

Effect of Self-Regulating Behaviour on Young Children's Academic Success

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Abstract

This article leads to several conclusions regarding self-regulation in young children which does affect academic outcomes for those who transition to formal schooling from a preschool environment. Herein we argue that children who are good self-regulators will realize greater academic success than those who cannot self-regulate in the later elementary grades. These conclusions are noteworthy given the importance placed on self-regulatory behaviour by teachers, particularly in the Early Learning Kindergarten (ELK) program where students must interact through open play with peers. The ability to self-regulate in this environment allows students to work collaboratively with others and problem solve without the intervention.

Keywords: Early Learning, self-regulation, academic outcomes, kindergarten, transitioning.

Introduction

Herein we argue that children who are good self-regulators will realize greater academic success than those who cannot self-regulate in the later elementary grades. We define and suggest, "social and emotional learning (SEL) is the capacity to recognize and manage emotions, solve problems effectively, and establish positive relationships with others" (Zins & Elias, 2007, p. 233). Socio-emotional development (SED), a related concept comprises "the emergence of emotional self-regulation, empathy, effective communication, positive social interaction, and social independence" (Pickens, 2009, p. 262). Social-emotional competence (SEC), according to Domitrovich, Cortes &

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Greenberg (2007) is “composed of skills and knowledge that are integrated across the emotional, cognitive, and behavioural domains of development” (p. 69).

We also claim that Self-Regulation (SR), according to Shanker (2010) is the ability to stay calm, be focused and alert which is akin to having self-control. Self-regulation involves goal-oriented behaviours (Matthews, Ponitz, & Morrison, 2009, p. 692). It is “a deep internal mechanism that underlies mindful, intentional and thoughtful behaviours of children which allows the capacity to both stop the behaviour or start something new” (as cited in Harrison & Muthinvhi, 2013, pp. 80-81). These definitions situate our arguments and help to illuminate the effect children’s self-regulation has on their academic development. We believe that children’s ability to control their own behaviour is important in school and life beyond the classroom; and requires careful examination via available published literature.

Method

The integrative review of literature began by accessing University library websites to search e-resources under the Education category. A variety of on-line, peer-reviewed articles were found using the following descriptors: “kindergarten success and self-regulation”, “kindergarten social-emotional success”, “teachers’ perceptions of kindergarten”, “self-regulating behaviour in children” and “social-emotional learning”.

Selection criteria.

Where possible, Canadian and Ontario sources were sought, although the majority of the research articles used are from the United States. Additional sources came from outside of North America. The research is recent, within the last 10 years; although for the contextualization of the paper and where reference is made to the philosophical underpinning of the subject or where limited research in the area occurred, older articles were relied upon. In addition to online journals, books and a podcast were used as resources.

Problem and Objectives

We believe it is imperative to address student self-regulatory behavior and school readiness, as well as their ability to not only cope behaviorally in school, but also progress academically. This research links to much earlier assertions by Vygotsky (1963) who suggested children use self-talk (private speech) as “an intrapsychological tool for regulating thought and behavior” (Winsler, de Leon, Wallace, Carlton, & Willson-Quayle, 2003, p. 584). And it was within an investigation of teachers’ self-reported classroom management that revealed “half of the teachers surveyed (47.4%) reported dealing with student behaviour problems five times or more in a typical day” (Clunies-Ross, Little, & Kienhuis, 2008, p. 699-700). Perhaps these students had not developed their self-talk (inner voice) to a point where they could self-regulate. Yet, self-regulation, when viewed as a ‘normal’ developmental marker, is problematic in light of the study by Walker (2004) which claimed “as many as 20% of students have emotional or behavioural problems and that 84% do not receive appropriate

interventions (as cited in Kramer, Caldarella, Christensen & Shatzer, 2009, p. 303). This research outcome could be telling us that teachers need to act (intervene) when self-regulation deficits are noted in at-risk children. However, we argue, and actually believe, that there is evidence suggesting early development of self-regulation behavior in children develops as each child grows.

Questions

Our primary question asks: What effect does self-regulation in young children have on their academic performance? Secondly, we ask: What types of self-regulatory behavior do children exhibit? And third, we ask: What type of instruction facilitates self-regulation of behavior in children?

Background

Children who begin their education in pre-school or kindergarten settings are transitioning from a home environment to often a more structured setting with different rules and expectations (McClelland & Cameron, 2011). Vygotsky (1978) concluded that children need early social interaction to internalize social rules, roles, and expectations. Children aged four to six enter school and begin to assimilate physical, cognitive, social, and emotional experiences within a structured learning environment (Ray & Smith, 2010). The importance of this transition is noted by Schulting, Malone & Dodge (2005) who insist, "Kindergarten marks a child's entry into formal schooling, and performance in kindergarten paves the way for future academic success or failure" (p. 860). As students begin their transition to this new formalized setting, a challenge occurs for some students in terms of their ability to self-regulate their behavior (McClelland & Cameron, 2011). McClelland, Connor, Jewkes, Cameron, Farris & Morrison (2007) explain how children every year transition and some encounter problems as they have not developed skills in self-regulation, such as following instructions, focusing attention and inhibiting inappropriate actions. Adding to this are the constraints teachers are faced with in their classrooms with regard to the delivery of the curriculum, teaching and management.

The Ontario Ministry of Education (2006) claimed, "it is therefore critical that Kindergarten programs reflect the importance of early literacy and early numeracy in order to provide what evidence-based research suggests is developmentally sound programming for children in the Kindergarten years" (p. 3). This is not to suggest that inquiry and play based learning, as it exists in the Ontario Curriculum is not being adhered to. Simply, teachers are expected to deliver an academic curriculum in addition to meeting the social and emotional needs of their students. The Ontario Ministry of Education (2006) suggests "the Kindergarten program should provide opportunities for learning, self-expression, and self-discovery in a variety of areas – for example, in music, drama, games, language activities, and cooperative activities with peers" (p. 4). However, it remains that kindergarten classrooms emphasize formalized instruction-instruction intended to raise the child's skill levels-more than do preschool environments. Because of the heightened academic goals associated with kindergarten

and because children have had such diverse experiences preceding school entrance, some children are more successful than others in meeting these new demands.

Of a serious note, there is a rise in the anxiety rates of children in Canada approximately five percent of children experience anxiety, which he attributes to students' inability to self-regulate behaviour (Shanker, 2013). It could be that stress (socio-emotional state) and uncertainty make the transition to school even more troublesome for some students (Rhoades, Greenberg, & Domitrovich, 2009). Because teachers and students are working together in community, the needs of the entire classroom are affected when students' behaviour is maladaptive. A recent study of predictors of teacher stress and teacher efficacy conducted by Collie, Shapka and Perry (2012) found "teachers who experienced greater stress related to students' behaviour and discipline reported lower perceived teaching efficacy" (p. 1195). This stress has been mounting in recent years as there has been "... an increase over the last ten years of behaviour problems "(Shanker, 2012). It is imperative to discuss these aspects of self-regulatory behaviour and the students' role in readiness for school as well as their ability to not only cope behaviorally in school, but also develop academically (Rhoades, Greenberg, & Domitrovich, 2009).

Historical Underpinning

Philosophers such as Plato, Aristotle, Rousseau, and Vygotsky have contributed to educational thinking by providing theories, which contemporary researchers, teachers, administrators and teachers can draw upon. These theories provide an essential starting point for the review of other researchers' work.

Plato believed students should be educated according to their capacities so they should not all have the same education. Further, his educational model was rooted in the understanding that education's purpose was to produce competent adults who would meet the needs of the state (Noddings, 2012).

Aristotle's contention was that people should be educated according to their place in life and that moral education was the underlying principle by which education should be rooted to. Importantly, Aristotle believed that children should be acting and making decisions based on good moral character (Noddings, 2012).

Rousseau's educational philosophy had overreaching platforms. Fundamentally, he believed "children in their natural state are good and that they become corrupted through their contact with society" (Miller & Seller, 1990). Specifically, Rousseau believed that timing of children's learning was paramount. From the perspective of kindergarten students' learning paths, Rousseau's stance was "children are ready at certain times to learn certain things" (Noddings, 2012, p. 16). Importantly in terms of an Ontario (Canadian) education perspective, the Kindergarten classroom model in Ontario today is based upon a child-centred format where the learning needs of each child is recognized and fostered (Ontario Ministry of Education, 2006). In the Ontario Kindergarten program the learning interests and capacities of students are promoted and fostered.

Piaget's belief system is rooted in constructivism. He believed that learning was developmental in nature and emphasized the interaction of cognitive mechanisms in order to create meaning in the world (Noddings, 2012).

Some people contend that Vygotsky was the most important philosophical theorist to examine the topic of children's development of self-regulation. He believed every function in children's cultural development appears first at the social level; that is, children can perform certain tasks in social settings with the help of others (Noddings, 2010; Bronson, 2000). Vygotsky (1983/1997) explains: "When the child enters into culture, he not only takes something from culture, assimilates something, takes something from outside, but culture itself profoundly refines the natural state of behavior of the child and alters completely anew the whole course of his development" (as cited in Bodrova & Leong, 2005, p. 439-440). Like Rousseau's stance, Vygotsky believed children's accomplishments in the preschool years is their ability to not only control but also overcome negative responses to environmental situations. In other words, if a child has a toy that another child wants, the child is able to intentionally think about ways to solve the problems and keep emotions under control (Bodrova & Leong, 2008). "Vygotsky's approach suggests that young children can master necessary prerequisites of academic skills through engagement in mature make-believe play" (Bodrova, 2008, p. 357). The thinking that play is an integral part of learning has its roots in social constructivist thinking. Social constructivism according to Noddings (2012) is the "belief that students learn from social interaction as much as or more than they do from individual manipulation of objects" (p. 147). However, Vygotsky was careful to note that the learning that children are doing is in a constant state of development. He referred to this state as "the child's Zone of Proximal Development (ZPD)" (Bodrova & Leong, 2005, p. 441). Vygotsky's zone of development defines those functions that are in the process of being matured while allowing us to see what will be developed in a child's immediate future (Vygotsky, 1978). To that end "the zone of proximal development can become a powerful concept on development research" (Vygotsky, 1978, p. 87). As such, Vygotsky's concept of play is an integral part of creating a child's ZPD (Bodrova, 2008). Notably, Daniel Elkonin who advanced Vygotsky's theories regarding the role of play and self-regulation provided some additional insight. Bodrova & Leong contend that Elkonin emphasized the importance of play in the mastery of children's social interactions with others and in terms of cognitive development. Play in children helps them define their roles, interact and learn the rules of game playing (2005). Importantly, play activity becomes the first activity where children must temper their need for instant gratification (Bodrova, 2008). With respect to this Vygotsky concluded,

...at every step the child is faced with a conflict between the rule of the game and what he would do if he could suddenly act spontaneously. In the game he acts counter to what he wants... [achieving] the maximum display of willpower in the sense of renunciation of an immediate attraction in the game in the form of candy, which by the rules of the game the children are not allowed to eat because it represents something incredible. Ordinarily a child experiences subordination

to a rule in the renunciation of something he wants, but here subordination to a rule and renunciation of acting on immediate impulse are the means to maximum pleasure. (as cited in Bodrova, 2008, p. 362)

The belief that children are developing the skills to self-regulate via the social construct of play also conforms to the transformational belief of education that learning can be as much a social exchange as it is an individual experience (Miller & Sellar, 1990). Harrison and Muthivhi clarify that children regulate their actions when engaged in play activities (2013). Therefore, through play and play based learning, children learn and develop the ability to self-regulate. Further, as suggested by Vygotsky, this development is changing, ongoing and building in the developing child.

Student Readiness. How prepared students are to enter school is not as simple as it would appear as Hatcher, Nuner and Paulsel (2012) contend that the reality of Kindergarten readiness is a complex idea linked to many meanings. Chronological age, developmental stage, academic and social skills, and home/school connections are associated with readiness. Worth noting is that social emotional maturing appears to be a prominent indicator for teachers and parents. Hatcher et al. (2012) state “twenty-five of 29 participants associated readiness with social-emotional maturing and the ability to interact successfully with peers and teachers.”

Research has identified several challenges some students have in this transition to school. Student transition challenges impact teachers. Specifically, in a study conducted by Pianta and La Paro (2003) when teachers were surveyed and asked about the specific problems they see as their students enter Kindergarten, 46 percent of the teachers noted that students had trouble following directions. Other reported problems included difficulty working independently (34%); a disorganized home (35%); poor social skills (20%); immaturity (20%) and communication problems (14%). Additionally, a study conducted by Rimm-Kaufman et al. (2009), examined the relationship between children's adaptive behaviour upon entering Kindergarten and their classroom behaviour. Students' self-regulatory behaviour was observed during the first five weeks in a kindergarten class. Further observation occurred at different intervals throughout the school year. Teachers also completed a questionnaire in May of that year regarding the students' self-control and work habits. The results indicate that children who showed better self-regulation at the start of the year were noted as showing more behavioural control at the end of the year. This conclusion is important in terms of students' ability to continue to self-regulate their behaviour for sustained periods of time. From an environmental perspective, children who came from a preschool background rather than from home performed better than others with respect to self-control. Research conducted by Ensar and Feskin (2014) supports the contention that preschool attendance benefits children. In the context of their study, students in Turkey attend school later (age 6) so that this age is the age of entry into formal schooling. The study examined students from the age of 5 to 6 to determine whether preschool attendance was a factor in emotional adjustment upon entry to formal schooling. The findings indicate that students who attended preschool had higher scores on a Marmara Socio-Emotional Adjustment Scale

than the students who did not attend preschool. Further support of this thinking comes from a qualitative study conducted by Hatcher et al. (2012) where parents and teachers' beliefs about school readiness were examined indicating 11 out of 13 teachers and 15 out of 16 parents noted that preschool attendance contributed to the children's adaptability in kindergarten. As such, it appears that a preschool background helps pave the way for students to transition effectively to kindergarten. We are left wondering as a result, if self-regulation can be learned.

Understanding the Development of Self-Regulation. As noted earlier, self-regulation and effortful control are considered to be one in the same. As such, the ability for students to demonstrate self-regulating behaviour has to do with making the choice of demonstrating favourable behaviour when given the freedom to choose other reactions. As such, self-regulation is different from compliance. Because students are using internalizing perspectives differs greatly from students who comply due to external threats of reward or punishment (Shanker, 2010). Social learning theorists contend that children learn through observation and become equipped over time to self-regulate; however, these experiences are sometimes accompanied by reward and punishment (Bronson, 2000). If we believe that self-regulation requires more highly developed cognitive skills (Bronson, 2000), the question of how these skills develop needs to be addressed.

Infants begin to demonstrate responses to their environment at birth and slowly these self-regulating behaviours become more complex (Florez, 2011). During the course of a baby's development and with the caring responses of adults, babies will fuss rather than cry. This reaction demonstrates an emergence of self-regulating behaviour (Bonnett & Maich, 2014). Sroufe notes this ego strength is developing in young children as a result of positive and warm relationships with caring adults (as cited in Bronson, 2000, p. 33). According to Bronson (2000) toddlers begin to start inhibiting their responses and begin to comply with adults. Florez (2011) suggests "by age 4, children begin to exhibit more complex forms of self-regulation such as anticipating appropriate responses and modifying their responses when circumstances are subtly different" (p. 48). It is the cues that young children pick up that help young children learn how to self-regulate. The ability of children to modify their reactions by being able to start a response or stop it, show impulse control with peers and delay gratification are all seen as emerging behaviours of self-regulation (Bonnett & Maich, 2013). However, this suppression of the desire to react is something that Dr. Shanker has postulated. If we believe as Shanker does that childhood stress is the root cause of children's demonstration of behavioural problems, then reducing the stress in the children's life should be the goal (Shanker, 2013). Academically, student anxiety occurs when presented with new information that has to be learned which creates frustration for the student (Graziano, Deavis, Keane, & Clakins, 2010). Supporting Shanker's belief is Buckner, Mezzacappa & Beardslee (2009) who state: "Self-regulation skills may also be critical in effectively coping with stressors after they have occurred" (p. 20). Therefore, the critical mix of delay of gratification after a stressor has been imposed, forces the question of how can some

children delay gratification and what effect does this delay have in terms of its role on children's future self-regulating abilities?

The delay of gratification for children can be difficult and frustrating (as cited in Mischel, Shoda&Rodriguez, 1989). Delaying gratification is important in understanding the cognitive and social development perspectives associated with self-regulation. In a study conducted over 40 years ago, researchers tested the delay of gratification skills on children. In the experiment, the researchers began by showing the children treats appropriate to their age level and told them that if they wait the required time, they would get their preferred treat. If they chose to not wait, they would get the less desirable treat (Mischel et al.). It was found that "around 30% of 4 year olds were able to wait" (Mischel et al.). Interestingly, the children who delayed gratification used strategies such as looking away or covering their eyes or singing were showing the development of tools to reduce the anxiety of waiting and therefore more self-regulation (Mischel et al., 1989). I find it interesting that none of the students had been instructed in how to avoid taking the treats early or how to control their responses. The children who delayed gratification demonstrated willpower and greater self-control than the children that did not wait (American Psychological Association). A follow up study tracked the same students 10 years later to find that the adolescents who were able to forgo instant gratification were "more academically and socially competent" as compared to their peers who did not delay gratification (Mischel et al., 1989, p. 934). This finding is important for the purpose of this report as it suggest that the presence of self-regulating skills does not diminish over time. This study prompted researchers to think about looking further into the topic many years later. In a large follow-up study conducted by Mischel et al. (2010), when the original children in the first study were followed 40 years later, they showed that their ability to delay gratification and display will power had remain consistent over that time.

The implications of these findings are exciting for researchers and for educators of young children particularly those children who are identified as having behavioural concerns. The findings affirmed the belief that delay of gratification had a sustained effect. Important in this report, is the belief that students are able to demonstrate these behaviours over long periods of time could have an impact on students' academic success in relation to their ability to self-regulate behaviour. In fact, Mischel et al. (1989) found that the children who were able to wait for the preferred treat had higher academic results and lower antisocial behaviour in adolescence.

Supporting Self-Regulation in Children. Self-regulating should be the goal of educators (Bonnett & Maich, 2014). Shanker notes the result of helping students achieve self-regulating behaviour creates the child's ability to:

Attain, maintain, and change ones' level of energy to match the demands of a task or situation; monitor, evaluate, and modify one's emotions; sustain and shift one's attention when necessary and ignore distractions; understand both the meaning and variety of social interactions and how to engage in them in a

sustained way and connect with and care about what others are thinking and feeling-to empathize and act accordingly (as cited in Bonnet & Maich, 2014).

Helping children arrive at self-regulating behaviour involves careful modeling and scaffolding. By showing children the appropriate behaviour children should employ to achieve a task, teachers are able to support the self-regulation journey of their students. For instance, when a teacher models the acceptable way to resolve conflict, students are learning (social learning) the appropriate choice to make. As the child ages, these choices become internalized and is used to make sense of future choices (Florez, 2011; Bronson, 2000). In addition, the self-regulation skills become more advanced as children are beginning to become consciously aware of their ability to control their actions. Further, children are starting to compare themselves with others and are better able to judge their actions (Bronson, 2000). In research conducted by Tiger & Ingvarsson (2007) teachers taught life skills to children aged 3 to 5 years using modeling. Children were observed being engaged in 13 situations requiring appropriate behavioural responses. Each expected skill was introduced to the students during a group meeting. Students were able to practice the skills during the day. Conclusions of the study “resulted in a 74% reduction in problem behaviour and a more than four-fold increase in preschool life skills” (Tiger & Ingvarsson, 2007, p. 277). According to Piaget, as higher levels of understanding of their social and physical world are attained, children are better able to make sense of their choices and self-regulate their behaviour (as cited in Bronson, 2000).

In addition, teachers need to guide students by providing hints and cues to students (Tiger & Ingvarsson, 2007). Rosenthal & Gatt state “children learn through their *intent observation* of the caregiver’s behaviour (*modeling: social referencing*) as well as the behaviour of other children” (2010, p. 228). Younger students might require more detailed cues depending on their level of development (Florez, 2011). Teachers’ knowledge of the strategies to help students enhance self-regulation is set out as domains. These domains or development modes are of importance to researchers. Shanker has set out what he refers to as the 5 domains of self-regulation (Table 1). These domains play an integral part in children’s development. The chart below outlines the domains in detail. It is important to note that several of the classroom strategies suggested in the chart below including classroom teaching skills, play, using books as well as teacher training programs are elements to be examined in this report.

Table 1.

Strategies to Enhance the 5 Domains of Self-Regulation

Domain	Indicators that Support is Required	Classroom Strategies to Enhance the SR Domain
Biological Domain: the activity or the level of energy in the human nervous system	<ul style="list-style-type: none"> • Hypersensitive to sensory input • Has difficulty sitting still • Is overloaded easily • Is often hyper-alert • Is easily distracted by both visual and auditory stimulus 	<ul style="list-style-type: none"> • Drumming • Nature sounds/music • A predictable schedule • Advanced warnings when transition is near • Sensory outlets (e.g. disc cushion, worry beads, exercise bands, sensory bottles, play dough, pocket "fidget" toys, stress balls)
Emotional Domain: feelings and moods, both in negative and positive realms	<ul style="list-style-type: none"> • Easily overexcited when receiving encouragement for an assignment • Intense frustration when in a problem-solving situation • Paralyzed with fear • Intense negative emotions are exhausting, leading to a drain in energy and inability to pay attention 	<ul style="list-style-type: none"> • Kids Have Stress Too! (KHST) program • Read stories that incorporate emotions of characters • Yoga, breathing exercises and meditation • Journaling feelings and experiences • Stop Now and Plan (SNAP) framework • Role play how to express and cope with a wide range of emotions
Cognitive Domain: mental processes such as memory, acquisition and retention of information and problem solving	<ul style="list-style-type: none"> • Difficulty when asked to shift attention or focus • Struggles to sequence thoughts and keep more than one concept in mind at the same time • Unable to inhibit impulsive behaviour 	<ul style="list-style-type: none"> • Set the stage for children to engage in socio-dramatic play experiences (dramatic play props, block play, sand and water) • Fast ForWord and Proloquo2Go programs when auditory processing disorders are identified • Treasure hunts, puzzles, obstacle courses, Simon Says, Just Dance game • Class contracts focusing on respect, fair play and collaboration • Consultation with families to identify a child's interests • Break instructions down into simpler, smaller steps • A cozy and quiet area in the classroom
Social Domain: understanding, assessing and responding to social cues in a socially appropriate manner	<ul style="list-style-type: none"> • Finds it challenging to read cues of others • "Social intelligence" is lacking • Child struggles in cooperative play situations 	<ul style="list-style-type: none"> • Collaborative and/or group activities • School choir or group music experiences • Vocabulary and "mind reading" games • Family nights • "What Is this Person Feeling?" games
Prosocial Domain: social acceptance, friendship, empathy and co-regulation in peer to peer interactions	<ul style="list-style-type: none"> • Finds it difficult to pay attention long enough to read social cues and gather relevant information in an interaction or social experience • May be easily overwhelmed and become upset when peers are loud or screaming • Is often too stressed to consider and process how others are feeling • Is too overwhelmed to support a peer who is upset or in need of help 	<ul style="list-style-type: none"> • Adult and peer modeling • Social stories • Roots of Empathy Program • Anti-bullying programs • Movies that incorporate empathy (e.g. <i>Beauty and the Beast</i>, <i>Ice Age</i>) • Researching empathy in animals • Literacy experiences that focus on empathy development and anti-bullying (e.g. <i>Confessions of a Former Bully</i>, <i>The Mouse and the Motorcycle</i>) • Integrating positive role models (e.g. Craig Kielburger, Ryan Porter)

(Used with permission - as cited in Bonnett & Maich, 2014)

Self-Regulation through Play. According to Vygotsky's approach, dramatic play should be a central component of the learning model for young children (Bodrova & Leong, 2005). Certainly in a contemporary context, we see the emergence of all-day kindergarten programming in many jurisdictions where the focus is on play-based learning. In Ontario, the full day kindergarten curriculum notes the importance of play:

It has long been acknowledged that there is a strong link between play and learning for young children, especially in the areas of problem solving, language acquisition, literacy, numeracy, and social skills. Play, therefore, has a legitimate and important role in Kindergarten and can be used to further children's learning in all areas of the Kindergarten program.

Current brain research confirms that opportunities for children to learn through play impel the development of multiple sensing pathways in the brain. A Kindergarten program that is designed with planned opportunities for learning-based play offers sensory stimulation that the child absorbs and assimilates into core brain development (Ontario Ministry of Education, 2006, p. 14).

Vygotsky contends that play is so important to student learning that it should not be excluded in a child's learning (Bodrova & Leong, 2005). Importantly, according to Gmitrova and Gmitrova (2004) "it appears that it is the child-directed play, rather than the teacher directed play, that is associated with a balanced development of both cognitive and affective domains in kindergarten students (as cited in Ray & Smith, 2010).

In a research study conducted by Hatcher et al. (2012) participants' school adaptation was examined and in spite of the gains made in literacy and math "centre-based and free-play experiences in preschools, remains essential to meeting the social readiness goals most parents and teachers express for preschoolers". According to Life is Good Playmakers (2014) "For preschool-aged children, both pretend play and rough and tumble play are linked to increased emotional competence. In play, children are able to negotiate the rules, circumstances, and the direction of play, all the while learning how to regulate their emotions." These competencies are the underpinning of the definition of self-regulation. It follows then the adoption of programs centred on play or that appear to be play to children will have a marked effect on outcome.

Self-Regulation through Books. Because the development of literacy competencies in students is important to their academic success, it is important to examine the development of effective literacy programs for young children.

Under the framework of a Vygotsky approach, all higher psychological processes are social as well as cultural, where children internalize the social experiences encountered. Through joint interaction with adults, children learn to develop responses to situations in social contexts (Estaban, Sidera, Serrano, Amado & Rostan, 2010). Bodrova & Leong contend "a quality program is one where children become active co-constructors of their

development” (2005, p. 444). To that end, programs have been developed in order to support the belief that through the reading of books, young students are better able to understand and regulate their behaviour while at the same time foster the love of reading thus “better preparing them for literacy instruction” (Murphy, 2012, p. 27). The intentional approach of book reading to children is not contrary to the Kindergarten curriculum as stated by the Ontario Ministry of Education teachers “need to plan intentional and engaging literacy instruction during the day. They can ensure that significant literacy learning is included in play, daily routines, and classroom experiences” (The Kindergarten Program, 2006, p. 17).

In recent research conducted in Spain, a sample of 96 children was divided into two groups. One group was provided direct instruction in the form of the teacher reading books related to social situations while the other group did not get the instruction. The goal of the study was to improve the social understanding of preschool students. Teachers were trained in explaining the story to the children in the proper way. The control group didn't receive the instruction. The results suggest that children improved their social understanding in a significant way leading researchers to believe that it is possible to improve children's social understanding by reading books (Esteban et al., 2010, p. 849-854). Therefore, direct instruction of this kind enables students to improve their understanding of social contexts as well as their overall language ability. To this end, teachers need to be aware of the resources (book names) that they can utilize in this process. Murphy (2012) presents the following titles as examples of texts that teachers could use in their classes:

- Percy Gets Upset
- Hands Off, Harry!
- Sophie Gets Angry—Really, Really Angry. (p. 25)

While this list is by no means complete, they represent the genre of text that would support students in the development of self-regulation. However, books alone are not sufficient without the teachers' ability to properly read and develop lesson plans. Therefore, it should be noted that teachers need to be provided with the proper training in order to utilize resources or programs effectively.

Importance of Teachers' Training and Programs. From a developmental perspective, Vygotsky emphasized that education should focus on the nature of teacher-child interaction. It is through that connectedness that quality programming should be based (Bodrova & Leong, 2005). The results of teacher training programs which target the role of teachers in enhancing the self-regulation of students shows promising results with respect to student outcomes. Supporting teachers in providing quality teaching and learning in the area of children's emotional growth is essential and should be the goal of administrators and boards of education.

According to Burchinal, Roberts, Hooper & Zeisel (2000) “well trained and supportive teachers, who use high levels of praise, proactive teaching strategies, and non-harsh discipline, can play an extremely important role in fostering the development of social and emotional skills and preventing the development of conduct problems in young children” (as cited in Webster-Stratton, 2008, p. 472). Research appears to indicate “children who were placed in classrooms characterized by low emotional support appeared to be particularly vulnerable to developing conflictual relationships with teachers in the first grade” (Hamre & Pianta, 2005, p. 962). The importance of teachers in the process of supporting students’ emotional needs cannot be understated. To this end, a number of training programs centre on teachers preparing to support students in their acquisition of self-regulation skills.

One teacher training program entitled Learning to Life Together (LtLT) is based upon the Vygotsky’s social learning theory that building upon children’s emotional learning gives way to higher cognitive abilities around self-actualization given the premise of (ZPD). The LtLT consists of both workshops and consultation meetings where teachers focus on learning about young children’s experiences in group care, how children show empathy and learn to play together as well as how children resolve conflicts. Further, LtLT gives educators a set of tools to use throughout the teaching day in order to promote children’s emotional competence (Rosenthal & Gatt, 2010). The LtLT program has shown considerably good outcomes for teachers as “early childhood teachers reported that the program has changed their understanding and attitude towards their role vis-à-vis social and emotional development of children” (Rosenthal & Gatt, 2010).

Importantly, some programs support students’ acquisition of self-regulating skills which are set up to target lower income families. In looking at the relationship between self-regulation skill acquisition and success, the variable of family socio-economic status needs to be examined. While the scope of this report does not address the connection if any of family emotional support and its correlation to self-regulation in children, the analysis of a family’s income to a student’s self-regulation ability will be examined.

According to the United States Department of Health and Human Service, the Head Start Program is a program developed and implemented in the United States that targets the emotional, social and medical needs of low-income children (Head Start). The Head Start training initiative targets teachers to deliver effective classroom management curriculum. The curriculum is geared for students aged 3 to 8 and teachers deliver the curriculum at least 2 to 3 times per week in a large group format. The 5 units of the program target the social, emotional and cognitive deficits that children exhibit. Training for teachers is done over a 3-day period where teachers receive resources such as lesson plans and content support. The program’s outcome is positive for students and is highly regarded by teachers, students and parents (Webster-Stratton & Reid, 2004).

A study conducted by Fantuzzo, Bulotsky-Shearer, Fusco and McWayne (2005) examined 210 students of low-income families in the Northeast in order to determine whether there was a connection between socialized learning and behavioural adjustment

among students in the program. In conducting the research, the Adjustment Scales for Preschool Intervention (ASPI) was used based on teacher observations. The findings indicated that those children who showed inattentive or oppositional behavior early in the observation period (start of school year) showed greater levels of unpredictable and negative emotion in the classroom at the end of the year. Further, Children who were shown to be withdrawn at the start of the observation period displayed less emotional regulation at the end of the year. Finally, and importantly, children who showed socially disruptive behavior initially were shown to be less engaged, cooperative and attentive later in the study (Fantuzzo et al., 2005). In a later study conducted by Bulotsky-Shearer, Fantuzzo & McDermott (2008) the investigation of identifying situational dimensions of behavior over the course of the school year as well as looking at the many dimensions of goal learning outcomes. Again, a population of Head Start students was used, but the sample size was considerably larger than the Fantuzzo et al. study. As with the prior study, the ASPI was used as a measure of assessment. Results conclude that children who have factors impacting their social development (biological, psychological or environmental) and who displayed behavioural difficulties had a harder time adapting socially (Bulotsky-Shearer et al., 2008). Therefore, not only does the presence of early behavioral issues indicate the potential continuation of these behaviors, the research also indicates that ecological factors such as parental income play an important role as well. Programs such as Head Start appear to meet the needs of children and families in this regard.

Still another program entitled The Peace Education Foundation (PEF) sets programming for parents and teachers in Florida. Teachers were trained by PEF trainers and each teacher was supported with teacher guides for the curriculum. Teachers were given opportunities to be tested to confirm that they had mastered the content. As in the case of the Head Start program, PEF targets the delivery of curriculum and is therefore not considered child-centred. Results of the program delivery on students' self-regulating outcomes show promise. Students who received the program from teachers trained in PEF showed that their negative behaviors declined and they had fewer problem behaviors. Importantly, the students showed less occurrences of acting out behaviors (Pickens, 2009).

Another teacher-based program is the PATHS. The PATHS curriculum model is targeted at delivering classroom-based social-emotional curricula to children five years and younger in a lower socio-economic family unit. Results of the in-class model demonstrate that children's emotional knowledge as well as their processing of emotional expression is greatly improved. As a result, teachers comment that the PATHS program has been successful for a broad range of students (Domitrovich et al., 2007). The Incredible Years Teacher and Child Training Program also focus on children whose families have lower income. Teachers involved received training and ongoing support in order to support the emotional needs of students as well as offer social peer coaching. Teachers' evaluation of the program concluded that it was effective for helping them support their students. The program as followed by teachers helped

contribute to overall school readiness and reduction of student conduct problems (Webster-Stratton et al., 2008).

Another teacher training program entitled Social-Emotional Learning (SEL) has developed from the Collaborative for Academic, Social and Emotional Learning (CASEL). The SEL framework provides professional development to educators so they are able to identify children's social-emotional development and develop awareness of project based teaching methods, which support the learner (Elias, 2006). The Social-Emotional Learning (SEL) programming provides teachers with professional development activities with respect to children's social-emotional development as well as teaching them about constructivist and project-based learning activities. The program gives opportunities to learn from other teachers. As a newer program for teacher professionals, the importance of learning the program delivery and content is highlighted (Elias, 2006). Zins et al. (2004) note that the characteristics of the SEL programming include day to day life skills, recognition of the different dimensions of learning, addressing the social dimensions of learning, paving the foundation to connect with family and community and the development of effective student supports to enable success. In general terms, the SEL program has shown that "83% of such programs produced academic gains" (Zins et al., p. 14). It should be noted that SEL programs target children from Kindergarten to grade 8 and outcomes specific to each grade are not available. However, even noting the collective gains made in the areas of positive attitudes, positive social behaviour and conduct, students who are involved in the SEL programming show stronger outcomes in these areas as compared to students who are not part of the programming (Collaborative for Academic, Social, and Emotional Learning, 2008).

From a Canadian perspective, Dr. Shanker has implemented a series of programs in various school districts in British Columbia. Beginning in 2012, one or two schools in each district have participated in self-regulation programming to support teachers in implementing self-regulating strategies in class. He remains excited by the possible outcome of the project stating, "We really want to learn what the best programs are to help students self-regulate" (Shanker, 2012).

As such, it appears that the effective programming for teachers appears to be a tool that enables the successful outcomes desired by teachers, administrators and parents for an improvement in academic success by students.

Self-Regulation and Academic Success. Teaching students to self-regulate their behaviour is complex (Zimmerman, 1990). According to Raver 2003 "children who are emotionally well adjusted have a significantly greater chance of early school success" (2003, p. 3). Supporting students to learn or build upon self-regulatory skills is a goal for parents and educators because self-regulation has been shown to have a positive effect on academic success. "Continued and reliable acceptance and unconditional support from adults actively contributes to the ongoing evolution of self-regulatory competencies which continue to develop throughout childhood" (Bonnett & Maich,

2014). Florez (2011) explains: “to develop self-regulation skills, children need many opportunities to experience and practice with adults and capable peers” (p. 48). Howse, Calkins, Anastopoulos, Keane & Shelton (2003) note children’s “adaptive classroom behaviour has been linked to achievement in kindergarten” (as cited in Rimm-Kaufman et al., p. 958). McClelland, Acock and Morrison contend that early learning related skills are linked to student academic performance (2006). “Learning-related skills describe a set of skills that are important for children to achieve academically, and include self-regulation and aspects of social competence (responsibility, independence and cooperation)” (McClelland et al., p. 472). If we believe as the research suggests that the continued self-regulation in children occurs through internalizing experiences, then the ability for students to be able to identify and recognize social and emotional situations in context and make sense of them becomes important. Vygotsky (1978) states:

Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (*interpsychological*), and then inside the child (*intrapsychological*). This applies equally to voluntary attention, to logical memory, and to the formation of concepts” (p. 57).

Evidence suggests that students have the ability to recognize socially acceptable behaviour through listening to a story and interpreting the emotional responses that each scenario evokes from the characters. In a study from the United States, interviewers set up a felt board that illustrated six socio-moral stories in order to find out if the children could identify the emotions represented in the read aloud stories. The stories involved scenarios of failing to act prosocially, social situations and situations depicting victims. After the stories were read, students were asked to identify the emotional state of the characters in the story on the felt board. The results indicate that children had a good understanding of what failing to act prosocially meant (Sy et al., 2003). A similar finding resulted from a study conducted by Denham, Bassett, Thayer, Mincic, Sirotkin & Zinsser (2012) used puppets to determine students’ ability to identify the emotions of characters. They found that 80% of the students correctly identified the correct emotion that the puppets demonstrated. These studies support the notion that children have the ability to recognize the emotions in others, which as Vygotsky contends is part of the social learning process that children go through. Collaborative for Academic, Social and Emotional Learning states, “Children’s knowledge and understanding of emotion is an important aspect of social awareness which is one of several skills that reflect social-emotional competence” (as cited in Rhoades, Warren Domitrovich & Greenberg, 2008, p. 182). Importantly Trentacosta, Izard, Mostow & Fine state: “It appears that the children who understand the cues or signs of basic emotions in facial expressions, social situations, and behaviors as they enter elementary school can also focus and sustain their attention in the classroom” (p. 162). It is this ability to sustain attention, which some researchers attribute to students’ ability to succeed.

Overview of Research on Academic Success. How literacy and mathematics competency are improved as a result of students’ ability to self-regulate behaviour has been the topic of many research studies. “Psychologists and educators have long believed that there is a

relationship between children's academic skills and their social, emotional, and behavioural functioning" (Dobbs, Doctoroff, Fisher & Arnold, 2006, p. 97). Evidence appears to indicate that students who are able to self-regulate their behaviour continue to do so in the later elementary years and also demonstrate a greater level of academic success in math and literacy.

An important skill for future school success that begins in kindergarten is literacy achievement (Ray & Smith, 2010). Venn & Jahn state, "self-regulation is the number one precursor to literacy acquisition" (as cited in Murphy, 2012, p. 24-25). McCabe & Meller (2004) contend while language is an essential component of social interactions, it can also be said that social interaction enhances language development. Children's poor social skills deprive them not only of the social benefits of positive peer-relations but also of the language benefits that social interactions often afford (as cited in Gliebe, 2011). Vygotsky stipulated that speech development was an integral aspect in terms of children's future ability to self-regulate behavior. He believed that through oral language, children were able to promote the development of skills necessary for academic learning, which has a unique influence on reading and writing (Bodrova, 2008). According to Vygotsky, the acquisition of language is a basic tool that children have because "it facilitates the acquisition of other tools and supports the transformation of many mental functions" (Bodrova, 2014, p. 362).

Several research studies have focused on the important role self-regulation has in children's literacy success. Within the pre-school years, these studies show promising results supporting the understanding that children's self-regulating ability indicates academic success in kindergarten. Blair & Razza's (2007) study examined the role of self-regulation in the emerging literacy development of 5-year-old students. Researchers measured receptive vocabulary and students' attentions shifting measure of emotional function. The findings indicate that in terms of letter recognition and phonetic awareness, students with better self-regulatory control showed more academic success. Supporting these findings, Garner and Waajid suggest, "emotional situational knowledge was a concurrent predictor of concept knowledge and language competence" (as cited in Rhodes et al., 2011, p. 183).

Blair & Razza also studied the academic outcome of students in the area of mathematical knowledge and what role self-regulation had in student achievement. Findings indicate there are moderate to strong relations between emotional control and mathematics ability because the skills acquired through mathematics are more effortful, they rely on a higher demand of students' emotional abilities (2007). In other words, students need to rely on memory, persistence and reasoning skills that utilize more behaviour self-regulation for the learning process (Ray & Smith, 2010).

Research conducted by Ponitz et al. (2009) examined middle class students' temperament in the spring before kindergarten entry and in the spring during the kindergarten year in order to assess academic success based on self-regulation abilities of participants. Additionally, students were tested using Woodcock-Johnson

Psychoeducational battery III tests of Achievement to assess academic achievement in literacy and mathematics. Interestingly, the results indicated that students who had higher levels of self-regulation in the fall attained higher levels of success in mathematics and literacy. Of note, students who entered kindergarten with a higher demonstration of self-regulation skills showed a greater achievement in mathematics but not in literacy. The researchers contend that the justification for this differential might result from the cognitive processes required in the acquisition of language skills as compared to mathematics. In other words, children are exposed to more oral and written language than mathematics in the early years.

In another study, McClelland et al. examined preschoolers' self-regulation ability to determine academic success in kindergarten. Findings show that children with higher behavioural regulation "achieved at significantly higher levels in emergent literacy, vocabulary, and math in the fall and spring of the prekindergarten year" (2007, p. 955). Further, students showing more behavioural growth from the fall to the spring had greater gains in literacy, vocabulary and mathematics than those students with less behavioural regulation growth (McClelland et al., 2007). Finally, a recent study by Graziano, Reavis, Keane & Calkins (2010) showed additional evidence of the connection between self-regulatory behaviour in children and academic success. Using 5-year-old students from varied socio-economic backgrounds, measures of emotional behaviour were taken by parents via the Behaviour Assessment System for Children (BASC) while teachers completed an Academic Performance Rating Scale (APRS). Results show "after controlling for IQ, emotional regulation was a significant predictor of academic success/productivity in the classroom. Thus children with better emotion regulation skills were more likely to obtain higher scores on teacher reported academic success/productivity in the classroom" (Graziano et al., 2010, p. 10).

When examining the research in the area of the effects kindergarten learning skills have on future academic success, research appears to show that there is a direct link as "learning related skills (including self-regulation and social competence) contribute to early school success" (McClelland et al., 2006, p. 471). In the McClelland et al. study, researchers tracked the academic success to students in literacy and math from kindergarten to sixth grade. A sample of 538 students was used and data was collected on the achievement levels of these students over the early academic years (until grade 6). The results of the study are supportive of the hypothesis that early self-regulation in children predicts their academic success. For both literacy and math, the results indicated a strong correlation between the self-regulation of these students in kindergarten and the results of their literacy and numerous tests between kindergarten and grade 2 (McClelland et al., 2006). Importantly in terms of examining whether the success seen in the early academic grades continues, McClelland et al. note "teachers ratings of children's social skills at kindergarten were a significant predictor of reading and math scores 6 years later" (2006, p. 482). This result is important in terms of future study in this area. In a related and more recent study, Rhoades et al. (2010) looked at the self-regulation of preschool students and its correlation to academic success in grade 1. Researchers collected data from lower income students in the United States at various

periods over the academic year in preschool, kindergarten and grade 1. Assessments were taken in the area of emotional knowledge, vocabulary, attention skills and arithmetic competence. They concluded that emotional knowledge was a large predictor of academic success. Further, and of note, researchers found that 66% of the effect of emotional knowledge had a direct effect on academic competence.

However, not all studies have produced these results. A study of mathematic achievement in students between kindergarten and third grade indicates a slightly different outcome worth noting. DiPerna, Lei & Reid collected data on students over a 4-year period beginning in kindergarten. Because the goal of the study was to determine any correlation between young children's behavior in kindergarten with growth in the methodical skills in later years, both the assessment of mathematical skills and children's behaviour (interpersonal skills as well as externalizing and internalizing behaviours) were examined. The results showed that students' negative behaviours showed a negligible relationship to mathematical success in later years. Researchers theorize that the difference in this research from others hypothesizing the same question might have to do with what types of prosocial behaviours are being measured. In other words, if variables are different among the studies, then the outcomes could be different (DiPerna et al., 2007). Matthews et al. (2009) contend that the inconclusiveness of results could be due to the fact that kindergarten is less academically rigorous for all students. The variance in results gives support to my later conclusion that more research would need to be conducted in this area.

In summation, if the research findings from the studies presented here are representative of the evidence that early literacy and mathematics acquisition is enhanced by students' ability to effectively self-regulate, the question to be answered is does academic success in kindergarten predict future academic success? According to Dickinson & Tabors (Eds.) (2001) Children's early language and literacy skills that develop during preschool are key indicators of literacy achievement, graduation rates and enhanced productivity in adult life (as cited in Applied Survey Research). Further, "early math skills have been found to be the single strongest predictor of later academic success. Moreover, K-5 students with persistently low math skills are less likely to finish high school and less likely to go to college" (Christensen, 28 April, 2011).

Summary

There is substantial evidence that self-regulating behavior is an important aspect of young children's development. Early educational philosophers such as Vygotsky note that self-regulation in children is not only present in children but also has the potential to grow and develop as children age and mature. This maturation process happens when children are exposed to a variety of social situations, which they internalize and draw from when making future social decisions. Young children who have preschool experience are noted to be better able to handle the demands of school entry as compared to students who transition from home. This ability appears to be partly due to the fact that these children have already been exposed to situations where they have had

to make decisions within a social group and may have received instruction from educators in this regard.

Further, the research in the area of delay of gratification shows that not only do children have the ability to delay gratification even at an early age, but also, those children who delay gratification are able to sustain this ability over the years. This leads to the question of how can teachers, administrators and school boards help support the development of self-regulation in children. Again, the research as presented here appears to indicate that children are able to learn self-regulation through caring and well-trained teachers and by the use of programming, which supports their social-emotional learning. Children attain self-regulation through play based learning activities as well as through direct instruction from teachers.

The benefits of self-regulation in children are many. Firstly, children who self-regulate continue to do so leading us to value self-regulation programming for young children. Secondly, children who self-regulate their behavior are shown to achieve greater academic success in literacy and numeracy. It should be noted that the outcome for mathematical competency is somewhat less conclusive from the studies presented. However, the gains made by students as demonstrated in a variety of studies are conclusive. In terms of the variables of gender and socio-economic status, it appears that boys who demonstrate fewer self-regulating behaviors than girls and those students from lower socio-economic backgrounds stand to benefit the most from programs, which target students' self-regulating growth.

Conclusion

It can be concluded that self-regulation in young children does affect academic outcome for those who transition to formal schooling from a preschool environment. Further, children who are good self-regulators will see greater academic success than those who cannot self-regulate in the later elementary grades. These conclusions are exciting in light of the importance placed on self-regulatory behavior by teachers particularly in the Early Learning Kindergarten (ELK) program where students must interact through open play with their peers. The ability to self-regulate in this environment allows students to work collaboratively with others and problem solve without the intervention of the teacher.

Future Considerations for Practice

In terms of future research, we note that there are some areas, which need further exploration. Firstly, research should be conducted to determine the ways that students who are not enrolled in preschool can effectively transition to school. In other words, what ways can parents assist their children with effective entry to formal schooling by supporting their self-regulation development at home? While not part of the scope of this report, I believe that given the evidence associated with the self-regulatory skills, which preschool children present, then establishing programming to assist students at home would prove beneficial. According to Statistics Canada, approximately 50% of families

in Canada use child care for their children under the age of 4. Importantly, 30% of these children are in non-structured care such as a nanny, family member or sibling (2012). This statistic reflects a large number of children who would as the research suggests, benefit from transitional support.

Secondly, additional research regarding the impact that gender has on self-regulation should be conducted. There appears to be limited research in this area and because isolating the variable of gender can be problematic for researchers in terms of other variables, I believe that this important aspect deserves additional insight. We know from the research that boys lag behind girls with respect to academic achievement. Further, boys appear to adopt fewer self-regulating behavior than girls. For this reason, the impact that gender has on both boys' ability to self-regulate behavior and its impact on academic success should prove beneficial to meeting the academic needs of boys.

Thirdly, the evidence shows that children from lower income families demonstrate fewer self-regulation abilities than their peers. While communities and governments attempt to alleviate the income disparity between families, some direct measures with respect to the children in these families can show positive impacts. We believe that researchers and governments might do well to target program options for children of lower income families by providing transition programs such as Head Start or PATHS, which have been shown to be beneficial to children.

Because of the recent changes to the format of kindergarten to the full day format, it is important to support teachers in doing the best job they can for their students. With play-based learning the focus of ELK (Early Learning Kindergarten), students are being asked to rely heavily on the ability to self-regulate their behavior in order to manage their learning experiences in these classes. From a Canadian perspective, there appears to be a lack of programming options for teachers to implement socio-emotional learning into the classroom. This is not to say that teachers neglect this aspect of direct teaching; however, unlike programs in the United States, Canada appears to have a less developed set of programs for school boards to tap into. With the adoption of programming in Canada, we believe there would be fewer problems associated with students' ability to self-regulate. Certainly, adopting programs that foster self-regulation in Canadian children would benefit teachers, parents and all students.

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