

Challenges to self-regulation: A multiple case study of preschool-aged girls

by

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Bachelor of Arts, University of Victoria, 1997
Bachelor of Education, Vancouver Island University, 2002

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of the Requirements for the Degree of

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Supervisory Committee

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Abstract

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The purpose of this thesis was to explore how preschool-aged girls self-regulate when they are challenged by a naturally occurring task or activity within the preschool environment. My work as a graduate research assistant to Dr. Wanda Boyer enabled me access to a large grounded theory study entitled, A Foundational Measure of Early Childhood Self-Regulation, from which participants were chosen. Since I endeavoured to capture a holistic picture of preschool-aged girls' self-regulation, as they encounter a naturally occurring difficult activity, a multiple case research design, within the qualitative paradigm, was used. In keeping with the qualitative case study tradition, this study utilized multiple data sources such as demographic information, transcriptions of interviews and videotaped observations from the larger study. The results of pattern matching, within-case and cross-case analyses are presented within four central themes: (a) initiating, modulating, and ceasing a difficult task, (b) strategies used across six dimensions of regulation, (c) interactions occurring during the regulation of a difficult task and, (d) the common use of physical strategies. This descriptive thesis concludes with key findings, proposed implications, and suggestions for future research.

KEY WORDS: self-regulation; early childhood; preschool girls; task difficulty

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Dedication

I dedicate this thesis to my former students and colleagues. I consider it a privilege to have taught students in their early years of Kindergarten, Grade One, and Grade Two and was honoured to work alongside gifted educators such as Sue Herzog. I am thankful for their contributions to my personal and professional development. I enjoyed sharing everyday joys and seeing the wonder of the world through the eyes of my students. I am especially grateful for the mentorship of former colleagues who actively expressed their commitment to providing thoughtful, developmentally-appropriate, and student-centred learning environments. Overall, the undertaking of this thesis was inspired by my experiences as an educator and my belief that every child entering kindergarten can holistically develop his or her potential by participating fully in a supportive and playful academic environment.

Chapter 1: Introduction

Overview

Although caregivers of preschool-aged children may dislike hearing proclamations such as ‘you’re not the boss of me,’ this can be viewed, according to Dr. Wanda Boyer (when interviewed by K. Dedyne), as optimistic evidence that young children are on the road to developing self-regulation (Dedyne, 2009, May 23). Self-regulation, or also called “effortful control” by Boyer, involves four areas of executive function which, when learned during the preschool years, can be “very important to the health and well-being of children” (ibid). When children develop the ability to (a) keep focused on a task, (b) shift attention from one task to another (whether they want to or not), (c) initiate actions, and (d) stop actions whether they want to or not, there will be less frustration and more opportunities for “fun, friends, and finding solutions” (ibid).

Self-regulation is not only a hot topic in local newspapers (e.g., Dedyne, 2009) aimed at educating caregivers but also a highly researched area in the developmental literature (Kopp, 2003). According to Post, Boyer, and Brett’s (2006) historical content and archival analysis of self-regulation research, the foundations of behavioural psychology dominated the precursory period (1891 – 1950), cognitive science defined the emergent period (1950 – 1970), a combination of theoretical perspectives coloured the contemporary period (1970 – 1990), while the current expansionist research period (1990 – present) has maintained a focus on the examination and prevention of different disorders. Specifically, this current period highlights the importance of developing ways of assessing self-regulation in the preschool years which can contribute to the early prevention-related research efforts.

A review of developmental literature (e.g., Boyer, 2008b; Bronson, 2000; Kopp, 1982) reveals that although there is a diverse emphases on regulation (i.e., physiological, neurophysiological, emotional, and self-to-society regulation), there is one underlying principle; that “children must develop an intrinsic self-organized system of controls that can meet [the demands of] physiological homeostasis, behavioural functioning adaptive to varied sociocultural contexts, and the protection of self-identify and needs” (Kopp, 2003, p. 370). Current research aimed at assessing the self-regulation of preschoolers has mostly depended on the use of structured lab assessments with a relatively small sample of participants (e.g., Smith-Donald, Raver, Hayes, & Richardson, 2007). This study, however, will be based on Boyer’s (2008b) large multi-phase qualitative study, which included 150 child participants with their families and educators from seven preschools. In addition to individual parental interviews and focus groups involving parents and educators, the child participants were observed naturally within the preschool environment. As a result, Boyer developed an observation guide to assist researchers in understanding how, when, and why preschool children learn to regulate their physical, cognitive, linguistic, social, emotional, and moral responses throughout natural preschool interactions.

There is particular interest by current researchers (e.g., Blodgett, Boyer, & Turk, 2005; Boyer, 2005a, 2006, 2007, 2008b; Kochanska, Aksan, Penney, & Doobay, 2007) in the development of self-regulation during the preschool years because children are shifting from mostly external to more voluntary internal control and from exploring the environment to more goal-oriented activities (Bronson, 2000). It is in the development of executive skills between the ages of three to six years that children are able to use self-

regulatory strategies and monitor their progress, in order to successfully achieve goals presented within their environment (Bronson, 2000). Boyer (2008b) gained a deeper understanding of the development of self-regulation by examining the role adults play in the preschooler's acquisition of self-regulation. In order to gain a holistic understanding of how the preschool child's behaviour reflects his or her ability to use language and problem solve, manage physical, emotional, and moral responses with or without social assistance in a socially appropriate manner, one needs to see the child naturally interacting within a variety of preschool situations (Boyer, 2005b). The developing preschool child is experiencing a lengthy period of transition from external to internal regulation which requires "time to resolve the conflict between the wish to comply and the desire to be autonomous" (Boyer, 2008b, p. 9). Once a child is able to experience compliance as "self-generated and not interfering with autonomy," he or she is better able to participate and gain mastery of tasks in the preschool years, which in turn affects his or her abilities to exercise better control over future events (Boyer, 2008b, p. 9).

The development of self-regulation and self-regulatory strategies is of personal and professional interest to me because of my classroom experience as a teacher of young primary-aged children. As a kindergarten and grade one teacher, I shared the classroom with children at varying levels of self-regulation within various contexts. For example, I observed the children's differing abilities to self-regulate when completing tasks, such as dressing for recess or opening a snack item, within an allotted time period. This has contributed to my interest in knowing more about children's development of self-regulation.

In the Master of Arts program in Learning and Development, I have worked as a research assistant during the third phase of a large qualitative research study entitled, A Foundational Measure of Early Childhood Self-Regulation. Intensive formal training and orientation to the data and first two phases of this grounded theory research study was provided by Dr. Wanda Boyer, Primary Investigator. Phase one was the collection of data (which included demographic information, interviews, focus groups, 30-minute tapings of naturalistic play and a general overview of findings across 150 cases), which led to phase two; the transcription process and development of two observational tools (*Preschool Observational Coding Sheets, Preschool Observational Guidelines*; Boyer, 2005a, 2008b). Phase three centred on the development and norming of a self-regulation assessment tool for preschool-aged children. I was involved in the inter-rater, intra-rater, and criterion agreement for this tool. The inter-rater, intra-rater, and criterion agreement is currently being established based on the primary investigator (of the larger study) and research assistants' viewings of the videotaped naturalistic play while using the tool and recording observations from 2007 to 2008.

Statement of the Problem

The problem of the present study is expressed by the following question:

How do preschool-aged girls, between 3 and 5 years of age, self-regulate when they are challenged by a naturally occurring task or activity within the preschool environment?

Purpose of the Study

Research in this area has focused primarily on observing a child in artificial or laboratory settings (e.g. Kalpidou, Power, Cherry, & Gottfried, 2004). Within these constructed environments, self-regulation is generally studied with the use of an assigned and structured difficult task or activity (e.g., Stansbury & Sigman, 2000). This present study is important because of a difference in methodology; observing naturalistic play, can influence assessments of how children acquire self-regulatory strategies, how much they use particular strategies, as well as assist in exploring the effectiveness of those strategies most employed (Boyer, Blodgett, & Turk, 2007; Bridges, Denham, & Ganiban, 2004).

The general purpose of this study was to explore how girls, between the ages of 3 and 5, regulate throughout natural preschool play. In general, girls and boys self-regulate differently when they come upon a difficult task. According to Elkind (1994), by the time girls reach the elementary school years, they are viewed by educators as more academically curious, yet express fewer instances of active goal-orientation, when compared to the self-regulatory behaviour of boys in the school setting. Therefore, the researcher was interested in discovering what needs to be done for girls in their early school years which can assist them in continuing to employ their curiosity while increasing active goal-oriented behaviour. As a result, a specific purpose of this study was to examine how preschool-aged girls self-regulate when challenged by a naturally occurring task or activity within the preschool environment. For example, the researcher chose to examine how a three year old girl responds and copes, while putting together a puzzle-like toy, when an adult is not within reach of providing social assistance.

By investigating self-regulation as a total and complex concept, the researcher explored a range of situations where challenges exist, with different caregivers and educators in order to show levels of support available to a child. Through these unstructured natural situations, this study was able to increase the understanding of how self-regulation is acquired by: (a) exploring the variety of self-regulatory challenges that preschoolers face, (b) exploring how they cope when confronted with a difficult task, and (c) providing a rich multiple case description of the self-regulatory strategies used by preschool-aged girls. This study contributes to knowledge about education by providing an understanding of how girls self-regulate which, in turn, helps educators and caregivers provide developmentally appropriate assistance to not only preschool-aged girls but also boys as they acquire self-regulation.

Definition of Terms

The following definitions are offered to ensure the intended interpretation of the terminology used in this study:

Challenging or difficult task/activity – A natural occurrence within the preschool setting that elicits self-regulation which, in turn affects the child’s ability to complete the activity with (or without) another person in a socially appropriate way (Elkind, 1987).

Examples of naturally occurring tasks include manoeuvring through playground equipment (i.e, monkey bars), dressing for outside play (i.e., putting on gloves, zipping up jacket), or using craft materials (i.e., glue bottle).

Preschoolers – children between 2 and 6 years of age “involved in out-of-home programs, including child care centers, family child care homes, or public and private

full- and half-day pre-kindergartens and kindergartens” (Bredekamp & Copple, 1997, p. 97).

Self-regulation – “the ability to comply with a request, to initiate, and cease activities according to situational demands, to modulate the intensity, frequency, and duration of verbal and motor acts in social and educational settings, to postpone acting upon a desired object or goal, and to generate socially approved behaviour in the absence of external monitors” (Kopp, 1982, p. 199-200). Specifically, this study examined self-regulation according to Boyer’s (2004, 2005a, 2007) six dimensions:

Physical – what the child does with his or her whole body in terms of moving, standing still, or resting

Problem-solving – (a) what the child does when handling a problem that she or he has set out for herself/himself, (b) what the child does when asked to do a task without being told how to do it, (c) what the child says (i.e., what can I do, I need help), (d) what the child does physically before coming up with a solution (i.e., stand still and watch another child, move in one place, go to another location and come back with a solution), and (e) what the child does when lacking resources (i.e., sharing a toy).

Language – (a) what the child says, sings, or chants to others, (b) what the child says, sings, or chants to self, and (c) what the child shows (by way of lips and body movements or a response elicited from the child’s language) while talking or using language.

Social assistance – (a) what the child does to seek help when he or she cannot start or complete the task, and (b) what the child does when giving help to another

child, Early Childhood Educator (ECE), parent helper, or visitor (i.e., share toy, give glue or material to the person).

Emotional – what the child does to express happiness, sadness, fear, or anxiety via words (i.e., I am happy, I did it) or physical behaviours (i.e., crying, smiling, laughing, reaching out to adult with hand).

Moral – whether the child: (a) exhibits behaviour that is helping, hurting, or disturbing the ECE, another child, parent helper, their own parent(s) (i.e., the individual asks the child to stop, tells the child his or her behaviour is helping or hurting or disturbing, or stops the main action to physically stop or redirect the child), (b) seeks confirmation or approval for his or her helping, hurting or disturbing behaviour from other children, ECE, parent helpers, their own parent(s), or visitors, (c) glances to see if anyone noticed the hurting or disturbing behaviour (i.e., looks at ECE, parent helper, his or her parent, visitors), and (d) is praised or admonished by others (i.e., shaking of their heads, saying no, wagging fingers to say no, words that suggest he or she is wrong).

This study also examined strategies of **self-regulation** within each of the six dimensions for the following two types: proactive/persistent and reluctant/resistant.

Proactive and persistent strategies – the terms proactive and persistent are used in this study as a combined category since both subsume positive and goal-oriented self-regulation. For example, seeking help (social assistance) from an ECE is a proactive example of a strategy that requires effortful control on the part of the child (Boyer, 2004, 2007). Similarly, task persistence involves trying to overcome a challenge towards a goal “in an appropriate and not overly forceful

manner” (Cole, Dennis, Smith-Simon, & Cohen, 2009, p. 330). Researchers have also considered task persistence as “a component of a larger system of self-regulated attention and behaviour that comprises executive function and effortful control” (Deater-Deckard, Petrill, & Thompson, 2007, p. 82) and as dimension of temperament (De Pauw, Mervielde, & Van Leeuwen, 2009). The following are examples of specific strategy definitions used in this study when identifying proactive and persistent behaviour:

Instrumental – was observed as involving physical engagement towards a goal, using an object or through positive actions, while trying to overcome a challenge (Grolnick, Bridges, & Connell, 1996; Zimmerman & Stansbury, 2003)

Energetic – physical activity level identified by lively actions (i.e., running) in a socially appropriate (i.e., through behaviours of peer affiliation) manner (Boyer, Blodgett, & Turk, 2007).

Reluctant and resistant strategies – the opposite of Cole, Dennis, Smith-Simon, and Cohen’s (2009) definition of task persistence, where regulatory strategies are ineffective or socially inappropriate through observable negative (i.e., lack of inhibitory control or distractability), forceful, or passive actions within the context of social expectations. Reluctance may be evident through delayed engagement and resistance through negative behaviours of non-compliance (Kochanska, Coy, & Murray, 2001). For example:

Aggression – involves negative physical actions towards another person or object which disrupts a child’s ability to comply or overcome a

challenge in an age-appropriate way. There are several types of aggression however the most relevant to this study is “reactive aggression” – a response to frustration that is typically used after alternative strategies have been tried (Wakschlag, Tolan, & Levanthal, 2010, p. 8). This definition of aggression has also been associated with the dysregulatory use of negative emotions such as anger (Denham, et al., 2002; Wakschlag et al., 2010).

Undercontrolled – or a lack of inhibition as observed through restlessness (i.e., difficulty sitting still) and difficulty maintaining a prolonged focus during an activity (De Pauw, Mervielde, & Van Leeuwen, 2009). If a child required constant interactions with an adult in order to modulate through an activity in a socially and developmentally appropriate manner, then those behaviours were identified by the researcher as undercontrolled.

Task orientation – “a child’s use of on-task, self-directed, and self-reliant behaviour in managing” the social and learning demands of the preschool environment appears to play a role in their school success (Downer, Booren, Lima, Luckner, & Pianta, 2010, p. 4). A child’s social interactions also vary within differing task orientations. For example:

Child-directed – a naturally occurring and challenging developmentally appropriate activity or task chosen by a child within the preschool setting (Elkind, 1987). For example, a typical young child has free choice opportunities during a preschool day where he or she may independently select a challenging activity, such as a puzzle.

Peer play – developmental challenges are a common occurrence within associative play interactions in the preschool setting (Fox, 2007). For example, a child may follow a peer and attempt to climb a challenging apparatus in the playground, an activity that he or she may not typically try when playing independently.

Adult-directed – a natural and common occurrence within the preschool setting in which an adult asks a child to comply with a request and carry out a developmentally appropriate challenge (Kochanska, Coy, & Murray, 2001). For example, a preschooler is expected to follow instructions and prepare for outdoor play through a cloakroom transition of changing clothes and/or footwear.

Delimitations of the Study

The boundaries of this study are set by the following:

1. This research study drew participants, living in a mid-sized city in the Canadian Pacific Northwest, from the larger study of self-regulation (Boyer, 2008b).
2. Seven preschool-aged girls who agreed to be videotaped for approximately 30 minutes were purposefully selected for this study.
3. Only preschool-aged girls who were encountering a challenging task (with whole sequence of initiating, modulating, and ceasing behaviours observed during the difficult activity) within the 30-minute videotaping period were considered for participation in this study.

Assumptions

The following assumptions prevailed throughout this research study:

1. Natural preschool experiences were captured on videotape in phase one of the larger study, yet it was not assumed that every detail of a child's complexity is recorded (Boyer, 2008b).
2. The parent participants were honest in their responses to relevant questions within the parent interviews and on demographic reports, with their answers being representative of their child's self-regulation.
3. Preschool-aged girls are developmentally working towards a sense of autonomy.
4. The preschool-aged girls were participating in a safe, caring, and accepting educational environment.

Summary

In this chapter the central topics of this study were briefly introduced and defined. The researcher was interested in exploring self-regulation through the challenges a child encounters in natural play experiences. The purpose of this research study was to understand, through observational data, how preschoolers self-regulate when naturally encountering a challenging task or activity. This study will help researchers inform practitioners and parents more effectively by advancing the understanding of the development of self-regulation throughout the preschool years. This chapter also presented key terms used throughout this thesis as well as any assumptions and delimitations. In the following chapter, literature pertaining to the development of self-regulation within the preschool years will be examined. Chapter three will outline this study's qualitative paradigm and case study approach.

Chapter 2: Review of the Literature

Overview

The purpose of this chapter is to review literature related to the self-regulation of preschool-aged children. To better understand the normal developmental trajectory of this young age group, this review begins with a general focus on preschool development. More specifically, gender differences in the development of self-regulation will be highlighted to address the developmental issues specific to preschool-aged girls. Relevant self-regulation research findings are then presented and organized according to Boyer's (2004, 2005a, 2007) six dimensions of self-regulation (physical, problem-solving, language, social assistance, emotional, and moral) in order to address the holistic intent of this study. This chapter closes with discussion of Boyer's (2009) phenomenological research theoretically grounded in Boyer's (2008b) larger multi-phase qualitative study of self-regulation.

Preschool Development

Understanding preschool development is vital to the well-being of children as it provides a foundation for effective parenting and enhanced family interactions. An understanding of development is also crucial for educators as they aim to construct appropriate and enriching classroom environments. When gaining an understanding of the preschool period, it is essential for all caregivers to appreciate that although "development shows an organization, pattern, and direction," each child's growth deserves to be considered holistically and in context (Elkind, 1994, p. 70). As a result, all

aspects of development (physical, problem-solving, language, social, emotional, and moral) are best understood deeply but not in isolation.

Table 1 presents a summary of the threads of child development, occurring during the age range (3 to 5 years old) of the preschool-aged participants of this study, arranged in the areas of physical, problem-solving, language, social, emotional, and moral dimensions. Following Table 1 is a closer look at the six aspects of development across the entire preschool period (2 to 6 years of age). Although these six areas of development are presented individually, all are considered to be reciprocally related and bi-directionally influential. The six dimensions are also influenced by environmental interactions. For example, changes in perspective-taking abilities have implications for how children interact with others, which in turn impacts physical development through game playing (Armstrong, 2003). In this example, the bi-directionality of developmental processes is evident when games, that involve motor activity as well as cognitive-perceptual activity, provide a child with group experiences, which then foster new understandings about problem-solving in their ever-changing physical, emotional, moral, social, and linguistically rich world.

Table 1

Developmental Trajectory of Children Aged Three to Five

	3	4	5
Physical	Makes self-regulatory attempts	Developing ability to persevere more on task	Perseverance continuing to develop when on task
	Rides tricycle	Alternates feet while climbing steps	Self-definition based on physical properties or skills
	Physical activity begins to increase	Handedness tends to be established	Moving towards gender constancy
	Use scissors and draws		Relies less on actions to communicate needs/feelings
			Increased ball skills
Problem-Solving	Increased ability to maintain attention	Increased capacity to use language in thought	Problem-solving continues to develop gradually; exhibiting more perseverance.
	Adults help children problem-solve by providing two choices	Less reliance on trial and error	Continued use of private speech during problem-solving
		Private speech first emerges during problem-solving	
Language	The meaning of speech becomes effective for action,	Self-instruction used as an impulse to initiate action	Self-instruction as meaning-controlled action
	3- and 4-word sentences with grammatical markers; answers “where” questions	Active vocabulary with grammatical markers added to sentences; beginning to ask many questions (“why?” and “who?”)	Improvement of inflections, past tense, plurals, passive sentences, and tag questions
		Can control volume of voice if reminded	Verbal aggression can increase as physical aggression decreases

Table 1 (Continued from previous page)

Developmental Trajectory of Children Aged Three to Five

	3	4	5
Social	Emotions trigger social-focused coping actions for support Less involvement of other's instructions	When attachment is secure, behaviour becomes less overt Can rely on routines (i.e., social frames such as bedtime)	Decrease in dependence on caregiver support
Emotional	Language enables more thinking and talking about emotions Negative episodes (i.e., tantrums) begin to diminish Mimics emotions during play	Beginning mastery of labelling emotions and making choices Able to increasingly apply distraction strategies and vary them context-specifically	Introduced to triggered feelings, such as hurt, introduced to subtleties of basic emotions (i.e., scared, excited) Various fears or phobias may arise
Moral	Beginning to understand what they should do Introduced to concern for others when supported from an adult model	Increased ability to understand what they should do, and what is wrong, in different contexts with the help of other caregivers	Developing the ability to differentiate between right and wrong

Note. Bee, 1994; Elkind, 1994 and Woolfolk et al., 2009 were used to create Table 1.

During the preschool period of development, children are physically growing at a slower pace than encountered during infancy (Elkind, 1994). However, their activity level increases, due to rapid metabolism and heart rate, and consequently preschoolers

require physical space, time, and developmentally appropriate activities that can “channel their physical energy and capture their attention” (Elkind, 1994, p. 35). Physically, preschool children are also moving from dependence on adults for regulating actions towards a more independent approach to activities. For example, at three a typical child can help dress and undress her/him self and at five, can tie shoes with adult coaching.

Early problem-solving behaviours rely heavily on an adult who can provide two naturally arising choices in a situation. During problem-solving activities, a typical child at three or four years of age is beginning to use private speech. By the time a typical child reaches six years of age, their ability to use language in thought has moved them beyond trial-and-error or socially dependent attempts (typically seen at two and three years of age) into more strategic ways of solving problems (Elkind, 1994). For example, by age six, children are more likely to attempt and complete a task in small units (or chunks) or use different and imaginative strategies such as using tools in a different way. Although the preschool child’s need for social assistance has the potential to move from heavy reliance on adult support and instruction at age two and three towards more autonomous problem-solving instances by age six, they generally will still seek comfort when experiencing novel or emotionally exhausting experiences throughout the preschool years.

Language development during the preschool years is rapid and complex, with vocabulary increasing at a remarkable rate (Bee, 1994). Language progresses from being used externally by an adult to regulate the child’s behaviour to being internalized. As a result, the typical child will not only initiate an impulse but, by six years of age, be more likely to understand and verbalize why they need to control their actions. For example,

private speech, such as whispers and inaudible mutterings, is often used by a preschool child to guide his or her actions or to comment on what is happening in fantasy play (Azmitia, 1992). When observing the preschool years, the use of private speech can be seen earlier, at age four, as a problem-solving strategy that peaks between five and six, and becoming internalized for self-instruction during the middle elementary years (Azmitia, 1992). Private speech can come about in later years, even in adulthood, when faced with difficult tasks (Bee, 1994). Likewise, temporary regression (i.e., baby talk) can occur for a preschooler when a change occurs within the family context that takes away attention (i.e., new baby).

The developmental gains in language ability during the preschool years allow for easier communication, which in turn creates added opportunities for social skill development. As previously mentioned, heavy reliance on parents in social and problem-solving situations become less frequent as the child advances through the preschool years (Bee, 1994). The influence of peers on a child's social development however, increases as interactions become more frequent. As opposed to using simple physical actions, preschoolers are learning to express feelings with words, thereby allowing for more successful interactions. During play activities, such as constructive or sociodramatic play, social development frequently occurs through cooperative interactions where preschool children are "[l]earning to take the other person's point of view, to attend to and follow instructions, to share and to take turns, and to start a task and bring it to completion" (Elkind, 1994, p. 41).

Early emotional development is generally characterized by a transition from expressing basic emotions at age two towards an understanding of the subtleties of these

emotions. This transition involves increasing language competence, which enables preschool children to formulate “expression signs as verbal appeals” (Holodynski & Friedlmeier, 2006, p. 152). This developmental progression typically involves the ability to talk about emotions at three, modify emotional expressions according to context at four, and by five, preschoolers are being introduced to the subtleties of basic emotions. By the time children reach six years of age, they have increased their ability to verbalize feelings (as opposed to solely acting on them physically) and have reduced their dependence on caregivers for the regulation of actions and emotions in varied contexts (Holodynski & Friedlmeier, 2006).

Early moral development also emerges when “young children’s moral behaviour is first controlled by others through direct instruction, supervision, rewards, punishments, and correction” before these external moral rules and principles become internalized (Woolfolk, Winne, Perry, & Shapka, 2009, p. 97). According to Elkind (1994), morality in early childhood is derived from the child’s experiences with adults’ authority over setting and enforcing rules. This early childhood morality of “unilateral authority” is evident until about age six, when children typically judge “an action’s ‘badness’ or ‘goodness’ on the basis of whether it was objectively rewarded or punished” (Elkind, 1994, p. 149). Similarly, pre-conventional morality in early childhood has been described by theorists (e.g., Lawrence Kohlberg) as showing evidence (i.e., focus on obedience and punishment) of the first level of moral development (Bee, 1994). As their experiences expand to several different contexts, preschoolers continue to learn right from wrong from the guidance provided by adults such as caregivers and preschool educators.

The development of empathy also depends on a child's relationship with his or her caregiver. Eisenberg, Spinrad, and Sadovsky (2006) reveal connections between a child's secure attachment to a warm and supportive parent and displays of empathetic and prosocial concerns. Cognitive development also affects the preschool child's moral behaviour while he or she learns how to differentiate self from others. Beginning around the ages of two or three, perspective-taking ability emerges, which assists a preschooler's transition from egocentric empathy to empathy for another's feelings (Bee, 1994).

Development of Preschool Girls

“Gender is so salient to young children, as a way of ordering the world, that establishing oneself as a ‘proper’ boy or girl in the new setting [of preschool] is of paramount importance” (Paechter, 2007, p. 73). During the preschool years, children are developing their understanding of gender; beginning with an awareness of differences as young as two years and being able to recognize gender roles by the age of four (Woolfolk, Winne, Perry, & Shapka, 2009). Given preschoolers “uncertainty about gender constancy” they tend to construct strong barriers between ‘appropriate’ girl and boy activities (Paechter, 2007, p. 75). These boundaries are also reinforced by the observed preference of preschool children to play in same-sex groups (Paechter, 2007).

Even though identifying boy-girl differences is a way for the preschool child to organize and make sense of their world, researchers recognize that these differences are “not absolute and that there is much overlapping between the sexes” (Elkind, 1994, p. 37). In addition to contributing in-depth knowledge to the understanding of one gender group's developmental process during the preschool period, studies which recognize overlapping qualities between genders can further aid in the understanding and

improvement of learning capabilities for all children. As a result, the researcher presents the following discussion on preschool girls' development within all six aspects (physical, problem-solving, language, social, emotional, moral), drawing specific attention to gender differences and similarities.

Throughout the preschool years and then later in adulthood, females tend to be smaller in stature and lighter than males (Elkind, 1994). Physically, girls tend to be more advanced in fine and gross motor skills that require precision; lesser so with physical skills that require power and force such as running and jumping (Berk, 1992). Overall, researchers (e.g., Johnson & Roopnarine, 1983) have revealed consistent findings that boys tend to be more physically active and assertive in their play than girls. Specifically, Paechter (2007) suggests that although there are biological differences between girls and boys, parental expectation may also contribute to differences in motor skills and the ability to attempt or overcome physically challenging activities. One study by Mondschien, Adolph, and Tamis-LeMonda (2000) found that gender differences in motor performance are only reported after the infancy period and may be the result of parental gender bias. For example, when asked to predict how their 11 month old infant would do in attempting and succeeding crawling down various steep slopes, mothers tended to provide overestimations of motor success for boys and underestimations for girls - despite there being no actual difference in performance levels (Mondschien et al., 2000). As a result, Mondschien et al. suggest that boys excel in physical challenges in part due to girls being held back or prevented from achieving success in challenging motor actions.

In the area of problem-solving, Nolen-Joeksema and Corte (2004) suggest that parents may be less likely to “encourage mastery-oriented problem-solving” when girls are distressed than when boys display negative emotions (p. 414). As a result, boys may be more likely to develop “active strategies [which] may involve using positive distractions or constructive problem solving” (Nolen-Joeksema & Corte, 2004, p. 415). It is suggested that by encouraging girls to display emotions when distressed, parents may be preventing a healthy collection of active problem solving strategies (Nolen-Joeksema & Corte, 2004). However, when social problems are encountered, girls were found to be “more competent overall, and perhaps more intuitive, in determining the intentions of others and in generating effective solutions” (Walker, 2005, p. 299). For example, Walker (2005) found that girls scored higher than boys in understanding that others can pretend and have intentions different from their own. Girls’ higher scores in social problem-solving, however, may have been a reflection of girls’ known greater facility with tasks related to oral language ability (Elkind, 1994; Walker, 2005).

Language development during the preschool period contain significant milestones and, according to Elkind (1994), “girls are initially superior to boys...in vocabulary size, reading comprehension, and verbal creativity” (p. 36). Nevertheless, all preschool children typically present a developmental pattern of language development. For example, there is a typical developmental trajectory of how children describe themselves. Between the ages of two and three, children begin to identify self using ‘me’ instead of their name, are able to combine nouns and verbs, and enjoy hearing the same story repeatedly (Woolfolk, et al., 2009). A young child’s ability to describe him/herself improves with vocabulary size. For example, a vocabulary of about 1,000 words at three

or four years increases to 1,500 by five years, with a vocabulary of about 10,000 by the time a typical child reaches six (Woolfolk et al., 2009). By the age of six, preschoolers have achieved the ability to use their vocabulary to define objects (i.e., by their use) and describe themselves and their interests (Woolfolk et al., 2009). For example, around the end of the preschool period, a child typically can use language to describe his or her “own competence on a whole range of specific tasks, such as solving puzzles, counting...or being able to make friends” (Bee, 1994, p. 291).

Socially, play preferences are apparent during the preschool years. Friendships and toy preferences appear to be aligned with that of their same-sex peers by the age of two or three. However, same-sex play is first initiated more by girls than boys, with the reverse occurring and peaking around age five (Grace, David, & Ryan, 2008). According to Bee (1994), a preschool child is learning what toys and activities children of his or her own gender prefer, in addition to how they typically play and talk. Early gender differentiation has been revealed for not only play (e.g., Fagot & Leinbach, 1983) and toy preference (e.g., Eisenberg, 1983) but also for genre preference of books (e.g., Collins-Standley & Gan, 1996). Generally, experience and the literature have revealed that boys prefer aggressive play activities and girls favour more nurturing play. Yet, Collins-Standley and Gan (1996) found girls to be less constrained than boys by typical gender play choices.

Emotions appear to be socialized during the preschool years according to gender stereotypes and norms although the adage ‘boys don’t cry’ is not as prevalent in our western society as it once was (Niedenthal, Krauth-Gruber, & Ric, 2006). Generally, girls are taught to be “nice, friendly, and smile” and to nurture relationships in an emotionally

expressive, non-aggressive manner (Niedenthal et al., 2006, p. 299). As previously mentioned, girls are encouraged to share their emotions during distress. However, girls are generally encouraged to express emotions such as sadness, fear, or pain and inhibit emotions of aggression and anger (Niedenthal et al., 2006). Researchers such as Boyer (2009b) have found the following:

When girls are cast as ‘good’ and boys as ‘bad,’ there is social objectification of feminine conduct and masculine conduct.

These gender-linked contrasts (e.g., judgmental and argumentative vs. caring) exist and promote static dualisms and beliefs in our society that girls are cooperative and will not engage in physical aggression or be victims of girl-to-girl violence while boys are argumentative, competitive, and aggressive (p. 20).

Although Boyer’s (2009b) study involved pre-adolescent girls, the same beliefs may be established during the preschool years.

In light of the aggressive play preferences found for boys, it is not surprising that Walker (2005) found girls to exhibit less physical aggression at age two and three than boys of the same age. Furthermore, teachers rated boys as more likely than girls to engage in aggressive or disruptive behaviour but not less likely to engage in prosocial behaviour (Walker, 2005). Girls tend to respond to educational struggles through internalization, and therefore receive less social assistance than their male peers (Berk, 1992). According to Berk (1992), girls receive less assistance because boys tend to translate their regulatory struggles into more externalized behaviours (i.e., impulsive, aggressive physical actions). For example, Kalpidou, Power, Cherry, and Gottfried’s

(2004) study revealed boys were significantly more likely to use aggressive coping strategies than girls. Therefore, it follows that girls would appear more compliant than boys (Kochanska, Coy, & Murray, 2001).

Although boys have been found to react more externally and aggressively than girls when it comes to educational struggles, studies of the regulatory use of emotions have been carried out for both girls and boys. For example, Hill, Degnan, Calkins, and Keane's (2006) findings suggest that at-risk children of both genders had high levels of externalizing problem behaviour, as measured from two to five years old, but different factors contributed to profile membership for boys than for girls. Hill et al. discovered that:

better emotion regulation ability at age two differentiated girls who started out at borderline-clinical levels of externalizing behaviour and then showed lower levels of externalizing behaviour at four and five from girls who displayed chronic and clinical levels of behaviour problems across the preschool period (p. 924-925)

- yet did not distinguish between the lower level profiles. Therefore, identification of at-risk girls at age two should result in an intervention focused on increasing the healthy use of emotions in self-regulation.

Morality research indicates that children become aware of gender stereotypes during the preschool years (i.e. toy preference), and that it increases with age (Killen, Margie, & Sinno, 2006). For example, young children tend to view playing with atypical gender toys as wrong. However, preschoolers will focus more on the unfairness of a situation (i.e., it is not fair that girls excluded a boy from doll play) than on the atypical

gender-based nature of the play desired by a child (Thompson, Meyer, & McGinley, 2006). Both preschool-aged girls and boys are generally concerned about fairness (i.e. sharing a toy) and are inclined to apply moral judgements of right and wrong to events involving physical harm (Smetana, 2006; Verbeek, 2006). Research has also found that sociable preschool-aged children exhibited more helping and empathetic behaviours as opposed to their angry and aggressive peers (Hastings, Zahn-Waxler, & McShane, 2006). However, despite the common belief that girls are more empathetic than boys, Eisenberg, Spinrad, and Sadovsky (2006) found mixed empirical evidence.

Overall, it appears that girls tend to exhibit a greater self-regulatory capacity at ages 4 and 5 than boys (Raffaelli, Crockett, & Shen, 2005). Other research findings have indicated that boys who use more regulatory strategies exhibited fewer behavioural problems over time, however it is unclear if these results can generalize to girls. Also since some studies (e.g., Stansbury & Sigman, 2000) revealed different coping strategies linked to different situations, there is a need to explore different naturalistic challenges that occur in a preschool setting.

Self-Regulation Research with Young Children

In order to examine self-regulation as a total and complex construct, relevant research with young children was reviewed according to Boyer's (2004, 2005a, 2007) six dimensions, keeping in mind that, according to Raffaelli et al. (2005) most self-regulation studies tend to examine one dimension in isolation from the others. Like Raffaelli et al., this review found little research on the interrelations of different aspects of self-regulation, with the exception of emotion and behaviour (e.g., Kalpidou, Power, Cherry, & Gottfried, 2004). The three components of self-regulation most commonly examined

(behaviour, executive function, self-restraint) during the preschool years have also been rarely investigated interrelationally (Feldman, 2009). However, this holistic examination of self-regulation requires a consideration of self-regulatory research that has been identified within each of Boyer's six dimensions. With specific attention to gender differences and task challenges, this section reveals examples of self-regulatory research within each dimension of self-regulation (physical, problem-solving, language, social, emotional, and moral).

Physical regulation. Physical regulation at the preschool age is viewed as involving the mastery of basic skills such as paying attention, following instructions, and inhibiting inappropriate actions (McClelland, et al., 2007). According to Boyer (2005a, 2007) physical regulation is evident through what the child does with his or her whole body in terms of moving, standing still, or resting, which in turn, affects his or her ability to initiate, modulate, and cease an activity according to situational demands in educational settings, in an effort to generate socially appropriate behaviours, without adult monitors. Researchers have taken several approaches to studying the physical dimension of regulation. For example, emerging research in neuroscience and brain developmental science has focused on biological indications that self-regulation is influenced by the functioning of the prefrontal cortex (Beaver, Wright, & Delisi, 2007). It has been suggested that the frontal lobe areas of the brain "support not only cognitive problem-solving activities and motivation and goal directedness, but also complex social cognitions and behaviours" (Bronson, 2000, p. 145). A review of related neuroscientific investigations is beyond the scope of this study; especially since Jones, Rothbart and Posner (2003) found that "functional imaging studies have not been performed for

[young] children” (p. 503). Therefore, research studies specifically focused on the behavioural aspect of physical regulation were reviewed to provide the foundation for understanding the physical dimension of self-regulation expressed by preschoolers.

Blair (2003) investigated the physiological aspect of regulation by examining the efficacy of scales used to identify the Behavioural Activation System (BAS) and the Behavioural Inhibition System (BIS) using a low-socioeconomic (SES) sample of 23 girls and 19 boys (mean age of 4 years, 10 months). Blair also examined the relationships among BIS/BAS sensitivity and many physical and behavioural aspects of preschoolers’ self-regulatory capabilities and competence. Since BIS/BAS sensitivity is thought to have implications for a child’s regulatory adaptations to the new challenges found in the preschool setting, Blair sought to understand the relationships among a preschooler’s characteristics that promote success.

By using a reliable and valid norm-referenced language measure (Peabody Picture Vocabulary Test-3), two moderately correlated measures of executive function (peg tapping task and Stroop-like day/night task), and electrocardiogram (ECG) recording, Blair (2003) collected data from the child participants. Mothers reported on child emotionality through interviews and teachers reported on social – emotional competence and on-task behaviour. Since no current adaptation of the adult BIS/BAS scales was available for use with children, Blair’s study examined these scales as adapted for parent report and related them to teacher reported behaviour of preschool children.

Blair (2003) discovered “evidence in support of a potentially unique role of BIS/BAS sensitivity for understanding regulatory behaviour in the context of the preschool classroom” (p. 307). For example, children with high levels of parent-reported

sensitivity to aversive stimulation were reported by teachers to have higher levels of socially competent behaviour and low levels of on-task behaviour (with girls exhibiting more on-task behaviour than boys). Blair believes that sensitive children tend to react to situations with avoidant or quiet behaviours, and are thereby perceived as less confrontational and more socially competent. For example, if overlooked after waiting patiently for his or her turn, a child may quietly retreat to another area of the classroom. On the other hand, children with lower sensitivity to environmental threats may be more likely to become engaged and spend more time on-task, yet be perceived as less compliant and socially competent with reluctant behaviours to disengage. For example, after several warnings for clean-up time, and despite encouragement from fellow classmates, a preschool child with lower sensitivity would continue to work intently on a puzzle.

In conclusion, Blair (2003) recommends including the physical aspect when examining a preschool child's ability to self-regulate and adjust to the challenges presented in the school setting. Parents, educators, and researchers can all benefit from considering assessments of physical regulation, such as the BIS scale, when investigating regulatory behaviour in the preschool classroom. Being able to identify regulatory challenges related to physiology early on can help caregivers in the areas of prevention as well as the promotion of early self-regulatory development. Nonetheless, a valid and reliable holistic tool (as opposed to a tool just assessing physical regulation) will serve as the most beneficial way to assess the development of self-regulation in the preschool years (Boyer, 2009a).

Investigations of physical regulation in early childhood have also used direct observational measures such as ‘Simon Says’ and, in the case of McClelland et al.’s (2007) study, the Head-to-Toes Task. Since low levels of physical regulation increase the risk of affecting a child’s peer relationships and task achievements, McClelland et al. examined whether physical regulation was significantly related to level and growth of emergent skills over the year prior to kindergarten. With a sample of 310 preschool children (approximately equal number of girls and boys) from two American sites (one ethnically diverse, upper-middle SES urban site and one mixed SES rural site), this study sought to discover: (a) the variability and growth in physical regulation over the pre-kindergarten year and, (b) whether physical regulation would relate to three valid and reliable measures of academic achievement (emergent literacy, vocabulary, and math).

Of specific interest was McClelland et al.’s (2007) focus on the variability and growth in physical regulation in children of late preschool age. Overall, children who exhibited stronger growth in physical regulation demonstrated stronger gains in emergent literacy, vocabulary, and mathematical skills after controlling for all other variables. As a result, McClelland et al. suggest that as preschool children develop their inhibitory control and learn to focus their attention, they become better able to regulate their behaviour, which can include improvement in areas of not only attention, but also with memory and task completion. For example, the ability to pay attention in preschool is considered predictive of later achievements in math and reading (McClelland et al., 2007).

Of great concern was the finding that preschoolers who experienced difficulty paying attention, using their working memory, and inhibitory control when trying to

complete goal-directed tasks were more likely to later score low on standardized achievement measures (McClelland et al., 2007). When coming across physical challenges, children use attention to focus on the task, working memory to follow directions and plan solutions, while inhibitory control helps them cease inaccurate plans and allow more appropriate actions (McClelland et al., 2007). McClelland's (2007) study highlights the importance of considering the behavioural aspect of self-regulation as an additional component of school readiness, and reveals the need for further research on classroom-based interventions. Although more research is needed on the effectiveness of interventions, children with inhibitory challenges can be taught regulatory strategies which can then enhance early academic competencies (McClelland et al., 2007).

Inhibitory control was also of interest to Jones, Rothbart, and Posner's (2003) so they used a 'Simple Simon' task to examine three aspects of self-regulation (ability to inhibit action in face of conflict, error detection/correction, and use of verbal and physical control strategies). As previously mentioned, the regulatory use of language has been investigated in challenging situations. Likewise, physical regulatory strategies have been observed when preschool children are faced with conflict. Jones et al. suggest that these strategies are related to the development of a child's ability to resolve conflicts. Therefore, examinations of strategies used in conflict resolutions may help researchers reveal "the processes underlying the development of inhibitory control" (Jones et al., 2003, p. 499).

Jones et al. (2003) chose a sample of 33 children (16 girls and 17 boys) between the ages of three and four, given that prior studies found strong inhibitory control within that specific age period. The measures used were an adapted version of a "Simple Simon"

task performed by the child participants and a Children's Behaviour Questionnaire completed by the caregivers. Both measures were cited as previously used, however reliability was not indicated. During the Simple Simon' task, where two toy animals were used to provide instructions, children were asked to follow the instructions of one toy animal (activation trial) and ignore the instructions given by the other (inhibition trial). Correct and incorrect responses, reaction times (RTs), and control strategies (physical and verbal regulatory behaviours) were recorded and coded. Using the Children's Behaviour Questionnaires completed by the caregivers, Jones et al. examined the participants' attention focusing/shifting, fear, anger/frustration, and inhibitory control.

Jones et al. (2003) tested three age groups (36-38 months, 39-41 months, and 46-48 months), and all children performed with 90 to 94% accuracy on the activation trials. Inhibitory control, however, increased with age (with significant differences among the three groups) and was highest for the oldest age group (46-48 months) tested. This progressive finding however, is limited by the narrow age range (36-48 months) and the omission of children between the ages of 42 and 45 months. Yet Jones et al. found that although RTs generally decrease with age, both correct and incorrect RTs increased with age in this study. Researchers specifically found that "even on activation trials, the older children are more cautious, and [did] not show the usual pattern of RT decrease with age" (Jones et al., 2003, p. 501). Furthermore, on the few trials where the oldest children committed errors, Jones et al. discovered that the RTs on the following trial were long. Therefore, Jones et al. (2003) suggest that "the ability to inhibit in the presence of conflict, slowing to error trials, and error detection tend to arise together" (p. 502).

Of particular interest was the correction strategies used by participants in Jones et al.'s (2003) study. Children were observed as using more physical than verbal regulatory strategies. Specific physical strategies used by the participants included "sitting on their hands, holding down one hand with the other, or reaching in another direction" when trying to inhibit an incorrect response (Jones et al., 2003, p. 503). Jones et al. further suggest that the use of physical strategies, when confronted with a conflict, increase with age and then decrease by the oldest age studied (48 months). Overall, a rapid increase in inhibitory control and error detection was found between 38 and 41 months which, according to Jones et al., can provide some general support for the self-regulatory shifts occurring through the preschool years.

Regulatory problem solving. Most self-regulation investigations involve problem-solving scenarios as an attempt to elicit the use of different types of strategies (i.e., physical or emotional) among preschool children. Boyer (2005a, 2005b) identifies regulatory problem-solving through: (a) what the child does when handling a problem that she or he has set out for herself/himself, (b) what the child does when asked to do a task without being told how to do it, (c) what the child says (i.e., what can I do, I need help), (d) what the child does physically before coming up with a solution (i.e., stand still and watch another child, move in one place, go to another location and come back with a solution), and (e) what the child does when lacking resources (i.e., sharing a toy). As previously discussed, children develop within a context of several reciprocal environmental influences, with early family interactions profoundly affecting the development of a preschooler's regulatory competence (Karreman, van Tuijl, van Aken, & Dekovic, 2006; Kochanska, Coy, & Murray, 2001; Neitzel & Stright, 2003).

Researchers suggest that when challenges occur, a typical child develops necessary regulatory skills through “quality scaffolding interactions” with a responsive caregiver, which later become internalized when problem-solving can occur independently (Neitzel & Stright, 2003, p. 147).

Family, according to Neitzel and Stright (2003), is the “fundamental foundation for children’s development of self-regulation” (p. 147). Therefore, research involving family members can help inform educators and assist with the design of parent education or intervention programs for those children who may leave the preschool period unable to self-regulate and, subsequently, struggle to perform well in the early elementary school environment. Although the literature reveals the family as fundamental, researchers have come upon participation challenges and therefore rarely include the family constellation of both mothers and fathers. Neitzel and Stright’s investigation, like many others, involved mother and child dyads, whereas, Boyer’s (2008b) study was able to gain parental perspectives from both mothers and fathers.

In search of the foundation for academic self-regulatory competence, Neitzel and Stright (2003), investigated mother’s scaffolding of children’s problem solving. Neitzel and Stright hypothesized that parents’ (a) metacognitive content and instructional approach would provide the child with information needed for self-regulation (through monitoring and help seeking), (b) emotional support would affect the child’s outlook on learning, influencing cognitive management, effort and task persistence, as well as behaviour control in the academic environment, and (c) level of control in gaining the child’s participation in the problem-solving process would promote the “child’s understanding of self as the responsible agent” and support autonomy (p. 148). Given that

these dimensions of scaffolding are inter-connected, Neitzel and Stright (2003) chose to examine all in a “hierarchical model of the effects of scaffolding on children’s self-regulation” (p. 149).

Neitzel and Stright’s (2003) participants included 68 mostly Caucasian family dyads of preschool children (32 boys and 36 girls), ranging in age from 4.75 to 6.75 (Mean = 5.6), and their mothers. Procedures involved home visits during the summer prior to beginning kindergarten, and subsequent observations in the child participants’ kindergarten classrooms on at least 4 different occasions (twice during the fall and twice in the spring). Mothers’ scaffolding behaviours were assessed during the pre-kindergarten home visit through observations of dyad interactions aimed at completing four difficult problem-solving tasks. These behaviours were assessed by Neitzel and Stright using an highly reliable (inter-rater agreement of .81 to .90) observational coding system designed to rate aspects of mothers’ scaffolding (cognitive support, emotional support, transfer of responsibility) on a 5-point scale ranging from low (1) to high (5). Subsequent observations of the child participants within their kindergarten classrooms provided assessments, using a highly reliable (inter-rater agreement of .88 to .90) observational coding system, of five areas of self-regulation (metacognitive talk, task persistence, behavioural self-control, monitoring progress, and seeking assistance).

Final analyses on the collected data were performed after preliminary analyses revealed no significant gender differences between the scaffolding behaviours of mothers (of boys or girls) or between the five academic self-regulation behaviours. Using five hierarchical multiple regression equations, the relative roles of all aspects of mothers’ scaffolding for predicting each of the child’s self-regulatory behaviours revealed

significant relationships. For example, the mother's metacognitive instructional content contributed significantly to predicting a child's task persistence. In addition to task persistence, the results related to help seeking were particularly interesting. Neitzel and Stright (2003) found that children who had received 'low-quality instruction' from their mothers during the difficult problem solving tasks were less likely to seek help than those provided with 'high-quality instruction' involving steps, reviews, and emotional support. As illustrated by Neitzel and Stright's study, examinations of the developmental progress of self-regulation can benefit greatly with the inclusion of family and future investigations into which aspects which may be transferable to a teacher and peers when a child is problem solving at school will be fruitful.

Sperling, Walls, and Hill (2000) investigated aspects of self regulation and connections between self-regulation and how children use thought and talk to themselves during age-appropriate problem-solving tasks, using a convenience (high SES) sample of 39 preschool children (17 boys and 22 girls), ranging in age from 3 to 5 ½ years old. Although Sperling et al. employed two categories of tasks as dependent variables (perspective taking and problem solving) in order to gain a deeper understanding of the regulatory nature of problem-solving in young children, the present review will focus on the three problem solving tasks (sorting, dominos, and matching puzzle) and the related hypotheses to the regulatory abilities of preschool children.

Sperling et al. (2000) hypothesized that: (a) strong relationships would emerge between performance on the intention and false belief tasks, (b) minimal gender influence and appropriate age-related growth would be demonstrated on the problem-solving tasks, (c) children would be slightly overconfident, but generally accurate in their ratings of

regulatory thought and talk and, (d) children who used effective problem-solving strategies would be more accurate in rating their performance (regardless of gender), and therefore, have a higher skill level of self-regulation. With gender and age as independent variables, two experimenters administered the tasks in order to measure performance, elicit descriptions of how preschoolers use language to predict and evaluate their performance, as well as identify strategies used. Sperling et al. revealed that preschoolers were relatively effective at being aware of monitoring their own learning through problem-solving tasks. This awareness was evident through the preschoolers' measured ability to predict their performance, solve a problem, and then rate their performance. For example, for the sorting task, children were asked to predict their performance by indicating whether they would be able to group the items by shape. Once they attempted the sorting task and their performance was recorded, they were asked to rate how well they had grouped the items. Developmentally, the researchers confirmed the age appropriate progress expected when preschoolers are prompted to apply regulatory strategies (Sperling et al., 2000).

Through their study, Sperling et al. (2000) were also able to test new tasks for assessing problem-solving ability and, on one task, unexpectedly found a gender difference in regulatory behaviour. As a result, the researchers suggest that future structured studies utilize tools (i.e., puzzles) that have gender-neutral illustrations. However, by using multiple measures, the researchers were able to address strategy use while children were engaged in problem solving. Significant correlations were revealed between strategy use and ability to differentiate between the beliefs of self and other, and between this self-other differentiation and regulation. Given that a correlation was less

robust between regulation and strategy use, Sperling et al. suggest the use of other regulation measures, such as observational data, in order to provide additional insight into the problem-solving regulation of preschoolers.

Language use. “Although speech is necessary for self-regulation, it is not sufficient” (Azmitia, 1992, p. 103). The self-regulatory role of language, and specifically that of private speech, has been found to occur universally in the preschool years (Diaz & Berk, 1992; Elkind, 1994). Boyer (2005a, 2005b) examines the self-regulatory nature of language by: (a) what the child says, sings, or chants to others, (b) what the child says, sings, or chants to self, and (c) what the child shows (by way of lips and body movements or a response elicited from the child’s language) while talking or using language. For example, the following use of speech may be overheard in a preschool classroom: “Where’s another blue piece? Found one! Hmmm, it doesn’t fit...” says Amy to herself as she works on a challenging puzzle.

Most private speech research begins with a Vygotskyian perspective of viewing self-regulation as emerging from “other-regulation,” transforming into external self speech and, lastly, becoming internal thought (Azmitia, 1992, p. 101). Azmitia (1992) elaborated on early findings by “observing expert and novice children’s use of private speech during moderately difficult to very difficult tasks” in order to further “explore the relation between expertise, task difficulty, and private speech” (p. 103). By examining dialogues during peer interaction, Azmitia expected to address the “social origins of self-regulation,” an approach that was also used by Neitzel and Stright (2003) in their exploration of the influences parent-child interactions have on later problem-solving efforts.

Azmitia (1992) designed two sequential studies aimed at exploring the importance of peer interactions on self-regulatory speech. Although Azmitia did not expect to find peers providing scaffolding, it was hypothesized that they “influence private speech by modeling self-regulatory behaviours,” and therefore, “children are forced to regulate their own problem-solving behaviour” (p. 105). The first study examined five-year olds’ private speech during problem solving, and the second study extended the first study’s results by exploring the influence of age (at 6 and 8 years) and task difficulty on children’s private speech. In both studies, task difficulty was assessed through four problem-solving sessions in which children copied difficult Lego models individually or in collaboration with a peer. Of specific interest to the researcher was the first study, with 5-year old children, which involved Lego models which were challenging, yet age appropriate.

Azmitia (1992) administered a pretest designed to assess the ability of a 5 year old to copy a Lego model. From this pretest, those with a copying accuracy of at least 80% were classified as an expert, and those with a copying accuracy of less than or equal to 30% were classified as a novice. From the resulting 40 experts and 40 novices, 10 experts and 10 novices were randomly selected and assigned to work on their own. The remaining participants formed the other three test groups (expert-expert, novice-novice, novice-expert) which consisted of 10 same gender pairs per group. These test groups were designed to assess the influence of peer interactions, in same-ability and mixed-ability pairs, on the regulatory use of private speech. Two sessions were performed in assigned groups, with an individual posttest completing the study. The private speech that emerged was classified by Azmitia as ‘task-relevant’ (descriptive speech related to steps,

plans and evaluations), and ‘task-irrelevant’ verbalizations (such as singing and action noises). Although some verbalizations were classified as irrelevant because of off-task behaviours lacking in self-instruction, they could still be considered regulatory in terms of stress relief. Measured within these two categories (task-relevant and task-irrelevant) were utterances, such as “audible” or “inaudible” whispers and “complete” or “abbreviated” phrase fragments, which served as signs of internalization (Azmitia, 1992, p. 106).

Azmitia’s (1992) analyses revealed consistent use of abbreviated and audible private speech and an increase in self-regulatory speech for children working with a partner, regardless of ability, from when working individually. However, ability was related to accuracy. As expected, experts used more task relevant private speech with more accurate building results than novices. These results provide evidence for the suggestion that cognitive abilities and a minimum level of task understanding is required for effective regulatory speech (Azmitia, 1992). Also, Azmitia found that experts who worked alone as opposed to experts working in pairs, showed greater internalization of private speech. Experts appeared to have the immediate ability to talk themselves through the difficult task, which consequently led to an earlier internalization of task-relevant speech. The analyses also revealed a lack of peer regulatory influence, since expert strategies used to regulate novice partners during the pair sessions did not emerge when the novices individually completed the posttest. Although task-irrelevant speech was rare, it was used more frequently, and not surprisingly, by novices (Azmitia, 1992).

In order to investigate whether the patterns found in the first study were specific to children aged five, Azmitia (1992) explored six and eight year old private speech use

during both individual and collaborative problem solving scenarios. Although patterns in the second study were similar to those in the first study, one notable difference in the second study, however, was the lack of change in private speech use from pre- to post-test sessions for those assigned to the collaborative pairings. One possible developmental explanation for this difference is that older children may choose to divide the task into two parts, thereby allowing more parallel building with more opportunities to use private speech while problem solving (Azmitia, 1992). Although the results may be specific to a constructive-type task, Azmitia's two-study investigation addresses the importance of considering the developmental progression when examining the regulatory use of speech during problem solving.

Since private speech has been found to increase with task difficulty, Krafft and Berk (1998) also wondered if the regulatory use of speech varied according to displayed teacher involvement and across both open- and closed-ended tasks. Specifically, Krafft and Berk hypothesized that private speech would be more prevalent during open-ended activities because of the potential for "more varied and continuous challenge[s]" when children set their own goals and, consequently, alter task difficulty (p. 642). Open-ended tasks in the preschool environment generally include painting, make-believe and construction-oriented play, whereas closed-ended tasks typically have a single correct solution as evidenced by puzzle solving and picture matching (Krafft & Berk, 1998). Since no previous studies used naturalistic observations to address age differences in the self-regulatory use of language across the preschool years, Krafft and Berk employed a cross-sectional investigation in two different school settings and hypothesized that: (a) children in the traditional preschool program have greater availability of open-ended

tasks and fantasy play materials, and therefore, would exhibit a higher rate of private speech than children in the Montessori preschool setting, (b) in both settings, open-ended activities would elicit more private speech than close-ended tasks, (c) fantasy play, which plays a role in the development of self-regulation, would produce the high rates of private speech, (d) as external (teacher) regulation increases, private speech decreases and, (e) associative and cooperative engagement in play with others will be positively related to self-guided utterances.

A largely middle SES sample of 59 preschool children (ages three to five), attending two educational programs and comparably selected from six classrooms (three Montessori and three Traditional), were observed during indoor free choice periods with reliable (.86) observational categories (type of play, goal of activity, adult involvement, peer involvement, and private speech/social speech) recorded on a behavioural observation checklist at 30 second intervals. Results of this study revealed fantasy play as employing the most private speech. Since preliminary analyses found no gender differences, gender was omitted from the remaining analyses (MANOVAS, MANCOVAS with verbal ability as a covariate) of preschool-setting and age differences in contextual variables and then in private speech as well as correlations of contextual variables with total private speech and the top three private speech subtypes (fantasy play, self-guidance, and inaudible muttering).

As expected, the evidence was consistent with all five hypotheses. However, one unexpected result was that children in the traditional setting still displayed more self-guided private speech than children in the Montessori program even though the closed-ended activities of the Montessori classroom were thought to be “rich in opportunities for

self-regulatory language” (Krafft & Berk, 1998, p. 653). As a result of their study, Krafft and Berk (1998) encourage early childhood educators to foster self-regulatory development by promoting fantasy play and peer interaction regularly through open-ended activities.

Social assistance as a self-regulatory strategy. Just as private speech moves from ‘social interaction to self-regulation,’ a developing child requires social assistance to move from total dependence towards autonomy (Diaz & Berk, 1992). Boyer (2005a, 2005b) identifies social assistance as a self-regulatory strategy through: (a) what the child does to seek help when he or she cannot start or complete the task, and (b) what the child does when providing help to another child, ECE, parent helper, or visitor (i.e., share toy, give glue or material to the person). When a young child moves from toddlerhood into the preschool years, he or she encounters a broader world of varied activities, peers, and associated challenges, which act as a catalyst for the developmental tension between social dependence and a desire for autonomy. In order for a preschool child to journey towards social competence, parents and educators play an essential role in the developmental acquisition of self-regulatory skills (Boyer, 2008b).

Thus far, it is evident that adult guidance, assistance, and modelling are essential to the development of a child’s self-regulation, and subsequent adaptation to social situations outside the family. Compliance to parental requests, whether committed and eager or situational and insincere, is an example of early self-regulation “because it requires the capacity to initiate, cease, or modulate one’s behaviour in accord with parental standards” (Kochanska, Coy, & Murray, 2001, p. 1091). Since a gap in the research called for a longitudinal investigation of how compliance develops through the

preschool years, and since little is known about differences in children's behaviour when challenged with 'Do' and 'Don't' contexts, Kochanska, Coy, and Murray (2001) chose to study a large group of 108 typical children using assessments in various naturalistic contexts at 4 developmental intervals (14, 22, 33, and 45 months of age).

A reliable coding system of 30-second segments was used while observing and assessing mother-child dyads at each age interval within 'Do' and 'Don't' contexts set in laboratory sessions. Coding occurred for observations of children's committed and situational compliance, internalization (time delay), fearfulness (involving masks and converged shyness scores), effortful control, and cooperation (coded on a 4-point scale) with an adult other than the mother. Results were analyzed in several steps using MANOVA; initially evaluating gender effects and developmental changes. Of specific interest were the gender effects, with girls only being higher in committed compliance (in the 'Do' context) at 14 months, yet when in the 'Don't' context, girls were higher than boys in committed compliance and lower in situational compliance across ages.

With the goal of understanding how preschool children ages four and five years old learn to self-regulate, Boyer (2008b) employed a phenomenological research design and gained perspectives from the 'lived experience of parents and educators.' Twelve families (50% supported by one career with one stay-at home caregiver) and three educators, with an average of 2.7 years of preservice training and 10 years of preschool teaching experience, were randomly selected from the fore mentioned larger qualitative study involving 150 families with preschool-aged children and their 15 educators from seven Canadian preschools. Boyer used a seven step process to analyze the multiple sources of data which included 40-60 minute individual parent interviews (led, audio

taped, and transcribed by trained graduate research assistants), 3 focus groups involving parents, 1 focus group with educators (all led by Boyer), and documentation from the schools, field notes, and journals.

Boyer's (2008b) in-depth analysis of adult participants' perspectives revealed five progressive themes on the acquisition of self-regulatory skills. The findings indicated that preschool aged children require: (a) deeper adult involvement through communication, interpretation, and encouragement, (b) parents learning how to modulate their own self-regulatory skills, (c) reciprocal attunement, (d) parental understanding of increasing influences from their child's expanding experiential context and, (e) time to internalize adult rules so that compliance becomes self-generated without interfering with autonomy. Through constant awareness and availability, caregivers provide an important and essential role in the social assistance domain of a preschooler's development of self-regulatory skills.

The first theme (*Deepening adult involvement: communication, interpretation, encouragement*) Boyer (2008b) derived from the fifteen participants emphasized the importance of adult involvement in the development of self-regulatory skills. Participants highlighted supportive actions such as watching and learning from the child, improving communication, taking the child's perspective, reflecting on past experiences, and maintaining routines and boundaries as necessary for a child's acquisition or refinement of self-regulatory skills (Boyer, 2008b). The second theme (*Adults learning how to modulate their own self-regulatory skills*) revealed an awareness that adults are self-regulatory role models who have to "modify and control their [own] behaviour," recognize the context and provide patient support in each situation (Boyer, 2008b, p. 5).

The importance of viewing the adult and child as a self-regulatory team persisted and emerged as a third theme (*Adult and child reciprocal attunement*) among participants. Values expressed by participants emphasized the use of deliberate intention when prompting and responding to the child as well as having specific strategies available in their repertoire when difficulties arose.

The parental and educator perspectives in Boyer's (2008b) study also revealed the importance of varied environmental influences on self-regulation. Since the preschool period increases exposure to a world outside a child's immediate family, a fourth theme (*Burgeoning experiential contexts*) recognized the self-regulatory challenges that accompany relational experiences with varied groups and people (Boyer, 2008b). For example, participants recounted observations where "children began to question and test caregiver expectations in different environments" and test boundaries (Boyer, 2008b, p. 8). The last theme (*Internalizing adult roles*) to emerge from the study illustrates the overall self-regulatory developmental process preschool-aged children are experiencing, as they move from mostly external dependence towards "resolving the conflict between the wish to comply and the desire to be autonomous" (Boyer, 2008b, p. 9). Specifically, participants' insights revealed the adults' role to provide rationales for rules and the child's need to "retest boundaries" in different contexts (Boyer, 2008b, p. 8).

In a related study, Boyer, Blodgett, and Turk (2007) investigated how preschool-aged children learn to self-regulate as a means of supporting school readiness. Participants were drawn from the same large qualitative descriptive research study as the present study, which involved data collection from 150 families and 15 educators from 7 preschools, representing varied socioeconomic classes, racial, and bi-racial cultures

(Boyer et al., 2007). After gathering facts through naturalistic interviews and focus groups, Boyer et al. analyzed the data according to how participants defined self-regulation and how self-regulatory skills are learned. As a result, five descriptive markers were found and eight self-regulatory skills identified.

According to the participating parents and educators, self-regulation for preschool-aged children is defined as “controlling emotions and reactions to events” and “learning how to control themselves in different contexts and with different people” (Boyer, et al., 2007, p. 1). Specifically, parents and educators highlighted eight skills contributing to self-regulation as: physical energy, effortful control, stability and consistency, communication, patience, optimism, controlling reactions to events, and empathy. The acquisition of these self-regulatory skills, according to participants, are a result of a preschooler having a care-giving role model who provides guidance, experiences with natural consequences, opportunities to practice empathy, and direct teaching of conflict resolution as well as all eight skills (Boyer et al., 2007). Participants expressed the need for a “greater understanding of the developmental progression of self-regulatory skills” and of “how to synchronize developmentally appropriate strategies of parents and educators to meet individual needs” (Boyer et al., 2007).

Emotion in self-regulation. “Perhaps the most researched subcomponent of regulation is ‘emotion regulation,’ a concept that has been multiply defined and studied across the life span” (Feldman, 2009, p. 546). According to Boyer (2005a, 2007), emotion in self-regulation is defined by what the child does to express happiness, sadness, fear, or anxiety via words (i.e., I am happy, I did it) or physical behaviours (i.e., crying, smiling, laughing, reaching out to adult with hand). Boyer (2009) revealed the

developmental progression, as described by early childhood educators, of emotion regulation during the preschool years. For example, a two-year old requires extra assistance and can be more reactive due in part to limited verbal skills, whereas a four-year old, although aware of expectations, still need caregivers “to defuse power struggles” (Boyer, 2009a, p. 3). Other researchers studying emotions in self-regulation look at aspects of social and peer interactions, (e.g., Arsenio, Cooperman, & Lover, 2000; Keane & Calkins, 2004; Spinrad et al., 2004), externalizing and internalizing problem behaviours (e.g., Hill, Degnan, Calkins, and Keane, 2006), and interrelations between aspects of emotional ability (e.g., Miller, Fine, Gouley, Seifer, Dickstein, & Shields, 2006; Rydell, Berlin, & Bohlin, 2004). These investigations are significant to the field of developmental psychology because they contribute to the understanding of early predictors and interventions for later behavioural and emotional regulatory problems.

Due to suggestions that “the preschool period is the time for the emergence of complex strategies for emotion regulation,” and since parents serve as primary models for self-regulation, Stansbury and Sigman (2000) chose to study parent-child dyads in structured and contrived settings (p. 183). Since Stansbury and Sigman consider young children’s use of emotion in regulation “an interactive phenomenon” with caregivers, they chose to quantify their observations of parents interacting with their children during controlled laboratory episodes (p. 184). In their study, Stansbury and Sigman set out to: (a) observe and describe preschoolers responses to frustration, (b) index emotion regulation in order to examine developmental differences in these responses, and (c) observe and quantify parental interactions with their children during the frustrating experiences. Four types of emotion regulation strategies were coded for observation, in

accordance with previous findings (Grolnick, Bridges, & Connell, 1996), as comforting behaviours, instrumental behaviours, distraction behaviours, and cognitive reappraisals. With regard to these strategies, Stansbury and Sigman hypothesized that: (a) comforting would be the most frequent strategy among younger children, (b) cognitive reappraisals would be the most frequent strategy for older children, (c) 3-year-old children would prefer instrumental and distraction strategies over cognitive reappraisals, and (d) scaffolding would appear when observing parent-child interactions during the frustration experiences.

In this correlational study, two observational paradigms (timed clean up, candy denial) were used to produce frustration among 51 parent-child dyads grouped according to the age of child participants (three year-olds and four year-olds). Through observation, Stansbury and Sigman (2000) expected to observe preschool children using strategies that they may otherwise not be able to describe verbally in an interview. Transcripts of the frustration episodes were made and measured for reliability (.75). Reliability coefficients (.68 to 1.0) were also achieved for the coding of behaviours based on the four types of strategies. By using a functional coding system, as opposed to structural, Stansbury and Sigman (2000) assert that “conceptual validity of the study [was increased] by separating the coding of emotion from the coding of behaviour and by tying [the] analyses to changes occurring in real time” (p. 197). Results revealed no gender differences, and that four year old children used fewer strategies than those a year younger, suggesting that either their emotion regulation strategies were more effective at quickly ending the frustrating episode or they just found the experience less negative (Stansbury & Sigman,

2000). Instrumental strategies were the most frequent type of emotion regulation whereas, comforting was the least common for parents and children.

Structured challenging tasks were also used by Zimmerman and Stansbury (2003) in order to examine the influence of situational context and temperamental reactivity on the emotion regulation of 53 three year old children (27 boys and 26 girls). The researchers expected that different demand characteristics would influence the emotion regulation strategies; specifically, that higher levels of distress would elicit more primitive and less 'cognitive' and interpretive strategies. Furthermore, Zimmermann and Stansbury expected children with high attentional control to have increased reactivity but lower level strategies (i.e., comforting), yet expected children with low attentional control to be flexible and regulate negative emotions with higher level strategies (i.e., distraction). As with the previously reviewed study, emotion regulation coding was based on four functional strategy categories: (a) comforting (i.e., sucking thumb, using a transitional object, or seeking an adult for comfort verbally or behaviourally), (b) cognitive (i.e., vocally redefining a situation positively, bargaining or compromising), (c) distraction (i.e., focus attention elsewhere to toys), and (d) instrumental (i.e., justified requests, getting the desired object, or contradicting the adults reasoning for a situation).

Zimmerman and Stansbury (2003) used procedures involving a stranger-approach situation, busy-caregiver paradigm, and a delay of gratification task involving candy. Gender differences were only found for the emotion regulation strategy of comforting where girls engaged in more comforting behaviours than boys (Zimmerman & Stansbury, 2003). A multivariate repeated measure of analysis of variance was used to examine the effect of situation on use of strategies and revealed significant overall results for

situation, strategy, and for the interaction between situation and strategy. Other results included fewest number of strategies observed during the stranger-approach situation, with comforting strategies being the most common type.

Distraction was revealed as the most frequently used strategy across situations, with more cognitive and instrumental strategies occurring in the delay-of-gratification task; comforting strategies occurring more in the stranger-approach situation; and distraction strategies within the busy-caregiver paradigm (Zimmerman & Stansbury, 2003). With respect to temperament, shyness was associated with more instrumental strategies, with high attentionality relating to more comforting strategies. On the other hand, bolder children used more distraction strategies when a caregiver was busy than in a stranger-approach situation. By aligning their findings with previous research, Zimmerman and Stansbury (2003) suggest that the behaviours children exhibit when challenged do act in the regulation of emotions during strategy use. However, researchers recommend future studies to further clarify relationships between regulatory emotions and behaviours throughout early development (Zimmerman & Stansbury, 2003). For example, although the researchers measured behaviours that appeared to “serve an emotion-regulatory function, [they] did not gauge stress or negative affect” and, therefore could not know if the children’s behaviours were the result of actually being challenged (Zimmerman & Stansbury, 2003, p. 407). Overall, the literature (for example, Boyer, 2009a; Dennis, 2006; Feldman, 2009; Stansbury & Sigman, 2000) reveals a strong interplay between the regulatory nature of emotions and behavioural systems.

Moral development in self-regulation. Researchers investigating moral development in self-regulation also suggest interactions between several influences; most

notably, the complex systems of conscience and inhibitory control within the social context. According to Grusec and Davidov (2007), socialization primarily occurs in the family and “involves the acceptance of values, standards, and customs of society as well as the ability to function in an adaptive way in the larger social context” (p. 284). How regulation of conduct, or knowing and doing what is right as opposed to wrong, moves from other to self stands as a fundamental question of socialization (Kochanska, Coy, & Murray, 2001). According to Boyer (2005a, 2005b), moral self regulation can be considered when the child: (a) exhibits behaviour that is helping, hurting, or disturbing the ECE, another child, parent helper, their own parent(s) (i.e., the individual asks the child to stop, tells the child his or her behaviour is helping or hurting or disturbing, or stops the main action to physically stop or redirect the child), (b) seeks confirmation or approval for his or her helping, hurting or disturbing behaviour from other children, ECE, parent helpers, their own parent(s), or visitors, (c) glances to see if anyone noticed his hurting or disturbing behaviour (i.e., looks at ECE, parent helper, his or her parent, visitors), and (d) is praised or admonished by others (i.e., shaking of their heads, saying no, wagging fingers to say no, words that suggest he or she is wrong).

As previously indicated, family experiences and interactions contribute greatly to a child’s moral development. According to Grusec (2006), “conscience includes adherence to societal requirements; feelings of guilt, confession, and attempts at reparation...and compliance with rules in the absence of surveillance by agents of socialization” (p. 243). Those rules, which hold a variety of related actions, have been labelled as “moral,” and have been the focus of researchers interested in the moral aspect of development (Grusec, 2006, p. 243). Given the previous discussion on gender

differences in early moral development (e.g., Killen, Margie, & Sinno, 2006), Tulviste and Koor's (2005) deeper examination of moral and conventional rules will be highlighted.

In order to further investigate gender-related moral self-regulatory preferences, and since no study had been done to compare the social rules referred to in naturally occurring same-sex interactions, Tulviste and Koor (2005) compared the moral and conventional rules that four to five year old girls and boys refer to in their real-life same-sex play interactions. Moral rules, according to Tulviste and Koor, involve statements of rights (i.e., let go, the car is mine), equality (i.e., this is not fair, you get the best doll and play her mother too), harm to others (i.e., it's not nice to make fun of them), kindness (i.e., I could show you how it works) and, general morality (i.e., this is unfair). Conventional rules, on the other hand, involve rules of a game, property care/destruction, tidiness, general conventions (i.e., you don't know how to be the mother at all), and conventions of independence (i.e., the teacher will be upset if we don't share nicely).

Gender-related differences were found by Tulviste and Koor (2005), with girls preferring conventional rules more frequently (without a statistically significant difference) and referring to moral rules less frequently than boys. Specifically, girls mentioned social conventions more than boys did. The reasoning behind lower mention of moral rules tends to be associated with fewer play interactions involving conflictual, rough play typically associated with boys. It was found that even in conflictual situations, girls mentioned an equal amount of conventional rules as rules of justice. As expected, their study revealed a lower preference of girls for rules of justice, but contrary to expectation did not reveal a higher preference of girls for rules of kindness/positive

behaviour. Therefore, this study only lends partial support for previous moral thinking research on the gender-related differences between the morality of justice and the morality of care (Elkind, 1994).

Understanding moral behaviour and conscience is central to understanding a preschooler's development of self-regulation (Kochanska & Askan, 2006). Inhibitory control has been examined in relation to the physical aspect of self-regulation (see Blair, 2003; Jones et al., 2003; McClelland et al., 2007) and Kochanska, Murray, and Coy (1997) argue that inhibitory control plays a role in the development of conscience. Utilizing data from their large longitudinal study, and extending previous findings, Kochanska et al. included additional paradigms for measuring conscience. Reliable and internally consistent measures and detailed procedures were used at three time periods (toddler, preschool, and early school age) which included observational behavioural batteries (aimed at assessing inhibitory control) and multiple paradigms aimed at assessing internalization in mother-child context (i.e., alone with a mundane task) and peer context (i.e., the ring toss game) as well as moral cognition (i.e., hypothetical dilemmas of self-interest vs. other's welfare) and moral self (i.e., puppet dialogues).

Results revealed stable maternal ratings of inhibitory control as well as stable inhibitory control assessments of children, and as expected, both maternal ratings and children's inhibitory control increase with age. The assessment of inhibitory control revealed that girls outperformed boys and mothers rated girls higher than boys. Moreover, those children with high inhibitory control were more internalized in both mother-child and peer contexts. A composite score of conscience was created from the multiple tasks and "served as the dependent variable in the hierarchical multiple

regressions” (Kochanska et al., 1997, p. 271). The series of regressions performed supported the hypothesis that inhibitory control is “a genuine underpinning of or contributor to children’s conscience” (Kochanska et al., 1997, p. 273).

Since Kochanska et al.’s (1997) study, there has been an increased interest in conscience and moral behaviour in developmental research. As a result, Kochanska and Askan (2006) provide a thorough and engaging discourse on conscience and self-regulation development in the early childhood years, drawing upon the previously discussed study as well as two other “large multimethod, multitrait, longitudinal studies, each with a community sample of 100 families” (p. 1589). The authors define conscience as “an inner guiding system responsible for the gradual emergence and maintenance of self-regulation” with interrelationships between emotional, behavioural, and cognitive components (Kochanska & Askan, 2006, p. 1587). By taking into account the complexities of temperament and socialization over time, Kochanska and Askan provide direction for future developmental research on conscience and self-regulation.

Self-Regulation Grounded in Theory

As mentioned in the introduction, the researcher based this present study on Boyer’s (2008b) large multi-phase grounded theory research study. In addition to previously reviewed studies (Boyer, 2008b; Boyer, Blodgett, & Turk, 2007) Boyer’s (2009a) phenomenological study also drew participants from the larger qualitative study. Specifically, the study of fifteen early childhood educators (ECE) perspectives revealed a recognition that preschool-aged children benefit from developmentally appropriate “modelled demonstrations” and “emotion mentorship” in their educational setting (Boyer, 2009a, p. 7). The participants’ perspectives revealed four themes related to their

supportive role in the preschool-aged child's ability to gain self-regulatory skills: (a) self-regulation and emotion regulation as a developmental progression, (b) environmental goals and complexities, (c) proactively guiding development of self-regulation and emotion regulation, and (d) emotional recognition, responsiveness and perspective-taking.

The first theme (*Self-regulation and emotion regulation*) revealed in Boyer's (2009a) study centered around the "preschool educator's role as an evaluator of children's self-regulation and emotion regulation along a developmental progression" with educators desiring to help parents recognize the developmentally appropriate needs of preschoolers at various ages (p. 3). The second theme (*Environmental goals and complexities*) emerged as participants discussed how the intentional home-like environment created in the classroom, combined with added players (students, adults, educators), allow for more complex opportunities where regulatory skills can be learned and practiced (Boyer, 2009a). The third theme (*Proactively guiding development of self-regulation and emotion regulation*) encompassed discussion of the following four supportive methods used by educators: (a) challenging children's perspective-taking ability, (b) encouraging children to follow class instructions, (c), learning how to modify rules safely when working or playing a game with one or more peers, and (d) adapting activities according to developmental needs.

Boyer's (2009a) fourth and final theme (*Emotional recognition, responsiveness, and perspective-taking*) revealed the importance for educators to provide "language and actions" when preschool-aged children are learning to recognize their own emotions and how to respond empathetically to others (p. 4). According to Boyer, the development of

this recognition ability requires opportunities for preschoolers to: (a) realize they have emotions, (b) identify the various possible emotions, (c) learn to express emotions appropriately, and (d) use language to describe their feelings during emotional expression. The participating educators, as “emotion mentors,” recognize the need to use developmentally-appropriate tools such as the use of comforting language with 2- or 3-year olds (Boyer, 2009a, p. 5). As a result, when preschoolers who had the benefit of such mentorship reach the age of 5 or 6 years of age, perspective-taking has improved to the point where children can consider the effect that behaviours and emotions have on others and further explore how they resolve conflicts and respect self, others, and work produced (Boyer, 2009a). Overall, the findings revealed “a glass wall” separating an educator’s view of “where children are developmentally in terms of self-regulation and emotion regulation and where parents think they are” (Boyer, 2009a, p. 2). Therefore, this present study contributes to this developmental understanding by exploring how preschool-aged girls, specifically between the ages of 3 and 5, self-regulate when naturally encountering a challenging task or activity.

Summary

In this chapter, research related to preschool development in general and, more specifically, to preschool-aged girls were highlighted in all six areas. Research investigating the self-regulation of preschool-aged children was also presented and organized according to Boyer’s (2004, 2005a, 2007) six dimensions of self-regulation (physical, problem-solving, language, social assistance, emotional, and moral). This literature review revealed a prominent practice of examining one dimension in isolation from the others. We also found that the preschool period is a time when children are

becoming more goal-oriented and are shifting from mostly external dependence on adults for control towards more internal self-regulation. As evident by the increase in strategy use across a variety of contexts with age, we learn that the development of executive skills in the preschool years allow children to refine their ability to self-regulate. Unlike most previous studies that focus on one gender (boys), due to the frequent exhibition of more visible regulatory challenges, this study focused on girls. Specifically, this study addresses gaps in the literature by providing qualitative research that connects all six dimensions of self-regulation through an in-depth examination of how preschool-aged girls self-regulate when challenged by a naturally occurring task or activity within the preschool environment. Given the already vast research on the self-regulatory challenges of boys, this study involved purposefully selecting girls with the aim to contribute findings that can expand our developmental understanding of both girls and boys. What follows, is the methodology which was used to bring about such a deep and holistic understanding. Following this will be a relation of the results of this research in Chapter 4 and a discussion of those results in Chapter 5.

Chapter 3: Methodology

Overview

This purpose of this study was to explore how preschool-aged girls self-regulate when naturally encountering a challenging task or activity. This chapter will identify and clarify the rationale for choosing qualitative research as an approach in investigating self-regulation in preschool-aged girls. Likewise, the multiple case research design is described. This chapter concludes with the participant sampling criteria and data procedures that the researcher used for the present study.

The Qualitative Research Paradigm

The qualitative research paradigm was chosen for this study because many investigations of self-regulation have been quantitative in nature. According to Anderson and Arsenault (1998), quantitative designs rely on “experimental manipulation under artificial conditions” (p. 119). Along with this gap in the research, there are several distinguishing characteristics of the qualitative approach to inquiry that led to the current researcher’s choice of paradigm for this study.

According to Gall, Gall, and Borg (2005), the qualitative researcher views social reality as being “continuously constructed in local situations” by the participants (p. 15). Therefore, it is assumed that “understanding the research environment” through the holistic observational data of children within a dynamic naturalistic setting will produce “rich, useful, and valid findings” (Anderson & Arsenault, 1998, p. 134). Considering intentional behaviour while making holistic observations, within the total context where social action occurs, also distinguishes this qualitative investigation (Gall et al., 2005). The researcher’s qualitative methodological choices enabled the discovery of “concepts

and theories after data have been collected,” as opposed to the postulation of quantitative preconceptions (Gall et al., 2005, p. 15). As a result, this qualitative approach to inquiry helped the researcher “interpret, understand, explain, and bring meaning” to the phenomenon of self-regulation (Anderson & Arsenault, 1998, p. 119).

Multiple Case Research Design

Since this study posed a ‘how’ research question and explored a “contemporary phenomenon within some real-life context” which provides opportunities for exploration of the regulatory dimensions in a safe environment, a case study was the most preferred research strategy (Yin, 2003, p. 1). According to Gall, et al. (2005), case studies are defined by the in-depth, field-based examinations of specific instances of interest. The case study research strategy was appropriately chosen for this research study because, unlike quantitative controlled experiments, the researcher was interested in discovering how existing constructs manifest in contextual conditions (Gall, et al., 2005; Yin, 2003). Variations within case studies as a comprehensive research strategy exist and include both single- and multiple-case studies (Yin, 2003). According to Yin (2003), a study using a multiple case design, as opposed to single case, is considered “more robust” (p. 46). The multiple-case research design was therefore, preferred for this study because of the adage ‘strength in numbers.’ Unlike the use of a single case design, this multiple-case design allowed the researcher an opportunity to follow “replication logic” and consider multiple cases as multiple experiments (Yin, 2003, p. 47). The multiple-case research design was chosen for this study after careful consideration of several research issues: (a) how multiple-case studies are conducted, (b) the benefits and strengths of multiple-case studies, and (c) the disadvantages and limitations of this research design.

According to Yin (2003), there are five procedures of a case study research design that are especially important: (a) a study's questions, (b) its propositions (if any), (c) its unit(s) of analysis, (d) the logic linking data to propositions, and (e) criteria for interpreting the study's findings. When considering a research design, and in this case multiple-case research design, the most important first step involves defining the research question to ensure that the substance and form are the best match. In particular, a researcher undertaking a multiple-case design, must (a) understand what the study is about, and (b) recognize whether a "who, what, where, why, or how question" is being asked (Yin, 2003, p. 7).

After the research question had been defined, the researcher considered propositions or criteria for success based on the literature reviewed which provided direction for the analysis process of this investigation (Yin, 2003). Next, the researcher identified a "unit of analysis" that related back to the research question in order to avoid trying to 'cover everything,' (Yin, 2003, p. 22). The last two research design components helped point towards and provide the foundation for the data analysis steps: identifying and indicating "the logic linking the data to the propositions" (i.e., pattern-matching) and then applying the criteria when interpreting the study's findings (Yin, 2003, p. 28).

With a pattern-matching approach, the researcher interpreted findings by comparing rival propositions or explanations. Yin (2003) recommends identifying a rival explanation prior to data collection so evidence of possible other influences are intentionally included, thereby avoiding deliberate favouring of an original proposition or hypothesis. In this study, the researcher identified rival propositions while themes emerged during the purposeful selection process. Findings and rival explanations were

considered throughout the analysis, with a final memo used to summarize conclusions. Overall, the researcher can place confidence in the findings since “the analysis address[ed] and reject[ed]” as many rivals as possible (Yin, 2003, p. 113).

Participants were selected based on the defined unit of analysis and were studied using a variety of data such as demographic information and transcriptions of interview and video recordings. Parental interview data was used during the selection process since interviews, according to Yin (2003), “are an essential source of case study evidence” and “can provide shortcuts to the prior history of the situation” (p. 92). This study also benefitted from the multiple observers who evaluated reliability of the observational evidence through the larger study. Other forms of documentation (e.g., principles and guidelines from each preschool) were also collected during the selection process in order to provide context and considered another essential data source for this multiple-case investigator.

In order to strengthen construct validity¹ and reliability of the evidence resulting from many instruments, the researcher benefitted from following Yin’s (2003) three qualitative data collection principles: (a) use multiple sources of evidence, (b) create a case study database and, (c) maintain a chain of evidence. These three principles are interdependent in that the sources of evidence need to be cross-referenced in the database that then serves as a tool for maintaining a chain of evidence record. Yin (2003) first

¹ Given the “prior specification of the significant, operational events that constitute [self-regulation]” in the larger study, the researcher is confident that this multiple case study genuinely reflects the self-regulation of 7 preschool-aged girls (Yin, 2003, p.35). To ensure that self-regulation was being studied correctly and therefore, subjective judgments or impressions avoided, the researcher accessed multiple sources of evidence from the larger study and referred to Boyer’s (2005a) Observational Coding Guidelines.

states that “the use of multiple sources of evidence in case studies allows an investigator to address a broader range of historical, attitudinal, and behavioural issues” (p. 98). One advantage of using multiple sources occurs through a process of “data triangulation” where the researcher can draw conclusions or inferences based on several different sources of evidence (Yin, 2003, p. 98). For example, individual interviews were used to corroborate information obtained from demographic documents and direct observations.

Following Yin’s (2003) recommendations, the researcher developed a case study database where: (a) case study notes are recorded in a retrievable, useable, and efficient manner, (b) case study documents were listed, described, annotated, and/or cross referenced, (c) tabular materials (such as observational counts) were included, and (d) narratives (e.g., parental interview, videotaped observation) were stored. The importance of creating a case study database lies in the ability to explicitly describe events and document “the connection between specific pieces of evidence and various issues in the case study” (Yin, 2003, p. 104). This database served the researcher well as a basis for both within- and across-case analyses.

Maintaining a chain of evidence during data collection provided a systematic and cross-referenced record with specific citations to all evidence used during the collection process. Abiding by this principle increased the reliability of the information contained in this study and addressed “the methodological problem of determining construct validity [in a qualitative study], thereby increasing the overall quality of the case” (Yin, 2003, p. 105). Maintaining an evidentiary chain also ensured that an external observer would be able to follow from one part of the case study process to another from start to conclusion or vice versa (case study report → case study database → evidence citations → protocol →

case study questions). For example, the case study database includes details regarding specific interview transcripts and, when looking further, an external observer should be able to find the actual evidence containing information such as the audiotape number and name of interviewer.

“The internal validity of qualitative research typically revolves around the issue of credibility...the extent to which the data, data analysis, and results are accurate and trustworthy” (McMillan & Wergin, 2006, p. 96). According to Miles and Huberman (1994), the quality, trustworthiness, and authenticity of qualitative findings can be judged on five practical standards (objectivity, reliability, internal validity, external validity, and utilization). Miles and Huberman suggest several tactics for assessing data quality and confirming findings such as triangulation, looking at patterns or un-patterns, and testing rival explanations. Yin (2003) suggests similar tactics aimed at addressing internal validity such as pattern matching, explanation building, and addressing rival propositions.

Pattern matching is one of the most appealing techniques used by case study researchers because if resulting patterns do coincide, internal validity is strengthened (Yin, 2003). The researcher used a type of pattern matching called explanation building in order to help establish internal validity. This process of explanation building included: (a) making an initial proposition about task persistence, (b) comparing the findings of the first case against the initial proposition, (c) revising the proposition, (d) comparing other information from the case against the revision, (e) comparing the revision to the facts of the second or more cases, and (f) repeating this process with other propositions (Yin, 2003). As a result, this process moved the researcher from analyzing each individual case towards across-case analysis (Yin, 2003). Another qualitative analytic technique

involving rival propositions (also related to pattern matching) was used to help establish internal validity. Explanations and rival propositions were recorded on memos, along with the researcher's related comments and conclusions.

According to Yin (2003), qualitative "case studies (as with experiments) rely on analytical generalization" where the researcher is aiming to "generalize a set of results to some broader theory" (Yin, 2003, p. 37). Therefore, when conducting this multiple-case research, "every case [served as] a specific purpose within the overall scope of the study" (Yin, 2003, p. 47). As a result, establishing external validity in this qualitative study was dependent upon replication logic. Consequently, the researcher selected each case carefully and followed replication logic, where contrasting results are predicted and compared (theoretical replication), all the while within the theoretical framework of the larger grounded theory (Yin, 2003). Although case study designs allow researchers "to retain the holistic and meaningful characteristics of real-life events" (Yin, 2003, p. 2) and are carried out with a goal to "expand and generalize theories" (p. 10), they are not intended to be generalized to populations.

Sampling of Participants

Purposeful sampling is used when researchers select individuals for a research study (Gall, Gall, & Borg, 2005). When purposefully sampling participants for this study, the researcher used a criterion-case selection strategy. A criterion-case selection strategy involves choosing cases based on a predetermined set of similar characteristics or conditions that are of interest to the researcher (Anderson & Arsenault, 1998). In addition to the boundaries set out in Chapter 1, the purposeful selection of seven accessible participants was dependent on each meeting the following criteria:

1. Each preschool-aged girl included in this study was between the ages of 2 and 6 years old at the time of observation.
2. Each participating girl was observed (as previously recorded on video) as encountering a difficult task as defined by observable sequences of initiating, modulating, and ceasing (successfully or unsuccessfully) with behavioural, attentional, and emotional actions or responses such as ability or inability to “resist distraction, use appropriate and effective strategies, and monitoring progress (correcting their approach or summoning help if needed)” (Bronson, 2000, p. 200). Boyer’s (2004, 2005a, 2005b, 2007) *Observational Coding Guidelines* were utilized when considering whether a new activity had begun (initiating), whether the child adapted or modified her response within that new activity (modulating), and whether the child indicated completion of the activity (ceasing) through observable behaviours reflective of one or more of the six dimensions (physical, problem-solving, language, social, emotional, moral).
3. Using Boyer’s (2004, 2005a, 2007) developmental dimensions, the researcher identified a girl experiencing a difficult task or activity who displayed self-regulatory responses such as:
 - a) Physical (for example, walking to a new location or jumping up and down while dressing)
 - b) Problem-solving (for example, trying to overcome difficulty in a different way; turning the task into a game)
 - c) Language (for example, private speech, change in tone or volume)

- d) Emotion through comforting behaviours (for example, the child hugs a toy or sucks thumb), instrumental behaviours (for example, the child uses language like “give it to me”), distraction behaviours (for example, the child sings a song), and cognitive reappraisals, (for example, the child uses language to bargain, or alternate behaviours to redefine the situation by making a game of the difficult task; Stansbury & Sigman, 2000).
 - e) Social (for example, using adult-directed help-seeking words or actions)
 - f) Moral (for example, looking around to see if anyone saw her negative reaction or failure to perform task)
4. Accessibility to multiple sources of data from the larger study. The selection of participants was finalized after ensuring that all necessary data sources were available. For example, the researcher confirmed that transcriptions of the parental responses to two applicable interview questions (which include discussion of patterns of persistence that children exhibit when engaging in a difficult activity at home) were available for use in this study (see Appendix A).

Data Sources

As previously mentioned, McMillan and Wergin (2006) assert that the internal validity of any qualitative research study revolves around the issue of credibility. This research study accessed and examined multiple sources of data collected from the larger study because triangulation can enhance credibility (McMillan & Wergin, 2006). Data sources from the larger study included demographic information, transcriptions of parental responses to two interview questions, and coded transcriptions of videotaped observations. For contextual information, the researcher consulted the educational

philosophy statements and preschool principles with guidelines from the schools attended by the purposefully selected participants.

External validity for this study consists of the “translatability or comparability” and not of generalizability (McMillan & Wergin, 2006, p. 96). In other words, the goal of this study was to “understand a particular phenomenon” and “provide insights useful in other comparable settings” (McMillan & Wergin, 2006, p. 96). Reliability was enhanced by systematic data collection, which occurred within the larger study, and was continued through this study using systematic and detailed records specific to the phenomenon under investigation.

Interviews. The interviews with parents were conducted individually with one of the graduate research assistants, either at the preschool or at the parent’s home or workplace. Parents were also asked to complete a demographic sheet at this time before beginning the 30 to 60 minute interview involving a structured set of eighteen open-ended questions (see Appendix A for two questions). The questions were arranged to begin broadly, and then shift to more specifics as parents were encouraged to use descriptive, real-life examples of their children’s self-regulation in initiating, modulating, and ceasing behaviours (Boyer, 2004, 2005a, 2008b). Prompts encouraged parents to include the physical, emotional, verbal, and moral aspects of their child’s behaviour. For this study, the researcher utilized the transcribed responses (provided by the parents of seven girls) to two of the interview questions as part of the selection process. Of the eighteen questions, two were related to difficult tasks (Boyer, 2004, 2005a, 2005b) and thus selected for this study (see Appendix A). Initially, the intended use of the transcribed parental responses was for selection purposes only. However a theme emerged, when the

researcher reviewed the contact summary forms, which later became relevant to this study's unit of analysis. The contact summary forms were consulted again for relevant connections, during the conclusion drawing and verification process, when within- and across-case patterns were being confirmed.

The interviews were audiotape recorded and documentation such as transcriptions was labelled with the participant's number. At the outset of the interview, parents were reassured of confidentiality and the voluntary terms of the study. Blodgett, Boyer, and Turk (2005) describe several methods used for gaining trust and truthfulness from parent responses during the interviews. First, the interviews were conducted in a familiar setting (preschool, home, work) to promote feelings of safety and confidence. This deliberate process continued when participants were greeted with refreshments and opportunities to engage in casual conversation. A delicate and warm transition from conversing to interviewing is key to establishing the trust and credibility needed for a successful interview (Blodgett, Boyer, & Turk, 2005; Shank, 2002). The welcoming conversation provides the gentle encouragement needed to shift from the symmetrical disclosure of a conversation to the asymmetrical disclosure involved in an interview (Shank, 2002). The interviews were conducted in a contemporary qualitative manner, where the interviewer sought to discover the interviewee's reality and key themes within the interpersonal process while remaining open, welcoming new insights, and being aware and sensitive to arising issues (Shank, 2002).

Transcriptions of the video recordings. Transcriptions of the videotaped natural play sequences documenting and describing each child participant's behaviour, speech, and movements (along with those interacting with the child) were a valuable

source of evidence because they directly captured events and contexts for furthering the researcher's rich understanding of self-regulation in the face of preschoolers' everyday challenges. Each child was videotaped by one of two graduate research assistants for a total of 30 minutes. Videotaping in natural settings however, present some limitations. Since the researcher and research assistants were guests within a teacher's classroom and/or playground, great care was taken to gently acknowledge and comply with restrictions such as participants' start and stop requests. Although the 30-minute segments were not always recorded as one continuous block of time due to children's or teacher's requests to stop and start, the videotaped data still allows a meaningful and holistic study of participants as the construction of their own social reality visually unfolds. The 30-minute segments recorded for each of the 150 child participants included a wide variety of preschool activities such as outdoor and indoor play, peer play, group interactions (e.g., circle time), art activities, silent book time, snack time, and ECE/parent interactions.

Data Collection

General procedure. This research study utilized secondary data previously collected from the fore-mentioned larger study. For the purpose of this study, the researcher used transcriptions of the videotaped natural play sequences documenting and describing behaviour, speech, and movements of seven girls. These descriptions, in addition to contextual information obtained from demographic data, transcriptions of parental interviews and the principles and guidelines for preschools related to each of the selected participants were essential sources of evidence in this study. All data sources

were complete with corresponding collection dates, location, and other relevant information.

Observations and interviews occurred within each of the seven preschools; in the order the preschools gave permission. Data collection procedures for the larger grounded theory study of preschoolers' self-regulation (Boyer, 2008b) began in October 2003 and were completed in June 2005. The procedures within each preschool continued for two to four weeks, depending on the rate of parent participation within the preschool. The videotaping and parent interviews were conducted concurrently, and the focus groups were the final step in each preschool's process. Multiple sources of data were used in the larger study, and, as previously mentioned, were accessed for this research study.

Videotapes. The intention of this videotaped element of data collection was to capture children's natural behaviours within the preschool environment, during different levels of play, peer and adult interactions, as well as educator or adult-led activities. Researchers such as Parten (as cited in Rubin, Maioni, & Hornung, 1976 & Fox, 2007) have revealed six levels of social participation among preschoolers that typically depend on age. Parten found that social participation is seen progressing with age through play behaviours from: (a) unoccupied behaviour, (b) solitary independent play around the age of two, (c) onlooker behaviour, (d) parallel play around the age of three, (e) associative play by age four, with (f) cooperative play being achieved by the end of the preschool years. These types of naturally occurring play behaviours were frequently captured on videotape during the larger study and served as an excellent source for observing children encountering difficult tasks.

According to Blodgett (2007), the goal for the larger study was to gather this descriptive behavioural data as an outside observer, and as a result, the researchers did not get involved in the preschoolers' activities or interactions unless it was an issue of safety for the children. The researchers (primary investigator and assistants) found that, by maintaining distance, the natural flow of the activities and interactions were preserved but the quality of the recorded verbal exchanges was often diminished (Blodgett, 2007). Blodgett, Boyer, & Turk (2005) reported that although many expect children to be intimidated by the camera, or conversely, make faces and act out, very few such instances occurred. It seems that the research process became a 'part of the background' (Blodgett, Boyer, & Turk, 2005).

The research assistants asked for informed consent and this resulted, in several instances, with children declining participation at that particular time. If a peer in the play-group did not consent, the graduate research assistants would either: (a) pause the videotaping until the non-consenting peer left the situation, (b) move the video camera so the peer would not be in the camera's view, (c) select a different child and group of children to observe, or (d) return to that child on a different day in order to secure informed consent (Blodgett, 2007; Blodgett, Boyer, & Turk, 2005). Although the researchers did not engage in the preschoolers' activities, they were able to maintain a delicate professional and ethical outsider-insider balance during informal interactions with parents and educators through casual conversations (Blodgett, Boyer, & Turk, 2005). These casual conversations likely decreased the outsider status, thereby creating a more balanced, warm, and transparent relationship between the researchers and the preschool community.

Parent interview. Eighteen open-ended interview questions (see Appendix A for examples) gathered parents' descriptions of their child's behaviours in *Do* and *Don't* contexts (Kochanska et al., 2001; Kochanska et al., 2007), and in difficult or frustrating situations. Probes were given to encourage parents to provide detailed examples and descriptions of their child's behaviour. In addition, each question about the child's behaviour was followed by questions concerning the parent's response to this behaviour, in terms of how they help their child to learn to self-regulate in the situation.

Data Analysis

“Descriptive designs attempt to present a complete description of a phenomenon within its context” (Hancock & Algozzine, 2006). The general analytic strategy chosen for this study was the development of a descriptive framework for organizing the multiple cases (Yin, 2003). This study used three analytic techniques, specific to this descriptive strategy: pattern-matching, within-case analysis and cross-case synthesis (Yin, 2003). As advocated by Yin (2003) and Miles and Huberman (1994), the researcher was committed to excellence by being attentive to four principles during the analysis procedures: (a) exhaustive analysis of all the evidence (b) consideration of all major rival interpretations early on (e.g., looking for negative evidence or following up on surprises) by asking whether there is evidence to support each rival, (c) addressing the most significant and important aspect of the study by focusing on the unit of analysis, and (d) using prior expert knowledge on the topic while analyzing the data (such as experience as an early elementary educator and prior research assistant experience with data from the larger study).

Multiple case data collection. Data collection specific to this study followed Yin's (2003) previously discussed three principles. First, multiple sources of evidence were accessed from the larger study and recorded. The researcher utilized Boyer's (2005a) "User's Guide: A Manual to Navigate through the Data of the Self-regulation Study," had trained experience navigating through the data, and achieved familiarity with multiple sources; therefore, an illustrative record of the multiple sources of data used in this study was the first step. Next, the researcher created an overall case study database by utilizing qualitative computer software (NVivo 8) for the purpose of storing the "raw data" in an easily retrievable format (Yin, 2003, p. 102). In order to ensure that all evidence and data analysis documents were available, a hard copy filing system was concurrently maintained throughout and, consequently, illustrates the 'chain of evidence.'

Data reduction. Data collection for the larger study was complete and had been sorted and organized prior to the inception of this multiple-case study. The observational data was also transcribed and coded according to six dimensions of self-regulation across initiating, modulating, and ceasing actions, in addition to the social interactions that occurred, for each behaviour recorded in a child's 30-minute video segment. Reliability (criterion-related, inter-observer, and intra-observer) was confirmed at 80% for the protocol of behaviours, speech, and movements within the naturalistic play scenarios in each 30-minute video-recording (W. Boyer, personal communication, December 8, 2009). This initial data reduction process enabled the researcher of this study access to an organized system from which to "pull out, and cluster the segments relating to a particular research question, hypothesis, construct, or theme" (Miles & Huberman, 1994, p. 57).

Data was further reduced for this study by purposefully selecting only those transcripts recorded from interviews of the parents of seven preschool-aged girls. The researcher utilized the parental interview transcripts (of seven girls preliminarily identified as encountering a difficult task) for the purpose of meeting one criterion during the purposeful selection process. The initial identification of these seven girls took place when the researcher was an assistant during the third phase of the larger study. The use of each parent interview transcript during the selection process was recorded on a case summary form for each parent of the purposefully selected children. Each case summary form (also known as a contact summary sheet) had questions that, when answered, assisted the researcher with identifying whether or not the parental data met the selection criteria (Miles & Huberman, 1994). Each case summary form was arranged on one piece of paper beginning with space for information specific to each case, such as participant number, interviewer, and date of summary completion. A succinct table was then created to summarize and display contextual information such as date and time for all parental data used. These completed case summary forms, containing thoughtful reflections and important elements found within the data, were initially stored in the event that the content became relevant during later reflection and when making comparisons between cases (Gall et al., 2005; Miles & Huberman, 1994).

Identification of the seven cases that met the previously established criteria involved another source of evidence: videotaped data. The videotaped behaviours, speech, and movements of the children in the naturalistic play scenarios were analyzed originally by Boyer (2004, 2005a, 2007). In addition, the researcher of the present study achieved 80% inter-observer agreement for the behaviours, speech and movements of

two children considered for inclusion in this study, using Boyer's (2004, 2005a, 2007) *Observational Coding Guidelines*. The protocol of the larger study included descriptions of initiating, modulating, and ceasing. In addition, the protocol included the operationalization of the six previously described dimensions of self-regulation (physical, problem-solving, language, social assistance, emotional, moral).

The transcriptions of the videos of all seven preschool-aged girls whose parent interviews met the selection criteria were examined. Case summary forms were also completed for the videotaped transcriptions of the seven preschool-aged girls. Specific to these forms was the listing of the selection criteria and a record of related instances, as well as an indication of whether or not the potential participant met the criteria. One general criterion was the availability of other data sources: demographic information and contextual information in the form of preschool principles and guidelines. After reviewing these additional data sources connected to the seven selected participants, and completing document summary forms for the associated preschools (five out of the seven involved in the larger study), the researcher began analyzing the transcriptions of the videotapes with the categories and related codes (See Appendix B for final list of abbreviations used in analysis).

Data display. This descriptive framework allowed for interpretational analysis since this case study involved “a systematic set of procedures to code and classify qualitative data to ensure that the important constructs, themes, and patterns emerge” (Gall et al., 2005, p. 315). In progressing from describing to explaining, Miles and Huberman (1994) identify the importance of displaying data, or arranging what you know, “coherently to permit careful comparison, detection of differences, noting of

patterns and themes, seeing trends, and so on” (p. 92). Since the seven children were expected to exhibit diverse self-regulatory strategies when challenged by different difficult tasks, the researcher used the case-oriented strategy of “types or families” in order to see if patterns could be grouped in a meaningful way (Miles & Huberman, 1994, p. 174).

As previously mentioned, the first step involved displaying important information related to each participant by using case and document summary forms (Miles & Huberman, 1994). The most logical next step was to produce a descriptive display of codes within matrices. As advocated by Miles and Huberman (1994), the researcher used a ‘conceptually clustered matrix,’ as one type of display where data codes were entered into appropriate categories. Information for the categories was based on the videotaped observations of selected child participants. It was within the sorting and further coding of the data that the categories and content showcased themes and allowed for meaningful comparisons.

Multiple sources of evidence (i.e., transcriptions of the observations, demographic information, school principles and guidelines) added to the context and awareness while enabling the researcher to identify indicators of self-regulation in patterns characteristic for the preschool-aged child. This research study set out to illuminate developmental patterns of self-regulation by accessing multiple sources of evidence in order to identify and organize self-regulatory behaviours across all dimensions (physical, problem-solving, language, emotion, social, moral). Data displays which showcased the important information necessary for conclusion drawing and verification included reflective remarks, marginal remarks, pattern-coding and memoing (Miles & Huberman, 1994). For

example, marginal remarks were recorded while examining transcripts, and served as useful sources later when examining a particular segment again. Memos, “one of the most useful and powerful sense-making tools at hand,” were used to “tie together different pieces of data in a recognizable cluster” through recording ideas in an exhaustive manner (Miles & Huberman, 1994, p. 72).

Naming and classifying data met the descriptive purpose of this analysis, however, explanatory pattern coding laid “the groundwork for cross-case analysis by surfacing common themes and directional processes” (Miles & Huberman, 1994, p. 69). According to Miles and Huberman (1994) pattern coding is useful and important because: (a) large amounts of data can be reduced, (b) the researcher can begin analyzing during data collection, thereby remaining focused throughout, (c) it helps elaborate on the researcher’s current understanding, and (d) consequently, lays the ground work for cross-case analysis as themes and directional processes emerge.

Conclusion drawing and verification. As previously mentioned, the quality, trustworthiness, and authenticity of qualitative findings can be judged according to practical standards of objectivity, reliability, internal validity, external validity, and utilization (Miles & Huberman, 1994). Miles and Huberman (1994) and Yin (2003) suggest several tactics for confirming findings such as assessing data quality (e.g., triangulation) and testing rival explanations. One example of how the researcher confirmed findings using triangulation was by making “a matrix of findings by data source/methods/types to see how well supported they are, and not[ing] any inconsistencies and contradictions” (Miles & Huberman, 1994, p. 267). This process was followed by a detailed memo where rival explanations were considered.

Documentation of the analysis procedures are crucial for any researcher wanting to provide “reassurance about the reproducibility of the results” (Miles & Huberman, 1994, p. 280). The researcher of this study was also interested in documenting the analysis procedures as a personal learning experience and to strengthen the methodology section. Miles and Huberman (1994) specifically recommend the “maxi-approach to documentation of analysis” for the conclusion drawing and verification process (p. 282). The researcher used this approach by creating a “qualitative analysis documentation form,” tailored for the study (Miles & Huberman, 1994, p. 283).

Overall, the analysis process was detailed on a documentation form, beginning first with any draft notes made during the analysis. The researcher ordered the notes, logged the details, compiled the exhibits (e.g., tables) and assigned a letter to each exhibit. After the analysis was complete, the researcher reviewed the form and added analysis codes (Miles & Huberman, 1994). This analysis documentation form contained a section for the three “analysis operations” columns (reading data, drawing conclusions, and confirming conclusions) under which codes were written (Miles & Huberman, 1994, p. 283). Miles and Huberman’s (1994) “code list for analysis operations” was used as a guide when completing the three categories of analysis operations (p. 285). The last two columns on the analysis documentation form allowed for brief statements on the analysis operations and researcher reflective comments aimed at clarifying the meaning of the analysis being reported (Miles & Huberman, 1994).

Overall organizational components of this study’s electronic workspace included sources, memos, nodes and sets created within a qualitative software program. A case was created for each child, with relationships and links between relevant documents and

attributes. Specifically, the researcher utilized NVivo in order to carry out the following steps: (a) create a project file, (b) gather source materials and organize as ‘internal’ (i.e., raw data) or as ‘external’ (i.e., webpage information) sources, (c) code sources to gather material by topic (i.e., all content related to interviews) or create a relationship connection between two ‘nodes’ (i.e., parent and child), (d) create sets (such as a set of all data related to one case, or a set of all interview transcriptions), (e) experiment with visual models (i.e., illustrations, graphs), (f) link data (i.e., link a memo to the source or node that it is related to), and (g) classifications (i.e., set up attributes such as age and school number). As previously mentioned, a hard copy filing system was also maintained and included additional evidence such as original data (e.g., videotape transcriptions), draft notes made by the researcher, and large colour-coded matrices.

Summary

This chapter provided the methodological means that were used to answer the research question. A general introduction to the qualitative research paradigm and multiple-case research design provided the rationale for why this qualitative framework was chosen for this study. This chapter included a discussion of the general analytic strategy of a descriptive framework for this study along with techniques, such as pattern-matching, within-case, and cross-case analyses that were used. Also described in this chapter were details pertaining to the study such as sampling of participants, the foundational larger study, data sources, and the data analysis procedures which follow Miles and Huberman (1994) and Yin’s (2003) recommendations. Chapter 4 will relay the results of this study while Chapter 5 will discuss the results.

Chapter 4: Results

Overview

Chapter 4 focuses on answering the research question of this study: How do preschool-aged girls, between 3 and 5 years, self-regulate when they are challenged by a naturally occurring task or activity within the preschool environment?

The first portion of this chapter includes a description of each purposefully selected preschool-aged girl and a brief synopsis of their observed play and interactions with a specific focus on the encounter of a difficult activity. The observational evidence of these children's difficulties is also explored in terms of cross-case and within-case discrepancies. Also addressed within Chapter 4 are the following specific sub-questions about the self-regulatory behaviours observed within and across these case studies:

- 1) What self-regulatory strategies did these children use while encountering naturally occurring difficult tasks or activities?
- 2) How did these children modulate during a difficult task? Specifically, how did these children transition from initiating to modulating, and from modulating to ceasing behaviours while self-regulating?
- 3) How did the level of adult and/or peer interaction affect these children's ability to self-regulate within the observed encounter with a difficulty?

The purpose of this study was to describe each child holistically by including the contextual elements of their self-regulatory behaviours. It is beyond the scope of this study to make causal claims or conclusive arguments about preschool children's behaviour during times of difficulty. The researcher draws some conclusions from the

children's behavioural and contextual patterns, within and across multiple cases, when relevant to the literature reviewed in Chapter 2. This chapter provides descriptive patterns, with illustrations from the case studies, through thematic categories and clusters that arose from the observations.

Context

This section includes demographic information and descriptions of the preschool programs. The demographic information and ages of the participants have been included in order to present a more complete illustration of these cases. The five preschools which served as the natural environments for the seven participants are also described for contextual information.

Demographics. The participants selected were students from five of the seven participating preschools, representing various neighbourhoods, philosophical approaches, religious orientations, and economic compositions. The seven participants self-identified their cultural affiliations as the following: Caucasian (European and French Canadian) and bi-racial (Arabic and West African). This represented a typical demographic spread. The children's family structures also exhibited some diversity as 2 children lived in unmarried households without siblings and 5 children lived in married households, 4 of which included 1 sibling (2 with younger siblings, 2 with older siblings). These families ranged in socioeconomic status (SES), from very-low/low (3 children) to middle/upper (4 children) class. The majority of parents included in this current study were between the ages of 29 and 39. At the time of observation, the children were between 3 and 5 years of age. Specifically, the children ranged in age from 3 years through to 4 years 3 months, with an average of 3 years 8 months.

Preschools. Five preschools provided the observational environments for the seven participants in this study. Three schools, two of which were members of a local cooperative preschool association, offered parent training and were parent-run cooperative programs. Two of these three schools offered programs for 3 and 4 year olds with the third providing programs for 3 and 4 year olds as well as 4 and 5 year olds. The other two participating schools acknowledged ‘parents as partners’ and provided preschool programs, one for ages 3 to 5 and the other for ages 3 and 4, based on Christian foundations. These five schools required or encouraged parental involvement and employed between 1 and 4 ECEs. Each preschool class consisted of 13 to 26 children and was operated by 1 or 2 ECEs. All programs for 3 and 4 year olds were operated during the morning, while 4 and 5 year olds attended either a morning or early afternoon program.

After examining the preschool philosophy statements, principles, and guidelines, the researcher found ‘learning through play’ to be a theme across all five schools. Four out of five schools explicitly offer programs aimed at the ‘holistic development’ of preschool children. Two of the five schools, one parent-run and one Christian, were identified as very low or low SES and both offered subsidies. Middle SES was represented through one parent-run and one Christian, and upper-middle SES through one parent-run school. The very-low SES school was the only one to include a discipline statement and was a site for ECE training, whereas the upper-middle SES school was the only one to indicate the inclusion of an explicitly taught three-step problem-solving strategy. Overall, cooperation and socialization (i.e., playing together, sharing, safety and respect) were program highlights of all five preschools. A focus on personal development

was also evident across schools through terms such as self-acceptance, self-worth, positive self-concept, self-esteem, self-discipline and self-control.

Participants

The data sources, including parent interviews, demographic information, and preschool principles and guidelines, consistently supported the observational transcriptions of each child's natural play. In this section, each of the seven participating children is described with excerpts from the parent interviews to support the selection of these seven cases for this study. The children have been given fictitious names to protect their anonymity. Most importantly, each child's summary contains a brief holistic description of the transcriptions of the videotaped observation, with comments regarding the nature of the difficult task and details on the type and variety of self-regulatory strategies observed. Attention is also focused on any interactions, adult or peer, that occurred during the initiating, modulating, and ceasing of the challenging activity. The results of these discussions are summarized later in this chapter.

Table 2 provides a general overview of the participants in this study. Each child's age is listed along with the number of dimensions and interactions observed during an individual encounter with a difficult task. For example, Olivia used regulatory strategies from five (physical, problem-solving, language, social assistance, emotion) out of six dimensions when coping with the difficult activity that was analyzed for this study. Also from the summary of interactions displayed in this table, it is apparent that Olivia frequently interacted with her peers (15 times!) but rarely with an adult (once) during her difficult activity.

Table 2

Self-Regulatory (SR) Dimensions and Interactions within Difficult Tasks

Child	Age	# (out of 6) SR Dimensions Observed	Interactions	
			Adult	Peer
Amber	4yr 0m	1	0	1
Keisha	3yr 0m	2	0	1
Rosie	4yr 2m	5	1	7
Olivia	3yr 1m	5	1	15
Gabrielle	3yr 6m	4	9	5
Lily	4yr 3m	5	4	6
Malika	3yr 9m	4	11	1

As shown in Table 2, these 7 children were between 3 years and 4 years 3 months at the time of the observation. The following descriptions of each child further illustrate how each of these 7 girls are distinct through discussions of: (a) overall activity level during the 30-minute video recordings, (b) the specific tasks that presented challenges to self-regulation, (c) ability to persist through a difficulty, and (d) the variety and use of self-regulatory strategies available to them. However, these 7 children also had similarities according to their parents' description of "frustration," and of the clusters of tasks and conditions that presented challenges and as such, the researcher was able to observe regulatory patterns that hold true within and across cases. Limitations to similarity were expected given the individuality and uniqueness of each child, such as the variety of strategies and interactions observed for each child as they encountered a task that was challenging.

Amber. In the 30-minute natural play observation scenario, Amber was 4 years of age. Amber's parent depicted her responses to a difficult task as verbal and physical with descriptions such as "she'll ask for help," "start rubbing her head," while appearing "uncomfortable." At the time of observation, Amber was attending a Christian preschool which was one of six programs offered to a very low SES demographic of families, some of who were in emotional and or financial crisis. Her preschool program was operated by 3 ECEs for two or three mornings a week, was inclusive of children with special needs, and focused on the holistic development of 13 children between the ages of 3 and 5. In the videotaped observations, Amber engaged in three behaviours during the 30-minute period, all of which involved interactions with an adult or peer. Amber frequently announced her interests (i.e., "I like Winnie the Pooh...I don't like to go outside") and concerns ("Stop that...hey watch it...oh sure, what do you say"), expressed her emotions by making faces, smiling or giggling, and complied physically and through problem-solving when an adult provided direction.

The difficult activity chosen by the researcher as the unit of analysis was the initiating, modulating, and ceasing sequence Amber experienced in order to get ready to go outside. Immediately prior to initiation, Amber ceased her colouring activity when the ECE provided direction ("get ready to go outside") to the next expectation. Language and emotion was used in a non-compliant self-assertive manner ("I don't like going outside, going outside is boring") which prompted a modified response and more specific direction from the ECE ("put those away please"). By complying and ceasing her colouring activity, Amber initiated the difficult task with physical behaviours moving her from the classroom to the cloakroom where she briefly interacted with a peer. For

example, Amber's physical initiation was observed through her 'join in' strategies of going to the cloakroom, listening to a peer, and looking at her picture. She used only physical strategies (i.e., sits down and takes off shoes) during modulation, with the apparent climax of this difficult activity observed for one minute of time where Amber struggled to zip up her jacket by physically jumping up and down. Physically zipping up her jacket was the last action observed on videotape and therefore was coded as a physical action of ceasing.

Keisha. In the 30-minute play observation scenario, Keisha was 3 years of age. Keisha's parent depicted her responses to a difficult task as verbal and physical with descriptions of frustration such as "it takes her about 2 seconds to get frustrated," "she slams her hands down," "she says, 'I need help, I need help'" while apparently blaming others and thinking "it's their fault." At the time of observation, Keisha was attending a preschool program for 3 to 5 year olds at a very low SES facility offering six childcare programs for families in emotional and/or financial crisis. Keisha's inclusive morning preschool had 3 ECEs who focused on the holistic development of 13 children from a Christian perspective. In the videotaped observations, Keisha engaged in three behaviours during the 30-minute period, with ECE interactions occurring during two of the behaviours and peer interactions in all three. Two of the three behaviours were considered difficult tasks; one with and one without adult interaction. Both of these difficult tasks elicited private speech.

During the 30-minute observation, Keisha regulated through a variety of dimensions, with the exception of emotional. For example, she used language, problem-solving, and social assistance through her help-seeking words of "can you help me open

this” directed at her ECE during snack time. Keisha would typically use physical (i.e., shaking her snack bag upside down) before using language (i.e., “where’d my snack go”). Keisha was also observed regulating through moral actions such as “looking around and then eat[ing] again” during snack time and seeking assurance by “call[ing] out” (words not heard) while modulating during tent play.

The difficult task chosen as the unit of analysis for this study involved a developmentally appropriate construction task that challenged both Keisha’s fine motor and cognitive skills. With minimal peer involvement (in the form of avoidance) and without adult interaction, Keisha persisted with ‘finding the right piece’ through physical and language dimensions. Physically, she initiated play and then modulated using trial-and-error actions. At the climax of this difficulty, Keisha said “need more pieces” to herself and continued physically modulating until success was achieved. This difficult activity ceased when she chose a new set of toys off the shelf. Once a peer entered the area, Keisha put down the toys and walked away.

Rosie. In the 30-minute play observation scenario, Rosie was 4 years and 2 months of age. Rosie’s parent depicted her responses to a difficult task as containing frustration if “she wants help and she doesn’t get help immediately.” Overall, this parent described Rosie as persistent if she tries to overcome a difficulty on her own, with regulatory actions occurring mostly through dimensions of verbal and social assistance. Her parent provided specific examples such as “she would normally ask for help and keep doing it” or if it’s a challenging puzzle, she’ll say “this is really hard, but I can do it.” At the time of observation, Rosie was attending a Christian preschool program for 3 and 4 year olds at a middle SES facility offering five other family and children programs.

Rosie's parents were encouraged to participate in her learning environment alongside the 2 ECEs whose program emphasized the holistic development of all 26 children. In the videotaped observations, Rosie engaged in five behaviours during the 30-minute period, all with compliant, positive, and supportive interactions with the ECE and/or her peers. Overall, Rosie interacted in a friendly manner through emotional expressions (i.e., smiles) and moral actions (i.e., helping others).

Rosie's difficult task of swinging independently involved movement from initiating to modulating, then back to initiating actions before finally ceasing by walking away. This specific unit of analysis was her associative peer play in the playground at the swing set that included one interaction with an adult. Rosie used regulatory strategies from a variety of dimensions (physical, language, social assistance, emotion, and moral), with the exception of problem-solving. For example, Rosie provided social assistance by helping a peer swing and then exhibited initiating behaviour (coded on the transcriptions as social assistance) through her 'I want help' physical actions (i.e., sits on the swing, gets off, then sits on the swing again facing the same direction as the peer). However, Rosie was not successful in overcoming the challenge of 'pumping her legs' to swing and chose to cease the activity by walking away with her peer. Later during the 30-minute video recording, Rosie behaved in a similar manner when she approached the swing set again, physically sat on the swing, jumped down, and then walked away with a peer.

Olivia. In the 30-minute play observation scenario, Olivia was 3 years and 1 month of age. Olivia's parent provided descriptive accounts of how she responds to a difficult task which included verbally asking for help and then becoming emotionally "angry," "frustrated" and "mad" if she is only offered social assistance in the form of

verbal and problem-solving direction. According to her parent, Olivia shows her emotions and frustration by physically scrunching up her shoulders, clenching her fists, and throwing items. According to this parent, she may also respond aggressively to an adult with a “smack or the tongue out” or give her sibling “a whack or a push” during the difficult activity. At the time of observation, Olivia was attending a preschool (for 3 and 4 year olds) where 2 ECEs aimed to educate the ‘whole child’ through a program based on Christian foundations. This school’s middle SES families were encouraged to participate in Olivia’s learning environment while she gained confidence and developed social skills alongside 25 other children. In the videotaped observations, Olivia engaged in three behaviours during the 30-minute period which involved interactions with peers and the ECE.

During the 30-minute video recording, Olivia was engaged in three behaviours and employed strategies from all six dimensions (physical, problem-solving, language, social assistance, emotional, moral). One point of interest was the finding of private speech occurring as a regulatory strategy in each of the three observed behaviours. For example, private speech was used when Olivia had difficulty getting a dress-up jacket on (“Ahhg!”), when a toy broke while playing Lego with two girls and one boy (inaudible muttering to herself), and later while playing with a toy ship with a peer (inaudible muttering to herself). The specific unit of analysis chosen for this study occurred during her associative peer play when she encountered dressing difficulties at the dramatic dress-up centre. At the climax of the challenge, Olivia employed a variety of regulatory strategies (physical, problem-solving, language, and emotion) when she realized that she put the dress-up jacket on upside down. For example, physical and problem-solving

strategies occurred through her actions of taking off the jacket and trying to put it on again, while language and emotion was used through her “Ahhg!” expression of frustration. Olivia exhibited great persistence as she overcame the challenge and was able to put the jacket on properly and do up the buttons in the presence of peers at the dress-up play centre. This dress-up activity ended with Olivia accepting social assistance from the ECE who tied up her shoelaces for her. She physically ceased dramatic play by walking away.

Gabrielle. In the 30-minute play observation scenario, Gabrielle was 3 years and 6 months of age. Gabrielle’s parent depicted her responses to a difficult task as physical with descriptions such as “she’ll leave it” and “won’t even continue” when not interested. According to Gabrielle’s parent, she will apply herself if she’s really interested. For example, “she’s really interested in the whole alphabet...and learning to read” and will push her body “to the limits” when interested. Overall, she may try everything, will persist only if the task is interesting, and will ask for help “if she gets frustrated.” At the time of observation, Gabrielle was attending a parent-run cooperative preschool where an ECE promoted holistic development through two programs (3 year olds; 4 year olds). This upper-middle SES school was a member of a local preschool association and required parent training of 10 hours prior to being involved in the running of the school and class participation. Gabrielle and her 23 classmates ‘learned through play’ for two mornings each week and were encouraged to solve their own problems through a three-step process (express feelings, state problem, offer solutions). In the videotaped observations, Gabrielle employed strategies from all six dimensions and engaged in six

behaviours, each involving peers, parent, and/or ECE interactions, within the 30-minute videotaping (recorded over the period of two days).

A language activity (story time) proved to be challenging for Gabrielle as she exhibited a variety of self-regulatory strategies (physical, problem-solving, language, emotion) while trying to sit, watch, and listen. She required constant adult interaction in order to exhibit socially and age-appropriate responses during this adult directed activity. Although she did not seek or provide social assistance, it was provided for her during story time through the physical and verbal guidance of the ECE. After initiating physically, Gabrielle modulated physically (struggled with inhibitory control), emotionally (utilized distractions), and with language (through interactions). For example, she physically stood up, touched the ECEs knees, and kneeled during story time, expressed emotion through her laughter, and problem-solving through language. When ceasing, problem-solving was added to her repertoire of strategies as the ECE held up name cards to read. Overall, Gabrielle frequently used physical strategies, along with the constant direction of her ECE, to regulate her behaviour during story time. Gabrielle's encounter with story time was captured again, on the second day of videotaping, revealing actions and interactions quite similar to the first recorded story time that was specifically analyzed for this study.

Lily. In the 30-minute play observation scenario, Lily was 4 years and 3 months of age. When encountering a difficult task, Lily's parent described "frustrated" responses as well as avoidance actions (i.e., pretending she doesn't like the task or moving "to do something else"). According to Lily's parent, she'll also say "Oh no, I don't like this," and may act "kind of bored, kind of tired with it." Following these responses, Lily will

then emotionally express feeling “not good enough” and “maybe a little bit sad” while encountering a challenge. At the time of observation, Lily was attending a parent-run cooperative preschool where 2 ECEs promoted age-related development through three programs (for ages 3, 3 and 4, and 4). This middle-SES school was a member of a local preschool association and required parent training of 10 hours prior to being involved in the running of the school and class participation. Lily and her 24 classmates developed social skills while ‘learning through play.’

In the videotaped observations, Lily employed strategies from all six dimensions and engaged in nine behaviours, each involving peer, parent, and/or ECE interactions – all within 30-minutes! Several of these nine behaviours were considered ‘difficult tasks,’ yet describing all of them is beyond the scope of this study. Transcriptions of Lily’s physical actions within the 30-minutes included descriptions such as “exaggerated,” “moving wildly and bumping into peers,” “falls off bike” and “clapping excitedly.” Emotion was also observed throughout the nine behaviours with facial expressions (i.e., “makes a sad face” or smiles and laughs). Morally, she attempted to, and frequently exhibited, helping behaviours towards peers. For example, she assisted a boy who was struggling to open up his snack container. Language strategies were observed throughout the 30-minute recording, with private speech occurring in three of the nine activities. In one activity, Lily exclaimed “big book, big book” out loud while she was looking around for a book to choose. During a different activity, Lily says “too hot, too hot” when outside and proceeds to remove her cape, take off her jacket, and put the cape back on and resumes outdoor play where she was later observed singing to herself. Lily was also

observed singing to herself at the peak of her experience with the difficult activity analyzed in this study.

Make-believe and dress-up challenges are typically encountered by children in their preschool environments. Therefore, the researcher chose to analyze Lily's difficult task that occurred in the cloakroom, was the fourth recorded behaviour, and involved the adult-directed expectation of Lily to get dressed appropriately for outdoor playtime after removing and returning the dress-up skirt. During the modulation and ceasing sequence of this difficult activity, Lily's responses to adults included moments of compliance (i.e., sitting back down again after being asked) and non-compliance (i.e., saying no with a sad face when asked to give the skirt to a parent). Her specific interactions with peers ranged from acts of positive affiliation (i.e., laughing with others, leans close) to negative responses (i.e., laughing at a boy who was being stopped by ECE; putting her hand in front of the boy's face). Lily initiated her encounter with the difficult activity through the regulatory dimensions of physical (sitting in her cubby, watching others) and language (talking out loud). When modulating, she added problem-solving, emotion, and moral strategies. At the climax of this difficult activity, Lily was observed as having a sad expression, bumping her head (side to side) on the inside of her cubby, and singing to herself. Lily ceased this activity by leaving the skirt in the cloakroom and running outside.

Malika. In the 30-minute play observation scenario, Malika was 3 years and 9 months of age. According to Malika's parent, "she gets frustrated" and uses "verbal and body language" when a task is difficult for her. At the time of observation, Malika was attending a rural preschool where one ECE focused on holistic development through two

parent-run cooperative programs (3 and 4; 4 and 5 year olds). This school's low SES families were required to complete 10 hours of parent training and participate in Malika's learning environment while she 'learned through play' alongside 20 other children.

In the 30-minutes of videotaped observations, Malika engaged in two behaviours, both involving fine motor skills at the craft table, by employing physical (i.e., lifted up string, shook beads down three times), language (i.e., talking to herself), problem-solving (i.e., looked around, then took paper off shelf) and social assistance (i.e., "can you do this for me?") strategies. Both of these behaviours included adult-initiated interactions, which were followed by Malika's requests for help (i.e., "can you help me"), and very little peer interaction.

The specific task chosen for this analysis occurred in the classroom while Malika constructed a beaded necklace at the craft table. Malika initiated this task by employing physical (standing and looking at the art table) and language (responding to ECE with "cutting") strategies, with the addition of problem-solving and social assistance through help-seeking (i.e., "can you help me") when modulating. At the climax of this difficult task, Malika specifically expressed problem-solving and sought social assistance through verbal appeals to the ECE. Ceasing this activity required interactions with the ECE while Malika employed physical, language, and problem-solving strategies.

Overview: Analyzing Self-Regulation within a Difficult Task

This study analyzed the coded transcriptions of videotaped observations associated with each of the 7 children. This first level of coding was performed during the Boyer's (2005a) larger study where the children's self-regulatory behaviours and responses within each activity (that occurred during the 30-minute video recording) were

sorted into specific descriptive categories (i.e., physical initiation). In addition, the interactions that took place with adults (ECE or parent) and/or peers were also sorted into specific categories (i.e., problem-solving with parent).

With the six dimensions already coded throughout each transcript as a foundation, the researcher further reduced the data by coding and sorting self-regulatory behaviours and responses for each of the seven girls, specifically focusing the analysis on a difficult task encountered by each child (See Appendix B). The difficult activities were first coded for location (classroom, cloakroom, playground) and social context of the task or activity (child-directed, peer play, or adult-directed). Through this level of coding, the researcher proceeded to identify whether the task was considered developmentally appropriate and then the tasks were sorted according to type. The tasks that were analyzed in this study were identified as either a physically challenging task (i.e., fine motor), or a language-related task (i.e., sitting and listening to ECE during story time). Once the difficult task was identified and coded, the researcher then sorted the self-regulatory behaviours within each of the seven girls' coded sequences of initiating, modulating, and ceasing. Concurrently, the interactions during the challenge were identified, coded, and sorted by utilizing the descriptive categories provided in the larger study (Boyer, 2005a).

The next level of coding involved identifying whether each of the child's observed behaviours within the six dimensions were instrumental towards the goal of the difficulty (See Appendix B). If the child's action was considered by the researcher to be instrumental and contributory to self-regulation during the difficulty in a constructive goal-oriented way, the behaviour was coded as 'proactive and persistent.' Conversely, a behaviour was coded as 'reluctant and resistant' if it appeared to delay or disrupt the

developmentally appropriate effortful control required for the difficult activity. For example, a behaviour coded as physical was further examined to see if the strategy being used could be considered persistent in an instrumental way or resistant in an aggressive manner. Likewise, a child's self-regulatory strategy of social assistance was further examined and coded as proactive if the child sought help or coded as reluctant if she waited until help was offered. Similar coding actions were performed for all 6 dimensions of self-regulation. What follows is a discussion of the results of these analyses.

Proactive and Persistent Strategy Use within a Difficult Task

For this portion of the analysis, the researcher focused on the frequency and variety of strategies used by the girls encountering a difficult activity within each of the 6 dimensions. The difficult activities for these preschoolers included challenging tasks such as trying to swing independently and sitting, watching, and listening during group story time. In determining the frequency of proactive and persistent strategy use within each difficult task, the researcher discovered that every one of these girls utilized proactive and persistent strategies. These frequencies for each child are displayed in Figure 1, which also illustrates that not every child employed reluctant and resistant responses during a difficult activity. Specifically, this histogram reveals that each child used at least two physically proactive and persistent strategies. This graph also displays the dimensions with the least number of strategies represented as: problem-solving in a proactive and persistent way (once by Keisha), social assistance in a proactive and persistent way (three strategies by Malika), proactive and persistent moral regulation (twice by Rosie), and reluctant and resistant moral regulation (once by Lily). Overall, there were more physical (i.e., initiating the difficult activity compliantly), language (i.e., using task-relevant

private speech), emotion (i.e., smiles), and moral (i.e., offering help to another) strategies used in a proactive and persistent way.

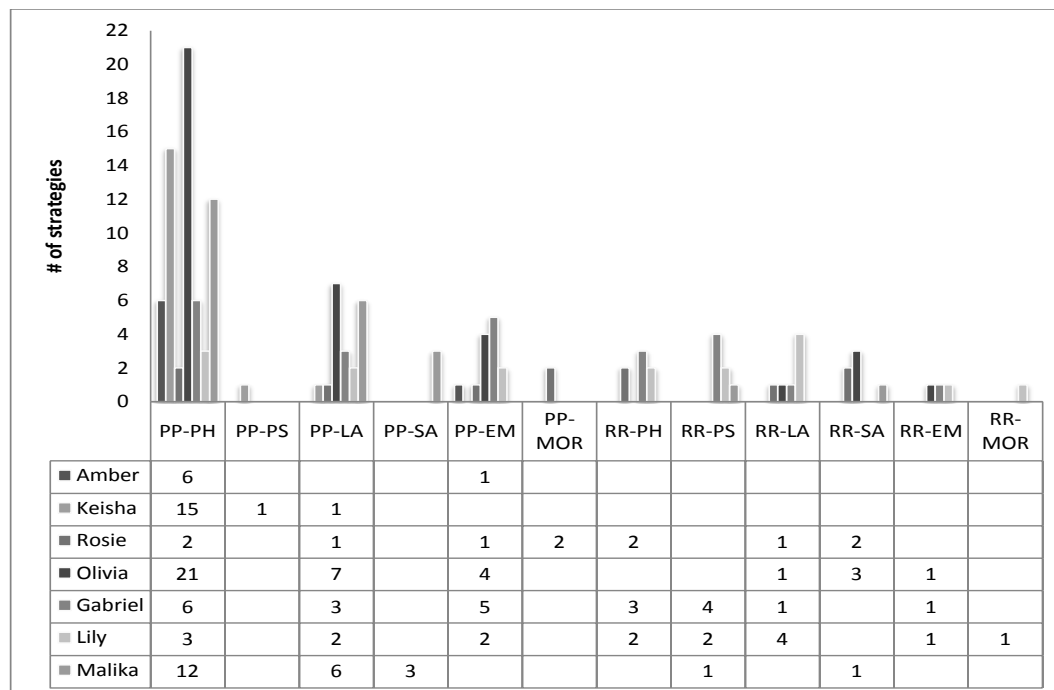


Figure 1. Proactive/persistent and reluctant/resistant strategies used by each child.
Note. Abbreviations used: PP (proactive/persistent), RR (reluctant/resistant), PH (physical), PS (problem-solving), LA (language), SA (social assistance), EM (emotional), MOR (moral).

In fact, as displayed in Figure 2, the total occurrence of proactive and persistent strategies was more frequent than the use of reluctant and resistant responses or behaviours across all the girls' difficult tasks. It is also apparent from this graph that Amber and Keisha only utilized proactive and persistent regulatory strategies. For example, Amber showed proactive persistence physically by jumping up and down while trying to zip up her jacket. Keisha was also proactively persistent through her trial-and-error actions of physically trying different pieces until she found the right one that fit. Rosie, however, used almost an equal amount of proactive and persistent strategies than

she did reluctant and resistant. For example, she had moments of being proactive (i.e., walked towards the swings) but then times of reluctance (i.e., stepped aside as an adult helped her peer with a push). Yet, Lily was the only girl to have used more reluctant and resistant regulatory strategies than proactive and persistent. For example, during Lily's difficult activity, she expressed resistant behaviours of non-compliance (i.e., in response to a parent's request, Lily said "no"). Although Lily used more reluctant and resistant strategies while getting ready to go outside, she did make proactive and persistent attempts during the difficult activity such as "taking off shoes" and then after a few other behaviours, she "continues changing shoes and puts on [her] coat."

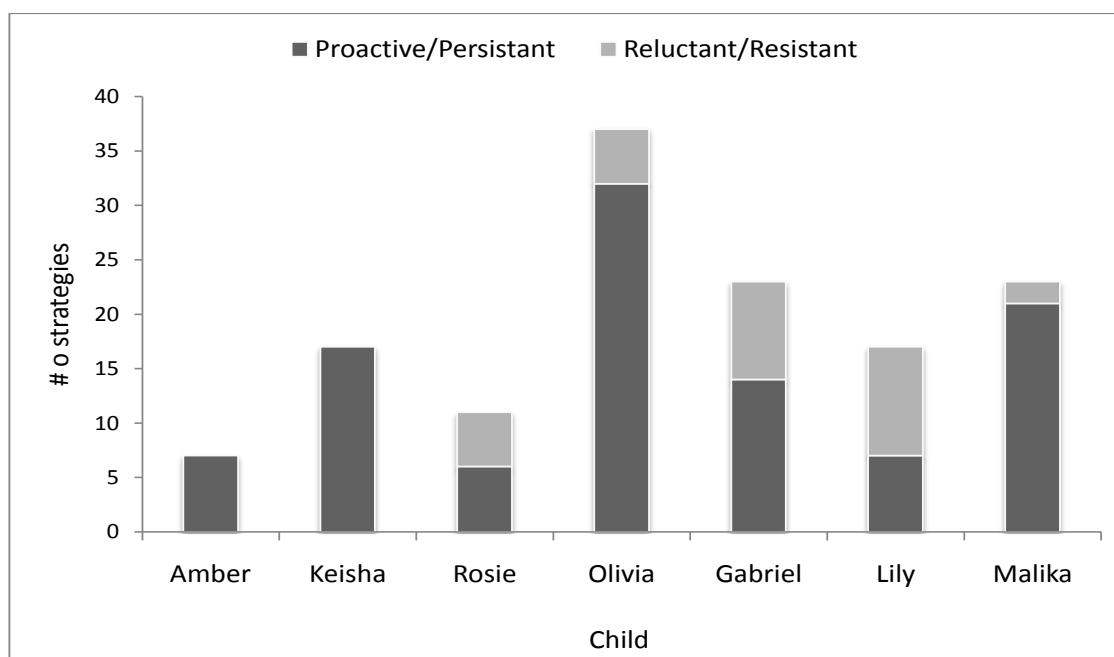


Figure 2. Proactive/persistent or reluctant/resistant strategies used by each child.

More specifically, Figure 3 illustrates that at least six out of the seven girls exhibited more proactive and persistent behaviours across physical and language dimensions of self-regulation. Also displayed through Figure 3 is that strategies of

problem-solving, as well as social assistance, were used by more girls (3 out of 7) in a reluctant and resistant way than in a proactive and persistent way (only 1 out of 7 girls). One point of interest was that all five children involved in either peer play or adult-directed contexts expressed emotion during the difficulty (or immediately prior to initiation) in a proactive way. For example, emotion was expressed during interactions through smiles or laughter. However, the two children who were involved in child-directed activities did not exhibit any regulatory emotional responses during the difficulty. Lastly, only two children were observed as responding morally, with one exhibiting proactive regulation (offering her peer help with the difficulty activity) and the other participant displaying resistant regulation (laughing at a peer being reprimanded by the ECE).

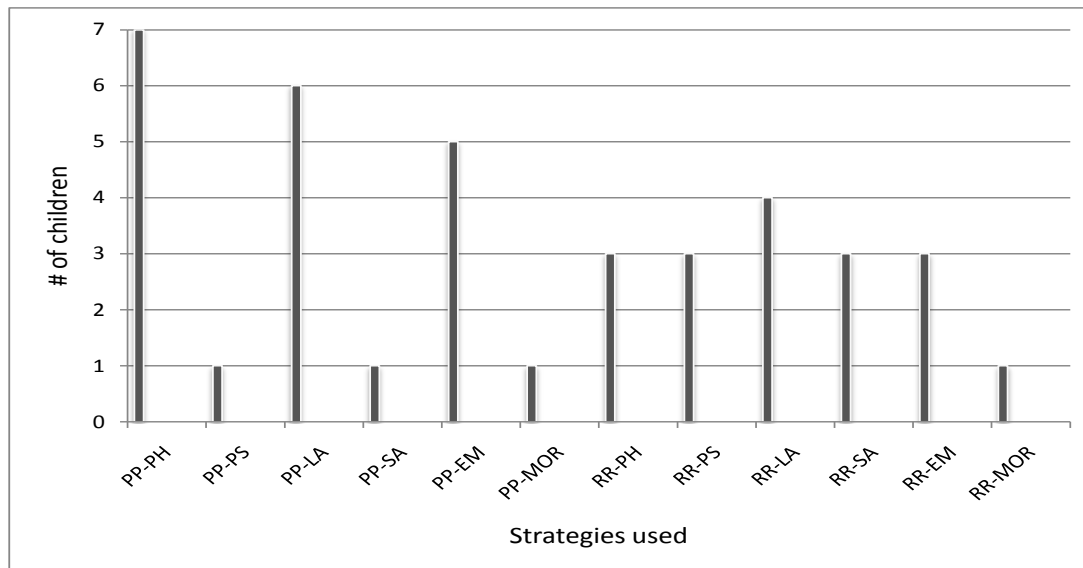


Figure 3. Self-regulation strategies used by children across difficult tasks.
Note. Abbreviations for strategies listed in Appendix B.

In examining the patterns within- and across-cases, it was revealed that every child employed at least one proactive and persistent strategy identified by the researcher

as physically instrumental or purposeful towards the developmentally appropriate goal of the difficult activity or task. For example, (a) Amber stood up to put her jacket on, (b) Keisha chose a number of pieces until she found the one that fit, (c) Rosie sat on the swing, (d) Olivia turned the jacket right-side up, (e) Gabrielle resumed listening while sitting down, (f) Lily took off her shoes, and (g) Malika shook the beads down the string while constructing a necklace. These and other coded behaviours or responses to each girl's difficult activity occurred during one of three task contexts: (a) the child chose an independent activity, (b) the child encountered the difficulty within associative peer play and, (c) the child was required, and directed by the ECE, to do the difficult activity. In addition, these seven difficult activities were encountered across three locations: (a) classroom, (b) cloakroom, and (c) playground. Although all children exhibited physically proactive and persistent behaviours and responses to a difficulty, there were varying amounts and types of adult and peer interaction across-cases. These patterns of proactive and persistent coping behaviour were observed across cases, and an illustrative sampling of these cases is included. The following account illustrates the occurrence of similarities across three task contexts (child-directed, peer play, and adult-directed).

Keisha was seen playing with a gear-like puzzle during floor play in her classroom. Without adult interaction, Keisha persisted through this fine motor cognitively challenging construction task independently, primarily using a problem-solving trial and error response when a piece wouldn't fit. At the climax of this activity, Keisha expressed task-related private speech through "need more pieces." This constructive coping response allowed for further instrumental actions that eventually led to her finding and fitting in the correct piece. As this behaviour sequence ceased, a peer entered the floor

play area which led to an avoidance response from Keisha. Similarly, Olivia expressed her frustration through self-directed speech when struggling to put on a dress-up jacket. Unlike the planning focus of Keisha's speech, Olivia released a problem-solving task-related emotional expression through "Ahhg!" at the climax of her physical struggle.

Lily also utilized private self-directed speech (singing to herself) while regulating during a difficult activity. Lily's speech, although not related to the task, also appeared to occur at the climax of modulation. Also like Keisha and Olivia, Lily responded to the difficulty in a physical way immediately prior to her expression of language. After realizing that she had to return the dress-up skirt before going outside, Lily sat sadly in the cloakroom, looked at her peers and then laughed at one. She then physically regulated by bumping her head side-to-side against her cubby. It was at this point, that Lily expressed her frustration and distracted herself through a type of task-irrelevant private speech – singing (also considered 'inaudible muttering'). In the end, Lily was non-compliant by ceasing the difficult activity without returning the skirt; she did not go outside with the skirt, but she also did not put it away before going outside. Although all three (Keisha, Olivia and Lily) utilized private speech (within fantasy play, as self-guidance, or through inaudible muttering) as a regulatory strategy, those (Keisha and Olivia) whose expressions were related to the difficult task were able to overcome the specific challenge without adult interaction, yet Lily, whose expression of singing was unrelated to the dressing challenge, did not complete the challenging activity as required by an adult.

Overall language, whether other- or self-directed, was employed as a self-regulatory strategy by most girls during an encounter with a difficult task. As discussed,

three girls (Keisha, Olivia, and Lily), used self-directed private speech. Language was also used when requesting social assistance (i.e., Malika asked her ECE “can you help me”) and as a social distraction (i.e, Gabrielle and Rosie talked with peers during their difficult activity). One exception was Amber who did not utilize language within the challenging activity, but immediately prior to the coded initiation stage of her difficulty. While ceasing her colouring activity, the ECE asked Amber to get ready to go outside (the difficult activity) to which Amber responded non-compliantly, through self-assertive language, “I don’t like going outside, going outside is boring.” Smiles and giggles followed this assertion, which then prompted a modified response from the ECE requesting her to put away the crayons and picture. Amber complied without incident, and then physically initiated the difficult activity of getting ready to go outside. For all seven girls, physical and language were the most commonly used self-regulatory strategies.

Self-Regulation within a Difficult Task: Initiating, Modulating, and Ceasing

In this section of analysis, the children’s overall sequence of behaviour within a difficult task was examined using the within-case memos as a foundation. The understanding of emerging patterns was enhanced through the memoing and arranging of data conceptually within matrices, while taking into account the context of the videotaped observations (See Appendix C for outline of analysis procedures). When the modulating phase, and specifically the transitional behaviour (involved in the initiating, modulating, and ceasing of a difficult task) of these seven girls was explored across cases, the data indicated two distinct clusters: (a) children (Amber, Keisha, Olivia, Gabrielle, and Malika) who transitioned through the self-regulatory sequence (initiating, modulating,

ceasing) in a straight-forward manner and achieved a successful outcome, and (b) children (Rosie and Lily) who transitioned through the sequence in a more complex way and ceased the difficult activity in a less-than optimal fashion. The researcher used Boyer's (2004, 2005a, 2007) *Observational Coding Guidelines* when identifying success from a linear sequence of initiating, modulating, and ceasing. Five girls displayed this expected sequence; however, the transitional behaviours of two children (Rosie and Lily) between the three phases of regulation were different. What follows is an account of all 7 children with attention to these two distinct clusters.

Within-case descriptions: Modulating with transitions towards success.

Amber initiated the difficult activity of 'getting ready to go outside' by being physically compliant to the ECE's direction. Although she physically initiated the activity by going to the cloakroom, language ("I don't like to go outside") and emotion (expressed through giggling) were expressed prior to initiation, which prompted the ECE to provide a modified response ("put your picture away"). Modulation involved physical regulation, whereby Amber stood up to zip her jacket. The transition from the modulation of the dressing challenge to ceasing was also physical as she was observed jumping up and down for one minute in order to zip up her jacket.

Likewise, Keisha employed physical strategies when transitioning between phases of her independent fine motor task. Initiation began when Keisha chose a puzzle-like toy of plastic gears. She transitioned into the modulation phase by lying on the carpet and playing with the gears immediately. After successfully finding the correct piece that fit, Keisha began her transition from modulation to ceasing. This involved getting a new bucket of toys, briefly playing with them, putting them away, and then ceasing this floor

play activity by walking away. Therefore, it appears that the arrival of a peer into the area played a role in her ceasing behaviour.

Olivia also employed physical strategies when transitioning through the phases of her difficulty during associative peer play at the dress-up centre. She showed a continuous interest in peer play through her energetic use of physical strategies in addition to expressions of language (i.e., “I’m a baby”), emotion (i.e., giggling), and problem solving (i.e., “I don’t wanna” to peers). Given her free use of language throughout, it was not surprising that language was a self-regulatory strategy used at times of transition. At the beginning of this segment, Olivia was observed running to same-sex peers at the dress-up centre and promptly pointing towards the indoor climbing apparatus. She talked to the girls, which proved to be a transition from initiation to modulation at the dress-up centre. Modulation then began with her experimentation with some of the available items (trying on a hat, playing with a doll in a crib). After expelling a lot of energy (particularly when struggling with a dress-up jacket), Olivia prepares for cessation of the dress-up activity by carrying her shoes away from the centre. When seen sitting on the ground, holding her shoelaces, the ECE offers to help. Olivia’s acceptance of help involved the social assistance use of language (“Yeah, someone has to help me”) which moved her from modulation towards the ceasing phase. This entire dress-up sequence ends successfully; with Olivia having independently overcome her developmentally appropriate struggle with the jacket, and then receiving social assistance with the developmentally challenging task of tying her shoes. After Olivia received help with tying her laces, she ceased the dramatic peer play activity by walking away.

Gabrielle was also quite physically active while being challenged by the developmentally appropriate task of sitting, watching, and listening to her ECE read a story to the class. She physically and compliantly initiated the activity by crawling towards the ECE. Modulation began when the ECE started reading the story book. Physically, Gabrielle immediately responded by rubbing a nearby boy's back and expressing emotion regulation by putting her arm around him. Throughout modulation, Gabrielle experienced difficulty with remaining attentive but was generally compliant to her ECE's responses of modification and negation. Like Olivia, Gabrielle transitioned from modulation using language. Although Olivia employed language in a social assistance manner, Gabrielle used language in a distracting and task-irrelevant fashion by talking to a peer (words not heard) after showing "thumbs up" as a signal of readiness to her ECE for the ceasing phase of this activity. After further interaction with her ECE, Gabrielle ceases this story time activity compliantly by standing up when called, receiving soap, and running to the sink.

Like Olivia, Malika utilized language (responded to ECE's question with "cutting") as she transitioned from initiation to modulation and from modulation to ceasing. At the beginning of this sequence, Malika was seen standing by the craft table deciding what to do. After her ECE provided two choices, Malika used language ("cutting") and proceeded to the modulation phase. Physically, she began her activity by standing on a chair and looking at the beads. Modulation of this developmentally appropriate difficult task of stringing beads continued with the use of language, physical as well as problem-solving strategies. The end of her modulation phase is signified by her use of language ("I'm going to finish my necklace") which prompted a positive

reinforcement response from her ECE (“I like what you are doing”). Ceasing began with Malika’s physical movement away from the craft table while holding her completed bead necklace. After accepting an offer of social assistance (“yeah” and moved towards the ECE), Malika allowed her ECE to tie the necklace around her neck before walking away.

Within-case descriptions: Complex transitions. Unlike the linear progression of initiating, modulating, and ceasing behaviour the previously described children utilized in order to overcome the difficult activity, Rosie was observed as progressing through the difficult task in a complex non-linear fashion and concluded with an unsuccessful resolution. Rosie encountered her difficulty while experiencing associative peer play in the playground. After standing with her peer, she used language to initiate a developmentally appropriate challenge of swinging (‘pumping her legs’) independently on a swing. However, modulation began with an abrupt physical action of stomping something on the ground. She then approached the swings with a peer and, rather than getting on the swing, Rosie offered social assistance to her peer (“want me to push you?”). At this point she pushes her peer which, according to the previously coded transcriptions, indicated a return to initiation. This second attempt to initiate was identified as a moral strategy signifying an ‘invitation to play.’

Next Rosie was observed as stepping aside to allow the ECE space for pushing her peer’s swing higher. After watching, she began another transition to modulation by talking to her peer. She then attempts initiation of the difficult task a third time by getting on the swing (emotionally signifying ‘I want to play’). Without response from the peer or adult, Rosie gets off the swing and changes her position so she is facing the same direction as her peer (physically expressing ‘help me’ as a social assistance initiation

strategy). Still unable to receive a response from her physical plea, Rosie moved straight from initiation to ceasing, without overcoming her difficulty, by physically walking away with her peer.

Like Rosie, Lily did not complete the difficult activity. Lily's sequence of transitional strategies, although linear, was considered complex because multiple strategies were used through a single behaviour. When moving from initiating to modulation and from modulating to ceasing, behaviours were observed and identified as utilizing regulatory strategies across dimensions. For example, physical and language strategies were coded for her initiating action of sitting in her cloakroom cubby, watching others and talking out loud (words not heard). Lily transitioned into her modulation phase through the use of problem-solving (takes off skirt when told by parent) and physical (takes off skirt and puts into her cubby) strategies.

Later, when preparing to cease the difficult activity of getting ready to go outside, Lily ends her modulation phase through a combined problem-solving and non-compliant assertive response ("no"), expressing her unwillingness to give the skirt to a nearby parent. Ceasing of this developmentally appropriate difficult activity for Lily involved a non-compliant avoidant response whereby she ran outside (after her ECE announced to the class that it was time to go outside). As a result, it appears Lily did not successfully complete this difficult activity within the cloakroom, as required by the adult involved.

Across-case patterns of transitional strategies. Table 3 displays the general strategy (or combination of strategies) each child employed when initiating the difficult activity, moving from initiating to modulating, modulating to ceasing, and then the strategy last used when ceasing the activity. Overall, Table 3 shows physical regulation

was exhibited when each child began the activity and left the activity. Transitioning from the initiation stage to modulation always involved physical behaviours and, for four of the seven girls, language was also employed. The transition from modulation to ceasing always involved physical with three children exhibiting additional regulatory dimensions (problem-solving, language, and social assistance).

In this table, the coded dimension(s) that represented each girl's behaviour as she moved through the complete sequence of a difficult activity are identified. For example, Table 3 shows Amber and Keisha as only using physical strategies when moving from one phase to the next during their respective difficulties. Similarly, Olivia, Gabrielle, and

Table 3

Self-regulatory Strategies of Transition for Each Child

Child	Self-Regulatory Transitions			
	Initiating	Initiating to Modulating	Modulating to Ceasing	Ceasing
Amber	PH	PH – PH	PH – PH	PH
Keisha	PH	PH – PH	PH – PH	PH
Rosie	PH	(1)LA – PH (2)EM – LA (3)EM – SA	SA – PH	PH
Olivia	PH	LA – PH	LA – PH	PH
Gabrielle	PH	PH – PH	LA – PH	PH
Lily	PH/LA	PH/LA – PH/PS	LA/PS – PH	PH
Malika	PH	LA – PH	LA – PH	PH

Note. Abbreviations used in this table: PH (physical), PS (problem-solving), LA (language), SA (social assistance), EM (emotional)

Malika used physical strategies yet also employed language strategies during times of transition. However, Rosie and Lily's transitions were not as smooth and, as displayed in Table 3, involved behaviours distinctly different from the other five girls. Rosie's transitional behaviours involved several attempts at re-initiating, with the last attempt involving movement from initiation (passively waiting for social assistance while sitting on a swing) to ceasing (walking away with her peer) without experiencing modulation (i.e., trying to swing). Lily, on the other hand, did proceed through the sequences of her difficulty in a linear fashion (initiating, modulating, ceasing), yet was distinct because her transitional shifts involved composite behaviours. For example, Lily's initiating behaviour (sat in cubby, watched others, talked aloud) was coded as both physical and language. Lily transitioned from initiating with this composite behaviour (physical and language) to modulation where she used a composite of physical and problem-solving (when told by a parent, Lily took off the dress-up skirt). Of specific interest was the finding that Rosie and Lily were not only distinct in their transitional shifts, but were also the oldest girls in this study and the only two girls who did not complete their difficult task successfully.

Six Dimensions of Self-Regulation: Two Types of Strategies

In this section of analysis, the children's behaviours and responses (as coded within the six self-regulatory dimensions) to a difficult task or activity were examined using the researcher's notes, memos, conceptually clustered matrices, and graphic data displays as a foundation. When specific strategies used by these seven girls were explored across cases, the data indicated two distinct clusters: (a) children (Amber and Keisha) who used only proactive and persistent strategies and, (b) children (Rosie, Olivia,

Gabrielle, Lily, and Malika) who used proactive and persistent as well as reluctant and resistant strategies when encountering a difficult activity.

Table 4 provides a summary of the number of dimensions (out of 6) which were coded initially for each child during a difficult task or activity. In addition, this table displays the number of dimensions (out of 6) expressed (either proactively and persistently or through reluctance and resistance) as a result of this study's further coding of behaviours. For example, Keisha's transcriptions were coded according to physical and language dimensions. Upon further examination by the researcher of this study, some of her physical strategies were identified as involving 'trial-and-error' and therefore were further coded as problem-solving. As a result, the researcher discovered three dimensions (physical, language, and problem-solving) represented in proactive and persistent ways during her difficult task. Lastly, the final column displays the number of dimensions represented by any reluctant and resistant strategies. By looking at Table 4, it is apparent that Keisha did not utilize this type of strategy (within any of the 6 dimensions), while encountering her difficult activity.

Table 4

Dimensions of Self-Regulation within Difficult Tasks

Child	Initially Coded Dimensions of Self-regulation (out of 6)	# of Dimensions (out of 6) Coded Further for Task Persistence	
		PP	RR
Amber	1	2	0
Keisha	2	3	0
Rosie	5	4	3
Olivia	5	3	3
Gabrielle	4	3	4
Lily	5	3	5
Malika	4	3	2

Note. Abbreviations used: PP (proactive and persistent), RR (reluctant and resistant)

Within-case descriptions: Proactive and persistent strategies. Amber and Keisha were the only two participants regulating through proactive and persistent strategies, without employing any observable resistance or reluctance. Other similarities between these two children were identified through the researcher's use of data displays such as summary forms, memos, and conceptually clustered matrices. Firstly, both children were observed struggling with a physical task involving fine motor skills. Amber was observed independently persevering through the activity of getting dressed to go outside without any adult or peer assistance. Amber specifically had a difficult time trying to zip her jacket up. The zipper on her jacket seemed stuck and so she persisted for one minute by jumping up and down. Keisha also encountered a challenge without adult or peer assistance, when she struggled independently. Specifically, Keisha was observed

as repeatedly trying different pieces until she found the correct piece that fit. Success was achieved as the correct piece made the ‘gears’ toy function.

Secondly, both girls appeared successful in overcoming their individual challenges through the use of a few proactive strategies; Amber independently zipping her jacket and Keisha independently finding the correct piece to make the toy complete. In fact, Amber and Keisha employed the least amount and the least variety of self-regulatory strategies during their respective difficulties. Both girls utilized compliant strategies to initiate, with Amber moving to the cloakroom and Keisha looking at the toy shelf. Both girls employed physically instrumental strategies during modulation, with Keisha also using task-related private speech (“need more pieces”). In the end, both girls ceased the activity physically. Lastly, the researcher considered it noteworthy that the preschool environment at the time of observation was similar for these two girls. Amber and Keisha each attended a preschool program, within a very low SES environment, devoted to providing holistic care based on Christian foundations for children aged 3 to 5 years. Although they were videotaped experiencing different difficulties within different task conditions, both Amber and Keisha were part of a safe, stimulating, and nurturing environment which encouraged students to ‘learn through play.’

Within-case descriptions: Reluctant and resistant strategies. Rosie used strategies identified as reluctant and resistant 45% of the time (5 out of 11) during the difficult task of swinging independently on a swing. However, Rosie was the only one of seven girls to be observed using proactive moral self-regulation. During the initiation stage, Rosie delayed engagement and talked with a peer. She further displayed reluctance during modulation, when approaching the swing set, by stomping something on the

ground. Rosie then proactively approached the swing set with her peer and used language in a social and positive way. Instead of sitting on the swing herself, she offered social assistance (“want me to push you?”) and, after an affirmative response, proceeded to push the girl on the swing. At this point, the transcriptions indicate a return to initiation with a second attempt at the swings. Here Rosie was observed moving and then watching the ECE push (an ‘under-duck’) the other girl’s swing. After talking with the girl, Rosie attempts a third time by getting on a swing. Unable to swing herself, she gets down and then back into the swing, this time facing the same direction as her peer. After this help-seeking action Rosie ceased this activity by walking away with her peer.

Olivia also used strategies of reluctance and resistance five times, yet this only represented 13% of her total strategies (5 out of 37) used when struggling through the difficult activity sequence. Actively engaged in dramatic play at the dress-up centre, Olivia appeared to only utilize reluctant or resistant strategies when at the peak of difficulty. For example, when struggling with a dress-up jacket, Olivia expressed negative emotion (anger) through her verbal expression of “Ahhg!” Shortly after, Olivia used language towards her peers in a self-assertive way. When ceasing the dress-up sequence, Olivia was observed as needing help with her shoes. She waited passively by sitting on the ground until the ECE offered to help. Unlike Rosie, Olivia was offered assistance by the ECE and consequently received the help she needed. Overall, Olivia was a very proactive and persistent child who successfully completed the two difficulties (dressing challenges with a jacket and shoes) encountered during a dramatic associative peer play sequence.

Gabrielle was also observed to be quite physically active, while challenged with the difficult activity of story time, and employed reluctant (i.e., crawled away) and resistant (i.e., stood up when required to sit) strategies 39% of the time (9 out of 23). Overall, more dimensions of self-regulation (4 out of 6) involved reluctant and resistant strategies than dimensions (3 out of 6) of her proactive and persistent strategies (See Table 4). Physically, Gabrielle struggled with inhibitory control and resisted the behavioural expectations of story time. For example, she was observed sitting up and touching the ECE's knees, and even after her ECE told the class to sit on "bottoms," Gabrielle stood and then sat tall. At this point, even after being specifically "told to sit on her bottom," she stayed kneeling until the ECE told her once more. As illustrated by this example, the problem-solving that took place was directed by the ECE. Gabrielle was also observed trying other regulatory strategies, identified by the researcher as positively helping her persist. For example, she physically expressed emotion regulation during the difficult activity through comforting strategies of affiliation such as rubbing a boy's back, putting her arm around him, and also by laughing and reaching out to touch another girl's finger.

Lily was the only one of seven girls to employ more reluctant and resistant (58% of the time; 10 out of 17 strategies), than proactive and persistent strategies within her difficult task sequence. Overall, Lily utilized a range of regulatory strategies with the exception of social assistance. Specifically, Lily's behaviours and responses involved the most dimensions (5 out of 6), and of those specific behaviours, eleven were coded as a composite involving more than one strategy. For example, after she took off her inside shoes and before she dressed with her outdoor footwear, one of Lily's actions was coded

across 3 dimensions as she leaned close to a boy's face (physical) and laughed (emotional), specifically "laughing at [a] boy" who is being reprimanded by the ECE for "making faces" (moral). In fact, Lily's difficult task sequence involved the most composite behaviours of all the seven girls. In addition, Lily was the only child to utilize moral regulation in a reluctant and resistant way (by laughing at a peer 'in trouble' instead of continuing to change her shoes) as opposed to Rosie who was the only girl who regulated morally in a proactive way (offered and delivered social assistance to a peer by pushing her on a swing).

Malika was proactive and persistent, employing the least number of reluctant and resistant strategies (of this cluster) at only 9% of the time (2 out of 21). Although this was primarily a child-directed task, Malika was the only one of seven girls who sought social assistance. Specifically, this only began to occur (and then increase) once her ECE initiated conversation and posed a question ("do you know what a pattern is?") during modulation. While modulating throughout her difficult task of constructing a beaded necklace, Malika sought help from the ECE. Malika was the only girl observed to regulate through both proactive/persistent (i.e., "can you help me with this") and reluctant/resistant (i.e., when ceasing this activity, Malika stood passively with her necklace until ECE asked if she needed help putting it on) strategies of social assistance. Malika also displayed reluctance through the problem-solving dimension during initiation by delaying engagement. Her behaviours involved physically standing, looking at the table "deciding what to do," only proceeding after an adult gave her two choices. She appeared reluctant during initiation as her response to the choices was "cutting," yet the activity she eventually initiated was beading.

Across-case patterns of self-regulatory strategies. This across-case discussion presents information demonstrating that these seven preschool-aged girls frequently used proactive and persistent strategies when regulating during a challenging activity. As presented early through Figure 2, six out of seven girls' use of proactive and persistent strategies was equal to or greater than their use of reluctant and resistant strategies when regulating during a difficult activity. Specifically, two (Amber and Keisha) girls only used proactive and persistent strategies, three girls (Rosie, Gabrielle, and Malika) used more proactive/persistent than reluctant/resistant, and one girl (Lily) used more reluctant/resistant than proactive/persistent strategies.

Although more proactive and persistent strategies were observed in this study, Figure 4 provides a pictorial representation of Table 4 illustrating the range of reluctant and resistant strategy as greater across the 6 dimensions of self-regulation than the girls' use of proactive and persistent strategies. Specifically, the girls' use of proactive and persistent strategies occurred within fewer (between 2 and 4) self-regulatory dimensions, whereas strategies of reluctance and resistance occurred within a wider range of dimensions (between 0 and 5). The total number of strategies (both proactive/persistent and reluctant/resistant) used by the 7 girls in this study within each of these 6 dimensions is displayed in Figure 5.

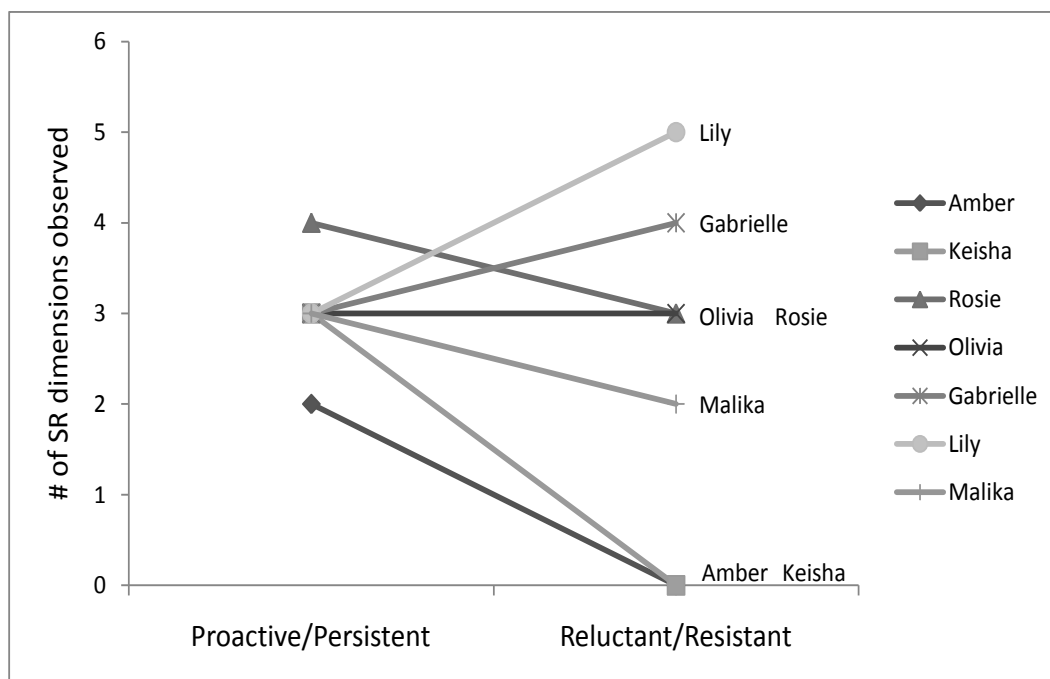


Figure 4. Range of self-regulatory dimensions present within difficult tasks across cases

As shown through Figure 5, the physical dimension was utilized the most and involved the most proactive and persistent regulatory strategies overall. Dimensions of language and emotion were also highly represented and involved more through proactive and persistent strategies than those of reluctance and resistance. The moral dimension also involved more proactivity and persistence (2 strategies) than reluctance and resistance (1 strategy), however the frequency was low (total of 3 strategies) and was only observed during the difficult activities of two children (Rosie and Lily). However, reluctant and resistant strategies were more common for social assistance and problem-solving dimensions. Another finding revealed that those who employed the least amount of physical proactive and persistent strategies were the only three children (Rosie, Gabrielle, and Lily) who were observed using reluctant and resistant physical strategies. Two of those children, Rosie and Lily, were similar in that they both exhibited

compliance and non-compliance physically, in addition to strategies that were instrumental and aggressive, and did not complete their difficult activity in a developmentally appropriate way.

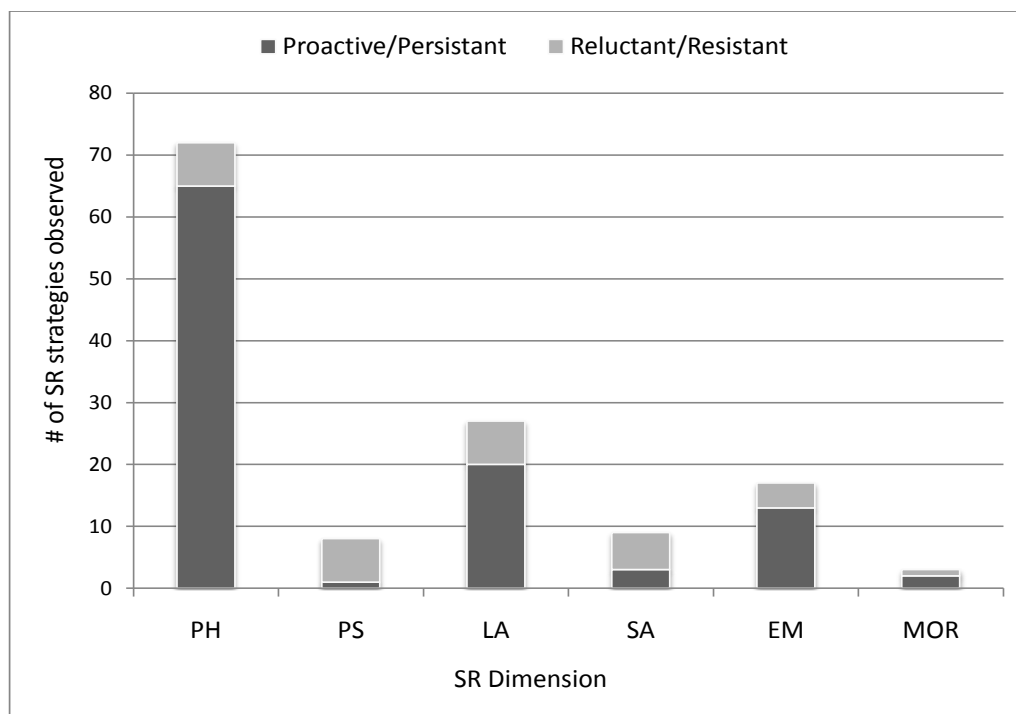


Figure 5. Self-regulatory (SR) strategies used across dimensions by 7 participants
Note. Abbreviations used listed in Appendix B.

Self-Regulation within a Difficult Task: Peer and Adult Interactions

In this section of analysis, the children's behaviours and responses within different task conditions were examined using the researcher's notes, contact and document summary forms, memos, and conceptually clustered matrices as a foundation. When the self-regulatory strategies used by these seven girls were explored across cases, the data indicated three distinct clusters defined by the amount and type of peer and adult interaction that occurred during the unit of analysis: (a) children who became engaged in a primarily independently-driven activity which presented a challenge, (b) children who

were involved in associative peer play when a difficulty was encountered and, (c) children who were challenged within an adult-directed activity (known as a ‘Do’ context in the literature).

Within-case descriptions: Child-directed tasks. Keisha was the only one of the seven girls that did not interact with an adult during her difficult activity (fine motor challenge of fitting the correct pieces together and creating a functioning toy). Furthermore, when a peer entered the area, Keisha responded with avoidance, and ceased the floor play toy sequence. Likewise, Malika chose an independent and developmentally appropriate fine motor activity (stringing beads) and initially did not seek social interactions. Both peer and adult interactions were other-initiated, whereby Malika responded compliantly. For example, Malika’s ECE gave her two choices during initiation, asked questions during modulation (i.e., “do you know what a pattern is”), and asked her if she needed help (“would you like me to put that on you”) when ceasing the activity.

Keisha and Malika were the only two girls who did not employ emotional strategies of regulation. However, they were the only children observed to have used proactive and persistent problem-solving (Keisha) and social assistance (Malika) which, according to Figure 5, were the two dimensions commonly represented through reluctant and resistant strategies. Keisha was proactive and persistent through problem-solving as she used a trial-and-error strategy to find the correct toy piece. Malika was proactive and persistent through social assistance as she sought help (“can you help me”) once the interaction had been initiated by the ECE. However, the dimensions of problem-solving and social assistance were represented by strategies deemed reluctant and resistant by the

researcher. For example, Gabrielle's actions coded within the problem-solving dimension primarily involved direction from her ECE:

ECE: Tells her class to sit on their 'bottoms'

Gabrielle: Stands and kneels at her ECE's knees; "Can I sit here?"

ECE: Tells Gabrielle to sit on her 'bottom'

Gabrielle: Stays kneeling in front of ECE

ECE: Tells Gabrielle to sit again

Gabrielle: Sits on 'bottom'

Similarly, the dimension of social assistance was also viewed by the researcher as including reluctant and resistant strategies. For example, Rosie waited passively for social assistance and, when help was not offered or received, she left the difficult activity (swinging). Likewise, Olivia did not seek help but waited passively (with her shoelaces) until her ECE offered to help. Unlike Rosie, Olivia was offered help, and after receiving social assistance, Olivia was able to cease the activity.

Within-case descriptions: Tasks during associative peer play. Rosie and Olivia both encountered a physical challenge in an open space (playground and playroom, respectively) within associative peer play. Rosie encountered a functional difficulty involving the gross motor action of 'pumping her legs to swing' and Olivia encountered a dramatic play difficulty where dressing actions required fine motor skills. The peer interactions that took place within their difficult task sequences were positive (i.e., Olivia smiles and giggles twice while at the dress-up centre) and supportive (i.e., Rosie offers social assistance to her peer). Both girls were observed regulating across the most (5 out

of 6) dimensions when challenged by activities within open, unstructured spaces and involved minimal adult interaction.

Within-case descriptions: Adult-directed tasks. This task condition occurred within indoor boundaries (cloakroom, story time carpet) and involved children encountering demands for compliance from adults. Both Gabrielle and Lily struggled with inhibitory control and compliance within a group of peers; Gabrielle challenged with sitting, watching, and listening, and Lily challenged with getting dressed and waiting before permitted to go outside. Although Amber did not express similar behaviours within her adult-directed difficult activity, the preceding interaction with her ECE provided additional context and involved resistant strategies of non-compliance, with peers as her audience.

Across-case patterns of interaction within a difficult task. This across-case discussion presents information demonstrating that the frequency and type of self-regulatory strategies tend to be related to the amount and type of interaction. All children interacted at least once with a peer during an encounter with a difficult task. However, 5 out of 7 children were observed as interacting with an adult during their challenge. The only two girls (Amber and Keisha) who did not interact with adults were children who: (a) attended a very-low SES preschool, (b) encountered a fine motor challenge, (c) were initially observed as using strategies from the least number of dimensions, and (d) exclusively utilized proactive and persistent (and not reluctant and resistant) self-regulatory strategies to overcome their respective difficulties. For example, Amber was proactive by physically getting her outdoor clothes on and persisting (jumping up and down) while zipping up her jacket. Similarly, Keisha was proactive as she selected

different toy pieces and persisted through physical trial-and-error actions to find the one piece that fit.

The researcher also discovered that age revealed some across-case similarities. Each of the seven children were of a distinct age at time of observation, however when clustering girls aged between 3 and 4, and those aged 4 and older, task conditions tended to differ. Girls between 3 and 3 years 11 months encountered a higher frequency of fine motor, child-directed difficulties than the older children. Of the younger group, those who did interact with adults experienced other-initiated social assistance in a compliant manner. Conversely, the older girls did not encounter an observable child-directed difficult activity but were more likely to be challenged through adult-directed tasks, involving gross motor skills. Each of the older girls (Amber, Rosie, and Lily) also expressed non-compliance immediately prior to initiating the activity (i.e., “I don’t like going outside”) or through ceasing behaviour (i.e., walked away without completing the activity). Another related finding revealed the two oldest children (Rosie and Lily) as the only ones who walked away, leaving the challenging task unresolved.

Across-case analysis of interactions also revealed patterns of emotion and language self-regulatory strategies. Five out of seven girls were observed using emotion strategies immediately preceding or during a difficult task. One point of interest is that the other two girls (Keisha and Malika) who were neutral in their emotional expressions were the only children involved in a child-directed task. In addition, all children regulated with language either immediately preceding or during a difficult task. However, the researcher found that those lacking adult interaction (Amber and Keisha) did utilize language differently than the other 5 children. When ceasing a colouring activity, Amber

expressed her resistance to the ECE's direction towards initiating the difficult task of getting ready to go outside. While Amber only expressed language (and emotion) towards an adult and within a group of her peers (i.e., "I don't like going outside, going outside is boring") immediately preceding her initiation of the difficult task, Keisha expressed private speech ("need more pieces") when working independently on her challenging task and without an audience of peers or adults.

Lastly, this analysis revealed that location and type of difficult task was not dependent upon the frequency of interactions or the type (peer and/or adult; help sought or offered) of interactions observed. For example, difficult tasks were encountered within the classroom across all three task conditions. Fine motor difficulties occurred across all three task conditions however dressing challenges were only observed across two conditions (peer play in the dress-up centre and adult-directed towards outdoor play). In addition, the researcher found adult interactions were involved during difficult tasks across the three conditions, as were positive peer interactions.

Use of Physical Strategies for Self-Regulation throughout the Difficult Tasks

In this section of analysis, the children's behaviours and responses to different tasks were examined using the researcher's notes, memos, tables, conceptually clustered matrices and graphic displays of the data as a foundation. As presented earlier in Figure 5, the strategies coded within the physical dimension of self-regulation were the only commonly observed behaviours and responses recorded across all children, with the language dimension represented across six out of the seven children. Moreover, the difficult tasks that challenged six out of the seven children were identified as physical (fine or gross motor) with one child challenged by a language activity (group story time).

When the physical strategies of self-regulation used by these seven girls were explored across cases, the data indicated two distinct clusters: (a) children who were observed as using proactive and persistent (and not reluctant and resistant) physical self-regulation and, (b) children who regulated by employing both types (proactive/persistent and reluctant/resistant) of physical strategies.

Within-case descriptions: Proactive and persistent physical strategies. All children employed proactive and persistent strategies of physical regulation, specifically strategies identified as instrumentally or purposefully moving the child through the difficult task. However, only four out of seven physically regulated a difficult task using proactive and persistent (and not reluctant and resistant) strategies. Physically compliant responses were observed for three out of these four girls, with all four completing and ceasing the difficult activity in a proactive way. Although Olivia was the only one of four to not exhibit physically compliant behaviour, she did however employ the most proactive and persistent physical strategies overall. In fact, Olivia was the only girl observed as proactively energetic, which accounted for 76% (16 out of 21) of her physical strategies.

Of these four proactive and persistent girls, Amber utilized the least number of physical strategies. However, she was instrumental in coping with the difficult task of getting dressed; jumping up and down while trying to zip up her jacket. As mentioned, Olivia was observed as using the most strategies, some of which were also instrumental. Amber, like Olivia, struggled with a jacket and both girls used instrumental strategies when modulating at the peak of difficulty.

Keisha and Malika also employed instrumental tasks (i.e., choosing a different piece while trying to construct a functioning toy; shaking down the beads on a string before adding more beads) when modulating. Unlike Amber and Olivia, Keisha and Malika were challenged through child-directed constructive tasks involving fine motor skills. Keisha physically struggled independently through instrumental problem-solving actions of trial-and-error until she successfully found and fit the correct piece into the puzzle-like toy. Malika, however, progressed through the difficult task of constructing a beaded necklace through instrumental actions in the presence of an ECE who provided positive reinforcement and reassurance. Malika was observed as using fewer physical strategies than Keisha, yet received initiated interactions and promptings from her ECE throughout the task.

Within-case descriptions: Reluctant and resistant physical strategies. Three children (Rosie, Gabrielle, and Lily) were observed as using reluctant and resistant physical strategies, and out of the seven children, they employed the lowest amount of physically proactive and persistent strategies. Rosie was observed as using equally low numbers of proactive and reluctant strategies throughout her challenging encounter. Rosie and Gabrielle both employed strategies across the physical dimension (proactive/persistent strategies of compliance and instrumental; reluctant/resistant strategies of aggression and leaving the task incomplete), whereas the only reluctant/resistant strategy used by Lily was identified through her under controlled behaviours during story time. Lily's parent indicated that she enjoys language activities but will leave a difficulty if it does not interest her.

Across-case patterns of physical strategies. Overall, physical strategies of

regulation were the most commonly used and accounted for 53% (72 out of 136) of regulatory behaviours across dimensions (see Figure 5). When the researcher examined the use of physical regulation across cases, 90% (65 out of 72) of physical behaviours and responses during challenging tasks were identified as proactive and persistent strategies. As displayed in Figure 6, the majority of these strategies were used by those children (Amber, Keisha, Olivia, and Malika) who did not regulate physically through reluctance or resistance. Overall, these four children physically regulated during a challenge by using an equal or greater number of proactive strategies than those (Rosie, Gabrielle, and Lily) who were observed using reluctant and resistant strategies. Yet Rosie, Gabrielle, and Lily still regulated through a challenge using an equal or greater number of physically proactive and persistent strategies when compared to their use of reluctant and resistant strategies.

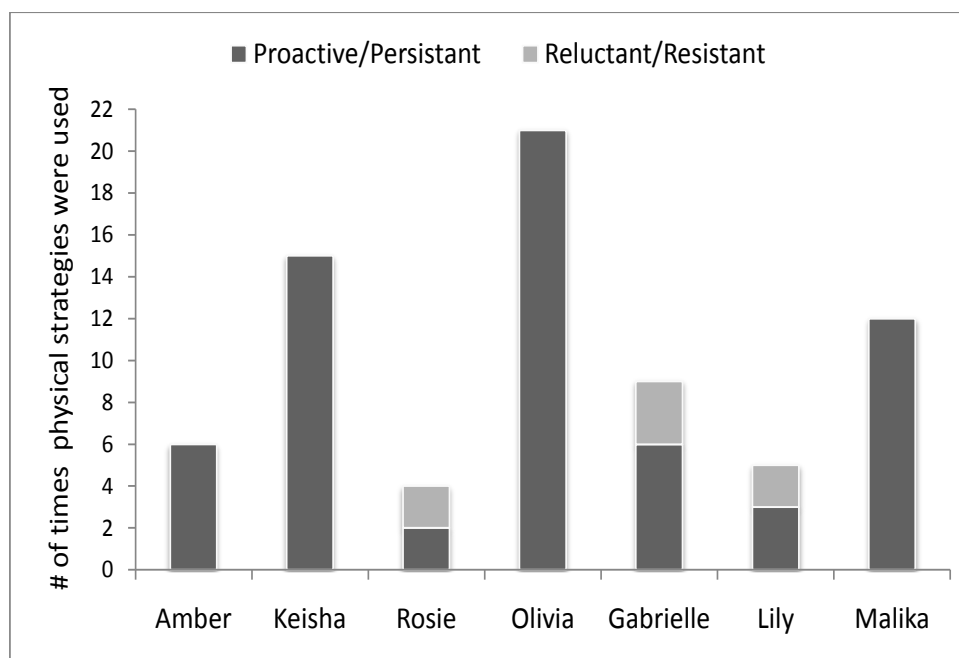


Figure 6. Across case physical regulation during difficult tasks

As displayed through Figure 7, all children utilized physically proactive and persistent strategies that were instrumental. Six out of seven girls responded compliantly during the difficult task, whereby Olivia was the only one who approached the task and modulated in a proactively energetic way. For example, Olivia's initiating actions included running up to the 2 girls in the dress-up centre, and later she modulated by running and giggling as a girl chases her. Moreover, when examining the data across cases, Olivia was also observed by the researcher as utilizing the most uses (21) of physical, as well as language (8), strategies when regulating a difficult task. One point of interest was revealed by Olivia's parent who indicated that she resorts to physical aggression when frustrated with a difficult activity.

In addition to proactive and persistent strategies considered physically instrumental or energetic, Figure 7 also displays the use of physical strategies in five other categories: compliance (i.e., proactively choosing an activity, or compliantly initiating an activity), completion (or ceasing the activity in a proactive and socially appropriate manner), aggression (i.e., resisting modulation of a difficult activity through aggressive actions such as stomping something on the ground), under control (such as reluctant and resistant behaviours of restlessness and non-compliance to adults during a difficult activity), and leaving a task unresolved or incomplete (i.e., displaying resistance or reluctance by walking away without completing the difficult task).

Six out of seven girls' compliantly initiated or modulated a difficulty through physical actions. Five out of seven children physically completed and ceased their respective activities. Five children completed the difficult activity, with only two children observed as leaving the activity incomplete. Rosie left the swing set without trying or

receiving assistance with the difficult task of coordinating her actions to swing. Lily left the cloakroom area without complying with the adult's requests of returning the dress-up skirt. After examining the data across case, the researcher also discovered that these two girls were the only children who exhibited aggression, and this only occurred once for each of these two girls. Furthermore, Rosie and Lily were also the oldest of the seven girls and, as mentioned earlier, the only girls who displayed moral regulation.

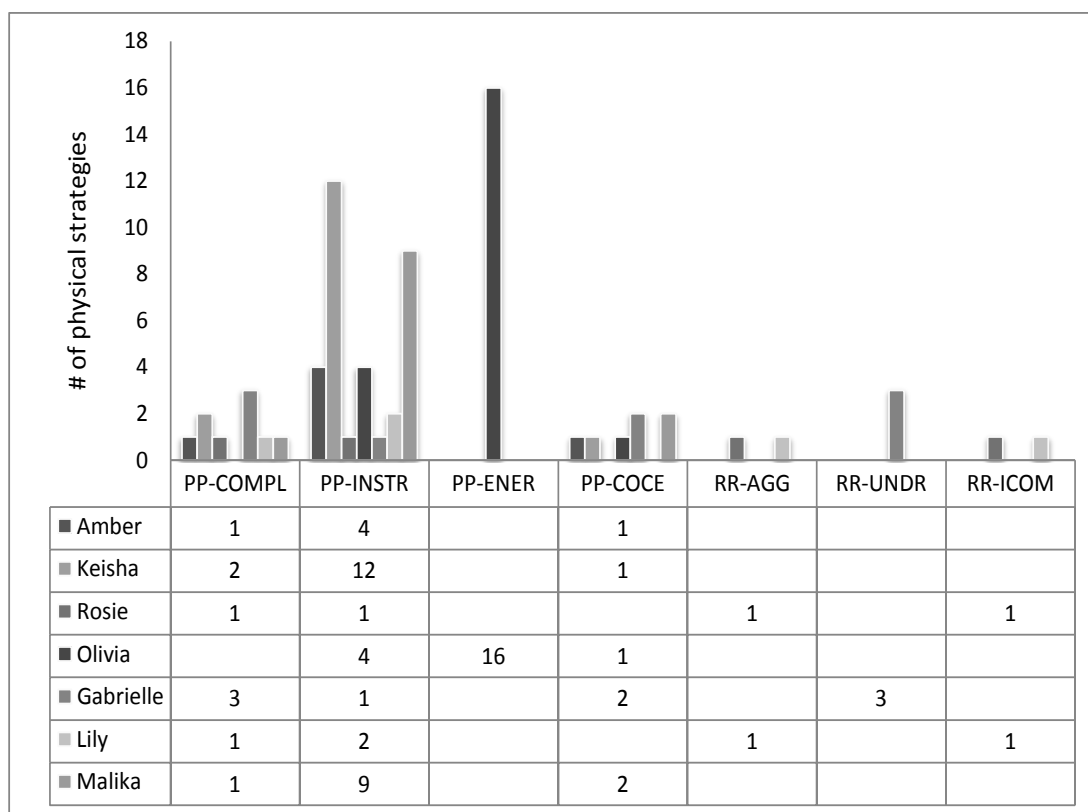


Figure 7. Strategies used within the physical dimension of self-regulation.

Note. Abbreviations used: PP (proactive/persistent), RR (reluctant/resistant), COMPL (compliant/choice), INSTR (instrumental/purposeful), ENER (energetic/positive), COCE (complete/cease), AGG (aggressive), UNDR (under controlled), ICOM (incomplete).

Lastly, Figure 8 displays the frequency of physical strategies across cases according to age. Specifically, the researcher identified two age groups: those in their

third year and those in their fourth year. Four girls (Keisha, Olivia, Gabrielle, and Malika) were between the ages of 3 and 3 years 9 months with the remaining 3 participants (Amber, Rosie, and Lily) between the ages of 4 and 4 years 3 months at the time of observation. As illustrated in Figure 8, the younger age group utilized more physical strategies than the older group. One finding revealed that even within the 3 year old group, the youngest (Keisha and Olivia) employed more strategies (15 and 21, respectively) than those slightly older (Gabrielle with 9 strategies and Malika with 12). However, only minor differences were revealed, both in age range (4 years to 4 years 3 months) and number of physical strategies (between 4 and 6), within the group of 4 year olds (Amber, Rosie, and Lily). In addition to age differences within the physical dimension, the researcher also found a similar pattern within the emotion dimension

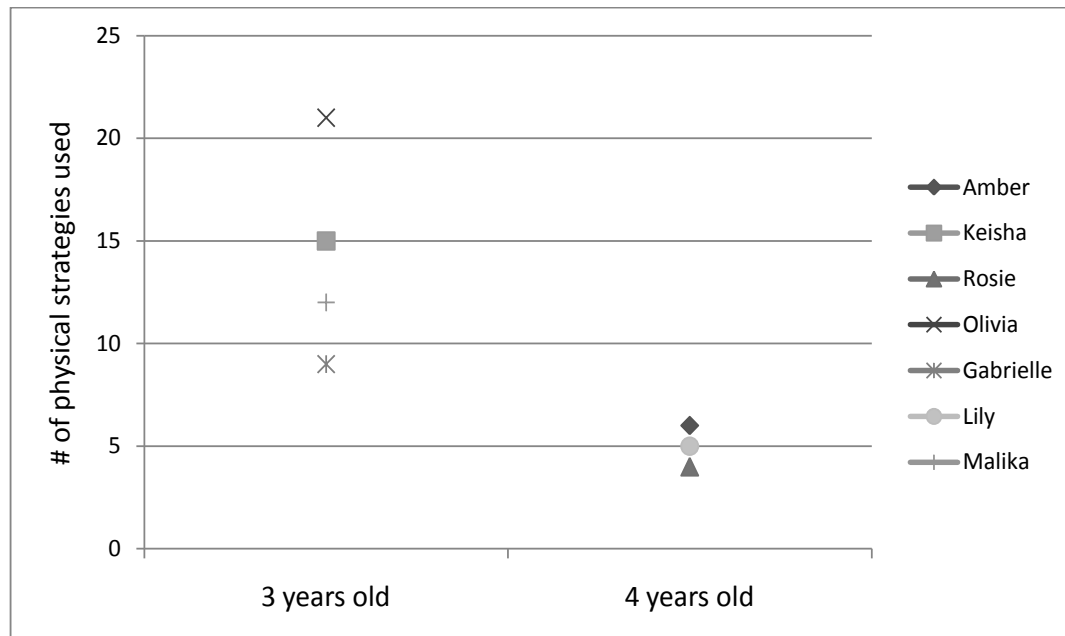


Figure 8. Physical self-regulation strategy use of 3 and 4 year old girls

between the age groups of 3 and 4. Of the five children who expressed emotion within their difficult activity, the three older children used fewer strategies than the two younger girls.

Summary

Chapter 4 has offered a rich and detailed description of this study's naturalistic observations, which was supported by the methodology and analytic process outlined in Chapter 3. In particular, the results were presented within 4 central themes: (a) initiating, modulating, and ceasing a difficult task, (b) strategies used across six dimensions of regulation, (c) interactions occurring during the regulation of a difficult task and, (d) the common use of physical strategies. The observational data was organized and discussed using thematic clusters. These themes and clusters grew from the researcher's holistic perspective of the data, including the parental comments and the context of each child's challenging encounter. The preschool-aged girls' self-regulation response patterns were described both within- and across-cases, and the researcher accounted for discrepancies in those patterns among the seven cases. In this chapter, the researcher offered a portrayal of the children's self-regulation according to the central themes and, in Chapter 5, will further discuss the significance of these findings for educational research and practice.

Chapter 5: Discussion

Overview

The present study focused on young children's self-regulatory behaviour as it relates to their problem-solving skills. Specifically, this study explored a variety of self-regulatory challenges that preschoolers face, how they cope when confronted with a difficult task, and provided a rich multiple-case description of the self-regulatory strategies used by preschool-aged girls. In order to increase the developmental understanding of how children self-regulate, observations of the seven cases were examined within context. The analysis presented in Chapter 4 yielded patterns found within- and across-cases and once these patterns were identified, the researcher examined the multiple data sources for commonalities and differences, themes, and rival propositions. As a result, this within- and across-case analysis revealed patterns and findings related to the theories and previous research presented in Chapter 2. Furthermore, by selecting each case carefully and following Yin's (2003) theoretical replication logic within multiple cases, this study established external validity.

Chapter 5 begins with a discussion of the findings as related to our current understanding of early development of self-regulation and its relationship to task persistence when preschoolers are challenged. Next, the significance of this study is highlighted, followed by limitations of this study's methodology and research question. This chapter concludes with the researcher's proposed implications of this study, along with suggestions for future research. These future directions validate the importance of this study; as such research supports early childhood educators and parents by providing

a more complete understanding of self-regulation as it occurs when a developing young child encounters a difficulty.

Key Findings

Task persistence has been defined as trying to overcome a challenge towards a goal “in an appropriate and not overly forceful manner” (Cole, Dennis, Smith-Simon, & Cohen, 2009, p. 330). Researchers have also considered task persistence as “a component of a larger system of self-regulated attention and behaviour that comprises executive function and effortful control” (Deater-Deckard, Petrill, & Thompson, 2007, p. 82). Key findings from this present self-regulation study of preschoolers’ persistence within a difficult task are presented through discussions of: (a) the criterion-based participant selection process, (b) task conditions and, (c) six dimensions of self-regulation. This discussion will focus on some of the themes that surfaced during this study which are in agreement with previous conclusions in developmental research on self-regulation.

Criterion-based participant selection. Although the parental data was initially intended, and used, for participant selection purposes, some confirmatory information came to light when analyzing the observational data. One point of interest was that all seven parents mentioned the child’s use of physical and language strategies in response to the interview questions on difficult activities. The observational data examined for this study also revealed physical and language strategies as the most common means of self-regulation across cases. Other descriptions from the parents which contributed to the researcher’s initial propositions about strategy types included proactivity (i.e., seeking help), persistence, resistance (i.e., aggressive behaviours), and reluctance (i.e., sad emotional expressions or physically move on to another activity). As seen through the

definitions provided in Chapter 1, these types identified by parents were used as categories in this study and are supported by several researchers (Boyer, 2004, 2007; Cole, Dennis, Smith-Simon, & Cohen, 2009; De Pauw, Mervielde, & Van Leeuwen, 2009; Deater-Deckard, Petrill, & Thompson, 2007; Denham, et al., 2002; Kochanska, Coy, & Murray, 2001; Wakschlag, Tolan, & Levanthal, 2010).

When completing contact summary forms on each participant's parent, the researcher discovered 'frustration' as a theme running through the parental interview answers. The theme of frustration that emerged from the parent data further confirmed the preliminary identification of the seven girls as potential and suitable cases for this study. During this preliminary stage, when the researcher viewed the videotapes, each of these seven girls was observed as struggling with a task. As a result, the girls' observable 'frustration' contributed to the researcher's preliminary identification of tasks or activities as developmentally 'difficult.' Overall, this theme combined with the examination of natural and observable examples of frustration provide further support for previous studies (e.g., Stansbury & Sigman, 2000; Zimmerman & Stansbury, 2003) which used structured controlled tasks to elicit preschoolers' frustration and regulatory use of strategies.

The observational data showed clear differences in the girls' transitional strategies and task outcomes, which were also linked to the parent interview data reviewed for participant selection purposes. For example, according to the parent of Rosie, she is persistent during a difficult activity, but will become frustrated if not helped immediately. As observed, Rosie did show persistence by re-initiating the analyzed activity a number of times. However, when she displayed her need for social assistance, and did not receive

it, she promptly walked away. Likewise, Lily was described by her parent as pretending not to like the task or may walk away after expressions of frustration and sadness. The researcher observed Lily responding non-compliantly to adult direction, expressing sadness, and then ceasing the task unresolved. Furthermore, Lily was the only girl to have used more reluctant and resistant regulatory strategies than proactive and persistent during her difficult activity. This finding of Lily employing more reluctant and resistant strategies is also consistent with other observations made within her 30-minute video-recording. For example, outside of the unit of analysis, Lily's behaviours (i.e., claps hands wildly and excitedly; doing movements to a song excitedly, quickly and exaggerated while bumping into peers; rocking back and forth) were considered by the researcher to be under controlled.

Gabrielle, one example from the cluster of girls who achieved a successful outcome, was observed persisting through the difficult activity of inhibitory control during story time. When reviewing the interview responses given by Gabrielle's parent, the researcher found links to the observational data which included her interest in language activities and her ability to persist only if interested in the difficult activity. For example, when asked how her child behaves when a task is difficult, Gabrielle's parent responded "she'll leave it; she'll just go away from it." However, she explained further that "she applies herself" if it is something "she's really interested in." Gabrielle's parent continued by saying that "she's really interested" in language activities such as "the whole alphabet and everything" and "learning to read and stuff." Therefore, it appears that Gabrielle did not "leave" but instead was able to persist through the difficult activity of story time because it was a topic that interested her.

Task conditions. It was possible to see varied preschool experiences such as indoor activities (i.e., snack time, looking at books, circle time, and dressing) and outdoor play activities (i.e., teeter-totter, running, tricycle, basketball, and dramatic play) in the 30 minute videotaped observations. For example, the video recording of Lily ended with a delightful dramatic play behaviour involving a cape outdoors. Lily donned a cape, fastened the clasp, and was observed ‘flying’ around the playground. Next she stopped to watch her cape as it flapped in the wind. Lily then ‘floated’ towards the ECE and proceeded to describe her make-believe self (“I’m a ...”). During this dramatic sequence, Lily employed private speech (“too hot, too hot”), removed the cape and her jacket, and then successfully re-dressed with the cape.

Stansbury and Sigman (2000) revealed different coping strategies being linked to different situations. Unlike these researchers who used structured laboratory settings, this current study explored these differences by examining naturalistic challenges. By examining naturalistic observational data, this study found that emotional coping strategies were linked to peer play and adult-directed situations but not to child-directed activities. According to Stansbury and Sigman, young children’s use of emotion in regulation is “an interactive phenomenon,” and this study found some support for situational differences in the observations of the two girls (Keisha and Malika) involved in child-directed difficult activities (p. 184). Keisha struggled independently, with no adult interactions and very little peer interaction (only through avoidance). Malika was engaged in a child-directed activity which involved interactions; however she only interacted when it was initiated by an adult or peer.

Both Rosie and Olivia engaged in difficult activities within open, unstructured spaces and encountered minimal adult interaction. The researcher considered these two specific activities to be in the upper limits of developmentally appropriate difficulties. At age 4 years and 2 months, Rosie's physical gross motor coordination was challenged with 'pumping her legs to swing,' a possible task beginning at age 3 which can remain a physical challenge for some preschoolers until ages 5 or 6. According to Berk (1992), girls tend to struggle more with gross motor skills that require power than with fine motor skills involving precision. This study provides theoretical support for this difference since those engaged with developmentally appropriate fine motor tasks self-regulated until they were successful, whereas Rosie did not. Olivia, age 3 years and 1 month, on the other hand was challenged by the fine motor tasks of dressing with a button-up jacket and tying shoelaces. She successfully resolved her developmentally appropriate difficulty with the jacket. However, at the end of her dress-up sequence, she encountered an additional fine motor challenge – the act of tying shoelaces. According to Bredekamp and Copple (1997), this task is considered developmentally challenging until a child reaches the age of 5 or 6. Therefore, Olivia's acceptance of social assistance with this fine motor task was considered a successful way to cease the dress-up sequence.

This study also found support for Krafft and Berk's (1998) findings that private speech increases with difficulty and varies according to adult interactions across both open- and closed-ended tasks. Private speech occurred across cases and task conditions, thereby providing some evidence for participants experiencing increased difficulty through specific tasks. As with previous research, this current study also revealed the top three common subtypes of private speech: fantasy play (i.e., "Ahhg!" at dress-up centre),

self-guidance (i.e., “need more pieces” to self), and inaudible muttering (i.e., singing to self). In fact, this current study found examples of all three across three conditions: (a) private speech during dramatic play (dressing difficulty), (b) self-guidance during an independent closed-ended task (puzzle-like toy), and (c) inaudible muttering (singing to self) during an adult-directed activity.

Like Krafft and Berk (1998), this study also found that as ECE involvement increased, private speech decreased. For example, Keisha employed self-guided private speech without ECE interactions, whereas, Malika did not regulate with private speech and engaged in several interactions with her ECE, even though both girls were observed struggling through a child-directed activity. It appeared to the researcher that, without social assistance available, Keisha physically persisted and employed the use of private speech, more than Malika did. Without an adult present, Keisha continued her difficult activity through several trial-and-error actions (physically trying different toy pieces) and used private speech (“need more pieces”) at the peak of her challenge. Malika however, progressed through her difficulty task with the assistance of her ECE. Specifically, Malika used language to seek assistance (“can you help me”) and reassurance (“I’m going to finish my necklace”) from the adult who was present.

When holistically exploring each child’s difficult activity as part of the entire 30-minute video recording, the researcher discovered surprising, yet confirmatory, information on two participants. Rosie encountered her difficult activity (of trying to swing independently) twice within 30 minutes and was observed exhibiting similar self-regulatory responses and final outcome. Gabrielle was also observed a second time, within 30 minutes, participating during her challenging activity – story time. Although

Gabrielle's second story time occurred on a different day than the story time analyzed for this study, it was interesting to observe similar self-regulatory responses within her 30-minute video-recording. Overall, these two cases contribute to the researcher's confidence in the difficult tasks identified and analyzed in this study.

Gabrielle's activity, which involved sitting, watching, and listening while an ECE reads a story to the class, is considered a 'Do' context. A 'Do' context, according to Kochanska, Coy, and Murray (2001) requires the child to self-regulate and respond compliantly to an adult's requests; a common occurrence within preschool classrooms. This study observed three children who struggled with adult-directed 'Do' activities. The researcher's observations of regulatory challenges within 'Do' contexts supports Boyer's (2008b) theme of 'burgeoning experiential contexts.' These 'Do' contexts become more complex as children progress through the preschool years since relational experiences extend and vary beyond a child's immediate family, and consequently, involve increased opportunities for preschoolers to learn and practice regulatory strategies.

Six dimensions of self-regulation. When analyzing the girls' use of self-regulatory strategies (proactive/persistent, reluctant/resistant) across six dimensions of regulation (physical, problem-solving, language, social assistance, emotional, moral), the data demonstrated that each of the seven girls employed physical strategies, with language used by six out of seven girls. Therefore, this study supports Jones, Rothbart, and Posner's (2003) similar observations of physical and language strategies commonly used by 3- and 4-year old children, with the occurrence of more physical regulation overall. Jones et al. further suggested that when confronted with a conflict, the

preschooler's use of physical strategies increases and then decreases within this short age period.

As displayed earlier through Figure 8, this study revealed a similar finding with 3-year old girls exhibiting more physical regulation than those in their fourth year. Other prior studies (e.g., Carlson & Wang, 2007; Kochanska, Murray, & Coy, 1997; McClelland et al., 2007; Moriguchi & Itakura, 2008) also found strong inhibitory control within this specific age period. For example, Carlson and Wang (2007) indicate that young 3 year olds have difficulty inhibiting their actions, yet older 3 year old and 4 year old children are better at “resolving conflict of attention and/or motor responses, waiting for a reward, and staying on-task in the face of tempting distractions” (p. 490). Furthermore, McClelland et al.'s (2007) study suggests that as preschool children develop their inhibitory control they are better able to regulate their physical behaviour. This current study adds to these findings which maintain that fewer physical strategies are needed for 4 year olds to regulate than 3 year olds.

This current study contributes to previous research by suggesting that 4 year olds use fewer physical strategies than 3 year olds, and also indicates that 4 year olds are increasingly regulating through other dimensions. As displayed earlier through Figure 4, a range of dimensions were revealed according to proactive/persistent and reluctant/resistant strategy use. As expected, the strategies used by two oldest girls (Rosie and Lily) occurred within the greatest variety of dimensions when compared to the younger participants. Both girls' strategy use, while regulating a difficult task, was coded within 5 out of the total 6 dimensions. When strategies were further identified as proactive/persistent or reluctant/resistant, a range of dimensions was also represented.

Rosie proactively and persistently regulated through strategies within 4 dimensions, with reluctant and resistant strategies through 3 dimensions. On the other hand, Lily regulated with reluctant and resistant strategies through more dimensions (5 out of 6) than with proactive and persistent (3 out of 6 dimensions). Although Rosie and Lily's difficult activities were regulated through the use of strategies from the most dimensions, they were the only two girls in this study to not complete their difficult activity in a developmental or socially appropriate way. Overall, Rosie and Lily expressed strategies from more dimensions than four out of the five younger girls.

The exception however, was Gabrielle who, at age 3 years 6 months, was observed struggling physically with inhibitory control during her difficult activity of story time. Despite her struggles, Gabrielle was able to persist and complete the activity by regulating through a range of dimensions similar to the range observed for the two older girls. As reported earlier in Chapter 4, Gabrielle was the only one of seven who attended a school which reported (within their principles and guidelines) the inclusion of an intentionally taught three-step problem-solving strategy as part of the preschool program. A related finding revealed Gabrielle's display of the most instances of problem-solving of all seven girls. Therefore, this study provides some support for the importance of modelling and scaffolding placed on educators and caregivers as they assist preschoolers in developing self-regulatory strategies (Boyer, 2008b; Boyer et al., 2007). This also provides some support for McClelland et al.'s (2007) assertion that children with inhibitory challenges can be taught regulatory strategies.

Another age-related discovery was through the analysis of Keisha's regulation during her difficult task. Keisha, at age 3, was identified as the youngest participant and

the only girl who used physical trial-and-error actions during her challenge. According to researchers (e.g., Elkind, 1994, Woolfolk et al., 2009), the trial-and-error strategy is used more by younger preschoolers when problem-solving, and by the time a child reaches 4 years of age there is less reliance on such earlier developmental responses (Zimmerman & Stansbury, 2003). However, this study did not find support for Stansbury and Sigman's (2000) suggestion that emotion use in regulation is displayed more by younger children when compared to older children. Even though Keisha was the youngest, one possible explanation for her neutral emotional response in regulation may have to do with the task conditions (i.e., there was no adult and very little peer interaction) since emotion regulation may have an interactive component (Stansbury & Sigman, 2000). However, since emotion and physical behavior are strongly interconnected, this study's finding that younger children use more physical strategies than older children lends support for Stansbury and Sigman's suggestion that instrumental strategies are used more by younger children. Nonetheless, the analysis of her encounter with a difficult task does provide some developmental support for the use of physical trial-and-error actions by a younger preschool child trying to overcoming a challenge.

Overall, this study revealed the regulatory use of physical strategies, within a difficult task, as the most common response across all seven girls. Although Olivia was the only one of seven to not exhibit physically compliant behaviour, she did however employ the most proactive and persistent physical strategies out of all seven girls. In fact, Olivia was the only girl observed as proactively energetic, which accounted for 76% (16 out of 21) of her physical strategies. According to Boyer et al. (2007), physical energy is one of eight skills which contribute to self-regulation. When examining the data across

cases, Olivia was also observed by the researcher as utilizing the most physical (as well as language) strategies when regulating a difficult task. In addition, Olivia's parent indicated that she resorts to physical aggression when frustrated with a difficult activity. The data of this study also revealed Olivia as the only girl to express anger. This study provides some evidence that girls, like boys, are capable of developing a collection of physically active goal-oriented strategies if encouraged to display emotions often attributed to males (i.e., anger) and those often attributed to females (i.e., sadness) when self-regulating during a challenging task (Boyer, 2008a; Nolen-Joeksema & Corte, 2004).

Like Olivia, most children completed the difficult activity, with only two children observed as leaving the activity incomplete. These two children (Rosie and Lily) were the fore mentioned oldest of the seven girls. Rosie left the swing set without trying or receiving assistance with the difficult task of coordinating her actions to swing. Lily left the cloakroom area without complying with the adult's requests of returning the dress-up skirt. One related finding revealed that these two girls were the only ones described by parents as reacting to a difficulty by leaving the task if not helped immediately. After examining the data across cases, the researcher also discovered that these two girls were the only children who exhibited aggression. Furthermore, Rosie and Lily were the only girls who displayed moral regulation; Rosie through offering assistance to a peer and Lily observed as laughing at a peer being reprimanded by the ECE.

Although researchers (e.g., Hastings, Zahn-Waxler, & McShane, 2006) have found that sociable preschoolers employ more moral regulatory strategies than their aggressive peers, this current study was only able to identify a general connection between physical aggression and moral regulation. The researcher did observe, however,

that both physically aggressive actions (stomping something on the ground and placing a hand in front of her peer's face) occurred socially. The connection found between these physical and moral regulatory actions were also related to the social context. Rosie was morally helpful to a peer and physically aggressive towards an object on the ground, whereas Lily was morally 'unhelpful' (by laughing at a peer being reprimanded) and then later acted physically aggressive towards a peer. These two cases highlight the importance of being able to identify physically aggressive behaviour in the early years as this identification can lead to successful self-regulatory intervention prior to the elementary school years, thereby reducing the risk of dysregulation affecting current and future task achievements and peer relationships (Boyer 2008a; McClelland et al., 2007).

Overall, the literature reviewed in Chapter 2 revealed a strong interplay between the regulatory nature of physical behaviours and emotion. As mentioned, brief moments involving physical aggression were expressed by the oldest girls (Rosie and Lily). Although coded by the researcher as a physical strategy, aggression is considered to have a strong emotional connection. For example, the regulatory use of physical aggression by these two girls also appeared to function as an emotional distraction. Distraction, according to Zimmerman and Stansbury (2003), is the most frequently used strategy for emotion regulation across situations, which acts together with physical behaviours when children encounter a challenge. The analysis of these two cases, and the ceasing actions involved, provide some support for Nolen-Joeksema and Corte's (2004) finding that parents are less likely to promote active problem-solving strategies when girls display emotions often attributed to males (i.e., through physical aggression).

Overall, the researcher found support for the suggestion that girls express more emotions such as sadness, smiling, giggling and fewer instances of emotions such as anger (Niedenthal et al., 2006). As previously discussed, Keisha and Malika did not employ emotional strategies of regulation while challenged through child-directed tasks. Yet they were the only children observed to have used proactive and persistent problem-solving (Keisha) and social assistance (Malika) which, according to Figure 5, were the two dimensions most commonly represented through reluctant and resistant strategies by the other five girls. Malika was observed as using fewer physical strategies than Keisha, yet received initiated interactions and promptings from her ECE throughout the task. Therefore, it appears that girls may use fewer strategies when receiving regulatory assistance from adults. Although fewer strategies of self-regulation were used when in the presence of an adult, it is developmentally important for preschool children to learn from adults. According to Boyer (2008b), the child and adult act as a 'self-regulatory team,' and children benefit when an adult deliberately models specific strategies and provides scaffolding through intentional prompts and responses.

As previously discussed, language use varied according to task condition and encountered interactions, was self- and/or other-directed, and was the second most common regulatory strategy observed in this study. In fact, it was used either preceding or during the difficult activity across cases. One girl (Lily) used language (by singing to herself) as a distraction at the peak of difficulty. Lily was observed as singing to herself (a subtype of private speech known as inaudible muttering) after physically bumping her head back and forth, and immediately before releasing emotion. This observation of language use, within the context of her before-and- after regulatory actions, provides

further support for previous researchers (e.g., Stansbury & Sigman, 2000; Zimmerman & Stansbury, 2003) who discovered that emotion regulation can occur through a distraction strategy involving language (such as singing a song) and be strongly connected to the regulatory nature of physical actions (such as aggression).

Previous research has also indicated that girls use less aggressive coping strategies, appear more compliant, and respond to educational challenges through internalization and therefore, receive less social assistance than their male peers (Berk, 1992; Kalipdou, Power, Cherry, & Gottfried, 2004; Kochanska, Coy, & Murray, 2001). This current study revealed some support for these previous findings since the dimension of social assistance was under-represented across cases (1 child used proactive/persistent strategies; 3 children used reluctant/resistant strategies). Although some girls received social assistance, they were less likely to proactively seek help, which is consistent with prior indications that girls tend to internalize when trying to regulate through a difficult activity (Berk, 1992). For example, Rosie moved between initiating and modulating, utilized the fewest proactive physical strategies (only 2) and when she did express her need for social assistance, it was through passively waiting. When help did not arrive immediately, Rosie ceased the activity without a final attempt at modulation. Olivia was also observed as waiting for help with her shoelaces. However, once help was offered, Olivia accepted and was able to cease her dress-up sequence. As a result, preschool-aged girls can benefit from being taught proactive coping strategies such as seeking help when a task is especially challenging.

This study also provides some support for Krafft and Berk's (1998) finding that private speech decreases as adult involvement in play increases. For example, as Keisha

modulated independently, without any adults nearby, she utilized self-guiding private speech to regulate through her difficult task. Malika initially modulated independently, but directed her language outward as her ECE initiated interactions and remained nearby. Although Malika did not initially seek social assistance, once her ECE initiated interactions during the modulation phase, she repeatedly and proactively sought reassurance or assistance (“can you do this for me”) even though she did not need help with the task (i.e., ECE: “do this for you – but you are doing such an excellent job”).

Although social assistance was not available for Keisha, she was able to physically persist and use self-guiding private speech, whereas Malika modulated her difficulty by seeking social assistance with language directed towards the ECE. Closed-ended tasks (i.e., puzzle), important and common experiences encountered in the preschool environment, prompted neutral emotion responses from Keisha and Malika. The literature related to effortful control indicates that children who may be behaviourally focused on a task may elicit neutral responses as an outcome of engagement (Blair, 2003). The researcher also recognizes Krafft and Berk’s (1998) recommendation for educators to ensure that a variety of open-ended activities be available. Specifically, all preschool-aged children benefit from open-ended activities such as painting or associative and cooperative peer play because a variety of interactions occurring within the preschool environment promote increased opportunities for continuous challenges which help develop healthy regulation in all 6 dimensions (Boyer, 2009a). Perhaps if Keisha and Malika were involved in more open-ended activities involving peer interactions, then strategies spanning more dimensions would be developing.

Significance of this Study

The findings resulting from this multiple-case study suggest that conclusions from previous controlled experiments within structured settings are valid and applicable to children's naturally occurring challenges within the preschool environment. The naturalistic setting of this study, however, allowed for a more holistic examination of the girls' strategy use within the complete sequence of a difficult activity. The observational data provided a thick description of these preschool-aged girls' patterns of regulation, including the developmentally appropriateness of a difficulty and the social interactions involved. Furthermore, the selection of participants for this study also contributed to the understanding about how children who come upon a difficult activity regulate their behaviours and responses towards a desired outcome.

Limitations

Due to the multiple-case research design of this study, it was not possible to provide results that are generalizable to larger preschool populations. Further research should be done to examine observations from this study which were unique or dissimilar from other self-regulatory research literature. Certainly, the validity of these results would be strengthened by investigations using larger samples of preschool-aged girls experiencing naturally occurring challenges, and by using formal task persistence measures to select and examine participants. Researchers could also expand on these findings with the addition of a comparison group of children, perhaps boys who also demonstrate observable frustration with difficult tasks. Furthermore, including participants from across the preschool period (ages 2 to 6) will provide a wider

developmental understanding of the type and gradual sophistication of effective self-regulatory strategies.

Finally, researchers must examine the effectiveness of the observational methods used in this study, and the validity of those methods in observing frustrated preschool children. Researchers such as Deater-Deckard, Petrill, and Thompson (2007) have assessed task persistence using multiple measures and observer ratings. The larger self-regulation study utilized ratings from different observers which resulted in coding reliability of 80%. Therefore, the researcher felt confident in proceeding independently (with the coded transcriptions and prior data experience) and then identifying whether or not participants' actions were deemed persistent during a difficult task or activity.

It is important for researchers in this field to continue to examine the proactive strategies that are observed while a girl self-regulates during a difficult activity. Although the larger study included fathers and mothers as parental participants, the interview data associated with each of the seven girls in the present study was all supplied by mothers. Therefore, this study was limited to the maternal perspective on two interview questions.

Implications of the Findings for Practice and Professionalism

This current study discovered that more developmentally challenging activities occurred when children were engaged in peer play. A common theme found across the participating preschools was the philosophy that 'children learn through play' with an emphasis on the importance of open-ended unstructured activities. As indicated by Boyer (2009a), self-regulatory skills can be learned and practiced when children are provided with more complex opportunities. Krafft and Berk (1998) also encourage ECEs to foster self-regulatory development by providing open-ended activities such as dramatic play

and peer interaction. ECEs can also support girls through self-regulatory development by teaching problem-solving. For example, Gabrielle's school explicitly taught a three-step problem-solving approach and she exhibited the most problem-solving strategies of all seven girls.

The findings of this study also suggest that when children are interacting within a 'self-regulatory team,' emotion regulation needs to be modelled, along with strategies across the other five dimensions (Boyer, 2008b). Specifically, girls need to learn how to deal with anger and aggression in a way that moves them forward towards constructive and goal-oriented problem-solving instead of internalization and avoidance (Boyer 2008a). Furthermore, preschool-aged girls require more intentional opportunities for gross motor development, just as boys can benefit from an increase in adult scaffolding as they develop their fine motor skills. Overall, this study recommends educators assist preschool-aged children, as they develop self-regulation, by providing opportunities to experience open-ended challenges and developmentally appropriate "modelled demonstrations" within the complex preschool environment (Boyer, 2009a, p. 7). Furthermore, this study noted some similarities between the parent reports of regulation at home and the regulatory behaviours captured on videotape in the preschool environment. Therefore, it would be beneficial for parents and educators to cross that "glass wall" and work in partnership as they support the development of self-regulation in the preschool years (Boyer, 2009a, p 2).

Future Directions for Research and Practice

Boyer's (2009a) research study exploring caregivers developmentally

appropriate regulatory modelling opens various avenues for future research and practice. For example, since early childhood educators (ECE) are considered ‘co-regulators’ with preschool-aged children, is there a difference in strategies being used that can be attributed to an ECE’s gender? If so, does the effectiveness of these modelled demonstrations differ according to the gender of the child? These may be difficult questions to answer given that female ECEs are quite common in preschool and kindergarten classrooms. Even though all 5 preschool programs involved in this study were carried out by female ECEs, all parents were strongly encouraged or required to participate in the classroom, which possibly increased the opportunities for children to learn regulatory strategies from male role models.

All preschool children can also greatly benefit from regulatory modelling in all six developmental dimensions. For example, when working on a puzzle with a young child, caregivers can display efforts of trying to fit a piece by turning it in another direction and talking aloud about why it might not fit (“maybe I should try a piece with more yellow?”). Problem-solving can be displayed when the caregiver utilizes a trial-and-error strategy of placing different puzzle pieces into the same space to see if one fits. Social assistance can be modelled when the adult asks the child to help find more yellow pieces. Appropriate emotional and moral dimensions can be displayed through talking about feelings of frustration yet respectfully using the puzzle pieces in accordance with social expectations.

Teaching all children to regulate, not just those presenting externalizing behaviours during difficulties, is becoming recognized as another ‘R’ that needs to be added to the basic ‘3R’ skills since early regulatory behaviours have been shown to

predict future academic success (Bodrova & Leong, 2008). Intentional teaching of strategies, along with modelling demonstrations of regulation, can greatly enhance a preschool child's ability to adjust actions according to the increasing variety of environmental contexts. For example, one participating school used puppet role-playing to teach about "caring for bodies, caring for feelings, and caring for things." The same school also taught children how to problem-solve using a process in which "the children express their feelings, state their problem, and offer solutions." If the problem is developmentally challenging, the ECE encourages development towards autonomy by providing the child with choices for overcoming the difficulty. For example, when a young child encounters a game situation where turn-taking issues escalate, an ECE can provide a choice of tangible tools (i.e., straws, coin, or dice), for the child to use in order to resume play (Bodrova & Leong, 2008). Through providing "choices for redirection," this participating school offered children the opportunities to develop problem-solving strategies which can be employed when a similar situation challenges self-regulation. This intentional and incidental process is also advocated by Hutchinson (2010) when assisting exceptional children with the development of self-regulation.

To assist all children with regulatory development within the social and moral dimensions, caregivers can create opportunities for preschoolers to practice and apply rules to different situations (Bodrova & Leong, 2008). For example, Bodrova and Leong (2008) recommend three ways which encourage the internalization of rules and social expectations: (a) teach children how to follow the rules established and monitored by the ECE, (b) allow children opportunities to experiment with setting and monitoring rules during open-ended activities (i.e., playground or make-believe play) and (c) teach

children how to personally apply the rules (i.e., through visual reminders). In order for preschool children to fully engage in the learning and practicing process of developing self-regulation, educators can also intentionally create classroom spaces which encourage positive behaviours. For example, developmentally appropriate materials and activities should be available which provide some element of challenge (Jones & Jones, 2001).

In order to fully provide parents and educators with a fundamental illustration of how important those early years are in the life-span developmental process and the impact that strategy use has on children's abilities to cope with challenges, future researchers can employ longitudinal studies examining the six dimensions of self-regulation. In addition, invaluable information can be gained while observing the changes and shift in regulatory strategies as each child moves from preschool to elementary, elementary to middle-school, and then on into the high school setting. As mentioned, future investigations into self-regulation and task persistence would also greatly benefit from a large sample size, multiple observers and the availability of an appropriate measure in order to further develop and operationalize the types of strategies observed in this study (proactive/persistent and reluctant/resistant).

In addition, multiple perspectives (i.e., ECE, mother, father) would contribute greatly to this area of research, particularly in the area of temperament. Future studies would benefit from including assessments of individual temperament as an influence on a child's reactivity to challenging tasks (Cole, Dennis, & Smith-Simon, 2009). A child's reactivity can also be dependent on the demand characteristics of a task. For example, like Stansbury and Sigman (2000), this study revealed a tendency for 4-year old children to use fewer regulatory strategies of emotion than 3-year olds. However, future research

is needed in order to explore the specific types of strategies and whether fewer strategies were used because they were more effective and helped the child quickly end the challenge. Furthermore, future investigations involving equally demanding tasks may also help when exploring across-case use of emotion in regulation (Stansbury & Sigman, 2000).

As previously mentioned, future studies including children across the preschool period (ages 2 to 6) would greatly enrich our understanding of the developmental gains in self-regulation. Comparative studies can also advance our developmental understanding of girls' self-regulation. For example, future studies could explore a girl's regulation of a specific type of difficulty (i.e., gross motor) as it occurs within each of three conditions (i.e., independent, peer play, and adult-directed). Furthermore, researchers could examine self-regulation through naturalistic observations of girls as they encounter a difficult gross motor task as opposed to a difficult fine motor task. Comparing the regulatory strategies that each girl uses within each type of physical task would also advance our understanding of self-regulation as it occurs during physical challenges. Likewise, language studies, where girls' regulatory abilities are challenged during a group activity as opposed to an independent language activity, can contribute greatly to research on self- and other-directed speech, as well as task-relevant and irrelevant language use.

As mentioned in Chapter 2, Neitzel and Stright (2003) recommend future research into a child's regulatory use of problem-solving strategies during a difficult task. Specifically, these researchers suggest future studies on which regulatory aspects of problem-solving can be transferred from the home to teachers in the preschool environment. This current study revealed a related finding which contributes to this

future direction of research. As reported earlier, only one girl, Gabrielle, attended a school which reported (within their principles and guidelines) the inclusion of an intentionally taught three-step problem-solving strategy as part of the preschool program. Specifically, Gabrielle exhibited the most instances of problem-solving of all seven girls. Gabrielle was also the only girl (other than the two oldest children) who completed a difficult activity using strategies within a high number of dimensions (3 dimensions through proactive/persistence; 4 dimensions through reluctance/resistance). This finding suggests that further research on problem-solving would help provide needed evidence and direction for educators and caregivers. Although this study provides some evidence that children with inhibitory challenges can be taught regulatory strategies, more research is needed on the effectiveness of problem-solving strategies taught in preschools and the impact that they have on early academic competencies (McClelland et al., 2007).

Parents and educators will benefit from more descriptive studies highlighting the needs of preschoolers during this crucial period of self-regulatory development. Further identification of healthy and unhealthy (proactive and resistant) strategies will help provide the knowledge caregivers need for early prevention and interventions to occur. Researchers can instil confidence in parents and educators by providing descriptive evidence on the developmental process of regulation. By providing evidence-based knowledge, researchers can encourage caregivers to embrace the important role of modelling and teaching regulatory strategies during the preschool years. Although more research is needed on the effectiveness of interventions, a knowledgeable and supportive ‘self-regulatory team’ can increase and enhance a preschooler’s task achievements,

positive peer experiences, as well as early academic competencies (Boyer, 2008a; McClelland et al., 2007).

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Appendix A
Sample Parent Interview Questions

Individual Interview Questions: Modulating during difficult activities

Question	Probe (if indicated)
1. How does the child behave when a task is difficult for her or him?	As the difficulty of the task becomes apparent to the child, how does the child respond with his or her body, how does the child solve the problem, what does the child say, how does the child interact with others, what emotions does the child express and how does the child do what is right when told to do an activity that is hard for him or her? Please can you elaborate and give examples.
2. And what do you do and say as the child does this difficult activity?	N/A

Note. As cited in Boyer (2004, 2005a, 2005b, 2008b)

Appendix B
Abbreviations Used in Analysis

Location	Abbreviation
Classroom	CLS
Cloakroom	CLK
Playground	PLG
Task Conditions	Abbreviation
Child-directed (chosen, independent)	CD
Solitary	SOL
Peer Play	PPL
Associative	AS
Cooperative	COP
Functional	FUN
Constructive	CON
Dramatic	DRM
Adult-Directed (required task)	AD
Adult Interaction	Abbreviation
Child response to Adult	CRTA
Compliance	COM
Non-compliance	NCOM
Self-assertion	ASSR
Passive	PASS
Avoidance	AVOD
Adult response to child	ARTC
Supporting Compliance	SCOM
Positive Reinforcement	POSR
Modification of Adult response	MODI
Negation	NEGA
No response	NRES
Peer Interaction	Abbreviation
Child response to Peer	CRTP
Interpersonal Support	SUPP
Affiliation	AFFL
Constructive Coping	COCO
Negative Emotions	NEEM
Avoidance/No response	AVOD

Peer Interaction (continued)	Abbreviation
Peer response to Child	PRTC
Positive Interaction	POSI
Non-compliance	NCOM
Self-assertion	ASSR
Avoidance	AVOD
Type of task	Abbreviation
Developmentally appropriate	DA
Physical	PHY
Fine motor (e.g., scissors, zipper)	FM
Gross motor (e.g., getting dressed, swinging)	GM
Language (e.g., sing-a-long, story time)	LAN
Cognitive (e.g., puzzle, choosing materials)	CO
Self-regulation	Abbreviation
Sequence	
Initiating	IN
Modulating	MOD
Ceasing	CE
Strategies	
Physical	PH
Problem solving	PS
Language	LA
Social assistance	SA
Emotional	EM
Moral	MOR
Task Persistence	
Proactive - Persistent	PP
Physical	PH
Compliant (or choose)	COMPL
Instrumental (purposeful)	INSTR
Positive/Energetic	ENER
Completion/Ceasing	COCE
Language	LA
For example:	
Positive other-directed	POD
Task-related to self	TRTS
Task-related to other(s)	TRTO

Self-regulation (continued)	Abbreviation
Task Persistence (continued)	
Proactive - Persistent	PP
Problem-solving	PS
For example: trial and error	TE
Social Assistance	SA
For example: seek help or reassurance	SH
Emotion	EM
For example:	
Comforting (e.g., arm around peer)	COMF
Pos. expressions (e.g., smile)	POSE
Pos. distractions (e.g., talk with peer)	POSD
Moral	MOR
For example: cooperation or offer help	COOH
Reluctant - Resistant	RR
Physical	PH
Aggressive	AGG
Under controlled	UNDR
Leaves task incomplete	ICOM
Language	LA
Non-compliant (e.g., assertive, avoid)	NCOM
Social distraction	SDIS
Task-irrelevant	TIRL
Problem-solving	PS
Directed by others	DBO
Internalization (delayed engagement)	INT
Social Assistance	SA
No help offered or received	NHO
Waits passively	WP
Other-initiated, help received	OI
Emotion	EM
Negative distractions (e.g., bang head)	NDIS
Negative emotions (e.g., sad, angry)	NEMO
Moral	MOR
For example:	
Laugh at peer doing wrong/in trouble	ATPR

Appendix C

Outline of Data Analysis Procedures

A. Data Collection

1. Create a case study database, including:
 - a. Raw data (transcriptions, demographics, etc) or reference to hard copies
 - b. Illustrative record of multiple sources of data
 - c. Case study notes (ongoing)
 - d. Tables created (ongoing)
2. Create connections (ongoing) within the database by cross referencing data

B. Data Reduction

1. Record the purposefully sampling procedure and results
2. Create a case summary form for each selected parent interview transcript
3. Create a table displaying contextual information resulting from the 7 parent transcripts
4. Examine preschool philosophies and create a document summary form for each school
5. Create a table displaying contextual information resulting from the schools
6. Examine demographic information and define attributes
7. Revisit and reflect on literature review and develop initial theoretical propositions
8. Examine one child video transcription according to the following steps:
 - a. Read entire transcript to gain a holistic picture
 - b. Complete a case summary form
 - i. with notes about selection criteria
 - ii. initial thoughts/observations for further reflection and comparison
 - c. Re-read transcriptions focusing on the unit of analysis - difficult task:
 - i. note significant shifts in activity that reflect I, M, C
 - ii. note any consistencies, patterns within each I, M, C
 - iii. note any contextual information (i.e., peer/adult interactions)
 - d. Identify codes and categories (beginning with those in proposal)
 - e. Record thoughts by writing memos about emerging themes
 - i. Reflect on propositions arising from the data
 - ii. May partition themes/patterns/sequences into smaller components
9. Next, examine each additional case (child video transcription), one at a time, according to the above procedure (8a-e)
10. Create summary chart on the case summary forms for child video transcriptions

C. Data Display (Compile all documents and displays)

1. Sort codes and cluster into families/types
2. Examine for themes and write a memo to clarify emerging themes (if a topic appears in at least 3 participants it can be considered a theme). Can the themes be partitioned further?
3. Produce a descriptive display of codes within a conceptually clustered matrix
4. During the pattern-coding process identify codes that turn around 4 summarizers: 1) themes, 2) explanations, 3) relationships among people, and 4) emerging constructs.
5. Revisit theoretical propositions – with new information arising from the data

D. Conclusion Drawing and Verification

1. Create a matrix of findings by data source/method/type for triangulation
2. Test rival propositions
3. Document the analysis procedures (maxi-approach to documentation of analysis)
4. Note reflective comments after the analysis

Maintain notes, memos, and reflective/marginal remarks throughout data analysis