-control and later adult success and well-being (Casey et al. 2011; Daly et al. 2015; Loeber et al. 2012; Mischel et al. 1989; Moffitt et al. 2011; Slutske et al. 2012). They all point into the same direction: Childhood self-control is highly predictive for adult outcomes. Those who as children have had better self-control have been less impulsive and more emotionally stable, have had better attention, and are doing better in various areas of life when being an adult. On average, they have better physical health, are wealthier, and display fewer incidences of substance dependence, gambling, or criminal behavior. Against this background, the following tripartite picture seems to unfold: (1) self-control is crucial for many areas of adult well-being, while lack of self-control is responsible for social and personal misery, (2) childhood self-control is predictive of adult self-control and adult life success, and (3) self-control is amendable and enhanceable already during childhood by means of current psychological and upcoming neuroscience-based interventions. This seems to render the relevance of self-control enhancement in children conclusive; turning potential disagreements or rejections futile at best and detrimental at worst.[2] In line with this, the past decade has witnessed the arrival of numerous parenting guides, blogs, and educational offices that inform parents and professionals about the importance of childhood self-control and that teach them how to instill and enhance self-control in individual children (e.g., Aha! Parenting 2013; Browers 2012; de Boo and Liber 2014).

[2] By contrast, Cabrera et al. (2015) figured out that public attitudes toward self-control enhancement are comparatively hesitant if not negative. However, their findings do not seem to apply well to the above studies on two grounds. First, they proposed a hypothetical psychopharmacologically driven self-control enhancement, while in realworld scenarios, educational or training enhancement might be more likely. Second, Cabrera et al. pointed out that the publics they studied considered the effect of self-control on well-being and life success to be only mild to moderate, whereas the longitudinal studies considered here assumed that the effect of self-control is highly decisive on these matters. To date, it is unclear whether public opinion would change if the quest of self-control enhancement were put into these other contexts.

These scientific findings and social developments apparently render self-control and self-control enhancement desirable almost by definition and childhood self-control enhancement highly recommendable if not obligatory. Thereby, however, current proposals are suffering from at least two blind spots that I will point out in the following. First, I will critically discuss conditions that render self-control undesirable and make suggestions on how to identify these and make relevant distinctions. Second, I will highlight a series of reasons that render childhood self-control enhancement impermissible. These should put arguments in favor of permissible or even obligatory pediatric self-control enhancement into perspective.

3.3 Should *Self-Control* Be Enhanced?

Children who exercise self-control or whose capacity of self-control has even been enhanced delay gratification, obey pre-defined rules, and suppress or override immediate impulses. Translated into the terminology of daily life issues, they go to the sport school in order to remain fit, wash their hands after having visited the toilet, wait for the dessert until they and their family members have finished supper, and refrain from screaming or kicking when experiencing a disappointment at home or school. As said, learning and having these capacities and to dispose of distinct self-control strategies may be very valuable and need not raise any ethical concerns. However, this confidence in the ethical value of self-control capacities and related enhancement interventions does not depend on their ethical innocence per se, but instead it depends on the presumed desirability and adequacy of the various goals, rules, or instructions aimed at. It is good to be fit, to wash hands, to wait for dessert, or to keep calm, and therefore it is good to exercise self-control for the sake of these ends. In principle, this is also assumed in current social psychology and neuroscience research. Here, self-control has even been defined as the ability to suppress *inappropriate* thoughts or responses or as the capacity to override and prevent *undesirable* thoughts, behaviors, and emotions in order to achieve *desirable* goals (Aron et al. 2004; Baumeister 2012; Baumeister et al. 1994; Casey et al. 2011). Thereby, one has postulated and presupposed the importance and relevance of the respective goal or end state, and the value of self-control has been deduced accordingly. The normative status of the goals themselves, that is, the question why some goal is worthwhile or why a rule desirable, however, has never become part of the debate (Deci and Ryan 2000; Horstkötter 2015). Instead, one focused solely on the question how people achieve distant goals and how they can get better in that respect. Apparently, this focus on procedural aspects may be appropriate and unavoidable for the respective experimental and laboratory based settings in which much of today's psychological and neuroscience research is carried out. Nonetheless, for the ethical debate and the analysis of the ethical implications of pediatric self-control enhancement, the normativity of self-control is of crucial importance. A person might be well able to achieve a distant goal and be advanced in her capacity to suppress her diverging impulses. However, in case one disagreed with the moral quality of her goal, her behavior need not be laudable and successful or contribute to

well-being. In such cases, people might even turn out to behave worse—ethically speaking—than those who are distracted and therefore miss certain distant and bad goals. Instrumental aggression might be an illuminative example in this regard.

Unlike people who exhibit reactive aggression and who are highly emotionally responsive, instrumentally aggressive people are hardly triggered nor distracted by emotional cues. Instead, they project on what they might achieve by behaving aggressively (Viding et al. 2012). If such a coldblooded person's self-control was further enhanced—without evaluating the value of her goals—the overall outcome might be very likely very undesirable. Presupposing but not reflecting on the ethical value of goal states might, however, not only lead to undesirable situations in which people invoke their self-control capacities for bad ends. Moreover, as long as the normativity of self-control is not part and parcel of the debate, one will be unable to even make a distinction between valuable and problematic forms of self-control and to identify situations in which self-control goes wrong. The following examples illustrate what this means and why it is important.

A first classical case is that of the fictional figure of *Huckleberry Finn* (Twain 2014/1885). Intensively discussed by Bennett already more than 40 years ago (Bennett 1974), this literary character has inspired much of philosophical thinking on the relationship of emotions or immediate desires and moral behavior (e.g., Kennett 2001). Living in rural Missouri at the beginning of the nineteenth century, Huck Finn helps his friend Jim to run away from slavery. In doing so, he is mainly driven by his feelings of friendship for Jim and triggered by Jim's thankful and adoring words. He gives in to these amicable feelings, so to speak, and he does so despite a simultaneous strong acknowledgment of the values of his time and place according to which slaves are the lawful property of their owners, rendering those who help in an escape to be guilty of theft. In a certain—mere procedural—sense, Huck Finn lacks self-control: He fails to achieve a preset goal because he gives in to friendship. Nonetheless, against the background of our own contemporary values that abhor slavery, we are strongly inclined to conclude that it is exactly his weakness, his intentional behavior against better judgment, which makes him do the right thing, ethically speaking. More self-control of Huck Finn would have led to more misery for Jim personally and more generally would have supported the undesirable institution of slavery. A second likewise literary case is that of Ender Wiggin from the science fiction novel *Ender's Game* (Card 1985).[3] Playing in some distant future, it tells the story of the 11 years old Ender, who is trained from a very young age onward in computer games. He shows a particular talent in tactical insight, strategic brilliancy, and self-discipline, and he soon outgrows his fellow students. Actually, however, Ender is trained in these games in order to prepare humankind for a space-based war battle with some alien intelligent species from which another invasion is expected. In his final test at school, he is given a simulation of that battle in which his initial position appears daunting, but nonetheless he manages to launch a device that destroys the enemy's planet and their fleet. Actually, however, as he learns afterward, this wasn't a simulation but a real battle, and the other species is

[3] I thank Bart Penders for introducing this case to me.

extinguished. In this context, Ender's training can be considered as a way of intentional self-control enhancement. Procedurally, he indeed ends up being very successful and achieving whatever goals is given to him, without suffering from any deflections. Normatively speaking, however, it is because of his high self-control and strict focus on this goal that he commits xenocide on the other species. This implies not only great suffering on the invading aliens but also a serious depression after he had to learn about the real impact of his "gaming." Given that Ender had been trained for the sake of some adult goals, had not learned to reflect for himself, and turned seriously depressed, Gross (2007) argued that his school and his military training manifest a literary case of child abuse. A final and again very different case resides in today's mental health practice and consists in the condition of so-called *orthorexia nervosa.* Here, people yield unhealthy effects of diets that had explicitly been invoked for health reasons. People with orthorexia nervosa follow a very strict food pattern where they exclusively eat certain foods that they consider to be very healthy and to fulfill high standards of, for example, purity or being unprocessed. Being highly self-controlled, these people persevere on their pre-defined eating behavior and consistently achieve their self-set aim. However, despite a sincere focus on health, a very strict compliance with extreme eating habits can have counter-productive effects and become unhealthy in the end. In orthorexia nervosa, people experience severe malnutrition, have an impaired daily functioning, or go through changing and worsening social relationships (Dunn and Bratman 2016). Given that "health" is by definition worthwhile, "pathological healthful eating" (p. 1) might appear as a paradox and seem unintelligible. Isn't it that people successfully focus on a distant goal, closely monitoring their actual behavior, and are not distracted by feelings or urges that would seduce others? Indeed, this is the case. However, the very rigorousness by which the goal is pursued leads to a situation in which bad effects are obtained and good intentions are overruled.

Capacities of self-control as such are not the panacea that recent research in social psychology and on that basis numerous parenting guide and self-help books try to make us believe. The bulk of social psychology and neuroscience research focuses on procedural aspects only and presuppose the relevance and adequacy of any goals aimed at. However, capacities of self-control are valuable or questionable because of the ethical desirability of the goals aimed at, not because of some intrinsic worth. In this sense, self-control is inherently normative rather than merely procedural. If the goals are undesirable, out of reach, or even abhorrent, one has to change the goals rather than one's behavior. That, however, goes beyond behavioral self-control with its current focus on skills and strategies. Instead of these, a reflective attitude is required that evaluates rather than pursues goals. If this normative aspect of self-control gets ignored and one's capacities for self-control get enhanced while the goals are not continuously evaluated and reflected upon, self-control enhancement might yield undesirable results. One might not only get exceptionally well at achieving distant goals but also become vulnerable to rigidity, lack of spontaneity, stubbornness, or even forms of radicalization. At the same time, to date, it seems unclear what it would mean to enhance a person's self-control when these normative aspects are taken care of. Does this mean that one will be better able to

reflect and evaluate? Better than what is considered normal or age typical (Bostrom 2008; van Riel 2016), and what would that mean? These questions lead well beyond the scope of this chapter. However, it should be clear that current ideas on self-control enhancement in the sense of training certain skills or strategies are insufficient in this regard. Further research has to investigate which concepts of self-control enhancements can be intelligible once the normativity of self-control is taken seriously.

3.4 Should *Children's* Self-Control Be Enhanced?

The value of childhood self-control and interventions targeted at self-control development or enhancement is largely attributed to potential beneficial outcomes during later adulthood. This relationship, however, raises a series of subsequent questions. Do later benefits justify early preventive interventions? If they do, why is that and to which extent? Would an increasing focus on self-control undermine our notion of childhood as a phase of spontaneity, fantasy, or creativity? Is childhood mainly a precursor of adulthood, or does it—also—have its own worth and intrinsic value? The status of childhood has been widely and controversially discussed elsewhere (Archard 2006; Arneil 2002; Gheaus 2015; Shapiro 1999; Tomlin 2016). In the following, I will make use of these discussions in order to investigate the justifiability and desirability of childhood self-control enhancement. Thereby and for the time being, I will treat childhood as one unified category distinguishing it from adulthood. That is, for the time being I will not differentiate between various phases of childhood or pay attention to differences between very young and somewhat older children. That would be the task of a further paper.

Specialized teaching and education guidelines and the learning of distinct skills and strategies feature prominently among the means to instill and enhance self-control in children. As such, these interventions can be considered medically safe and probably also effective. Even though this might constitute an important advantage compared to psychopharmacological endeavors, it does not render ethical acceptability self-evident. Santoni de Sio et al. (2014) provide a normative and conceptual analysis of various forms of cognitive enhancement deemed safe and effective, which is particularly relevant in the here discussed context. Most essentially, they consider the desirability or permissibility of enhancement to be not an all or nothing issue. Instead, it comes in degrees and depends on a series of relevant circumstances. As a consequence, enhancement practices can be either impermissible, permissible, or maybe obligatory.

3.4.1 Impermissible Self-Control Enhancement

Most prominently, enhancement is impermissible in case some practice-oriented activities, for example, educational (!) or sports activities would lose their point while there are *good reasons* to value that point (Santoni de Sio et al. 2014: 184ff).

Regarding the case of pediatric self-control enhancement, I will proceed from the assumption that the relevant activity is the behavior of children or the condition of childhood as such. The question then is whether pediatric self-control enhancement supported *child* behavior in a positive way or whether it endangered the condition of childhood and undermined the value put on it. Let me explain.

The relevance of childhood self-control for adult success and well-being has been emphatically emphasized by the series of retrospective longitudinal studies referred to earlier. At the same time, much less attention has been paid to the impact of high or enhanced self-control on children themselves. Instead, the phase of childhood seems to figure merely as a precursor to adulthood, and child development gets presented as a linear maturating movement. Enhancement interventions during childhood might then mainly streamline and accelerate this process. This focus may be apt for this kind of studies; it is inherent to their methodological setup. However, for the ethical analysis of the implications, it is too narrow. Next to later adults, also current children have to be taken into account. Is it good for them to have their self-control enhanced? Does childhood as such have a point, are we right in putting special value on this condition, and can self-control enhancement be a threat to that special value? In that case, pediatric self-control enhancement would turn out impermissible from a normative point of view. The safety of any means invoked could not change and increasing effectivity would only worsen the situation.

Here is not the space to formulate a final argument on the condition and the value of childhood and how self-control enhancement would affect these. However, there are a series of issues that should be taken into account. First, how do children and adults relate to each other? Is it reasonable to assume that childhood "merely" precedes adulthood and that children grow gradually from one status into the other, exhibiting merely quantitative differences regarding their size, strength, or experiences? Or are both age groups qualitatively different? Tomlin (2016) recently argued that children relate to adults like caterpillars to butterflies with the one evolving from the other but each having its own distinct set of needs and goods. In that case, questions regarding the value of self-control and self-control enhancement have to be investigated separately for children and adults, leading potentially to rather different answers. Even in case self-control enhancement turned out worthwhile for adults, this need not hold for children too. However, if it is not worthwhile for children qua children, it is impermissible during that phase, independent of any benefits it might enable in the long run. Second, some developmental psychologists even refer to potentially adverse effects. Young children are characterized by a great learning capacity and an apparent huge curiosity, creativity, and spontaneity. Gopnik argues (in, Gheaus 2015: 10f) that children have these special capacities particularly because they are still lacking strong prefrontal control and as a consequence of that are also not—or to limited extents—controlling their thoughts and behaviors. According to Gopnik this, however, is not to be considered a deficiency of a being still immature. Instead, this lack of control—neurobiologically and psychologically measurable—allows children to be particularly open-minded and indiscriminative and to accumulate knowledge to extents unachievable by any adult. It is not until one has to perform concrete tasks that the capacity to inhibit or discriminate certain

information is needed. In this sense, early self-control training and enhancement would undermine crucial features of early childhood. Moreover, to the extent that such enhancement trainings foreclosed imaginative unbounded learning, it might also have long-term detrimental effects. Self-control enhancement that changes children's behavior beyond norms of typical development would then be impermissible on two accounts: It undermines the special value put on the phase of childhood, and it impedes uncontrolled and undirected behaviors, thoughts, or feelings that, however, are particularly valuable during early life.

Notably, one can conceptualize childhood also as a condition of deficiency or incompleteness but still oppose self-control training. Kantian philosopher Tamar Shapiro unequivocally argued that childhood is a predicament. It is to be characterized by what children are not and cannot and entails the demand to overcome itself (Shapiro 2003). However, regarding self-control, Shapiro clearly argues that mere teaching and learning of self-control skills and strategies would not be suitable to enhance children in the sense of overcoming their deficiencies any better or faster. Instead, in order to develop self-control, children should "establish a deliberative perspective which speaks *for them*. Children need, in other words, to establish a constitution on the basis of which the words and deeds they produce will come to count as exercises of *their own* wills" (p. 589, italics DH). For Shapiro, self-control is achieved by *developing a self* and a normative outlook of one's own rather than by learning *strategies of control* that help one to achieve any preset goals. Against this background, whether self-control enhancement is permissible or impermissible does not depend on the activities and skills potentially enhanced but instead on our understanding of what self-control even is. For Shapiro self-control is about the self rather than about control, and therefore self-control enhancement in the previously discussed sense should be impermissible. It lets children take the wrong route in development. In order to enhance *self*-control, children have to develop a self and a normative perspective on their own wills and doings. However, what it might mean to enhance such a development and to determine whether *self*-control enhancement would be impermissible or permissible goes beyond the current analysis.

3.4.2 Permissible Enhancement

Reverting back to the analysis of self-control enhancement as enhancing capacities to control one's behavior, Santoni de Sio et al.'s (2014) position on permissible enhancement is again a valuable starting point. According to them, enhancement is permissible if it allows for the achievement of highly desirable goals. Current proponents of pediatric enhancement do not only point to the benefits that might get achieved in later adulthood but also have in mind potentially increased child well-being. For example, today, many children exhibit symptoms of high weight or show particularly impulsive, hyperactive, and unruly behavior. Children themselves can suffer from these conditions and behaviors. They might experience health problems, be much worse at sports than their classmates, or get socially excluded or bullied by

others who consider them boring, annoying, or troublesome. In so far as high weight or very intense activity can be considered the result of a lack of behavioral self-control, better self-control skills and strategies might come as a welcome relieve to such children. In this sense, but without referring to the topic of self-control, Singh and Wessely (2015) recently argued in favor of diagnosing at least some children with ADHD and to provide drug as well as non-drug treatment to them. Even though there are reasonable hesitations regarding the status of the condition and the stigma often associated with it, in the end, they argue, diagnosis and adequate treatment will be helpful to specific groups of children. Thereby, they oppose those critics who consider impulsive and very active behavior to be a normal characteristic of childhood rendering all kinds of hyperactivity treatment a form of—undue—medicalization that enhances "normal" children. Up to a certain degree, Singh and Wessely agree with this outlook. There are children who are very active but should not be diagnosed as having ADHD. Nonetheless, there are also children who exhibit otherwise typical child behavior excessively and to degrees that inflict suffering on themselves and their surroundings. In so far as these children could profit from corresponding interventions, a desirable goal can be achieved and the interventions are to be considered permissible. This is independent of the question whether ADHD is indeed a "real" medical condition or whether it "merely" consists in normal yet medicalized behavior. In so far as it relieves suffering, particularly of children themselves, self-control enhancement is permissible. However, again (cf. Sect. 2.3.) it holds that it is more important to ask *who* will be enhanced and *which* goals will be approached than *how* these goals could be achieved.

3.4.3 Obligatory Enhancement

If certain ends render self-control enhancement permissible, because they foster the well-being of individual children, one could wonder whether these enhancements should not be obligatory. That is, should it be demanded that children follow specialized interventions and learn distinct skills on top of today's common education in order to boost their self-control and hence their capacity to achieve distant goals? Santoni de Sio et al. (2014) consider enhancement obligatory in special cases only: if very high goods are at stake and if the enhancement has a reliable direct effect on their achievement. For example, a doctor might have the obligation to take an enhancement drug to keep alert and perform a complex and long surgery that can save a patient's life and that can, after a long working day, be performed by this doctor only. However, in the lives of children, no really high goods are at stake. As a child, one does not carry comparatively great social, professional, or personal responsibilities. Apparently, sometimes children do bear significant social or family commitments, for example, in case parents are severely ill, drug dependent, or extraordinarily poor. In such cases, however, it seems more appropriate to focus on a change of these children's circumstances and provide help to their families, than to oblige them to get enhanced in order to keep coping. Therefore, what might hold—sometimes in the lives of some adults—does not likewise hold for children,

and an obligation to enhance child behavior appears off the mark.[4] Still, this leaves open the question whether enhancement might be obligatory if the goal aimed at is children's own well-being. Could we ever wrong children, if we withheld enhancement?

Krutzinna (2016) critically discussed this question and investigated whether child welfare could ever constitute a moral duty to cognitively enhance children. She clearly argued against this. First, the concept of well-being is too vague and unclear to justify a corresponding duty. Moreover, the effect of enhanced cognition on better well-being is also unclear; the connection is not direct and occasionally even reverse. Finally, caregivers have no clear guideline to decide on how much enhancement or how much cognition is required to achieve sufficiently beneficial results. Krutzinna does not consider the topic of self-control enhancement. Nonetheless, her arguments also seem valid in this context. Apparently, as the longitudinal studies showed, there is a likely effect of childhood self-control enhancement on increased adult well-being. This effect, however, is a statistical one, which is valid on a group level only. Whether it holds also for specific individuals remains unclear. That is, whether any specific self-control enhanced child will indeed experience an increase in her well-being as an adult is unsure. This uncertainty, however, does not align with the imposition of an obligation to enhance. Krutzinna's concerns regarding our ignorance of the right quantity further support hesitations against an obligation to enhance self-control. Above, I have pointed toward the potential detrimental effects of having too much self-control and the danger to end up in rigidity, stubbornness, or the effective achievement of evil ends. Given the need for ongoing discussions on the desirability and adequacy of the goals aimed at, a general duty to enhance children's self-control as a mere means seems unjustifiable.

In sum, three reasons speak against an obligation to enhance children's self-control: No high social responsibilities are at stake in the lives of children, it is unclear whether later benefits will be achieved, and it is possible that undesirable ends result instead.

3.5 Conclusion

Self-control has received great attention not only among scientific researchers but also in the wider public. Frequently, it is assumed that greater self-control leads to greater well-being and success. In particular, childhood self-control seems to have beneficial effects on one's life as an adult. Self-control enhancement during childhood might, therefore, appear as a self-evident demand. The above discussion, however, shows that this requirement is more complex than it seems at first sight. First, the very meaning of self-control is under debate. Rather than being a "mere" means toward a pre-defined end, I have shown that the desirability of self-control essentially depends on the normative value of the goals aimed at. Not the how of goal

[4] Remind, the character of Ender Wiggin discussed above was essentially fictional and in subsequent analysis considered a case of child abuse.

achievement is crucial, but instead the question which ends one aims at and why. This aspect of self-control, however, has been largely neglected by current scientific research in both social psychology and neuroscience. Second, even if one assumed that relevant procedures are safe and effective, these can still be impermissible. Self-control enhancement is impermissible if it undermines our notion of childhood and the specific capacities that come with it. It can be permissible, if it serves the needs of specific groups of children. But it is never obligatory because, even if beneficial outcomes are possible, these are not guaranteed and occasionally even undesirable ends can be fostered.

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