

How to Improve Self-regulation among Preschoolers

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Abstract. In this paper, a thorough review is provided of how different aspects of self-regulation are affecting a child's development and the manner in which they are influenced by various components of self-regulation in the process of development. The ability to self-regulation has been recognized to be one of the most essential components in the development of cognitive, behavioral, and academic abilities. It is noteworthy that there have been only a few studies that have specifically focused on preschoolers, who are proved to be at the perfect age to learn self-regulation. Therefore, the aim of this paper is to critically comment a number of recent studies on how to improve self-regulated skills in preschool children following a systematic review of recent research and gives some constructive opinions. It presents an analysis of three different types of interventions: physical activities, mindfulness practices, and game-based interventions. In spite of the strengths and weaknesses of each form of self-regulation learning, the paper concludes that both physical and game-based activities are more practical and acceptable to preschoolers, while mindfulness is suggested to apply among special groups. Additionally, at the end of the paper, two common disabilities which suffer from hard-wired deficiencies in the ability to self-regulate their development are also mentioned and discussed in order to encourage future research on these special groups. This paper provides some reference for follow-up research.

Keywords: Self-regulation; Preschoolers; Self-regulation interventions.

1. Introduction

Self-regulation refers to the modulation of mood and behavior based on contextual and stimulus influences [1]. In academic settings, it involves tracking behavior habits, emotional and cognitive processes, and social interactions. Research has indicated that self-regulation is likely to predict children's academic achievement, earning ability and even physical health [2]. Obviously, it takes an indispensable role in early life. Each year, a significant number of preschoolers who transition to kindergarten each year, which places a greater emphasis on academics and structure [2]. The majority of children are capable of handling this transition successfully, however, this can be a difficult transition for those who lack the self-regulation required to succeed in school.

The components of self-regulation can be mainly divided into two parts, executive functions (EFs) and effortful control (EC) [3]. EFs contain attention, working memory, and inhibitory control, which composites behavioral self-regulation [4]. Rothbart and Posner define attention as the competence to switch tasks without being distracted by other activities [5]. While working memory enables people to complete several tasks simultaneously, which refers to a persons' capability to store information over a long period of time. In addition, inhibition control enables individuals to restrain the urge to engage in dominant behavior in favor of more appropriate and rational behavior. The ability to regulate one's behavior has been proven to be an essential component of academic success due to these three useful abilities [6].

On the other side, EC was introduced by Rothbart et al. to explain the emotional part of self-regulation. It mainly consists of attentional shifting, attentional focusing and perceptual sensitivity [5]. Blair and Dennis have clarified that there are some facets in common between EC and EFs, such as attention and inhibition [4]. Both attentional shifting and focusing can be understood literally, which means the ability to regulate one's attention. Furthermore, perceptual sensitivity refers to the response to external environment which offers special information of a person to show individual differences [7].

Self-regulation develops across lifespan. Studies have shown that self-regulation is the key predictor of children's academic achievements in all early or high educational context [2]. Furthermore, self-regulating is proved to be able to predict the outcome of health, happiness, income, qualifications in workplace, as well as behavior habits. This often means better performance in school, better relationships with others, and more resilience in the face of adversity. However, children during the period before entering school take a long time to form a self-regulated system. The condition is even worse among special groups of children because their disabled ability. Therefore, the importance of fostering regulation ability in children cannot be overstated.

Throughout this article, this paper provides an overview of new self-regulation training methods that have been developed over the past couple of years that have been tested with preschoolers. A thorough explanation of self-regulation training, its significance, and the details of what it involves are provided in the first section of the paper. Moving forward, the paper discusses and evaluates successful examples of promoting self-regulation in normal groups and groups of children that have special needs in the context of its discussion of self-regulation in order to move on to the next section. A few suggestions are made at the end of the article regarding some future directions, as well as some considerations are given about the subject.

2. The impact of Self-regulation

2.1 Cognitive Development

The relationship between cognition and self-regulation completely show in the development of EFs. As mentioned before, EFs consist of inhibitory control, attention and working memory. The enhancement in these three components also means the promotion of neuro-cognition [8].

Firstly, keeping inhibition under control in the classroom is essential to ensuring that learning takes place. Several situations indicate the necessity of inhibitory control, for example, children should comply with teacher's instruction to not run in the hall and not shout in the class. However, if running and shouting have been developed as a habit before entering school, it is strongly difficult for children to inhibit their habit response. In addition, poor level of inhibitory control during childhood will lead to severe problems in future learning, such as lack of flexibility and management ability.

Subsequently, good quality of attention is also necessary for children's academic development [1]. Children with difficulties in attention will not only cause behavioral problems, but also contribute to poor memory skills due to frequent distraction [9]. In addition, some research has even found that social relationship is affected by attention control to some extent. In Wilson et al.'s research, children lacking in concentration has less positive social circle compared to their peers [10].

Furthermore, one's working memory is one of the most significant factors to judge one's ability to self-regulate. According to a study, students with difficulties in working memory may find it difficult to comprehend instructions, have difficulty keeping interactions with others, hesitate to give feedback when they missed key information, and wander their minds during conversations. In light of this, it is extremely important to improve one's skills of self-regulation before entering school.

2.2 Behaviour Formation

Poor self-regulated ability, particularly bad emotional control and easily distracted habit can contribute to behavioral problems in children. In terms of self-regulation, research shows that preschool and the first few years of primary school are crucial stages in a child's development [11]. It is possible that having a weak sense of self-regulation from the start of school can lead to maladaptive consequences and various behavioral problems, such as conflicting with teachers and refusing obey instructions [12].

2.3 Academic Achievement

Several studies have shown that kindergarteners who have effective self-regulation perform better in mathematics and comprehension in young grades and are likely to achieve success in academic

career [13]. Students with less advanced academic skills may be able to catch up with their peers who possess more advanced academic techniques due to their healthy self-regulation. In several studies, it has been found that students with poor learning ability in academic who possess better self-regulation make greater academic gains [14]. Alternatively, lack of self-regulated skills in early childhood are associated with difficulties with academics several years later.

There is no doubt that poor self-regulated skill contributes to the delay of cognitive development, makes children more likely to have behavioral problems, and results in them failing in their academic career as a whole. It has been demonstrated in research that self-regulation improves rapidly during the first five years of life, and the improvement is particularly rapid during the first few years of life [5,11]. Therefore, developing children's self-regulation skills before entering school cannot be overstated, it is imperative to place considerable emphasis on this endeavor.

3. Main interventions to Improve Self-regulation among Regular Preschoolers

An increasing number of studies show that self-regulated abilities can be enhanced [5,15,16,17]. It is believed that when self-regulation is taught in the classroom, students will be able to spend more time learning and less time managing their problematic behaviors since it allows them to spend more time studying. Furthermore, it has been shown that students possessing competent self-regulation skills can help them become less dependent on their living condition and to enhance their ability to completely engage in learning when they have the capability of self-regulating. Throughout the course of the day, self-regulation training should be incorporated into the routine of the employee, which progresses from tasks with a low cognitive burden all the way up to tasks requiring a greater degree of executive control in order to ensure maximum effectiveness [18]. Generally, self-regulation interventions are most effective when applied to students who possess low self-regulated skills in the early stages of academic difficulties [13]. There are several interventions that have been shown to be effective in the development of self-regulation, in addition to new interventions being tested and demonstrated to be effective. This section provides an overview of existing interventions and discusses the evidence for their effectiveness and ability to positively impact self-regulation.

3.1 Movement Activities

Several studies have demonstrated the benefits of movement activities for self-regulation. For example, Campbell et al. found that preschoolers who demonstrated a high level of motor activity displayed a better ability to inhibit motor activity [19]. Track back to 1971, Dimondstein has suggested that creative dance can interpret children's thinking and emotions, which leads them to result in a system of mature behaviors and independent presentations [20]. Similarly, Becker et al. [15] observed a positive relationship between active outdoor movements and inhibition control [26]. Not only does the component of inhibition control in self-regulation can be improved, but also movement activities are associated with positive development of attention. The experiment conducted by Howie et al. [21] illustrated that children's ability to stay on task and their arousal level improved when they took 10-15 - minute movement breaks during the learning process. Furthermore, movement activities in particular with music and beat synchronization have been suggested to have better performance in improving self-regulation.

However, some common limitations are shown in these experiments. A first point of discussion is that none of the above-mentioned studies had a sufficient sample size to demonstrate a definitive relationship between physical activity and self-regulation. Moreover, some studies only employed one measurement of self-regulated skills, increasing the degree of unreliability. In some cases, experiments have even been led or trained by only one experimenter, making it difficult to generalize. Accordingly, future experiments examining the improvement in self-regulation brought about by active play should include a greater number of participants. The use of various measures will be more convincing and powerful in assessing the progress of children in terms of their ability to regulate their behavior. There are some limitations present in the previous literature; however, a great deal of

relevant research has demonstrated that physical training does have a positive impact on self-regulation.

3.2 Mindfulness

Through mindfulness, students can also improve their ability to regulate their emotions. The development of this type of cognitive training is based on the notion that, in order to achieve your goals, it is essential to maintain long-term attention on a target and to disengage yourself from distracting factors that can distract a person along the way. Besides the fact that mindfulness meditation has a beneficial effect on the enhancement of self-regulation skills that are associated with the practice of mindfulness meditation, mindfulness meditation also provides a calming effect. In view of the increased availability of attentional resources during the early steps of responsive procedure, the assignment of attentional energy is more effective and flexible, the increased connectivity between attentional networks may lead to a more effective and efficient allocation of attentional resources. During mindfulness practice, one's movements, thoughts, feelings, and sensory experiences are centered around the point of concentration. In the study conducted by Schöne et al. [22], attentional resources are more efficiently utilized when attention is focused on the breath. Unlike reckless movement, mindful movement is characterized by the coordination of goals and motor plans, which recruits emotional part of self-regulation.

3.3 Game-based intervention

Numerous studies have also shown that games are effective in teaching individuals how to regulate their behaviours and improve regulating skills in a variety of situations. The first benefit of games is that they encourage preschoolers to combine different domains of knowledge in order to solve problems [23]. As a result of the complexity of most games, children are able to exploit novel ideas that aid in understanding acquired knowledge. They will be able to develop their creative and digesting abilities more rapidly in this situation. Secondly, children will gradually understand how their decisions and actions affect the outcome while playing games. Through the process of playing the game, children are inspired to think more deeply and reach more principles on their own. Last but not least, group games can even promote children's social skills. They provide kids with opportunities to communicate with and negotiate with each other, which helps them develop their communication and coordination skills.

Two different aspects of games have typically been used in previous studies, cognitive- and behavioural-based games. Considering cognitive-based games first, a study conducted by Traverso et al. [17] suggests that children aged 5 can increase their behavioral self-regulation skills through this type of activity. Both math and expressing capability were found to be greatly enhanced. Consequently, cognitively-based games can maximize children's potential as they grow up.

Previous research has employed a variety of behaviorally-based games to train behavioral self-regulation. An investigation by Coatsworth and colleagues found that the addition of a behavioral game to a school-readiness program was very effective in enhancing self-regulation behaviors and in assisting students in improving their literacy and math skills at an accelerated rate [23]. Additionally, Savina et al. [8] claimed that kids participated in games with rules demonstrated better abilities when performing visual-motor integration tasks afterward in understanding rules of conduct, controlling verbal interference, and following verbal instructions [24].

There have also been some limitations pointed out in these papers. A major issue with most game-based intervention studies is that they focus only on improving one or two components of self-regulation (i.e., inhibitory control). In addition, the nature of playgroup sessions may restrict the scope of game-based training [2]. As well, in Traverso et al.'s study [17], the authors assessed children's behavior self-regulation after one year, which could lead to confusion over whether training led to improved behaviour or better comprehension. Further research should take advantage of every possibility that such kinds of interventions can make positive progress, and attempt to use more types of games in that research.

4. Different Methods of Self-regulation Improving among Special Children

According to Stuart Shanker [25], there are five steps to accomplish in order to enhance self-regulation. As part of a successful strategy for managing stress, both teachers and parents are required to be able to identify the symptoms and the causes of stress. As a way of reducing the observed stress and developing awareness regarding it, educators and caregivers must work together in order to reduce the observed stress. Furthermore, educators and caregivers can teach children to manage stressors on their own and encourage them to restore their bodies to a state of calm by educating them on how to do so. However, children in special groups should have more work to achieve a good level of self-regulation. Both talking and understanding deficiencies delay their progress pace. Thus, the paper lists some special condition and correlated self-regulation techniques.

4.1 Learning Disability

As one of the most common children's disabilities, learning disabilities (LD) affect the patient's ability to comprehend and read [26]. That means children with LD have serious difficulties in enhancing academic capabilities.

Having conducted a meta-analysis of 30 years' worth of both group and single-subject interventions with students with LD, Swanson found that direct training as well as strategic training were both effective methods of teaching students with learning disabilities, particularly in reading, writing, and mathematics, across academic domains [27]. Other studies have also shown the results on mathematics intervention with LD students demonstrated that self-instruction, a self-regulation strategy, was most effective in improving mathematics learning in general, whereas direct instruction was more effective in developing basic skills.

4.2 Attention Deficit Hyperactivity Disorder

It is widely considered that patients with Attention Deficit Hyperactivity Disorder (ADHD) mainly display weaknesses in concentration and inhibition. As an important component in self-regulation, attention takes a vital role in improving children's self-regulated ability. In this way, children with ADHD are concerned to form the concept of self-regulation in advance to support future study.

Rubia et al. [28] have conducted a study involving 24 children between the ages of 7-8 to measure the ability of children with ADHD to tap independently (reflecting internal beat stability) and to synchronize their sensorimotor movements was compared between those with ADHD and those without ADHD. The result shows that the link between behavioral self-regulation and beat synchronization skills is examined in the context of ADHD, which is characterized by impaired EFs. While there was no extreme discrepancy in independent free tapping between control and experimental groups, sensorimotor synchronization was, with children with ADHD more likely to have impulsive errors related to inhibition difficulties than children with typically developing brains. When children are exposed to music training, their executive function skills of inhibition and sustained attention improve significantly during the adolescent years, with stronger inhibitory skills being associated with better sensorimotor synchronization.

The effects of mindfulness on special children have not been directly studied, however, Razza et al.'s [7] experiment to enhance self-regulation skills by mindful yoga indicated that children with poorer inhibitory control made significant progress over the average children in the experiment. Thus, it is recommended that mindful activities be applied to special groups of preschoolers in the future.

5. Summary

There are several significant aspects of self-regulation that can affect children, especially those who have not been enrolled in a systematic education system, and the purpose of this article is to review the importance and impact of self-regulation on children. A number of studies have demonstrated that children who are able to utilize self-regulation in their environment are more likely to succeed academically. The development of self-regulation skills has also been shown to assist

children in reducing future behavioral and emotional problems that may arise as a result of poor self-regulation skills. Hence, there can be no doubt that implementing preventive measures that are capable of improving the self-regulation skills of preschool children is essential in order to improve their academic success in school. This paper presents three common and useful techniques: movement activities, mindfulness exercises, and game-based interventions. Through a comprehensive review of each method in deep, it has been suggested that physical activities as well as game-based activities are more practical and acceptable to preschoolers, while mindfulness can be used to teach special groups how to enhance self-regulated ability. Moreover, it was noted in the study that some special groups of children, such as those suffering from learning disabilities or attention deficit hyperactivity disorder, were also addressed in regards to this study. Such problems prevent an individual from developing self-regulation skills adequate to cope with life's challenges. At the end of the paper, some relevant solutions are analyzed in order to suggest some possible solutions that can be implemented. The paper also suggests a future direction that should be focused predominantly on the development of self-regulation skills in special children in order to improve their overall well-being regardless of the fact that there is a lack of literature devoted to special communities.

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