AN ABSTRACT OF THE DISSERTATION OF

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Title: An Analysis of Maria Montessori's Theory of Normalization In Light of
Emerging Research in Self-Regulation

Abstract approved:

Sharon Rosenkoetter

The regulation of behavior is a major issue in early childhood development, with
important implications for children's adaptive and maladaptive developmental outcomes.
Emerging research suggests that the degree of successful self-regulation depends upon
the efficiency of the child's attentional system and that the ability to focus and sustain
attention supports emotional self-regulation throughout the lifespan. The neural networks
that underlie the development of attention are beginning to be charted. Studies have
shown that the executive attention network undergoes considerable development between
the ages of 2 and 7. To support this development, research scholars have suggested the
need to develop curriculum to promote focused and sustained attention in preschool
programs.

One hundred years ago, Maria Montessori observed that when the environment
was designed to promote concentration, children went through a transformative process,

which she referred to as *normalization*. Is normalization the same as self-regulation? This study was designed to examine whether Montessori's theory of normalization can be considered an applied theory of self-regulation. This was accomplished by analyzing Csikszentmihalyi's optimal experience theory and Ryan and Deci's self-determination theory to provide the requisite guidance for developing curriculum capable of nurturing multiple aspects of self-regulation, which led to a conceptual framework for the comparison with Montessori's theory of normalization.

Montessori's theoretical perspective is not readily available in published literature. Therefore this study used qualitative methods to conduct interviews with 12 Montessori teacher trainers. These individuals are considered the highest authority regarding Montessori theory and practice. Though Montessori's contributions to the field of Early Childhood Education are often mentioned in university textbooks, the underlying theory (normalization) that guides her work receives little discussion. Without a clear understanding of Montessori's theoretical perspective, research scholars are not able to isolate distinguishing characteristics that can assess self-regulation as an outcome of the curriculum nor can they adequately compare this approach with other forms of education. By introducing Montessori's theory of normalization and analyzing it as a theory of self-regulation, this study has created a conceptual framework to articulate the governing characteristics and educational principles necessary to enhance practices that support the development of self-regulation in early childhood.

An Analysis of Maria Montessori's

Theory of Normalization

In Light of Emerging Research in Self-Regulation

by

Kathleen M. Lloyd

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Chair of the Department of Human Development and Family Sciences

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Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Kathleen M. Lloyd, Author

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DEDICATION

This work is dedicated to Geoffrey Trevor Lloyd (1980 – 1986) and Susie Huston (1946 – 1992) whose living and dying are both woven into the choices and commitments I have made.

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CHAPTER 1: INTRODUCTION

The processes underlying the human capacity to consciously regulate behavior have been the focus of research conducted within the domain of self-regulation. Various scholars have defined self-regulation in different ways (Carver, 2004). According to Rueda, Posner, and Rothbart (2004), self-regulation encompasses the individual's ability to control reactions to stress, capacity to maintain and focus attention, and competence to recognize and interpret the mental and emotional states of one's self and others. Because of the tremendous impact that self-regulation has on the child's social and cognitive development, it is important to understand the processes that provide support for its development (Eisenberg, Smith, & Spinard, 2004). Emerging research suggests that the child's degree of successful self-regulation derives from the efficiency of the child's attentional system (Rueda, Posner, & Rothbart, 2004; Ruff & Rothbart, 1996). This dissertation explored the relationship between self-regulation and sustained attention.

Although the types of socialization that occur in everyday life are important for the development of self-regulation, Rueda, Posner, and Rothbart (2004) recommended the implementation of curriculum to help children ages 2-7 learn to focus and sustain their attention. Mischel and Ayduk (2004) insisted that researchers must first determine whether self-regulation can be taught. They urged researchers to pursue answers to this question because of its importance in helping individuals gain access to willpower when they need and want it (2004). Therefore this study attempted to answer the question of how education might provide this support by examining relevant developmental learning theories and one early childhood curriculum that appears to emphasize the cultivation of concepts related to self-regulation.

Background and Direction

Maria Montessori developed and implemented pedagogy to promote what she saw as the natural ability of children to focus and sustain their attention, a capacity that initiates a transition in the child's temperament, from capricious and disorderly toward self-disciplined (1989). Though Montessori's contributions to the field of Early Childhood Education are often mentioned in university textbooks, the underlying theory that guided her work receives little discussion. Without a clear understanding of Montessori's theoretical perspective, research scholars are not able to isolate distinguishing characteristics that would enable them to assess self-regulation as a possible outcome of the curriculum, nor can they adequately compare this approach with other approaches to education (Boehnlein, 1988). Whether Montessori classrooms provide a fruitful methodology for children to develop self-regulation remains unclear. Further exploration of this question has been hindered because the principles of Montessori's philosophy are held within an oral tradition unavailable to researchers in psychology, human development, or education unless they attend a formal year long Montessori training. The author of this study has received the requisite Montessori training.

The purpose of this study is to examine Montessori's *theory of normalization* in relation to emerging research on self-regulation and current developmental theories in order to determine whether *normalization* presents an applied approach to self-regulation. If normalization were to be so recognized, then Montessori classrooms may provide insightful answers to Mischel and Ayduk's (2004) question, "Can self-regulation be taught?"

Montessori borrowed the term *normalization* from the field of anthropology. It is a technical term which means "becoming a contributing member of society" (Zener, 1999, p. 89). It is undoubtedly an awkward term for modern use. According to Montessori, the phenomenon of normalization refers to the process of healthy development whereby children regularly and freely choose constructive activities based upon their interests, which then leads to their development of the capacity to concentrate (Montessori, 1989; Zener, 1994; Zener, 1999; Haines, 2000). Montessori

referred to a child who regularly chooses challenging activities that leads to concentration as "normalized," and she believed that this state was the "true nature of the child" (1999, p. 87).

This dissertation explored whether Montessori's understanding of what it means for the child to be *normalized* is similar to current theoretical perspectives regarding what it means for the child to be *self-regulated*. By introducing Montessori's theory of normalization and distinguishing it as a theory of self regulation, this study creates an academic framework that articulates the governing characteristics and educational principles necessary to develop methodologies and enhance practices that support the development of self-regulation. These then can be evaluated in terms of their efficacy and utility, leading to new designs for research, assessment, and evaluation.

<div align="center">Research Questions and Hypotheses</div>

To initiate this inquiry, the following research questions were examined:

1. *What is the relationship between self-regulation and focused and sustained attention (i.e., concentration)?* The investigator conducted a literature review of current research that demonstrated a clear linear relationship between self-regulation and attention and offered a rationale for the manner in which Montessori's approach to normalization promotes self-regulation.

2. *How do theories of self-regulation and explanations of developmental processes proposed by Mihalyi Csikszentmihalyi and Richard Ryan and Edward Deci offer support for the cultivation of self-regulation?* These two theories articulated clear guidance for the cultivation of self-regulation and offered a framework for analysis of Montessori's concept of normalization as a curricular approach for developing self-regulation.

3. *To what degree can Maria Montessori's theory of normalization be viewed as an applied theory of self-regulation?* The normalization

constructs presented by Montessori leaders located Montessori theory clearly within the self-regulation school articulated by Csikszentmihalyi, Ryan and Deci, and recent psychological research pioneered by Rothbart, Eisenberg, and their colleagues.

The methods for addressing each question are described briefly below.

Stimulus from Recent Empirical Research

Question #1: What is the relationship between self-regulation and focused and sustained attention (i.e., concentration)?

The relationship between self-regulation and attention were examined through a review of the empirical research on attention in early development that has been conducted in large part by Ruff and Rothbart (1996) and Rueda, Posner, and Rothbart (2004). Because the development of attention appears to have a direct relationship to the strength of *effortful control* or "willpower," this study also surveyed the empirical literature on effortful control (Eisenberg, Smith, Sadovsky, Spinrad, 2004).

Theoretical Development

Question #2: How do theories of self-regulation and explanations of developmental processes proposed by Csikszentmihalyi and Ryan and Deci offer support for the cultivation of self-regulation?

To answer this question the investigation examined two current theories of self-regulation, specifically the paradigm of motivation articulated in Csikszentmihalyi's (1999) Optimal Experience Theory or Flow and the Self-Determination Theory of Ryan and Deci (1999; 2002). These theories approach self-regulation from slightly different positions than the influential cybernetic view proposed by Carver and Scheier (1999). Optimal Experience Theory (OET) or Flow and Self-Determination Theory (SDT) have been chosen for this analysis because of their apparent congruence with Montessori's theory of normalization, to be explored under question 3.

Optimal Experience Theory (OET) or Flow. Mihaly Csikszentmihalyi studies processes leading to focused and sustained attention and articulates the necessary

ingredients that support the cultivation of self-regulation. This dynamic systems perspective posits that self-regulation results from engaging in meaningful and challenging activities that lead to concentration (Csikszentmihalyi & Rathunde, 1998; Csikszentmihalyi & Nakamura, 1999; Csikszentmihalyi, 2000). Even though this theory was created from Csikszentmihalyi's research with adults and adolescents, it maintains relevance when applied to educational philosophy and curriculum design, regardless of the individual's developmental stage. Additionally, OET appears to be closely aligned with Montessori's theory of normalization. According to Csikszentmihalyi, "the whole notion of normalization is almost eerily similar to the Flow experience" (2000, p. 22).

Self-Determination Theory (SDT). Ryan and Deci's (1999) *SDT* emphasizes intrinsic motivation and the processes involved in establishing an authentic self. SDT seeks to clarify how the self makes choices and in that pursuit, it delineates a continuum between the experiences of authenticity and alienation. For Ryan and Deci (1999), regulatory processes differ to the extent that they have been integrated within the self. The degree of integration results in *more* versus *less* self-determined action. Healthy development results from the integrity that arises from acting with volition to achieve goals and satisfy needs. The self can experience volition and self-determined action, or it can be governed by antagonistic or controlling forces within the social environment, limiting self-regulation. Exploration of this tension may be particularly valuable in the refinement and application of Montessori's theory of normalization.

Empirical Study

Question #3: To what degree can Maria Montessori's theory of normalization be viewed as an applied theory of self-regulation?

Once the relationship between self-regulation and attention has been clearly established, the investigator will then introduce Montessori's theory of normalization (Montessori, 1989; Kahn, 1997; Zener, 1994; Zener, 1999; Haines, 2000; Rathunde, 2001). Collection of new qualitative data will help to define Montessori's theory in the present age. The investigator will then compare Montessori's theory of normalization with the other theories to determine points of convergence and contrast. Results from

this empirical investigation will help to establish a conceptual framework that will either confirm or refute the hypothesis that Montessori's theory of normalization is indeed an applied theory of self-regulation. The combined results and comparative analysis will provide a theoretical framework to stimulate further research to enhance practices that support the development of self-regulation.

CHAPTER 2: LITERATURE REVIEW

This chapter offers a literature review that provides an overview of self-regulation and describes its relationship to sustained or focused attention. The chapter begins with a review of current research that has stimulated this inquiry before moving to a survey of two theoretical perspectives that may advance understanding of its concepts. Based upon this literature the investigator conducted an empirical study and analysis to answer the three research questions. The literature review begins with a definition of self-regulation and an overview of its value in the promotion of healthy human development. Next it briefly discusses the construct of effortful control and its relationship to the will. Then the relationship between self-regulation and effortful control, as a construct of temperament, is described. The intentional or executive nature of self-regulation is then introduced, suggesting that an individual's ability to sustain or focus attention supports the development of self-regulation. The review of empirical research concludes with a brief query posed by current researchers who propose the possibility of providing educational support for the development of self-regulation. Two theoretical perspectives and how they inform understandings of the processes involved in self-regulation follow. First, OET is described and then SDT. Specific elements drawn from both theoretical perspectives will inform this study.

Overview and Research on Self-Regulation

Self-regulation or the exercise of control over inner processes, states, and functions is an adaptive ability that allows humans to organize their emotions, social relations, cognition, and exercise control over development (Baumeister & Vohs, 2004). Rothbart and her colleagues define self-regulation as "processes that serve to modulate reactivity, including fearful inhibition, surgent or extraverted approach, and the effortful control of behavior based on the executive attention system" (2004, p. 358). The strength or weakness of self-regulation can be linked to every human success or failure (Baumeister & Vohs, 2004). It is the essential component required for the transformation of human behavior from "the inner animal nature into a

civilized human being" (Baumeister & Vohs, 2004, p. 1). When they are considered in the context of larger social and biological influences, all negative outcomes, such as alcoholism, drug addiction, aggression, violence, crime, underachievement, eating disorders, depression, and apathy, are all mediated by the inability of the self to successfully establish self-regulation (2004; Schmmeichel & Baumeister, 2004). Self-regulation is a key mediator between early experience, genetic disposition, and adult functioning (Rueda, Posner & Rothbart, 2004). Eisenberg and Wang argue that the success of self-regulation is an essential characteristic for the achievement of peace and cooperation among people (2003).

The domain of self-regulation includes a broad range of perspectives and a diverse literature with many overlapping constructs. Some of the global concepts of self-regulation include executive functions, ego control, inhibitory or effortful control, and emotion regulation (McCabe, Cunnington, Brooks-Gunn, 2004). Self-regulation also refers to the biological control mechanisms that maintain the body's homeostatic processes such as those involved in the body's ability to maintain the immune system or constant temperature. In psychology, the term 'self-regulation' refers to the ability of the psychological self to regulate itself by its *self* (Baumeister & Vohs, 2004; Carver & Scheier, 1998). It is the psychological self that is the focus of this dissertation study.

<div align="center">Effortful Control</div>

The Concept of Will or Effortful Control

Self-regulation and self-control are often used interchangeably, though self-regulation more specifically refers to goal directed behavior resulting from feedback loops, and self-control generally deals with conscious impulse control (Block, 2002; Baumeister & Vohs, 2004). Eisenberg and Wang (2003) emphasize that regulation is not the same as control. Control is defined as restraint or inhibition, whereas well regulated individuals are flexible. They are not overly controlled or inhibited, nor are they under-controlled or uninhibited (2003). The well regulated individual exhibits optimal control and is regulated effortfully (2003). Such individuals are likely to be

resilient and able to cope effectively with the stresses of life (2003; Eisenberg, et al., 2004).

Theorists have differentiated between behaviors that are under voluntary control and behaviors that are automatic or reactive. Rothbart labeled the construct of voluntary control *effortful control* and defined it as "the ability to suppress a dominant response in order to perform a subdominant response" (Rothbart, Ellis, Rueda, & Posner, 2003, p.1114; Eisenberg, et al., 2004). Effortful control involves two components: first, attentional regulation, which is the ability to voluntarily focus and persist at a task as well as the ability to shift attention; and also behavioral regulation, which is an important adaptive response that includes the ability to activate or inhibit behaviors when necessary, even contrary to one's personal preference (2003; 2004). According to Eisenberg and Wang, effortful control "involves the notion of 'will' or 'effort'" (2003, p. 122).

Mischel and Ayduk (2004) translate effortful control as "willpower" or human agency, and distinguish regulatory motivation, that is the *wish* or the motivation to exert willpower in the pursuit of a goal, from regulatory competence, the *ability* to exert willpower effectively (2004). Motivation and commitment are necessary for goal attainment, but alone they are insufficient to achieve success. With time, both motivation and commitment fade away, and the will must be activated (2004). To sustain the effortful control required to succeed in difficult goal attainment, the individual must implement effective self-regulatory mechanisms (2004). Without having and using such strategies, the individual may be unable to sustain self-control or to delay gratification.

Decades of research on the power of stimulus control document the failure of motivation and good intentions (Mischel & Ayduk, 2004). Initially Skinner's work on operant conditioning demonstrated that situations (stimulus) hold tremendous power to elicit reflexive, conditioned responses without higher-order mediation or consciousness (2004). Though the dominance of radical behaviorism has waned, Mischel and Ayduk express concern that the cognitive revolution taking place in social and personality psychology is in danger of a renewed form of mechanistic behaviorism due to its emphasis on automaticity (2004). In order to defend purposeful

self-regulation, Mischel and Ayduk challenge researchers to articulate the processes and conditions that people use to make them less susceptible to the influences, temptations, and pressures of momentary situations (2004). Both strength of desire and goal commitment are required to sustain effort, but in the midst of temptation or frustration, it becomes necessary for the individual to have rapid and flexible access to cognitive attention deployment strategies (2004). To maintain willpower when it is most urgently needed, the individual must quickly access the necessary effortful control processes and maintain them over time. To accomplish this, strategies must be converted from effortful to automatic (Mischel & Ayduk, 2004).

Effortful Control as a Dimension of Temperament

It has long been recognized that self-regulatory capacities play an important organizing role in the social-emotional development of young children. There are complex individual differences that researchers seek to understand: the number and content of personality characteristics, their age of origination, measurement issues, the degree and the mechanisms of their continuity over time, and the relationships of these continuity mechanisms with the concept of temperament (Buss & Plomin, 1975; Thomas & Chess, 1977; Bates & Wachs, 1994; Kagan, 1994; Thomas & Chess, 1996; Strelau, 1998; Molfese & Molfese, 2000; Guerin, et al., 2003; Kochanska & Knaack, 2003; Kagan & Snidman, 2004).

The organization of temperament is considered a major part of self-regulation (Rothbart, Ellis, & Posner, 2004). Temperament is more limited than personality, which is typically thought to include a "wider range of individual differences in feeling, thinking, and behaving than does temperament" (Shiner, 2006, p. 214). Temperament is viewed as traits or dispositions that are constitutional in nature and hereditary in origin (Saucier & Simonds, 2006). Scholars disagree about what constructs to include in the definition of temperament and whether to limit these to purely affective or to include cognitive aspects as well (2006). Scholars disagree regarding the influence of biology on the variables of temperament (2006). Nevertheless, though definitions of temperament vary, all definitions tend to focus on

> …the basic dispositions that underlie and modulate the expression of reactivity, physical activity, emotionality, and sociability; dispositions that are present early in life and influenced, directly or indirectly, by biological factors; and traits that are subject to change due to environment and maturation (2006, p. 110).

Rothbart, Ellis and Posner define temperament from a psychobiological perspective as "constitutionally based individual differences in reactivity and self-regulation, as seen in emotional, motor, and attentional domains" (p. 357, 2004; Saucier & Simonds, 2006).

Temperament can be conceptualized as a framework that develops early in life and forms the dispositional basis that underlies all behavior and from which the personality develops (Rothbart, Ellis, & Posner, 2004; Saucier & Simonds, 2006). Though all humans have dispositional systems, there are individual differences in sensitivity and strength as well as in "the efficiency of their attentional capacities" (2004, p. 358). The developmental systems that underlie the expressions of temperament change over time as new systems "come on line at different stages" (Saucier & Simonds, 2006, p. 118). Two examples of systems of temperament emerging at different stages can be seen in the developing capacity to inhibit approach and in the elicitors of fear (2006). For instance, the infant does not develop the capacity to inhibit approach toward new objects until after the first year. Once this ability is in place, individual differences remain relatively stable (2006). Elicitors of fear also change with age. Fearful reactions to unusual stimuli or to the sudden presentation of stimuli fade for nearly all children by school age (2006).

> The following traits are typically included in models of temperament Positive emotions/pleasure (expression of positive emotions and pleasure and excitement in social interactions); fear/inhibition (withdrawal and expressions of fear in stressful or novel situations); discomfort (negative emotional reactions to irritating or painful sensory stimulation); attention/persistence (attentiveness to environmental stimuli, and in toddlers, ability to sustain attention over time and persist at a task); and activity level (Shiner, 2006, p. 215).

The statistical method of factor analysis has been used to extract broad factors in the studies of temperament. This variable reduction technique organizes interrelated variables into a few key factors. Three such factors that have been delineated in

Rothbart and Derryberry's (Saucier & Simonds, 2006) model of temperament include Extraversion/Surgency, Negative Affectivity, and Effortful Control (Rothbart, Ellis, Rueda, & Posner, 2003). There is recent evidence that the tendency for affiliation indicates a fourth factor which has been labeled Affliliation/Orienting (Bates & Wachs, 1994; Molfese & Molfese, 2000; Saucier & Simonds, 2006).

The third factor, effortful control, taps children's emerging abilities to constrain and regulate behavior. Rothbart and colleagues first proposed the construct of effortful control to denote a class of self-regulatory mechanisms or aspects of temperament that emerge at 6-12 months of age and increase in importance during the second year and beyond (Kochanska & Knaack, 2003). It is during this time that a behavioral system develops that allows for voluntary control

> A behavioral system also develops, beginning late in infancy and
> continuing through the early years, that allows voluntary control of
> behavior and emotion, and which we have labeled effortful control,
> defined as the ability to inhibit a dominant response in order to perform
> a subdominant response (Rothbart, Ellis & Posner, 2004, p. 362).

Most theories of temperament emphasize "the extent to which our motivation and behavior is driven by positive affect and approach systems versus negative affect and avoidance/inhibition systems" (Rothbart, et al., 2003, p. 1114). Effortful control however, provides some freedom from behaviors that are driven strictly by affect, allowing the child to suppress approach and avoidance tendencies in order to design other behaviors, particularly when confronted with conflict (2003). Because of this, Rothbart emphasizes that "effortful control plays a critical theoretical role in our view of temperament and development" (2003, p. 1114).

Building on the work of Rothbart and colleagues, Kochanska and Knaack (2003) examined effortful control using two longitudinal samples. They viewed effortful control as an active inhibitory system, including behaviors of fearfulness and inhibition of the unfamiliar. Kochanska and Knaack (2003) have also developed age-appropriate behavioral batteries to assess effortful control during the toddler and preschool years. This research showed that by 22 months of age, effortful control has trait-like attributes and is modestly coherent and highly predictable. By 33 months, effortful control is a highly coherent characteristic, and by 45 months, effortful control

is stable and highly coherent, reflecting robust individual differences (2003). According to Kochanska and Knaack, children's performance in suppressing their dominant responses and/or activating subdominant responses (effortful control) appears to be very stable over time, and by the fourth year is equal in stability to that of IQ (2003).

<div align="center">Attention and Self-Regulation</div>

Executive Attention Underlies Effortful Control

Until recently, the potential seemed remote to link knowledge of neural networks in the human brain to the socialization efforts of parents and educators to support children's development (Rothbart, Ellis, & Posner, 2004). The prospect for such integration has now been changed by two major developments: (a) neuroimaging in combination with electrical or magnetic recordings from outside the skull that together provide a view of the circuits that compute sensory, semantic and emotional responses to input, and (b) the human genome that provides a portrait of genetic differences and individual variations in the ability to utilize these networks to perform actions and acquire skills (2004). Yet despite these technological advances, isolating neural networks responsible for self-regulation is still a major task in which Posner and Rothbart have been engaged for some time (2004).

Cognitive neuroscientists are now able to investigate additional mechanisms which approximate the intentional, conscious, or voluntary nature of self-control. These mechanisms are referred to as "executive" and are usually associated with activity in the brain's frontal lobe. In early childhood, executive functions include working memory, planning, switching, and inhibitory control (Rueda, Posner & Rothbart, 2004). Rueda, Posner, and Rothbart refer to the executive attention network as the storage and executive components of working memory. They emphasize both the control functions and the monitoring of attention (2004).

After studying the link between the ability to focus attention and self-regulatory temperament, Rothbart and colleagues (2004) hypothesized that executive attention underlies effortful control. This hypothesis led the authors to conduct studies to explore the early development of attentional control. The results indicate that there

is considerable development in the executive attention network between ages 2 and 7 and that the young child's degree of success in self-regulation depends upon the efficiency of the attentional system (Rothbart, Ellis & Posner, 2004). Furthermore, the executive attention network continues to develop up to age 7 or 8, after which it shows surprising stability (Rothbart, Ellis, Rueda, & Posner, 2003). Based on their work and a review of the literature, Rothbart, et al., concluded that there is little improvement in the executive attention network after age 10 (2004). These findings taken together support the importance of developing activities in the early years to foster self-regulation as a critical element of later functioning.

To understand the mechanisms underlying temperamental effortful control, Rothbart and colleagues conducted research using laboratory tasks to study the development of attentional self-regulation (2003). They found age graded sequences; for example, infants as young as 3 months old demonstrate the ability to control their attention in relation to distress by orienting to a visual stimulus, and they can temporarily soothe themselves, one of the major developmental tasks of infancy (Ruff & Rothbart, 1996; Rothbart, Ellis, Rueda, & Posner, 2003; Rothbart, Ellis, & Posner, 2004).

According to Rothbart and colleagues, one of the most exciting aspects of their research on effortful control as a temperament construct is that it can now be linked to the functioning of the nervous system via the executive attention network (2003). Effortful control is regarded as the manifestation of the executive attention network operating in naturalistic settings. It is "an outcome of the development of executive attention, including the ability to inhibit a dominant response in order to activate a subdominant response, to plan, and to detect errors" (p. 1114, 2003; Rueda, Posner, & Rothbart, 2004).

Effortful control has important implications for children's adaptive and maladaptive developmental outcomes and serves as a protective factor against the development of behavior disorders (Kochanska & Knaack 2003; Rothbart, et al., 2003). Lower levels of psychopathology and maladjustment, as well as the development of empathy and conscience, have been linked to individual differences in effortful control (Rothbart et al., 2003). The development of conscientious thought and

behavior appears to be regulated both by the attentionally based system of effortful control as well as the reactive temperament control system of fear (2004). The relationship between these constructs is based on the idea that for an individual to show empathy requires an ability to accurately interpret signals of distress or pleasure, that is, to pay attention. Some aspects of metacognition, also relate to individual differences in effortful control (2004). Notably here is theory of mind, the ability to know that people's thoughts and beliefs effect their actions. Both inhibitory control and theory of mind share similar sequences in developmental timing, with tremendous advances between ages 2 and 5 (2004).

Lack of effortful control, which includes a short attention span, has been implicated in the development of adolescent externalizing behavior problems (Rothbart, et al., 2003). In delay of gratification studies, low self-control has been identified as a risk factor for aggressive and delinquent behaviors, whereas the ability to delay gratification has been linked to adaptive behaviors (Kochanska & Knaack, 2003). With a group of young adolescents, Rothbart and colleagues found that externalizing (aggression) and internalizing (depressive mood) were associated with poor effortful control (2003). The ability to reduce negative emotion through the use of effortful control may be an important link between cognition and emotion, a link that develops in early childhood (Rothbart, Ellis, Rueda, & Posner, 2003).

Sustained Attention and Self-Regulation

One of the advantages of relating attention to self-regulation is the recognition that the development of a specific neural network enhances the ability of children and adults to regulate their thoughts and feelings (Rueda, Posner, & Rothbart, 2004). The regulation of emotions is a major issue in early childhood. Now the anatomical reasons why this poses such difficulty for children are being revealed. However by emphasizing the neural networks and genetic influences, Rothbart and colleagues (2004) do not mean to imply that these networks are not amenable to processes of socialization that might focus on training or behavioral therapy. Though evidence suggests that temperament influences the ability to self-regulate, studies also emphasize the plasticity of temperament characteristics and the importance of a

"goodness of fit" for the developing child with the surrounding environment (2004; Shiner, 2006). Though normal socialization is important for the development of attention, Rothbart and colleagues suggest that specific training during particular stages of development may be effective in fostering self-regulation (Rueda, Posner, & Rothbart, 2004). Because the executive attention network shows substantial development between ages 2 and 7, Rueda, Posner, and Rothbart suggest that "a systematic training of attention might be an important addition to preschool education" (2004, p. 296).

The ability to sustain attention supports emotional self-regulation throughout the lifespan (Rueda, Posner, & Rothbart, 2004). Studies of attention have long been a central topic in the field of human experimental psychology (2002). Now, with the development of neuroimaging, the neural networks that underlie shifts in attention are beginning to be charted (2004). Studies using functional magnetic resonance imaging (fMRI) demonstrate a number of brain areas that play a key role in modulating regulatory activity (2004).

Though automatic or overlearned responses may be adaptive and in many cases helpful, they can also interfere with coping in situations requiring the execution or preparation of a non-dominant response (Derryberry, 2002). The "stimulus-response compatibility task" is a paradigm used to study response control. Derryberry's (2002) findings indicate that those who have greater difficulty inhibiting the dominant response tendency are persons who are anxious and have poor attentional control. However, subjects who are anxious but have good attentional control are similar to low anxious subjects in their ability to limit interference and inhibit the dominant tendency.

Additionally, using Logan's "stop-signal" task, which focuses on response control, Derryberry (2002) had similar findings with college students. Individuals with high impulsivity have difficulty executing a non-dominant response. However, it is only impulsives with poor attentional control who have difficulty restraining themselves. The ability to voluntarily regulate one's responses, as opposed to responding automatically or habitually or being controlled by stimulus, has many implications for buffering vulnerabilities in children and youth (2002).

Eisenberg found that 4-6 year old boys with good attentional control were able to deal with their anger through the use of verbal methods rather than using overt aggression (Rothbart, Ellis, & Posner, 2004 cite Eisenberg, et al., 1994; Eisenberg, et al., 2004). In a longitudinal study of children in kindergarten through third grade, Eisenberg and colleagues measured negative emotionality and a composite of attention regulation (Rothbart, Ellis, & Posner, 2004 cite Eisenberg, et al., 1996). As predicted, children who exhibited externalizing behavior problems were also high in negative emotionality and low in attention regulation. A strong predictor of behavior problems in children with negative affectivity was found to be the lack of regulation of attention. When Eisenberg and colleagues followed up 2 years later, they found similar results (2004). Thus, an effective predictor of behavioral problems in children with higher levels of negative emotionality is limited attentional control.

With the same sample, Eisenberg and colleagues examined socially appropriate and pro-social behavior (Rothbart, Ellis, & Posner, 2004 cite Eisenberg, et al., 1997). Children high in attention regulation exhibited higher levels of social competence. Attention control was also found to be related to resilience in the face of developmental challenges, particularly with children prone to negative affect.

Relevant comparative research has shown that in monkeys, attention training appears to reduce aggression and improve self-regulation even outside of the training context. Nonhuman primates raised in captivity can be notoriously difficult and are described as natural models for Attention Deficit Hyperactivity Disorder (ADHD) (Rumbaugh & Washburn, 1996 as referenced by Lillard, 2005). After trained on tasks requiring sustained attention, the animals showed general improvement in social behavior (2005). The ability to pay attention has also been taught in human adults with brain injury and children with ADHD. For patients with brain damage, the brain circuits regulating attention are restored following attention training (Sturm et al., 2004 as referenced by Lillard, 2005).

In terms of prevention, Derryberry and Rothbart (1997) stated that since attentional differences can be recognized early in life and are linked to problems in later childhood with internalizing or externalizing behaviors, training programs ought to be developed that enhance sustained attention. Derryberry (2002) also suggested

that attentional skills and coping strategies could be assessed in patients in order to prescribe exercises in attention that will strengthen the underlying mechanisms in conceptual facilitation and perceptual disengagement.

Derryberry (2002) emphasized that the assessment and enhancement of attentional skills will be an important part of future therapies. He noted that meditation techniques have long been used to improve individuals' emotional and mental stability. Cognitive therapies more recently have emphasized the importance of gaining control over habituated or automatic thought patterns, with some approaches focusing specifically on improving the use of attention (Wells & Matthews, 1994 as referenced by Derryberry & Rothbart, 1997).

There are several important implications for attentional control. In stressful situations individuals deploy various defense mechanisms and coping strategies. According to Derryberry (2002), limitations in an individual's attentional capacity are likely to constrain the efficiency of coping strategies. For example, efficient strategies, such as simple disengagement or the ability to inhibit reactions to threat may not be used by anxious people with poor attentional control, whereas those with good control are better able to utilize more flexible strategies such as compensation. Compensation allows the individual not only to disengage from the threat stimulus but also to choose to engage in a more positive ideational concept. Emotional arousal can be modulated by the ability to shift and focus attention (Eisenberg, et al., 2004). Attention also facilitates the integration of information, which promotes the ability to plan the next steps and inhibit inappropriate behavior (2004).

Can Self-Regulation Be Taught?

The development of self-regulation begins in infancy, but the preschool years represent the pivotal time of its growth (McCabe, Cunnington, Brooks-Gunn, 2004; Bronson, 2000). According to Mischel and Ayduk (2004), an urgent question remains: Can self regulation and the ability to delay gratification be taught? What is not yet known is whether education, socialization, or therapy can be utilized effectively to help individuals gain the attention control competencies that make willpower more

accessible for their use (2004). Mischel and Ayduk conclude that it is time to pursue this question, they hope that answers will soon be forthcoming, and the word will be affirmative (2004).

Based on the research cited above, support of the young child's developing attentional process must begin to be recognized as a critical ingredient to promote self-regulation. Because parents, teachers, and other caregivers influence the capacities of young children, Rothbart and colleagues recommended disseminating knowledge regarding "the developing basis of effortful control in order to provide the best introduction for young children into contexts and situations that require the exercise of self-regulation" (2003, p. 1140). Additionally, the authors underscored the need to consider individual differences, which are influenced by the child's developing temperament, in order to motivate the child's cooperation with parents and teachers (2003). Further, because of the plasticity of the executive attention system during these early years, at risk populations may be well served through interventions that promote the development of executive attention (2003). The authors concluded that further study is required to explore the nature of the links between attention and the control of emotions (2003), as well as to identify and validate pedagogical approaches that enhance effortful control to increase self-regulation and reduce subsequent behavioral challenges. This dissertation study presents an opportunity to address Rothbart et al.'s recommendations, contributing to the scholarship in this area. To identify the elements capable of providing pedagogical support for the development of self-regulation, two theoretical perspectives are examined below.

<div align="center">Theoretical Framework: Optimal Experience Theory (OET)</div>

Goals Emerge from Positive Affect

Carver and Scheier's cybernetic model of self-regulation is considered "one of the most successful theoretical formulations of regulatory processes yet to emerge" (Wyer. 1999, p. viii). OET agrees with the basic assertions made within cybernetic models of self-regulation that behavior is directed by goals and controlled by feedback (Csikszentmihalyi & Nakamura, 1999; Carver & Scheier, 1998). Goal constructs are

conceptualized in the literature by various labels, such as current concern, personal strivings, life task, personal project, possible selves, and self-guide. All these constructs embrace a similar view, that personal goals direct and energize individual activity (Carver & Scheier, 1999).

In formulating a model that shows goals and feedback processes as behavioral regulators, Carver and Scheier (1999) admit that "the question of where goals come from and how they are synthesized is one that hasn't been well explored" (1999, p. 59). This question, the ontogenesis of goals, is one of the central themes stimulating the development of OET, the model of flow, and related empirical research (Csikszentmihalyi & Nakamura, 1999).

OET and the Flow model of self-regulation claim that emotions determine goals and not the reverse, as posited by Carver and Scheier's self-regulation model (Csikszentmihalyi & Nakamura, 1999; Carver & Scheier, 1998). Young children, for example, do not use goals as primary reference points from which to evaluate feedback. Instead, the motivating factor driving their activity is positive affect and a desire to optimize the quality of their experiential state (Csikszentmihalyi & Nakamura, 1999). For instance, the newly acquired motor skills of the infant make physical action possible, and genetically programmed needs (e.g., hunger) demand attention. When the initially random movements bring an infant's mouth into contact with the mother's breast and activate a sucking response, the infant experiences pleasure and contentment. The positive affect motivates the baby to repeat the experience. It is through repetition that the baby begins to form a mental representation of the feedback cycle. The infant has developed the goal of reaching the nipple, and subsequently, the goal will regulate behavior (1999). Csikszentmihalyi and Nakamura (1999) argue that it is not only in infancy that behavior can be understood through this developmental perspective, but through all stages of life. For example, when Nobel Laureate Linus Pauling described how he developed an interest in chemistry, he recalled that he never sat down to ask himself what he wanted to do with his life (1999). The goal was never external to himself. As a child he simply followed what interested him, from collecting insects and minerals to eventually discovering the

excitement in chemistry. This, then, is a key principle within OET: goals continually emerge from an experiential matrix of positive affect.

When addressing the function and centrality of goals in the regulation of behavior, Csikszentmihalyi and Nakamura (1999) emphasized the problematic nature in utilizing the term *goal*

> One of the problems in understanding the function of goals in regulating behavior is that the word *goal* implies an end state that motivates a person's strivings. Yet, often goals are really means – they are pursued in order to achieve a positive affective state. For instance, let us consider why an amateur pianist might sit down to play a concerto. Is it to finish the piece as quickly as possible? Hardly. The goal of completing the piece is simply the means by which the pianist can experience the enjoyment of playing. Similarly, most mountain climbers set the goal of reaching the summit not because they want to get to the top, but because they want the experience of climbing. Contrary to the generally accepted view in psychology that behavior is directed to achieve consummatory ends, in many instances it is the means that justify the ends (p. 111).

According to the cybernetic model postulated by Carver and Scheier, "positive affect results when a behavioral system is making rapid progress in *doing what it's organized to do*" (1999, p. 25). The theory of optimal experience disagrees with the idea of velocity stated in the phrase "making rapid progress" (Csikszentmihalyi & Nakamura, 1999). OET claims that mountain climbers are not feeling joy because they are making rapid progress toward the peak, but because they are experiencing a good fit between their skills and meeting the challenges that are emerging.

A General Systems Perspective

Similar to developmental systems theory (Ford & Lerner, 1992) and general systems theory (Werner, 1957; von Bertalanffy, 1969), OET emphasizes an open-systems perspective where "the basic process of development consists in changes in relationships between individuals and their multiple contexts" (Csikszentmihalyi & Rathunde, 1998, p. 643). From this perspective human development, described as a living system, is open to exchange with the environment, self-organizing, and self-

constructing. People can, therefore, act as agents or producers in promoting their own development.

A property of all living systems is the creation of organization combined with effort to overcome any disruptions to this organization (Ford & Lerner, 1992; von Bertalanffy, 1969); nevertheless the very processes of daily life continually disrupt organizational coherence. Change and development result from efforts to maintain, to restore, or to create new organizational coherence in response to disruptions, discrepancies, and conflict (1992, 1969).

Comprehension of the dynamics within open systems is essential (Csikszentmihalyi & Rathunde, 1998; Csikszentmihalyi, 1993; Ford & Lerner; 1992, von Bertalanffy, 1969). In an open system, the human's organization tends toward complexity, though an individual's organizations differ in their complexity based upon the number of constraining and facilitating conditions that are involved (1998; 1992; 1969). Some types of organization follow fixed pathways and are highly predictable. Referred to as mechanistic organizations, these are expressed in habits and reflexive behaviors. From a general systems perspective, the emphasis is on the relationship between the self and the environment and the person is not seen so much as the *result* of this relationship, but as the *process* of creating meaning, organizing information, and developing greater complexity (1998; 1993; 1992; 1969). Since individuals are self-organizing, self-constructing, open systems embedded within their environments, they cannot be changed by efforts to do something to them but must participate in their own self-construction and self-organizational processes (1992).

The self-regulation loop proposed in OET (Csikszentmihalyi & Nakamura, 1999; Csikszentmihalyi, 1997) is based upon enhancing the individual's experience. The feedback loop compares present experience to past experience, and according to the "affects generated, the goal becomes to either maintain or to change the quality of experience" (1999, p. 108). Feedback is provided from the environment to the individual through a dialectical and circular process.

Equilibration and Flow

The theory of optimal experience develops the general systems concept of complexity in human development through the use of Piaget's theory of *equilibration* (Csikszentimihalyi & Rathunde, 1998). Though many consider Piaget as a static stage based theorist, Csikszentimihalyi and Rathunde (1998) claim that equilibration is an interactionist open-systems model which views the process of development as occurring *between* the subject and the object. From this perspective, development is a moment-to-moment process, an ongoing relationship between the self and the environment. The individual's actions in the world introduce disequilibrium or imbalance while dynamic equilibrium continually seeks to bring balance through the processes of assimilation and accommodation

> Thus, equilibrium describes the state of the open system such that the self and environment are related in a way that is differentiated and integrated; in other words, it describes a state of complexity. Assimilation and accommodation are two facets of a unitary and dynamic evolutionary process and must be understood together: as an organism differentiates, it moves, so to speak, through assimilation toward accommodation (i.e., from structure toward change); this movement calls for a reverse movement through accommodation toward assimilation (i.e., from change to structure) that integrates the organism with the environment in a new way (Csikszentimihalyi & Rathunde, 1998, p. 644).

The problem for the theorist is how to measure and describe this transitory state of equilibrium. According to Csikszentimihalyi and Rathunde (1998), there are at least two ways to deal with this problem The first is from the "inside" to describe the relational aspect of how the self experiences the process, and the other is from the "outside" by describing or measuring the consequences of the relational process. Piaget focused upon the outside by studying problem solving and different stages of cognitive development (1998). This approach ignored the participatory nature of the self within the assimilation/accommodation process. In so doing, it failed to address the role of motivation or emotion in development (1998). Piaget's theory does not tell how "the relational process between self and environment is *experienced by the self,* thus it tells us little about what – in human terms – motivates development" (1998, p.

645). By adopting a framework with an internal reference, Csikszentimihalyi and

Rathunde (1998) believe that new research opportunities emerge

> For instance, if equilibrium indicates a complex relationship that is
> fully involving, then it becomes possible to look at development from a
> perspective that emphasizes full involvement as a measurable criterion
> of the self-environment negotiation process. Much can be learned about
> this process, we believe, by adopting a phenomenological perspective
> that focuses on the experience of self-environment relations. For
> instance, what does a complex relationship feel like? How can
> relationships that are too one-sided – too integrated or too differentiated
> – be recognized phenomenologically? (p. 645)

In order to achieve complexity, full involvement between the self and the

environment must continually bring the processes of differentiation and integration

into equilibrium (Csikszentimihalyi & Rathunde, 1998). Differentiation occurs

through cultivating individual skills and developing unique abilities. However, in

order to achieve complexity, a person must also integrate these skills into the network

of a community. Integration occurs through active participation in meaningful cultural

and social contexts. It is the experiential quality of total or full involvement between

the self and the environment that has come to be known as the experience of *flow*

(1998).

Optimal Experience and Flow

The first systematic study of what would later become known as *flow* was

begun in 1970 by Mihalyi Csikszentimihalyi and his research team from the

University of Chicago's Department of Human Development. The initial study

conducted interviews with people involved in intrinsically motivating (*autotelic*)

activities. Participants who engaged in rock climbing, basketball, chess, modern

dancing, and surgery were interviewed to find out what made these activities so

rewarding and compelling. The resulting theoretical model has now been refined and

used by researchers worldwide

> In the beginning our data consisted of interviews and questionnaires.
> To achieve greater precision we developed with time a new method for
> measuring the quality of the subjective experience. This technique,
> called the Experience Sampling Method, involves asking people to

wear an electronic paging device for a week and to write down how
they feel and what they are thinking about whenever the pager signals.
The pager is activated by a radio transmitter about eight times each day
at random intervals. At the end of the week, each respondent provides
what amounts to a running record, a written flip clip of his or her life,
made up of selections from its representative moments. By now over a
hundred thousand such cross sections of experience have been collected
from different parts of the world (Csikszentimihalyi, 1990, p. 4-5).

Respondents from all over the world, representing different cultures, age
groups, and economic backgrounds have described enjoyable and deeply involving
experiences in remarkably similar ways (Csikszentimihalyi 1990, 1993, 1975/2000).
An *autotelic experience* was the original term used to describe the flow experience
(1975/2000). The term *flow* was eventually adopted because informants often used this
term to describe the quality of their experience (1975/2000). Flow illustrates the
experiential qualities consistently found within the *flow experience*.

The Experiential Qualities of Flow

Perhaps the most obvious sign to the outside observer that someone may be
experiencing flow is in the visible quality of absorption, undivided attention, and full
concentration on the task at hand. This subjective quality has been described by
Csikszentimihalyi

Perhaps the clearest sign of flow is the merging of action and
awareness. A person in flow has no dualistic perspective: he is aware of
his actions but not of the awareness itself. A tennis player pays
undivided attention to the ball and the opponent, a chess master focuses
on the strategy of the game, most states of religious ecstasy are reached
through complex ritual steps; yet for flow to be maintained, one cannot
reflect on the act of awareness itself. When awareness becomes split, so
that one perceives the activity from "outside," flow is interrupted.
Therefore, flow is difficult to maintain for any length of time without at
least momentary interruption. Typically, a person can maintain a
merged awareness with his or her actions for only short periods, which
are broken by interludes when he adopts an outside perspective. These
interruptions occur when questions flash through the actor's mind: "Am
I doing well?" "What am I doing here?" "Should I be doing this?"
When one is in a flow episode (*in ludus* as opposed to *inter ludes*),
these questions simply do not come to mind (1975/2000 p. 38).

Activities that promote the experience of flow have goals that are clearly understood. Such goals follow an orderly, sequential progression. As each moment unfolds, what needs to be done, the individual readily comprehends. In an activity that leads to flow, there is unambiguous feedback providing immediate information as to how well one is doing. The vulnerability of the ego disappears, allowing for freedom from self-consciousness. George Mead referred to this experience as not needing to worry about or to defend the "me" (Csikszentimihalyi & Rathunde, 1998). In flow, the self is experienced as simply an "I." The optimal experience of flow also includes the distortion of time. Hours seem to pass by in minutes, or minutes may seem to expand into hours. The positive feelings experienced in flow create a desire for repetition. Such enjoyable experiences are intrinsically motivating, and the desire to recreate the feeling occurs without needing external motives or incentives (Lawton & Nahemow, 1972; 1998). According to Csikszentimihalyi and Rathunde (1998), to instigate an experience of flow, it is necessary to discover the proper balance between

> … the *skills* of the self and the *challenges* afforded by the environment…The flow model describes this balance in terms of the fit between perceived challenges and skills: an activity wherein challenges predominate increases arousal; an activity wherein skills predominate reduces arousal. Thus, a synchrony of challenges and skills permits a deep involvement, while the pitfalls of either over – or underarousal (i.e., anxiety or boredom) are avoided. In this sense, flow seems to represent the subjective dimension of that "goodness of fit" between temperament and environment that underlies several developmental perspectives (p. 647).

When challenges within an activity predominate compared with the necessary skills, anxiety and arousal increase and disequilibrium results. In contrast, if skills predominate in an activity without much challenge, the individual experiences the activity as too easy, arousal declines, and boredom soon results (Csikszentimihalyi & Rathunde, 1998; Csikszentimihalyi, 1990; 1975/2000).

Meeting Challenges by Developing Skills: Increasing Complexity

Piagetian terms can also be used to describe the experience that occurs when balance occurs between skills and challenge (Csikszentimihalyi & Rathunde, 1998).

Assimilation requires a preexisting structure that makes processing new information automatic because it can be organized by the structures that already exist. The utilization of current skills is similar to assimilation. The development of a skill is a response that has been practiced and so becomes automatic or even habitual. For example, a skilled musician relies on the assimilative mode to read an easy piece of music (1998). However, if the musical score is beyond the skills of the musician, the accommodative mode is required. The latter involves a "more effortful response to novelty" (Csikszentimihalyi & Rathunde, 1998, p. 642). Just as flow is more likely when skills and challenge are in balance, likewise flow is more likely when assimilation and accommodation are in equilibrium (1998).

Piaget used the terms *over-assimilation* to describe the imbalance that occurs when skills outweigh challenges; i.e., the equivalent of boredom. Boredom closes the self in its pursuit of new opportunities for action. Because action has become too habitual, there is rigidity in the relationship between the self and the environment. The opposite extreme, *over-accommodation* is the imbalance occurring when challenges outweigh skills, or accommodation dominates assimilation; i.e., the equivalent of anxiety. Excessive stimulation or too much novelty in the environment can overwhelm the processing capacity of preexisting structures. When anxious, the self becomes imbalanced and tends to seek orientation outside itself. In these circumstances, the uncertainty in the environment disorients the self, and the possibilities for feelings of connection, relatedness, and meaning are further diminished (1998).

When balance or equilibrium occurs between skills and challenge, then the action is completely centered between the self and the environment (Csikszentmihalyi & Rathunde, 1998). As skilled musicians play a challenging score, they are pulled into a "more complex and involving relationship. The automaticity of existing skills provides confidence, structure, integrity, and a foundation from which the new material can be reached; yet the reach is not easy, and the novelty of the score demands careful attention" (1998, p. 648). It is the combination of skills and challenge that demands effort and full attention to detail

> And this full attention is experienced as a feeling of flow, of being
> caught up in a single energy system that unites self and environment.
> Motivation to continue the activity becomes intrinsic – not in the

mistaken sense of "in" the self, but rather "in" the self-environment relationship (1998, p. 648).

The experience of flow includes a combination of heightened concentration and positive affect (Csikszentmihalyi & Nakamura, 1999; Csikszentmihalyi & Rathunde, 1998). Some activities can begin with intense concentration, but if they are not accompanied by pleasant feelings, they are experienced as alienating and oppressive. Likewise activities can arouse positive affect, but will soon become frivolous if focus is not required or a challenge provided that leads to concentration (1998; Dewey, 1913). In either case, flow ceases. It is through synchronizing affect and cognition that the individual demonstrates undivided interest and the experience of "*serious play*" in their fullness. Such synchronous times are optimal experiences (1998, p. 648).

Flow as a Developmental Model

Just as Piaget asserted that the search for equilibration energizes human development, Csikszentimihalyi and Rathunde (1998) propose that the search for optimal experience motivates development. In the phenomenological model represented in the model of flow (see Figure 1), boredom and anxiety are both inevitable life processes signaling disequilibrium (1998). Individuals rarely experience the same activity with the equal intensity more than once. Flow must continually be recreated. Similarly, Piaget recognized that disequilibrium inevitably occurs between the processes of assimilation and accommodation (1998). Put very simply, to recreate flow or to escape boredom, complexity must be added through the continual introduction of increased challenge. However, too much challenge leads to anxiety. The individual can then alleviate anxiety by learning new skills. Development proceeds through this perpetual and dialectical process in the individual's attempt to increase complexity. Optimal experiences cannot be captured through a regression of skills and challenges but only through their progression in the direction toward greater complexity. It is this dialectical process that makes flow a developmental model (1998; Csikszentmihalyi 1990).
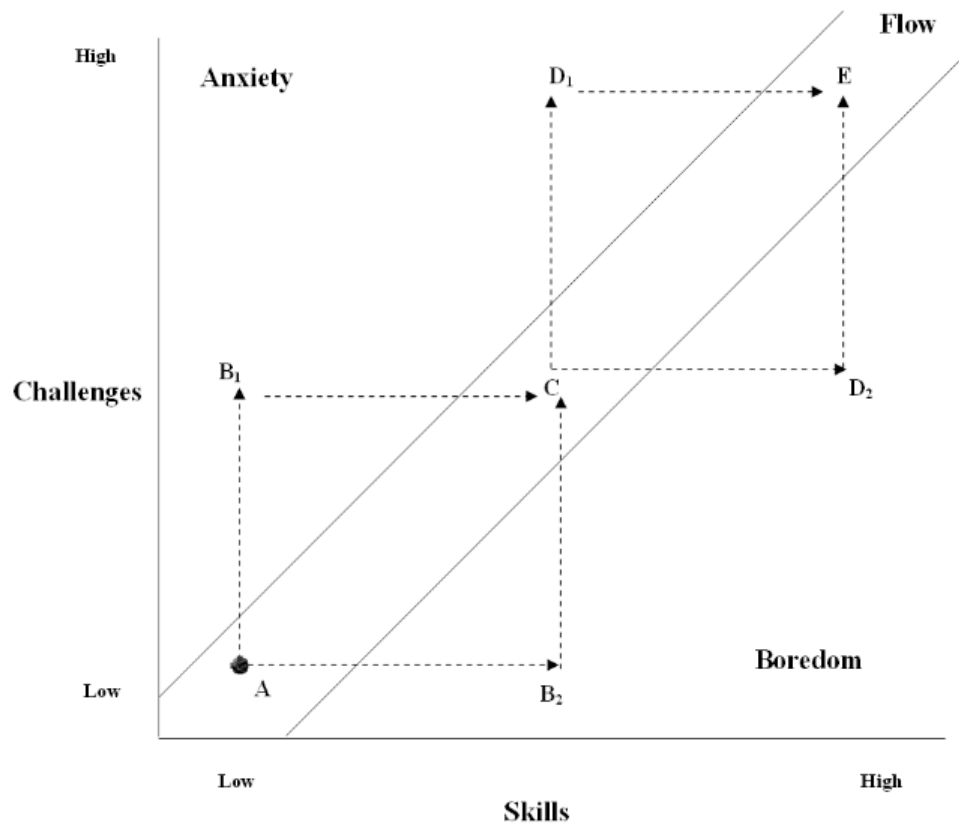
Figure 1. The Dynamics or Channel of Flow
    A, C, E represent enjoyable states where equilibrium is achieved through increasing complexity. This is the channel of flow, creativity, or serious play.
    B_1 and D_1 represent states of anxiety. For a person to return to the channel of flow, new skills must be learned.
    B_2 and D_2 represent states of boredom. For a person to return to flow, new challenges are required.

Figure 1 depicts the rising of skills and challenges that represents the flow model (Csikszentmihalyi & Rathunde, 1998). Challenges or skills must be increased appropriately depending upon the re-entry point. Finding one's way into the flow channel varies, depending upon which subjective state one is entering from, boredom or anxiety. On the other hand, to find relief from boredom requires searching for something of interest. Interest and curiosity help to draw out the self, but it is boredom that initiates the process of finding something to do. As one's experience becomes more intrinsically rewarding, boredom subsides. On the other hand, anxiety is a

response to a dilemma and initiates the efforts to find resolution. As success increases, bringing order or closure, attention focuses, and anxiety begins to dissipate as the quality of experience improves. To move from assimilation toward accommodation requires problem solving, as existing structures of information are pushed beyond their limits. Experience becomes optimal when assimilation is combined with an emerging sense of accommodation without the individual's being overwhelmed by it.

   Csikszentmihalyi and Rathunde (1998) use the example of a skier who is testing the limits of new found skills by taking on the challenge of a more advanced hill. If the challenges are not overwhelming, they will serve to intensify the skier's experience by evoking greater concentration and demanding faster adjustments. However, if the challenges are beyond the skier's reach, then anxiety sets in, and the skier feels out of control. This is an example of accommodation moving toward assimilation. It requires a process of problem solving to rebuild new structures. Maybe the skier recognizes the need to control descending speed with more effective turns. As the skier practices new attempts, technique becomes second nature, and anxiety lessens. The skier's turns are no longer forced, and attention need not be focused on the self-conscious process of making the turns happen. Once again, the experience of skiing becomes exhilarating, that is, until the turns become too effortless and automatic. And then the cycle continues, drawing the self toward greater complexity.

The Influence of Earlier Learning Theories

   Piaget's exploration of the constructive nature of thought did not include interpersonal processes (Csikszentmihalyi & Rathunde, 1998). These are illuminated through the socio-cultural developmental perspective provided by Lev Vygotsky (1998). Vygotsky coined the term zone of proximal development that refers to the distance between the child's actual level of independent problem solving or skill level and the potential level of mastering a challenge with the help of a more skilled partner (1998). Development happens when the child or the learner operates in that zone. It is here that "the skills of a culture are passed from one generation to the next" (Csikszentmihalyi & Rathunde, 1998, p. 669, cite Rogoff, et al., 1993).

Csikszentmihalyi and Rathunde make a comparative distinction between Vygotsky's zone of proximal development and the experience found in flow.

> From a phenomenological perspective, we would add that a child's subjective experience within this zone is very close to the more optimal, intrinsically rewarding flow experience. In the zone of proximal development, challenges are slightly higher than skills, and the person experiences the slightly unpleasant state of *arousal*, which will change into flow if the person develops the next level of skills (Csikszentmihalyi & Rathunde, 1993). From a phenomenological perspective, it is the attraction of flow that spurs the child to move out of the zone by acquiring new skills (1998, p. 669).

Csikszentmihalyi and Rathunde (1998) extend Vygotsky's socio-cultural perspective by reviewing the work of James Mark Baldwin, who links "phenomenology to social processes" (p. 665). Csikszentmihalyi and Rathunde claim that Baldwin's insights are congruent with their own goal "of providing a phenomenological rendering of assimilative and accommodative processes" (1998, p. 666). Similar to Piaget, Baldwin regards development as a progressive construction in "platforms" of organization (1998, p. 665). Both view development as the interplay between an assimilative, conservative function that organizes information into preexisting structures and the opposite, change oriented function, accommodation, wherein the subject reconstructs through its encounters with environmental opposition, resulting in a higher platform (1998).

Nevertheless there are important differences between Baldwin and Piaget that are of particular relevance to OET (Csikszentmihalyi & Rathunde, 1998). The role of social processes is perhaps the most important difference between the work of Piaget and that of Baldwin (1998). From Piaget's perspective, the speed with which children move through developmental stages can be affected by the quality of the social environment, but the quality of the stage itself cannot be affected. Piaget posited that social processes become more important only as children develop more mature forms of thought. However, for Baldwin, social processes develop with the infant's primary caregivers through interaction. These social interactions provide the developing child with a rich source of resistance that stretches the functions of assimilation and accommodation to their maximum, thereby promoting growth and novelty (1998).

According to Baldwin, a child accommodates the other through *imitation* (1998). However, the child always imbues these actions with private meaning so that imitation is never simply an exact replication of another's action: what is learned is always translated through subjective experience. Therefore, accommodation through imitation is not simply passive mimicry but is an active creative process. The child assimilates the other through a process of *ejecting* the self, and when contradictions arise, then the self must be reconstructed (1998).

Negotiating a Goodness of Fit

According to OET, the development of the person is influenced by a broad array of cultural and biological influences. Inherited and learned characteristics place limitations on the person's ability to actualize potential. Although biological, cultural, and social contexts impose demands that cannot be ignored, it is possible to "negotiate a goodness of fit with the setting" (Csikszentmihalyi & Rathunde, 1998, p. 651; Chess & Thomas, 1996; Ford & Lerner, 1992; Lewin, 1935). According to Ford and Lerner (1992), the ability to negotiate a goodness of fit with environmental contexts is the cornerstone of human flexibility. Competent flexibility allows the individual to face challenges and to evaluate one's personal abilities or skills to respond effectively (1992). Flexibility allows the individual to select and gain access to those contexts with a high probability of finding a good fit while avoiding situations where such a fit is unlikely. Flexibility also allows the individual to change self in order to find a better fit (i.e., change the pattern; accommodate) or to change the context (i.e., alter the situation; assimilate). Through developing self-regulatory competence, it is possible for the individual to negotiate a goodness of fit and actively shape personal development, leading to greater complexity. According to Csikszentimihalyi and Rathunde, a person with complexity is "one who has *the self-regulative capacity to move toward optimal experiences by negotiating a better fit or synchrony of self with environment*" (1998, p. 651; Csikszentmihalyi, 1993; 1996).

Optimal Development and Psychological Complexity

The notion of personhood emphasizes the fact that humans come into the

world immature and depend upon the support of social contexts to nurture their potentialities (Csikszentmihalyi & Rathunde, 1998). Although personhood is considered a socio-cultural construction, Csikszentmihalyi and Rathunde (1998) argue against a relativistic perspective, claiming that there are common traits valued by all cultures across time and place. Though there exists a great deal of variability, the authors state that there also seems to be general agreement amongst people that some ways of being a person "are preferable to others, in that they best serve both personal and social growth" (p. 638). In claiming universality for the cultural ideal of optimal development, Csikszentmihalyi and Rathunde (1998) define the preferred or optimal ways of being a person as *psychological complexity*. Individuals with such a quality have "the ability to develop and use the full range of potentialities open to human beings" (p. 676-677). This definition is not static. It emphasizes the dialectical view of the person contextually engaged in the developmental process of "integrating and differentiating self and environment" (p. 652). Therefore what it is that optimally develops in humans is not a distinctive or specific individual characteristic, trait, or outcome but rather "the style or self-regulative capacity to adapt to unforeseen contextual conditions (i.e., changing self to fit context or context to fit self)" (Csikszentmihalyi & Rathunde, 1998, p. 664; Ford & Lerner, 1992).

Csikszentmihalyi and Rathunde (1998) recommend that scholars investigate the processes that support optimal development, for it is these elements that will contribute to the construction of what it means to be a 'good person' and what is needed to form a 'good society.' A growing consensus is important because societies depend upon such meta-theories to inform their public discourse regarding self-regulation (1998). Therefore, a central developmental question becomes how to create contexts within schools, families, and communities that will facilitate the enjoyment of complexity

> If we do not approach developmental issues from this perspective, we
> will miss the fact that to become active agents in their own ontogeny,
> individuals have to *want* to develop and become more complex. And
> they will want to do so only if they enjoy it. If they do not,
> development becomes alienated because the child as well as the adult
> will learn and grow primarily for extrinsic reasons. The child will study
> to graduate from school, the adult will work to get a paycheck and be

promoted, and both will endure their present conditions listlessly, in
anticipation of a more pleasant future. This is not the kind of
developmental trajectory that leads to complexity, or to a desirable old
age (Csikszentmihalyi & Rathunde, 1998, p. 677).

According to OET, the motivation for the individual to grow toward greater
complexity derives from interest, positive affect, and intrinsic motivation (1998).
Creating the contextual factors that will offer support for an individual's desire to
grow toward greater complexity requires a broader understanding of the processes
governing intrinsic motivation. SDT, described below, provides a detailed analysis of
these motivational processes.

Theoretical Framework: Self-Determination Theory (SDT)

Discrepant views exist concerning the nature of human development and the
concept of the self. Some theorists claim that human nature includes a self-organizing
tendency that actively seeks to promote its own growth, whereas others emphasize the
opposite source, namely the individual's conditioning by and reaction to the
environment (Ryan & Deci, 2002). The strongest opponents to a self-organizing or
general systems perspective have been the behaviorists whose operant approach
assumes no inherent direction for development. Rather, they posit that personality and
behavioral regulation are solely functions of reinforcement contingencies. Any
organization of the personality results not from an internal, integrative tendency but
from the organization of factors within the environments that the individual encounters
(2002). Personality is portrayed in a similar vein from a contemporary social-cognitive
perspective, where it is seen as a "collection of selves or self-schemas that are
activated by cues" rather than as a self-unifying system (2002, p. 4). SDT seeks to
integrate these widely discrepant views, recognizing that there exists compelling
evidence to support both perspectives.

SDT assumes that all individuals possess constructive and integrative
tendencies that lead toward the development of a "more elaborated and unified sense
of self" (Ryan & Deci, 2002, p. 5). This integrative tendency is characterized by two
complementary aspects whose functioning results in healthy development: *autonomy*

and *homonomy*. The first aspect, autonomy, is defined as "tending toward inner organization and holistic self-regulation," and the second aspect, homonomy is defined as "tending toward integration of oneself with others" (2002, p. 5).

However, even though this integrative tendency is fundamental to human life, SDT emphasizes that it cannot be taken for granted. Psychological growth and the integration of the personality do not develop automatically but depend upon appropriate proximal and distal conditions of nurturance. According to SDT, there are clear and specifiable social-contextual factors that either support or obstruct optimal development. As a result of these social-environmental conditions, SDT predicts a broad range of behavioral outcomes, ranging from a relatively active and integrated self to a highly fragmented (i.e., passive, reactive, or alienated) self. Thus social environments may either facilitate the integrative propensities of the human psyche, "or they can disrupt, forestall, and fragment these processes, resulting in behaviors and inner experiences that represent the darker side of humanity" (Ryan & Deci, 2002, p. 6). The foundations of SDT reside within this dialectical perspective: the interaction between an active and integrative human nature and the social contexts that can either impede or nurture the active nature of the organism.

Basic Psychological Needs and Social Contexts

SDT maintains that there are certain conditions that do indeed promote growth and well-being in the development of people's personalities and cognitive structures. "These nutriments are referred to within SDT as *basic psychological needs*" (Ryan & Deci, 2002, p.7). Psychological needs are innate requirements as opposed to acquired motives. They are universal and therefore evident in all cultures and stages of human development, although they may be expressed and find satisfaction in different ways within various contexts. SDT posits three basic psychological needs: *competence, relatedness*, and *autonomy*. These three psychological needs provide a framework with which to organize aspects of the environment recognized as supportive versus antagonistic to optimal outcomes in human functioning. "To the extent that an aspect of the social context provides need fulfillment, it yields engagement, mastery, and synthesis; whereas, to the extent that it thwarts need fulfillment, it diminishes the

individual's motivation, growth, integrity, and well-being" (2002, p. 9). The individual's striving to satisfy these basic human needs is central to understanding the self-regulation process

> In humans, the concept of psychological needs further suggests that, whether or not people are explicitly conscious of needs as goal objects, the healthy human psyche ongoingly strives for these nutriments and, when possible, gravitates toward situations that provide them (2002, p. 7).

The Need for Competence. The need for competence leads people to seek challenges and to make persistent attempts to enhance, practice, and express their skills and capacities through active interactions with the social environment (White, 1959; Lawton & Nahemow, 1972; Bandura, 2001; Ryan & Deci, 2002). People "seek challenges that are optimal for their capacities" (2002, p 7). However it is also important to remember that the need for competence is more about a *feeling* of confidence and a sense of effectance in action, rather than of the *attainment* of a particular skill or a certain capability (2002).

The Need for Relatedness. The need for relatedness refers to the homonomous tendency of life, whereby individual parts are joined through similar structures and forms. This integrative tendency seeks connection, unity, and communion with others. It includes the psychological sense of being affiliated, secure, and accepted by others into community. This includes a need to *feel* the freedom and ease of being allowed *to be oneself* in relation to others as opposed to a desire for a particular outcome or for the attainment of a certain position, role, or social status (Ryan & Deci, 2002).

The Need for Autonomy. According to Ryan and Deci, "autonomy concerns acting from interest and integrated values" (2002, p. 8). When individuals are autonomous, their behavior is experienced as "an expression of the self," even if their actions have been influenced by outside sources (2002, p. 8). When behavior is influenced by others, in order for it to remain autonomous, the individual must concur with that influence, feeling both a sense of initiative as well as of personal value in the situation. In this way it is possible for the individual to autonomously enact values or behaviors that have been requested or required by others, so long as these influences have been congruently endorsed. However, it is equally possible for one to rely upon

others in such a way that autonomy is not experienced, resulting instead in compliance or conformity.

The Difference between Needs and Motives

SDT makes a distinction between basic psychological needs and the concept of personal motives, goals, strivings, or desires. While it is true that people formulate motives, goals, strivings, and desires to satisfy basic psychological needs, it is also apparent that such promptings can sometimes be detrimental to an individual's essential well-being. Some motives detract people from activities that could satisfy their need fulfillment and lead to greater well-being. When motives, personal strivings, and desires interfere with a person's competence, autonomy, and relatedness, they may be detrimental to personal well-being. Ryan and Deci emphasize this point, because it clarifies an important concept, namely that being efficacious or attaining one's personal goals or strivings is not sufficient to support psychological well-being (2002). The organization of behavior through motives and goals may in fact be peripheral to the satisfaction of psychological needs, or these may act as need substitutes. Need substitutes develop as compensation for fulfillment when basic needs are thwarted (2002).

Four Mini-Theories Compose Self-Determination Theory (SDT)

SDT has utilized an empirical approach to articulate and define basic psychological needs, study their relation to behavioral dynamics, and examine factors within social contexts that facilitate or thwart well-being and self-motivation across diverse settings and cultures (Ryan & Deci, 2002). Over the last three decades, empirical studies of four separate mini-theories have evolved to build a broad theory in an inductive fashion. As different issues emerged during field and laboratory research on motivationally based phenomenon, each of the meta-theories was developed to serve as an explanation. Though each mini-theory relates to specific phenomenon, they all join together through a shared set of organismic and dialectical assumptions as well as through the unifying concept of basic psychological needs (2002). Though at times various aspects of the research have been presented under the

terminology of each mini-theory, the components have also been presented under the rubric of SDT (2002). The four mini-theories are: *cognitive evaluation theory, organismic integration theory, causality orientations theory,* and *basic needs theory.* A brief discussion of each mini-theory follows.

Mini-Theory #1: Cognitive Evaluation Theory

Ryan and Deci's (2002) first mini-theory was formulated to describe the effect of social contexts on intrinsic motivation. Self-determined activity is represented by the prototype of intrinsic motivation. Behaviors that are intrinsically motivated are those that are engaged in freely. They are inherently satisfying for the individual and are sustained through the experience of enjoyment and interest. On the other hand, behaviors that are extrinsically motivated arise from reinforcements or contingencies that are separate from the activity itself. Cognitive evaluation theory (CET) suggests that the individual's intrinsic motivation will be affected by contextual events such as receiving a reward, positive feedback, or the imposition of a deadline, so long as the individual experiences these events as either satisfying or thwarting the need for autonomy and competence. Two primary cognitive processes, *perceived locus of causality* and *perceived competence,* influence the affect of contextual factors on intrinsic motivation.

Perceived Locus of Causality and Perceived Competence. The perception of what is controlling an individual's behavior as well as the perception of one's personal competence influences the functioning of intrinsic motivation. The cognitive process involved in a *perceived locus of causality* states that intrinsic motivation will be undermined when the individual's perception of control is changed toward a more external cause (locus), whereas intrinsic motivation will be enhanced when an event prompts perception toward a more internal cause. This explains why tangible rewards and positive reinforcement typically decrease intrinsic motivation because of the tendency to create a focus on the reward and the external motive.

The second cognitive process by which contextual factors affect intrinsic motivation is *perceived competence*. This cognitive process states that intrinsic motivation will be enhanced when the perception of competence increases whereas

intrinsic motivation will be diminished when an event decreases the individual's perceived competence. Thus one would predict that positive feedback will enhance intrinsic motivation only if the activity provides the individual with a sense of competence and autonomy.

Aspects of Social Contexts. Cognitive evaluation theory (CET) specifies that social contexts contain both a *controlling* aspect and an *informational* aspect. It is the salience of these two contextual climates that determines the effect on the individual's perceptions of causality and competence and, thus, on the individual's intrinsic motivation. Aspects of social environments that are controlling exert pressure toward a specified outcome and tend to shift the perceived causality toward an external locus, which undermines intrinsic motivation. Conversely, social contexts that provide information and communication to support an individual's experience of competent engagement enhance intrinsic motivation.

The Quality of Social Contexts and Internally Initiated Events. In the 1980s two important elements were added to CET based on research findings. Although events such as positive feedback, rewards, or deadlines have a particular functional significance, they can also be greatly influenced by the interpersonal climate within which they are administered. For instance, if positive feedback, which is often experienced as informational, is administered in a climate of pressure, then this feedback tends to be experienced as controlling. Similarly if tangible rewards, which are usually experienced as controlling, are administered in a context of non-evaluation that supports autonomy, then intrinsic motivation is not undermined. These factors have been shown to hold true in the ways that adults set limits on children's behavior, with varying effects depending on whether the interpersonal context is controlling or informational.

The second important element concerns events that are internally initiated. People's actions can be initiated and regulated in different ways that are independent of the social context. For instance, it is possible for people to become *ego-involved* in an activity and its outcome. People can do an activity to prove to themselves that they are good at it, and, in this way, their feelings of self-worth become attached to their performance. Ego-involvement is contrasted with *task-involvement* where people

become more involved in the activity itself rather than in their own feelings of worthiness. When the regulation of behavior is initiated by ego-involvement then

> …the functional significance will be controlling relative to when the initiation and regulation is task-involved…CET holds that self-controlling forms of regulation will be associated with diminished intrinsic motivation, whereas more autonomous forms of self-regulation will maintain or enhance intrinsic motivation (Ryan & Deci, 2002, p. 13).

Mini-Theory #2: Organismic Integration Theory

Organismic integration theory (OIT) is concerned with extrinsic motivation and the social contextual factors that lead to its internalization. Educators, parents, and employees are often required to socialize the behavior of others to the standards and values of the corresponding cultural setting: the classroom, home, or office. Required behaviors are not always experienced by the individual as enjoyable or intrinsically motivating. Therefore, an important question for socializing agents is how to encourage the self-regulation of such behaviors so they will be internalized by the individual and will persist over time. OIT is concerned with the ways in which people internalize and integrate the values and rules of their particular group or culture. Therefore, OIT was formulated to help explain the dynamics of behaviors that are extrinsically motivated and the degree to which individuals might internalize and autonomously experience and regulate these behaviors. OIT posits that extrinsically motivated behaviors have various regulatory styles and that these regulatory styles are developmental outcomes. These styles have been used by researchers as individual differences in predicting well-being and performance.

Internalization: Transforming External Regulation into Self-Regulation.
Organismic integration theory (OIT) assumes that people have a natural inclination to integrate their experiences through the process of internalization, whereby they "work to actively transform external regulation into self-regulation becoming more integrated as they do so" (Ryan & Deci, 2002, p. 15). Internalization and intrinsic motivation are both considered innate tendencies that promote growth and development. If significant others or groups that hold particular salience for the individual use external motivation

to encourage people to engage in activities for which they have no particular interest, the individual will have the tendency to *internalize* the external regulation if the behavior is perceived to be socially valued.

However the success of the internalization process can vary. Regulations can be internalized without becoming part of the integrated self. Regulatory processes differ to the extent that they have been integrated within the self and result in *more* versus *less* self-determined action (Ryan & Deci, 1999). The self can experience volition and self-determined action or it "can also fall victim to controlling or antagonistic forces within the social environment that can diminish its capacity for self-regulation" (Ryan & Deci, 1999, p. 195). This view of self-regulation is in stark contrast with other social-cognitive and cybernetic control theories because of the way it frames the position of the self. According to Ryan and Deci (1999), self and person are not synonymous.

> Our point is that if one does not distinguish the concepts of self and person, recognizing that some aspects of the person do not constitute self, then there is no basis for differentiating between regulation and self-regulation, between alienation and authenticity, between conformity and commitment, between introjection and integration, or between efficacious actions that are volitional and efficacious actions that are coerced (p. 195).

A Taxonomy of Regulatory Styles. Ryan and Deci (1999, 2002) have articulated *three types of regulation* that are particularly salient to the development of educational processes that intend to support the development of self-regulation. These three types of regulation establish a distinction between goals that have been determined by an autonomous self and goals that have been imposed from outside the self. *Self-regulation* is consistent with a goal that forms and is "valued by one's integrated sense of who one really is-by one's true sense of self," whereas *non-self-regulation* is experienced when a goal has been imposed by exogenous forces to the self (1999, p. 195). These can be forces that the self is not consciously aware of and, as such, have not been resolved by the self (1999). The third type of regulation, *non-regulation*, is an amotivational regulatory style, representing behaviors that lack intentionality or goal directed behavior.

As a regulation is more fully internalized, it becomes part of an integrated self and forms the basis for self-determined behavior and *self-regulation*. This process has been conceptualized as a continuum or taxonomy of regulatory styles, arranged graphically from left to right (see Figure 2) to express the degree to which a motivation for the behavior is either controlled or compelled by external motivation (contingencies that are external to the self such as rewards or punishments) or has become autonomous and originates from the self (autonomous self-regulation).

Ryan and Deci emphasize the importance of utilizing the taxonomy of regulatory styles (shown in Figure 2) descriptively to help organize types of regulation in relation to self-determination (2002, 1999). The researchers are not, however, suggesting the continuum be used as a developmental progression and that people must pass through each stage of internalization. Instead, Ryan and Deci (2002) propose that it is possible for people to respond to a regulation along any point of the continuum so long as they receive sufficient support in the interpersonal climate along with the necessary supportive experience. Ryan and Deci (2002) further assume that as cognitive and ego development increase over time so also do the range of behaviors that can be assimilated to the self, such that the child's general regulatory style tends to become more internalized with age.

Four Types of Extrinsically Motivated Regulatory Styles. The four types of extrinsically motivated behaviors begin on the left with *External Regulation* representing a form of extrinsic motivation with the least amount of autonomy. This type of regulation includes the motivation to avoid punishments or to get rewards and is seen when the reasons for behavior are attempts to satisfy demands external to the person or contingencies that are socially constructed, such as those that have been adopted because of social conformity or a feeling of obligation or "have-to." The perceived locus of causality is totally external. This type of regulation was central to Skinner's behavioral operant theory and represents the original form of extrinsic motivation that was first contrasted with intrinsic motivation.
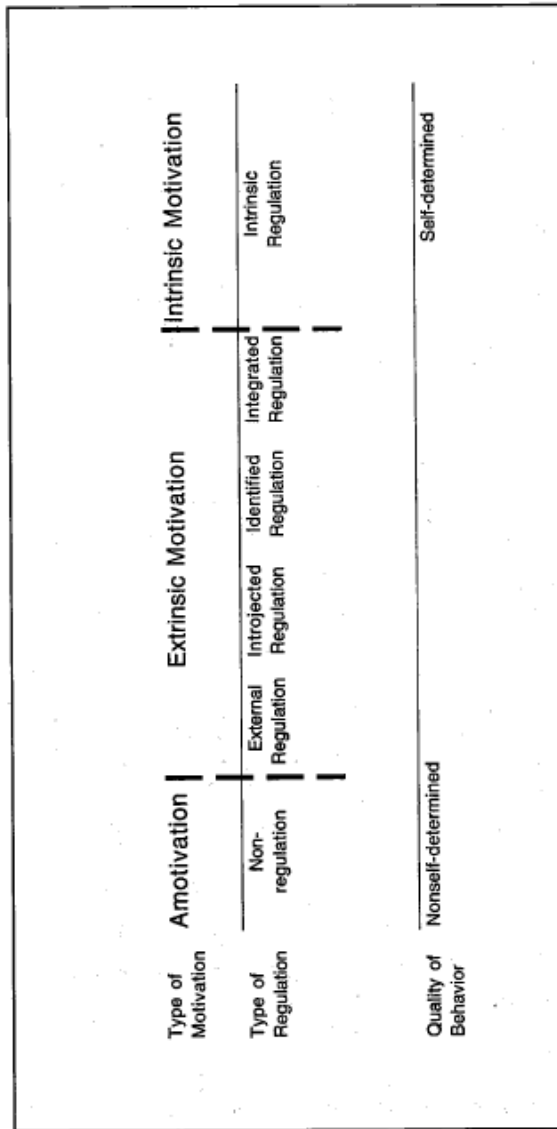
Figure 1.1. The Self-Determination Continuum, with Types of Motivation and Types of Regulation.

Figure 2. The Taxonomy of Regulatory Styles and the Self-Determination Continuum (from Ryan, & Deci, 2002, p. 16).

Introjected Regulation consists of the internalization of an external regulation, but in a "deeper sense," the external regulation has not been truly accepted by the self (Ryan & Deci, 2002, p. 17). This type of extrinsic motivation has therefore been only partially internalized by the person but not fully integrated by the self. Introjection is theorized as a form of internalized regulation that is very controlling. The behaviors

within this regulatory style are performed in order either to acquire ego-enhancement or feelings of self-worth or to avoid shame and guilt.

Moving to the right in Figure 2, *Regulation Through Identification* is a more self-determined extrinsic motivation regulatory style because it involves the acceptance or the valuing of a behavior, a goal, or a regulation as personally important or central to one's identity. The transformation of external regulation into self-regulation involves the process of identification. Identification requires that an action or its corresponding value is endorsed personally. Identifications include a great deal of perceived autonomy with the tendency toward an internal perceived locus of causality. However, identifications can also be compartmentalized and may be separated from a person's other values and beliefs. SDT suggests that identifications may not always be an accurate reflection of the overall values of a person. Nonetheless behaviors that result from identification tend to be more autonomous and self-determined when compared to regulations described above.

Integrated Regulation represents the most autonomous form of extrinsically motivated behavior. Integration results from self-reflection and full assimilation in order to bring identifications into congruence with goals, values, and needs that have been personally endorsed and integrated into the autonomous self. Integrated, extrinsic motivation and intrinsic motivation share many of the same qualities. Although integrated regulation governs volitional behaviors, these behaviors are still considered extrinsic because the motivation is to attain outcomes that are personally important rather than for the enjoyment and interest inherent in the activity. "In other words, they are still instrumental to a separable outcome whose value is well integrated with the self" (Ryan & Deci, 2002, p. 18).

Amotivation, on the left side of Figure 2 refers to not having an intention to act. People in this state either do not act at all or they act passively, just going through the motions without really intending the action. Amotivation results when people feel the inability to achieve desired outcomes because contingency is lacking or because competence is perceived to be lacking or because the outcomes yielded by the activity are not valued. As behavior becomes intentional and goal directed, it moves toward the right on the diagram. Opposite *Amotivation*, on the far right side of Figure 2, is

Intrinsic Motivation, the prototype for autonomous self-determined, self-regulatory behavior. *Four types of extrinsically motivated* behaviors fall in the middle of the self-determination continuum, between amotivation and intrinsic motivation.

The Promotion of Integrated Regulation. By definition, extrinsically motivated behaviors are not particularly interesting, and people will not usually choose to engage in them unless they lead to a personally desired outcome. Initially, these behaviors are typically motivated by the influence of significant others, sometimes in the form of a simple request; by the offer of a reward in exchange for a certain behavior or perhaps by demonstrating the value of a particular activity by regularly performing it. As such, extrinsically motivated behaviors can be prompted through relationship with a significant other or by a group whose endorsement is valued by the individual. To enhance the feeling of relatedness, the individual may engage in the behavior to gain implicit or explicit approval, thus supporting the process of internalization. However, OIT proposes relatedness is not enough to guarantee the complete internalization of extrinsic motivation. If people are to engage in socially valued behaviors and accept responsibility for them, they must also feel competent in relation to these behaviors. Therefore OIT suggests that to facilitate the "internalization and subsequent self-regulation of extrinsically motivated activities," competence must also be supported (Ryan & Deci, 2002, p. 19).

Perceptions of autonomy are also important for the process of internalization to result in integration. As shown in Figure 2, internalization can result in introjection, a form of controlled regulation or it can develop into integration. According to OIT, support for autonomy is the crucial factor in determining whether the promotion of internalization (which is supported by relatedness and competence) will be only partial (e.g., introjection) or whether it will result in complete integration. Even though some internalization may occur without support for autonomy, the kind of internalization that will lead to the factors that characterize self-determination, namely, "persistence, flexibility, and vitality," will occur only when autonomy is fully supported (Ryan & Deci, 2002, p. 19).

Mini-Theory #3: Causality Orientations Theory

This mini-theory examines different tendencies that people have as they orient to the social environment, resulting in individual differences. By examining a person's enduring orientations, causality orientations theory allows for the prediction of behavior and experience. As SDT developed, the assumption was that a person's motivation, experience, and behavior in particular situations are both a function of the person's inner resources and these develop over time as a result of prior interactions with various social contexts (Ryan & Deci, 2002). The theory of causality orientations (COT) was developed to describe these inner resources, which are viewed as individual differences in motivational orientations toward the social world, and are considered relatively stable (2002). Based upon this work, an individual difference measure was developed, the General Causality Orientations Scale (GCOS). This scale has been used in numerous studies for predictive purposes (2002). The intention of the causality orientation approach is "to index aspects of personality that are broadly integral to the regulation of behavior and experience" (2002, p. 21). Three orientations are specified according to the degree to which they represent self-determination. It is assumed that people have some degree of each of these orientations. The three causality orientations are: autonomous, controlled, and impersonal. Behaviors regulated by interests and self-endorsed values are referred to as *autonomy orientation;* this orientation serves to arrange the general tendencies of a person toward intrinsic motivation and extrinsic motivation that is well integrated. When a person is concerned with how one should behave and is orientated toward controls and directives they are involved in the *controlled orientation;* this orientation is related to external and introjected regulation. The focus of the *impersonal orientation* is on indicators of ineffectance and not behaving with intention; this orientation is related to amotivation, where intentional action is lacking.

Mini-Theory #4: Basic Needs Theory

The formulation of this mini-theory is relatively new to SDT. Although the emphasis on basic psychological needs has always been an important element in each of Ryan and Deci's mini-theories, its role was often implicit. Therefore basic needs

theory was established to clarify the conceptual meaning and to provide detail regarding the dynamic relation between basic needs and well-being or mental health.

> To qualify as a need, a motivating force must have a direct relation to well-being. Needs, when satisfied, promote well-being, but when thwarted, lead to negative consequences. Further, because needs are hypothesized to be universal, this relation between satisfaction and well-being must apply across ages, genders, and cultures. Of course, the means through which needs are satisfied (versus thwarted) vary as a function of age, gender, and culture. Thus, in an extreme case, it is possible for the same behavior to be need satisfying for one group and need thwarting for another. Still, the underlying process in which need satisfaction promotes health is theorized to be the same across all these groups (Ryan & Deci, 2002, p. 22).

There are two different ways that the concept of well-being has been treated in recently conducted research (Ryan & Deci, 2002). One approach is to equate well-being with happiness, focusing on subjective or hedonic well-being. The other approach is to equate well-being with full human functioning, a focus that is eudaimonic. Although there is a great deal of intersection between these two approaches, SDT endorses the eudaimonic view. Much of the research within SDT has established an empirical link between the satisfaction of the basic psychological needs (autonomy, competence, and relatedness) and eudaimonic well-being.

Summary

Emerging research has recognized the importance of attention in the development of self-regulation and researchers suggest the need to develop curriculum to support the child's ability to focus and sustain their attention (Derryberry & Rothbart, 1997; Mischel & Ayduk, 2004; Rothbart et al., 2004). OET or flow and SDT provide the theoretical guidance necessary to develop curriculum capable of nurturing multiple aspects of self-regulation. Both theories were reviewed to offer a subsequent conceptual framework for comparison to Montessori's theory of normalization, an early childhood curriculum emphasizing concentration and concepts that seem to be related to self-regulation. Therefore, in Chapter 3, Montessori's theory of

normalization will be presented through the collection of qualitative data obtained from interviews with AMI Montessori teacher trainers. Montessori's theory will then be analyzed for its relevance to self-regulation. There are no research studies that have examined the development of self-regulation in relation to Montessori's theory of normalization. Furthermore, there is no research that has examined the ways that education might be of support to the development of self-regulation through the design of curriculum intending to inspire intrinsic motivation leading to sustained attention.

CHAPTER 3: METHODOLOGY

As the first woman to practice medicine in Italy, Maria Montessori (1870-1952) became particularly interested in the development of children (Association Montessori Internationale, 2006). Based upon her initial experimentations and scientific observations with a group of children in the slums of Rome, Montessori established what would become a highly organized pedagogy (2006). Montessori observed that when the environment was designed to promote concentration, children went through a transformative process, which she referred to as *normalization*. Normalization is the theoretical foundation that guides Montessori's pedagogy. This theory, however, receives little discussion in circles of education or human development, which tends to focus their occasional overviews to Montessori's prescribed classroom activities. Is normalization the same concept as self-regulation? By exploring Montessori's theory of normalization and then comparing it to contemporary theoretical perspectives on self-regulation, the present study intends to demonstrate that Montessori's educational approach supports the child's development of self-regulation and effortful control.

Rationale for Methodological Approach

The research questions and research goals formulated for this study were motivated by the dearth of literature on the topic of normalization and its potential relationship to self-regulation. The investigator conducted an exhaustive literature search that turned up no theoretical or research studies on normalization and its relationship to self-regulation. A qualitative research methodology was therefore chosen as the most suitable method to obtain foundational information to accomplish the intended goals. According to Marshall and Rossman's (1999; 2006) framework for designing qualitative research, the purpose of the study was descriptive; describing a phenomenon, *normalization*, and a method for facilitating it. Normalization was then compared with current research and theory reviewed in chapter 2. By identifying points of convergence and contrast, as well as patterns and salient themes between

Montessori's theory of normalization and contemporary theories of self-regulation, this research study creates a conceptual framework to enhance practices that support the development of self-regulation while identifying new avenues for future research.

There are four competing paradigms or interpretive frameworks that guide qualitative research: positivism, postpositivism, critical theory, and constructivism (Guba & Lincoln, 1994; Denzin & Lincoln, 2005). This study has embraced a constructivist position, which claims that the human mind is the active agent constructing knowledge (Schwandt, 1994). Constructivism views the cognitive process as the on-going development, or the advancement in understanding, beginning with what is currently known and then actively integrating new information by reorganizing it into a new concept (1994). Each individual construction is continually tested and modified by the developing human as new experiences unfold. Therefore, knowledge is not a particular *product,* independent of the knower, but rather *a process* of coordinated activity in the mind of the individual (1994). This integrating process can also be described with the use of Piaget's terminology, adaptation and equilibration (1994).

The constructivist paradigm responds to the fundamental question of ontology from a position of relativism, which states that reality is apprehended in multiple and intangible mental constructions (Guba & Lincoln, 1994). Each individual creates these constructions socially and experientially, and their form and content depend upon the persons or groups who have constructed them. Constructions are thus not true in any absolute sense, but they change as their constructors become more informed and sophisticated. The fundamental question of epistemology is transactional and subjectivist (1994). Therefore, research findings are literally created as the research proceeds, because this approach assumes that the investigator and the people involved in the investigation are linked interactively. Knowledge is then created in a transactional process, from the interaction between the investigator and the respondents. The intended methodology is hermeneutical, that is, it employed the science and methodology of interpretation (1994). It is also dialectical due to the creation of successive understandings from ongoing transactions between investigator and respondents (1994). Because social constructions are variable and personal in

nature, purposeful dialectical interactions elicit and refine individual constructions (1994). Conventional techniques guide the investigator in interpreting these varying constructions as they are compared and contrasted through dialectical interchange.

The strength of the constructivist paradigm for this study is in the documentation of knowledge that emerged from the transactional process that occurred between the investigator and the respondents who were interviewed. Consistent with constructivism, the goal of the present study is to arrive at a more informed and sophisticated distillation of knowledge regarding normalization through dialectical interchange (Guba & Lincoln, 1994). The discourse or the "community narrative" (Guba, & Lincoln, 2005, p. 204) that upholds Montessori's theoretical perspective was explored to discover what its essential principles mean to the "educational connoisseurs" (Schwandt, 1994) who have been certified to champion Montessori's theory of normalization.

Participants

Although Montessori published several books and lectures, her desire to maintain strict control over her work was deeply influenced by the rise of Mussolini's fascist regime (Zener, 1994; Gutek, 2001). By 1929, Montessori and her son, Mario had established an organization to protect her work, which continues to be disseminated largely through an oral tradition. The Association Montessori Internationale (AMI), located in Amsterdam, supervises teacher training programs and conducts other related activities for the accreditation of AMI Montessori schools worldwide. The researcher is certified as an AMI primary teacher and so had access to this oral tradition.

To explore the accuracy of the investigator's interpretation of Montessori's theory of normalization as well as her comparison of it to the self-regulation literature, this study relied on interviews with expert AMI Montessori teacher trainers. AMI teacher trainers represent the highest authority regarding Montessori theory and practice. There are currently 13 independently owned and operated teacher training centers in North America (Canada, USA) that offer a diploma for the primary level,

certifying teachers to teach 2 ½-6 year old children. Each center is affiliated with an AMI teacher trainer (Association Montessori Internationale, 2006). Additionally, there are three North American trainers, two retired and the other scheduled to direct a training course in Asia, that were invited to participate in the analysis. In total, 16 AMI primary teacher trainers were invited to participate in this qualitative research study exploring the relationship between contemporary understandings of self-regulation and Montessori's theory of normalization. It was expected that approximately half of these trainers would attend the week long Montessori Centenary Celebration in San Francisco in February, 2007, and would agree to participate in this study, yielding an anticipated sample size of eight. If sample size was problematic, due to insufficient numbers, then AMI teacher trainers from Europe or Asia, who attended the San Francisco celebration, would also be invited to participate in the study. There are approximately 13 teacher trainers in Europe and Asia. The maximum number of participants that could be included in this study was 16, while the acceptable minimum was eight. The sample of participants was purposive in order to gather participants with the necessary depth of knowledge and the credentialed expertise regarding Montessori's theories that is unavailable in published literature (Denzin & Lincoln, 1994; Berg, 2004).

Procedures

After receiving permission from the OSU Institutional Review Board (IRB) to conduct research with human subjects, the investigator sent a letter to the 16 teacher trainers living or working in North America. If an ideal sample size was not obtained by January 1, 2007 (e.g., 6 weeks prior to the San Francisco conference), then additional letters would be sent to teacher trainers in Europe and Asia. The letter introduced the purpose of the study and invited the trainers to participate in a semi-structured interview. Twelve teacher trainers agreed to participate. The investigator confirmed each teacher trainer's involvement in the study via telephone or e-mail. At that time, the investigator answered questions, arranged an interview schedule during

the San Francisco meeting, and introduced the need for informed consent. Conditions of confidentiality prevailed throughout the study.

Interviews were conducted in a private room in the San Francisco Marriott Hotel during the week long Montessori Centenary Celebration that was held in San Francisco, February 16-19, 2007. The investigator conducted one 90-180 minute personal interview with each of the twelve participants. Interviews were audio taped and then transcribed by the interviewer. The interview style was semi-structured, which allowed for a certain amount of informality while using planned guidance to maintain focus (Fontana & Frey, 1994). Although a set of predetermined questions was employed, their sequence varied across interviews. The nature of each conversation determined the appropriate timing. Unforeseen questions emerged (1994). An atmosphere was created that encouraged an informational exchange and included mutual disclosure (Berg, 2004; Charmaz, 2006). In face-to-face interviews, meaning-making is a collaborative process, and the relationship that was constructed helped the investigator draw out information (2004).

Nine AMI Primary Teacher Training Centers were represented in the study. In addition, two retired AMI teacher trainers and one not currently affiliated with a center were part of the study group. Many of the participants have also directed trainings outside the United States.

Table 1 – Participant Demographics
Montessori Training Centers Represented in Sample

Center	Location	Options
Montessori Institute Northwest	Portland, OR	offers a Master's degree
Montessori Institute of Atlanta	Atlanta, GA	offers a Master's degree
Montessori Institute of San Diego	La Jolla, CA	offers a Master's degree
Montessori Institute of North Texas	Dallas, TX	
Montessori Training Center of Minnesota	St. Paul, MN	offers a Master's degree
Montessori Training Center of New England	Hartford, CT	
Montessori Training Center of St. Louis	Chesterfield, MO	offers a Master's degree
Washington Montessori Institute at Loyola College in Maryland	Columbia, MD	offers a Master's degree
Montessori Training Center of British Columbia	Vancouver, B.C., Canada	

Table 2 – Participant Demographics:
  Education and Experience

.		Other Levels of Montessori Training			As of 2007	
Education Level	Year of Primary Teacher Training	Elementary Training	Infancy Training	Special Ed Training	Number of years teaching children	Number of years training teachers
Med	1976-77				9	22
PhD Psych	1965				unknown	25
EdD	1979-80	Yes			13	24
Unknown	1964	Yes			unknown	25
MA Montessori Ed	1975-76	Yes		Yes	18	13
BA	1964	Yes			unknown	44
Unknown	1961				13	35
PhD Human Dev	1967-68				5	33
MA Ed Psych	1971-72				10	18
MA Asian Studies	1981-82				12	5
Med	1973-76				7	20
Med	1971-73	Yes	Yes		5	20
TOTAL					**52**	**284**

Primary Training = Trained to work with children age 2 ½ to 6+
Elementary Training = Trained to work with children age 6 to 12
Assistance to Infancy Training = Trained to work with children age birth to 3
Training of Teachers = Conducting Primary Teacher Training to certify adults to work with children age 2 ½ to 6+

The Interview Protocol

The interview questions explored similarities and differences between Montessori's theory of normalization and selected current perspectives on self-regulation to determine whether Montessori's theory of normalization can be considered an applied theory of self-regulation. The interview protocol emerged from the theoretical and empirical research conducted prior to collecting the qualitative data. Questions were designed to assess various strengths and deficiencies within the comparative analysis. Follow up probes were included as potential prompts to be used when needed to expand a participants response. Specifically, the interviews and follow-up probes explicated and examined Montessori's concept of using the child's growing ability to sustain and focus attention on self-chosen tasks as a strategy to foster self-regulation. AMI teacher trainers were asked to describe how teachers might recognize and encourage an increasing depth in attention or concentration, both within the individual child and within the classroom.

Data Analysis and Coding

After the interviews were transcribed and prior to sending the transcripts to the respondents, the investigator read each transcript three times and then set it aside for several days to provide time for the investigator's reflection (Denzin & Lincoln, 1994; Berg, 2004; Charmaz, 2006). This incubation process allowed time for the investigator to capture the subtle nuances of meaning and the insights of intuitive understanding (1994; 2004; 2006). Analysis is an ongoing process that begins as soon as the data have been collected. The investigator used an inductive process to search for possible meanings and discover patterns and connections that may exist among the interviews (1994; 2004; 2006). Qualitative researchers must interpret the perspectives, beliefs, and meanings that have been expressed by the participants. Relationships regarding the structure and occurrence of these meanings must then be analyzed. Points of tension must be considered. What does not fit? Are there conflicting points within the data? Interpretation of the findings must be related to an outside body of theory or a set of concepts that transcends the study. Often the concepts that have been used in a study play a central role (1994; 2004; 2006). They usually are the categories by which

the data are grouped, but sometimes they are the terms that have been used to cast the problem (1994; 2004; 2006).

The transcriptions were read a fourth time to discern patterns, themes, or concepts, theoretical insights, and possibilities for an emerging model that integrates normalization and self-regulation (Denzin & Lincoln, 1994; Berg, 2004; Charmaz, 2006). Interviewees were then contacted and given a copy of their transcribed interviews to check for validity. After respondents had a chance to read the transcript, the investigator arranged telephone conversations to discuss elements that required further elaboration or clarification from the participants. Each follow-up conversation was also audio-recorded and transcribed. During this subsequent conversation, the investigator discussed interpretations of the themes or concepts that had emerged from the data. Once the participants reviewed the transcripts, analysis of the data began in earnest. As the analysis proceeded, the investigator searched for saturation of repetitive patterns and the links between them (1994, 2004; 2006).In order to maintain control over the data, the investigator organized interview content into separate files according to each code and theme. These files, organized around specific codes and themes, facilitated content analysis (1994; 2004; 2006).

CHAPTER 4: FINDINGS:
MONTESSORI'S THEORY OF NORMALIZATION

This chapter focuses on Dr. Maria Montessori's observation of normalization, a phenomenon that she initially witnessed in children's behavior in 1907. For the last 100 years, normalization has continued to emerge whenever the right conditions have been replicated. To illustrate what normalization is and what the conditions are that encourage its emergence, 12 Association Montessori Internationale (AMI) teacher trainers were interviewed to discuss their understanding of normalization and their experiences with its process. These individuals prepare teachers for AMI licensing to work with children between the ages of 2 ½ - 6 and represent the "community of knowledgeable peers" (Bruffee, 1999) that are responsible for establishing and maintaining Montessori's oral tradition.

Throughout this chapter these teacher trainers will be referred to as *participants* and *respondents*. Participants were queried about Montessori's theory of normalization in ways that would support the researcher's acquisition of fluency to carry on the discourse of this interpretive community described below. Throughout the conversations participants did not express differences of opinion, only differences in style. Therefore, the content of these conversations will be treated as one unit of analysis and individuals will not be identified by pseudonyms or other biographical referents (Charmaz, 2006).

The content within this chapter is a direct reflection of the conversations that occurred regarding the participants' understanding of normalization. Most of the content has been summarized and paraphrased. Elements that have been directly quoted are enclosed within the text in double quotation marks, whereas longer material has been displayed without quotation marks in freestanding blocks, indented from the margins. Brackets are used whenever additions were added for clarification.

This chapter is organized under the following categories: (a) what is normalization? (b) work, the vehicle for normalization, (c) inner directives that guide development, (d) the integration of the personality, (e) universal relevance, (d) the role of the adult, and (f) can normalization be taught?

What Is Normalization?

Normalization is Not a Theory. It's an Observable Phenomenon

Montessori's educational philosophy and theoretical underpinnings were initially developed in her work with the children from the Casa dei Bambini, the Children's House in the San Lorenzo district of Rome, which was opened under her direction in 1907. Based upon Montessori's observations and experiments, she began to develop a systematic and well-organized, sensorial-based curriculum. One participant in this study explained that Montessori's work continued to develop and to expand with the help of colleagues and practitioners who requested teacher training and began implementation throughout the world.

> In those 1915 lectures [Montessori] talks about finding something that will capture the child's interest... the only theoretical base was repetition and attention, which are the basic components, but there was no other theoretical or philosophical foundation [yet] available…until the forties. So this is like 25, 30 years, and of course backing up to 1907, you've got 40 years of dedicated practitioners providing these classroom laboratories out of which the theoretical constructs gradually developed….The debt of gratitude that we have to all those people is enormous, because without them the constructs would not have developed to the point where they could have been articulated.

Montessori is probably best known for having created an educational model that responds to the pre-school aged child between the ages of three to six. However, Montessori's work extends far beyond this stage of development, including an educational philosophy that begins from birth and extends through adolescence.

Montessori pioneered the understanding that the developmental process is divided into levels or stages, which she referred to as planes. Montessori delineated four planes of development. Each plane encompasses six years, and is then further subdivided into two sub-planes of three years. For example, the first plane of development begins at birth and continues through age six. Its two sub-planes include the infant-toddler (0-3 year olds) and the primary age child (3-6 year olds.) The focus of the present study is organized around the second sub-plane within the first plane of development, that is, the 3-6 year olds. Several participants in the study asked if I would be talking with the Association Montessori Internationale (AMI) Teacher

Trainers for the 0-3 year age group, referred to as the Assistants to Infancy. Since normalization is a phenomenon of the first plane of development, the respondents felt that both sub-planes would need to be taken into consideration. However, because this dissertation was designed to test the hypothesis that Montessori's theory of normalization is in fact a theory of self-regulation, the focus on ages 3-6 was maintained. The limitation of the investigator's speaking only with the AMI primary teacher trainers (who represent the 3-6 year age span) should not hinder the validity of the results.

Montessori used normalization as "a label to describe the phenomenon she was witnessing in 1907 in San Lorenzo." And according to several participants in this study, normalization is not a theory but an observable phenomenon.

> I'm going to fall back on the idea that there are no theories, because theories are things that are invented by adults. Montessori said over and over this isn't an idea that she just ginned up in her own imagination, or invented. She said other methodologies are theories that can be tested. She said these are not theories, these are facts. And she said it very strongly. These facts are observable, and you can observe them over and over and over again, and they're cross cultural, they're over time, and they're what the children themselves have demonstrated, first to Maria Montessori and then to her practitioners for over 100 years now. We are still seeing these same characteristics of children….And so the theory, if you will, that guides the practice, is what the children have shown us and continue to show us. So it still is a very responsive approach. We follow the child, and not our own theory about what the child should do.

Where Did the Term Originate?

No one seems certain where Montessori's use of the term *normalization* began. As an Italian speaker, perhaps she adopted the "common parlance at that time." Another possibility is that because Montessori was a medical doctor as well as an anthropologist, she might have borrowed the term from either of those disciplines. Or perhaps it was taken from the larger social context at that time. Woodrow Wilson was talking "about normalizing political conditions after World War I, so the term [might have been] in the air." Today in English the only use of the word *normalization* seems to

…come from international relations, when you have two warring factions, maybe it would be the Sunnis or the Shiites, or maybe it would be Palestine and Israel, and you would say that the relations between the two countries or the two factions have normalized. That means that they have become peaceful enough that they can begin to get along…the relations are normalized. It's the same with the personality. The personality is fractured and at war with itself. Montessori talks about two streams of energy, the physical and the mental, and they have become separated because some obstacles have been put in the way of normal development, and so the mind goes one way, perhaps into…extreme fantasy, where the child almost lives in this fantasy world and the body goes the other way and moves aimlessly. It's clumsy. It's spinning around. It's moving, but it's not moving with a purpose. So you have these two streams of energy that are going off without any connection to each other. When you connect the mind back with the body, then we have re-integration of the whole person…the relationship of the energies of that person have become normalized.

One participant had been surprised to discover that the term *normalization* had been used, in much the same way that Montessori intended, in the 1969 autobiography of the psychiatrist Frederick S. Pearls, the founder of Gestalt Therapy.

I like Fritz Pearl's definition. I was startled when I came across it in his *In and Out of the Garbage Pail* where he says normalization is the optimal functioning of the organism. I had never come across anybody else who used that word, *normalization*.

Another participant stated that normalization is often a familiar term for students with a background in special education who attend Montessori teacher training. "Special education teachers understand the word as being able to take care of yourself and society and be a contributing member."

Normalization is Easily Misunderstood

In the English language *normalization* is an awkward term that is often misunderstood.

…Normal somehow implies midrange, or even worse a fulfilling of someone else's expectation of what is acceptable or what is the norm, and norms we know statistically are in the middle [of the bell curve]….That's not what Dr. Montessori meant.

Because the term *normalization* is so often misconstrued, participants emphasized that they never use the term without careful explanation. Their preference was to avoid the term altogether in favor of describing the processes and the observable behaviors that emerge. "When we use the word *normalization,* it's important to distinguish it from another concept like the *norm*, because the norm implies what it usual….And normalization is typically not the usual behaviors we see in children."

In Italian, the term *normalization* might not have been at risk for the same degree of misinterpretation. Perhaps it was a more natural word in the early 1900s, and it "may not have [had] the same meaning as when you're thinking about normal and the norm in English. There's a certain rigidity, a certain frame of mind, in English that may not be the same in Latin rooted words." Perhaps it is the English translation that "traps us; it's like little Venus Fly Traps all along the way that keep snagging us."

> I think people worry about normalization, outsiders worry about the concept, because they think we're trying to make all children the same; whereas it looks different in every child. I mean I've had learning disabled children who, given their challenges, were, nevertheless, normalized.

Normalization has Nothing to do with Being Normal

What Montessori observed in the children's behavior in the San Lorenzo district of Rome 100 years ago took her by surprise. It was unexpected and at first she would not believe it. "The really miraculous phenomenon of the first *casa* was that Maria Montessori accidentally created a situation where children could" [let go of all the defensive and negative behaviors that are considered typical for their age group.]

> And that was not expected because [those behaviors] are what are so commonly seen in children universally. Everyone assumes those [behaviors] are the natural characteristics of childhood.... [For example] this child was extremely shy and timid…this child was a bully, this child was hostile. This child was hoarding….All of those behaviors that people think [are natural for] children. And so when their personalities transformed, which they did, this was the true phenomenon of the *casa*. And even Montessori wouldn't believe it…she said the directress, the assistant would come and describe the concentration and the kindness of the children to each other, and these almost miraculous concentrations and kindnesses. Montessori wouldn't believe it. She

accused her [assistant] of lying, of making it up, and then she said, "I'll believe it next time. I won't believe it this time."

When Montessori began her work, she too "had all the wrong concepts about children." In some cases, the term *normalization* may be used to counter what adults typically think of as normal behavior in children.

> What we see in children is not normal. What we see is sick behavior because we haven't understood how to provide for them. So that's probably where [the term *normalization*] came from, that what we see is not the norm of what a human being ought to be. In our society so many people understand nothing about children's development. They think being rowdy, being aggressive, being sloppy, lacking the ability to concentrate is the nature of the child. And then we work with children and we see a totally different sort of thing.

Montessori's accidental discovery of the conditions that led to the transformation of the personality came to be known in her circles as "the secret of childhood" or "the discovery of the new child." The children who had experienced this integration of personality were called "miracle children" or "the converted children" because they revealed a hidden side of human nature that had not been previously known. People came from around the world to observe the children in San Lorenzo.

> [They] kept saying why won't you tell us the secret? Why are these children so different? [Montessori] was trying to say this is how all children are when we respond to them properly.... I think in her broadest view of normal she was talking about the integration of the personality or harmony between body and mind in a period of growth that's so formative…and all conditions need to be stable and supportive…to enable a child to come back to that normal state.

Margot Waltuch (1908-2003), who worked closely with Maria Montessori, told one of the participants in this study that the term *normalization* was used

> …to help parents understand that [Montessori's] discovery of the new child, the child that's different from what people think, is the normal way of children…and that's what she meant to convey, that it was the normal way for children to be, and that the things we were used to were not the normal way.

And so normalization "has nothing to do with being normal. Montessori saw normalization as the state the human being would be in if we had understood how to respond to human needs, the child's nature."

Normalization as Behavioral Conversion

Thus *normalization* was the term that Montessori used to describe the psychological change in behavior that she witnessed in the first children's house in the San Lorenzo district of Rome. This behavioral change revealed a "new" child, and Montessori concluded this transformation represented another side to human nature, one that had "been hidden and thwarted from showing itself."

> And so then she did the backtracking. What were the accidental conditions that made this happen?....She couldn't have made this transformation [in the children]…because she wasn't expecting it. She didn't predict it.... She didn't think it was possible. So in that regard she came to see that this normalization, what she called *normalization*, which is the child coming back onto the normal path of development, was the primary need of the young child, the child under 6. And as people came and took her training and then went back all over the world…every time the conditions were replicated, the same set of very positive and very powerful characteristics emerged, and the other behaviors all disappeared.

The emergence of positive characteristics and the elimination of negative behavior traits were instantaneous, unexpected, and so surprising that Montessori likened it to a conversion.

> We still see it today when a child focuses on something that calls his attention powerfully, strongly. His behavior changes instantaneously and it's so instantaneous as to be compared to a conversion, someone who has had a change of mind, right? When we talk about the child, it's not a change of mind. It's a change of behavior. He's not aware of it. He's not conscious of it….The more he experiences this conversion, this change, the more it becomes a habit, a part of him.

This transformation or conversion is seen to occur after children are given the freedom to follow their own interests, using their hands and minds to engage in purposeful work that results in an experience of deep mental concentration. It is this psychological event or conversion that Montessori labeled *normalization*. Because children's negative behavior traits disappeared in this process, Montessori concluded

that the defective characteristics had been the result of frustration in not finding the appropriate support in the environment for optimal development. Montessori called this opposing process, *deviation*. Children's negative behavior traits disappeared as soon as conditions were normalized.

Deviation as a Defense Against Obstacles

Deviation and normalization are dynamic psychological processes that occur simultaneously. And just like the term *normalization*, *deviation* is also a problematic term for modern use because it has tremendous potential for misunderstanding, particularly with its inappropriate association with the word *deviant*. For that reason, participants in this study said that they often avoid using the term, especially when talking with parents or the general public. When they use the term *deviation*, they are very careful to explain the concept, which then "seems to tranquilize people who would react to it."

Participants in this study often used the analogy of a river or the forces of energy to explain the processes of deviation and normalization.

> Montessori developed this idea about strong and weak children. She talks about the vital energy and that depends on your temperament and your constitutional type….And depending on the environment, the child will be successful and develop trust in the environment, trust in themselves, or they will start deviating from the normal path. And depending on the obstacles, the deviations can be very strong….It is like a river, and the river goes toward its own path. If you have rocks in the river, which are like challenges…you start building character….But if you put a dam, and the wall is so strong that the water is stopped then deviation begins….That's what happens with children who may deviate in very strong ways, with certain characteristics such as aggressiveness and violence….And you can see that the energy, the vital energy that they have is not used to grow, it's used to defend themselves.

Which direction the vital energy goes, towards normalization and optimal growth or towards deviation depends upon the opportunities that the child finds in the environment. Deviations are detours from optimal development. They are defense mechanisms created to protect the self from obstacles and oppression. "Montessori talked about the repression [the self creates] being so strong that there is a barrier, a

kind of shield to defend [the self] from the outside world." The behaviors that result from deviation include many that are thought to be characteristic of young children. These include

> …possessiveness, stubbornness, fits of rage, aggressiveness, those things that are so difficult for many adults because they see that as the real child…but that's just the façade….And then there's some other behaviors that are easier to live with, excessive timidity, clinging to an adult…whining….She even thinks psychosomatic illnesses are a result of just not having enough normal activity for development to take place.

The result of deviation and normalization are therefore observable in the "predictable behaviors that arise when development is either thwarted or supported." When conditions in the environment are normalized, children leave behind their defensive behaviors and return to the path of normalization.

Conditions that Lead to Normalization

"Concentration is the key" for creating conditions that help children stay on their path of optimal development.

> The process of normalization actually occurs in that realm of focused attention. So it's actually the normalizing agent. It's not the material that is normalizing me. It's this focus of attention. It's the polarization of the attention, which actually is the gist of the process of normalization.

There is a difference between the kinds of activities that keep a child busy or happily occupied and those that engage and polarize the child's attention in mental concentration. Activities that produce concentration are those that have been freely chosen, because of personal interest. For interest to serve as the catalyst for concentration, the activity must also be meaningful to the child and provide a certain degree of challenge. When interest and challenge are combined, the child's need for repetition is activated. And when the level of engagement in an activity brings together interest, challenge, and repetition, then the polarization of attention (concentration) is more likely. The child's personality is transformed (normalization) when interaction with the environment produces concentration.

> Engagement has a lot to do with normalization….There is that phenomenon that we see, altruism and the love of work…no matter what that work may be. And the inner contentment that results from engagement through freely chosen, spontaneous activity based on interest….I think that's really the essence of…normalization.

Although at first it may appear that the environment is providing the motivation for the child's self-constructive efforts, respondents noted that it is the quality of the child's emotional content that is initiating the process.

> There is an emotional piece that has to be included because the emotions of deviation are very disturbed and very uncomfortable and unhappy. And the emotion coming out of…concentration, even if it's just for a moment, is an emotion of joy and comfort and safety and relaxation….And everyone, given the chance, will choose happiness over unhappiness, if they can.

Characteristics of Normalization

There are four observable characteristics that are the outcomes of normalization: (1) concentration; (2) the love of work, defined as being engaged in purposeful activity that requires a bit of effort; which leads to (3) self-discipline; and (4) a refined sense of sociability, including expressions of kindness and affection for others. These characteristics are universal and remain stable across time and culture. Although the observable characteristics are organized within these four major categories, the participants in this research expanded upon these constructs by using a variety of descriptors. For instance one participant talked about the outcomes of normalization in this way:

> There is a kind of centering and calming you see when children concentrate; even their physical being changes….There is a certain carefulness in the way they interact with the environment. There is deep engagement and joy. There is a kind of altruism…friendliness with others, a willingness to help….[They are] willing to take, it's not really a risk but willing to expand, take on a new challenge….They feel more confident in themselves….And [they have] the love of work.

Respondents described additional variations including resilience, compassion, empathy, caring, love, task persistence, competence, and problem solving.

In summarizing, one participant stated that Montessori talks about the process of normalization as observable

> …in three very distinct ways: Through any single act of concentration on a purposeful activity that fills the child's need for development, then gives a visible change in the child's movement, in their stature, in the way they interact with other children. Those children, who repeat that process over and over and over again, then go home with those same characteristics. It isn't just short lived. It becomes a part of their personality. And then as several children in the classroom begin to live in this way together, that's mutually respectful and with sympathy and love and caring, you have a society.

The Vehicle for Normalization: Work Leads to Concentration

As a scientist, Montessori recognized that the transformation of the child's personality, which she referred to as normalization, was the outcome of certain conditions in the environment.

> Montessori describes very clearly what [those conditions] consist of. It is work, or activity (we can't use work all the time because sometimes it's a four letter word for people), activity done with the hands, using real objects, accompanied by mental concentration. When that is available to the child…that's when the child [begins to feel] normalized energy.

Since work leads to concentration, and concentration is valued as the pathway to normalization, this purposeful activity is always protected from interruption.

> And I always say, in a Montessori environment we don't talk about play. We talk about work because we give it dignity. When a child is playing, so often somebody will say, "Oh they're just playing," which means you can interrupt them anytime. But when you use the word, *work*, that means, I respect the child as much as I would respect a scientist who is working on an important experiment. So the children feel that. For them it's wonderful, that even the adult does not have a right to interrupt their work.

Work and Play are Different

One of the most noticeable differences, when comparing early childhood programs is the obvious lack of a pretend kitchen or a dramatic play area in a Montessori classroom. This contrast, between pretend play and real work, is a

fundamental difference that distinguishes Montessori's approach from all other approaches to early childhood development and education. Because Montessori is aligned with constructivist pedagogy, her intentional lack of fantasy and pretend play in the classroom has been the source of much criticism. However, without understanding the process of normalization, critics are neglecting to understand the benefit that concentration plays in development.

Montessori was amazed to discover that when given the chance to choose challenging and purposeful activities that led to concentration and also contributed to the community, children preferred these types of activities to playing with toys.

> [Montessori] saw in the activity of the child something much more serious than play, similar to play, but the child would choose what she called *work* over playing with toys because playing with toys, whereas pleasurable was not developmental…given the choice between play, say with a Barbie doll, or work with something that was constructive and developmental and met the needs of the growing organism during a formative period, then that organism would choose what was necessary for its life. And what was necessary for its life was not the Barbie doll. And that's probably the difference between work and play, although work in a Montessori environment is very akin to play.

Play and work are not the same thing, though they are both valuable.

> Play doesn't always have the same kind of deep concentration that we see in work. Sometimes play is a freeing of the spirit and mind in a spontaneous interaction with something or someone…play is a different kind of experimentation with the world, a little more free form….When you watch children play at a playground or you look at adults when they play, it often includes laughter and movement…they're both valuable.

Where Did the Use of the Term Work Originate?

The word *work*, as opposed to play, became a referent for the type of activities that promote concentration. It has become part of the Montessori movement's lexicon. It is not clear where the use of the term *work* originated. Its origin is part of Montessori's oral tradition. "Yeah talk about oral history…we have different versions of how that word came to be. Many people seem to think it came from the children. I don't know if that's true or not."

The use of the word *work* is often used to dignify the child's need for active manipulation with the three dimensional world and also to alert adults to the importance of meaningful engagement for the young child's optimal self-construction. The task of self-construction "manifests itself as very purposeful, concentrated activity always around an interesting piece of material, and that's also a key….It's when the child's hands engage with a piece of material." The use of the hand to engage the child's mind in concentrated activity is the governing principle upon which normalization is based.

> For the child, work is any meaningful activity….It's not busy work. It's not work that just occupies my time and doesn't feed my spirit or feed my brain. Meaningful work means something that engages my attention, engages my concentration, provokes me to explore beyond the obvious with this activity. So to them work means active, meaningful, purposeful, developmentally nurturing activity that helps me grow, and that is their work.

Work is Easily Misunderstood

The use of the word *work* can be problematic because of negative adult connotations that associate work with the notion of earning wages, which in turn elicit images of employer exploitation. Attitudes toward work, especially the work of the hand as physical labor, are aligned in contemporary thought with issues of social stratification and economic class. Adults often speak in derogatory terms when speaking about the need to go to work, defining this activity as something that must be endured in order to make a living. Utilizing the term *work* in relation to children can also be problematic for some because of its potential for misidentification with the concerns of child labor and childhood slavery.

> Work is again one of those words that can be really misunderstood…. Adults usually equate work with job, which then you look at the emotional aspects. Drudge. What I do to get a paycheck. But then I go have fun. First of all, the child doesn't have that mental classification, unless we've imposed it, and so we have to be careful.

Work Promotes Interdependence

Montessori's perspective on the value of work in early childhood was uniquely different from contemporary notions of toil. Rather, her view was aligned with the

issues of social liberation through the balance of power, participation, and inclusion rather than with the oppressive nature of drudgery, labor, and slavery. Montessori observed that when children were allowed to participate in meaningful work, their deeper humanity was awakened, promoting individual and social dignity and the joys that come from being allowed to develop and to contribute the practical skills that interest them. These skills became spontaneous contributions that weave together the life of the community and cultivate the bonds of friendship.

Practical Life. The Montessori primary classroom, referred to as *the prepared environment*, is designed to give children opportunities to work with real tools, such as those that they see their parents use at home. Parents are often too busy or unwilling to take the time to show children how to successfully participate in family life, and parents are often unaware of the benefits for the child of doing so. Instead of providing children with a pretend kitchen in which to "play house," real objects from the household are introduced to children. These objects are crafted into carefully designed activities intended to refine children's physical motor development, while offering skills and the "know-how" to satisfy the child's quest for independence. This type of work forms the foundation of the prepared environment and is referred to as *practical life*.

The Use of Real Objects. The activities of practical life incorporate all of the ways a cultural group cares for its members as well as their immediate and extended environments. An important component of the practical life area would address how the children's cultural group takes care of its nutritional needs. The child's work in this area would include elements that relate to gardening, food preparation, and cleaning up. Kitchen tools offer exciting challenges that encourage young children to develop and to refine the coordination of their body and their hands, an important developmental milestone. Activities of interest to young children might include an invitation to peel and slice bananas, squeeze fresh orange juice, prepare a snack for oneself and a friend, use a sponge to wipe a table after a spill, use a vegetable grater to grate cabbage for soup, employ a hand held nutcracker to crack open walnuts, fill wash basins and use a scrub-board to wash dirty cloth, spray with a spray bottle and use a squeegee to wash windows or full-length mirrors, and on and on. As should be

evident, the list is as plentiful as are the cultural objects. Being respected, trusted, and given the dignity to use real tools from the home environment delights and challenges young children, who relish the chance to master new skills that result in a feeling of successful accomplishment. However, no one of these activities is required or prescribed. All are simply possible elements of a well-prepared environment that offers children a variety of choices within highly organized limits. These choices evolve in response to children's interests and with the refinement of their increasing abilities. Real tools serve as motivational prompts that initiate concentration while supporting children's pursuit of functional independence. "Functional independence is a vehicle to other kinds of independence that ultimately leads to interdependence."

> We know that children play at this age, but they play because they need to manipulate the world. They need to internalize that world and so they play with it or on it. But we [Montessorians] give them toys which are replicas of the world. In Montessori we give them things that are real and they can act on the real objects….A 3 year old loves to do things that he's seen his mom or dad doing at home…but nobody lets him do. Maybe he learns how to sweep the floor, or dust the shelves, or wash the table, or wash the dishes. Much of it is practical life.

Play Versus Work

The prevailing social construction of childhood tends to value play over work. Perhaps this is the reason why adults are often uncomfortable encouraging children to engage in challenging activities (work) that demand the sustained effort required to arouse concentration. Adults tend to be more comfortable seeing children engage in dramatic or fantasy play, interpreting this as creative and imaginative. Due to this cultural bias and governing world view, adults have a tendency to interrupt children, offering unneeded help as soon as a child struggles to overcome an obstacle. However if the child has not asked for help, then providing it is disrespectful, according to Montessori, and the adult's interference becomes an obstacle to the development of the child's concentration. According to the respondents, the cultural bias that privileges play over work promotes the erroneous assumption that childhood must be protected and therefore work must be avoided for fear it will somehow take away the innocence and joy of childhood. This fear arises from a persistent misunderstanding that disregards the value of work in early childhood. It's as if adults are worried,

"We're taking their childhood away from them when we make them work. That's the prejudice, that it looks unnatural when it's the most natural thing in the world."

The cultural tension within the play versus work dichotomy was described by one of the participants in this study who shared an experience while observing a student teacher practicing in a Montessori environment. Two prospective parents were also sitting nearby observing the children at work. A little boy had chosen button sewing as his work. Prior to this day, the boy would already have had several previous lessons to prepare the way for his current success, since each Montessori lesson builds upon more basic skills, so that the art and craft of sewing could be mastered. One of the previous lessons would have featured learning how to thread a needle.

> There was a little boy, probably about 8 feet away from me, who got some sewing out. He looked to be about 4 and a half. He unwound the thread and then started trying to thread the needle. I'm listening to the parents. They know they're not supposed to talk, but they're saying a few things. I started counting after awhile…so I know that he tried more than 35 times, and he was concentrating the whole time. The adults [the Montessori teachers] were magnificent because they just walked by and nobody offered to help him. And the parents were, "Look at that boy, he has a needle! Nobody's helping him. Look at those adults they're just walking by." They thought nobody saw him. They thought he was neglected…. I would have thought all those things too if I didn't have my Montessori training. But it was just gorgeous because he finally did it. A lot of people would expect that he would be thrilled at that moment. No. He just went along and made the knot and sewed the button. So there was no change in his affect at all because he was just working to get there, and he got there, and it was in service of getting to the next step…. But it can be misinterpreted. It never occurred to [the parents] that he was doing something positive. If I would have asked them if he was concentrating, they probably would have said, no, he was frustrated. But what were the signs of frustration? They weren't there….But how many teachers would have helped if they had noticed? Lots…of Montessori teachers would have because they're thinking, oh he wants to sew the button, and there's an obstacle here. It's too hard. He can't do it. He's tried 35 times! So you look at the adults too, because if you see the adults interrupting, directing, helping, you just know there's not going to be independence and concentration.

After 3-4 years in the Montessori prepared environment, many 6 year olds might have acquired the necessary competencies to enjoy designing and sewing their

own simple quilts, that is if their interest in sewing persisted. Work is not dictated by the adult but is freely chosen by the children, whose interests are often inspired by the interests of their friends and admired classmates. However, the goal is not the development of skills and competencies, but the experience of concentration, which promotes normalization and minimizes deviation.

<div align="center">Inner Directives Guide Development</div>

Montessori felt that the child between the ages of 0-6 was in a second embryonic phase of development and was endowed with certain developmental structures to help activate the process of self-construction. These developmental systems function as inner directives or inner guides that promote development. They were not to be interpreted as some mystical force but, rather, were seen as motivators or laws of development. These inner directives include (a) the absorbent mind, (b) the human tendencies, and (c) the sensitive periods.

The *absorbent mind* was the term Montessori gave to the unique quality of the child's brain during the first six years of life to absorb everything in the child's environment. Specific details pertaining to the important functioning of this process were gathered from a series of lectures Montessori delivered while interned in India during World War II. The book of lectures, entitled *The Absorbent Mind*, was published in 1949. Mario Montessori, Maria Montessori's son, was responsible for introducing an additional structure in the 1960s, referred to as the *human tendencies*.

> This is part of the oral tradition….You won't find [the human tendencies] in any of her books where she actually spells out what these are. She suggests that there are tendencies, which are similar to instincts….We can't say that there are seven tendencies or 10 tendencies, but what Montessori suggested is that these tendencies are what make us human…humane individuals, rather than broken and deviated individuals. These tendencies are to explore and orient and order and abstract and work and self-perfect and control your own errors and communicate your ideas with each other and so forth.

Although very little has been published by Montessori regarding sensitive periods, the process of normalization cannot be understood without this framework.

The knowledge regarding sensitive periods is held within Montessori's oral tradition and continues to be passed from trainers to trainees.

Sensitive periods are "laser like energies" that "drive(s) the child's interaction with the environment." They are the dominant powers that motivate young children toward specific elements required for their self-construction, "not only as a human but as an individual." These developmental supports or prompts are said to occur only in the first plane of development, from birth to age six. Sensitive periods, or windows of opportunity, open and close within certain developmental timetables. When a sensitive period is activated the child demonstrates a strong attraction toward particular elements in the environment that will facilitate the acquisition of specific abilities.

Currently four sensitive periods are recognized to guide growth and development. They include the sensitive period for movement, language, the development and refinement of sensory perceptions, and order.

First, the sensitive period for movement

…accounts for the child becoming upright, bipedal, and moving through all the different modes of locomotion, which in essence…frees our hands to become the instrument of the mind….The sensitive period for movement also accounts for the activity by which the child refines the movement of the hand, all the grips, all the grasps that then allow it to be the tactile instrument for exploration.

Secondly, the sensitive period for language accounts for the child's innate ability to spontaneously learn their mother tongue

…basically by age two, when the whole syntactical structure of the spoken language is recorded in the brain, vocabulary of about 200 words at age two, mostly nouns, a few verbs, a couple prepositions, their favorite conjunction *and*, and then the sensitive period, which is the only one that goes clear till age six accounting for two huge interests or motivators, one being the expansion of vocabulary, which we know goes from 200 words at age two, to an everyday usable spoken vocabulary of approximately 10,000 words by age six, and a recognition vocabulary of 15,000, where the child might not use it every day but if they meet it in their reading know and understand from the context what that word means…also at about age four and a half [the sensitive period] evokes in the child a desire to play with language, play with the structure of language, play with the patterns of language, and so they add some vocabulary that they see gets good responses…as they discover words have power.

Third, the sensitive period for the development and refinement of sensory perceptions helps the child begin to classify and organize sensory information into mental schematics to eventually be able to create abstractions that will allow the discernment of

> …patterns of similarity, patterns of difference, all the relationship information of objects to objects, objects to things, or things to things, things to people, people to people. But the child doesn't come with a hard wired classification schematic, not for relationships nor for classifications of physical objects. They have to create that in the brain…it literally is a sensitive period that…trains the brain to analyze the sensory data that comes in.

Fourth, the sensitive period for order is "probably the hardest to understand." It can initially be seen superficially in the young child's dependence on order, in their need for predictability and consistency in the patterns of their daily routines. It is active in

> …the two year old who gets upset if the chair has been moved out of place, and goes around fixing things, or putting them back where they belong if you've rearranged. That dependency on order, external order that we see in a two year old, is a moment of clinging, just before they're ready to let go, because it gets replaced with elements of mental order, where the child has enough experience of bringing physical elements, from chaos into order, as if to say, again training the brain but also the psyche to know I don't have to depend on everything staying rigidly in order. If I want to I can make order. I can create order….It's also what helps the child perceive differences and similarities, patterns, and sequence.

Sensitive periods represent biological forces that direct the child toward particular elements within the environment that will satisfy certain developmental needs. Understanding the nature of sensitive periods is a prerequisite for determining what kinds of activities will promote concentration in young children. When children are provided with activities in response to the framework of sensitive periods, they are more likely to attain the depth of concentration that leads to normalization. When these energies "are put into conflict because [the child] can't follow those relentless drives, the timetable of nature" then deviations result. "The essence…is that through work there's concentration and through concentration there's normalization….It's

really through the child's purposeful, meaningful work that responds to sensitive periods."

The interests of young children are activated by the strength of the sensitive periods, which "ebb and flow" according to developmental timetables. The adult must learn how to observe for the manifestation of sensitive periods in order to offer activities that satisfy the inner needs of the child. By building a curriculum on the knowledge of sensitive periods, the Montessorian is able to insure that children's interests are naturally aroused. And "you need that high level of interest, because the work that comes out of that will effortlessly get the child on the path to normalization."

> When the needs that are manifested by those innate energies find a harmonious resonance in the environment, then it allows that child to grow in the most optimal manner….The energy of the child to grow seeks out the elements of harmony and synchronicity in the environment that allow that growth to happen, psychological growth, developmental growth, cognitive growth…but those psychological and developmental aspects of the child to grow and to learn, have to find that resonance…and when they find it, and they're in harmony with it, that's normalization.

Normalization occurs when the child's self-constructive process is in harmony with the natural laws of development. This is one of the reasons Montessori's educational philosophy includes the dictum, *follow the child*.

<div align="center">The Integration of the Personality</div>

When the child's developmental needs meet with a response such that independent interactions with the environment provide continual opportunities for extended periods of concentration, then the child's personality is transformed. When the child's attention is focused, energies are no longer dispersed. That's part of the process of normalization. As a result the child's personality "which is still in process of becoming, actually becomes a unit." This process of unification is referred to as the *integration of the personality*.

> Because of the polarization of the attention, the personality becomes one….[Montessori] uses this almost indistinctly when she says the

polarization of the attention and the integration of the personality….They are two different processes, but still they're both happening at the same time, so as my attention is polarized so is my personality being unified.

Crystallization of Normalization

According to Montessori, normalization, or the integration of the personality, takes place between the ages of three to six. It is during this time that the personality is consolidated. Crystallization was used as a metaphor to describe the process of normalization. The personality of

a child who comes into the pre-school environment…[is] not yet unified, and… [it is between the ages of] three to six where the whole personality is going to be consolidated….I see it very much like the process of crystallization. When you're forming a crystal, you know? And you have to saturate that medium with an X mineral. And there's only a moment when it's saturated just to the point where the crystal actually forms. It's through repetition. That's why repetition is so important.

At first the child's experience of normalization may only last "for five minutes or for 15 minutes or 30 minutes, and then you come out of it for awhile….Normalization needs to crystallize in order to become a permanent state."

Normalization moves through several phases in its progress toward the integration of the personality. Several participants in this study referred to Montessori's developmental work curves in *Spontaneous Activity in Education* (1917, 1965), which are examples of the data she collected on individual children and classroom work cycles. Even though children expressed individual differences in their patterns and rhythms of work that resulted in concentration, they went through similar phases as normalization moved toward crystallization.

Montessori's developmental work curves show several consistent phases, beginning with no concentration, and then a preliminary phase where children's ability to sustain an independent work cycle with concentration was rudimentary, followed by the middle or serious phase where children began to work from a higher plane of development, and, finally the superior phase when children consistently displayed internal equilibrium and self-disciplined behavior. Normalization had then

crystallized. It had become a habit. Children now were "masters of their own work cycle."

> …if we look at the developmental curves she talks about in
> *Spontaneous Activity in Education*, we arrive to those last curves where
> the child is no longer at a lower plane of development…and she
> establishes that the child begins his work…at that higher level and stays
> there throughout. He no longer comes down to the other levels of
> expression and behavior, and he's already working at that point, which
> is a point of great concentration, great focus, great intent…so that's the
> conversion….And we still see children whose needs are being
> responded to. They feel a great connection to that material…whatever it
> is that's calling their attention, and instantly their behavior changes.

Phases or Levels of Concentration

Through graphing these work curves, Montessori delineated the phases of concentration that children, as well as a classroom community, move through. This is not something that can be forced or manipulated by the adult, but it is a natural progression that occurs when children are given the freedom to make their own choices to satisfy their developmental needs.

These phases of concentration progress through four levels, beginning with (1) no concentration at all, and then (2) an initial phase of concentration that Montessori called *the first earnest work*, which was followed by *false fatigue*. This is where the personality begins to change. The child shows expressions of kindness and is "much more calm, extraneous movement disappears" following that work. As opportunities and the experience of earnest work continues, then (3) the time between these work cycles begins to shorten as the earnest work increases and becomes more consistent. The time between concentrated work becomes filled "with a restful state, there's much more tranquility and kindness and a much higher level of introspection" or contemplation. And then (4) the superior or final and most advanced level of concentration

> …looks like a normalized child on a graph, which would be that self-
> directed work from…[a position] of I've arrived and this is what I'm
> choosing and each choice coming from the child, whether it's one or
> many engaged activities….I know what to do and I know what I can
> offer and a sense of Self and a sense of place and a harmony with ones'
> surroundings both animate and inanimate.

Internalized Self-Discipline

Internal self-discipline was one of the four positive characteristics that Montessori observed as an outcome of normalization. The characteristic outcomes were: (1) concentration; (2) love of work; (3) self-discipline; and (4) sociability. Self-discipline was part of the conversion that Montessori witnessed in the children's behavior that occurred from the impact of the polarization of their attention and the integration of their personality. Although the manifestation of self-discipline came from the children's external experience, it was not a discipline that had been externally imposed or manipulated. It arrived spontaneously, without the governing influence of an adult in a position of authority managing the children's behavior by utilizing reinforcement strategies such as the threat of punishment or the promise of reward. The advent of this natural occurrence of self-discipline was even more surprising because it was not (nor is it yet) understood that children have the capacity to establish their own discipline without the use of external control.

Since spontaneous self-discipline was an unexpected outcome in the normalization process, Montessori called it *natural discipline*. As a scientist witnessing for the first time the child's natural expression of discipline, Montessori likened it to "the discipline that accounts for everything staying in place in the universe…that there are energies that hold things in their rightful place to perform their rightful function." And then to express the truest sense of the word, she called it *self-discipline* because the children naturally expressed this mode as an aspect that had been integrated into the essence of who they were.

Montessori used the term, *self-discipline* to identify the subsequent behavior that occurs with normalization. One participant in this study volunteered without previous prompting that currently the term *self-regulation* might be an accurate descriptor for the characteristic behavior that Montessori referred to as *self-discipline*.

> I think today self-regulating is a term that's used….And it's the ability of the person, or the individual to manage their own behavior without external limits or supports. Of course the most common of those would be rewards and punishments, or sort of a situational discipline where if the adult is there, the rules are followed, but if the adult's not there, the rules aren't followed. Or the child follows external rules, those would not be self-regulation. Self-regulation means there's an internal sense

of what is the right thing to do or how to act [in this situation]….No one can make another human being do anything. You can threaten them enough that they'll agree to go along with you, but they still have to agree. And so, in fact, we are always self-regulating, but we sometimes self-regulate by agreeing to let someone else regulate us or someone else discipline us or someone else set the limits. And the Montessori primary environment offers children this constant opportunity to follow, even if they're following what's a prescribed activity, they are doing it from within, not because it's been imposed from without.

The Development of the Will

Normalization and the integration of the personality require the development of the will. The will is an essential component in Montessori's analysis of normalization. In brief, the will is thought to be a directing force that develops from birth onward, and impels the young child toward activities that are beneficial to life, and equally impels obedience to follow these unconscious directives.

One participant explained that between the ages of four and five, when several sensitive periods begin to fade, the will is activated as a motivating force. Children must now learn to consciously make decisions, since the sensitive periods are no longer governing their developmental interests.

The fullest integration of the personality requires integration of the will, and the will is developed from birth on, but it manifests itself as a motivating power in the life of the child at around four and a half, at about the time when three of the sensitive periods fade. So if we look at the logic of nature, nature has provided these strong, powerful, passionate motivating energies, the sensitive periods. Up to age four and a half, a huge process of self-construction has gone on, including the child learning how to make choices, learning how to accept the consequences of those choices, learning to accept the limitations of those choices, learning to accept the responsibilities of those choices, learning how to go from choice to choice, and building that repertoire of experience….But we can't live life with sensitive periods. And so when they fade what takes over? Now the absorbent mind is still there for a few more months. Human tendencies are always there. But the will, which is the power to choose for myself what is appropriate activity in this moment in time. And to do that consciously, because it requires an element of consciousness, becomes the integrated part. So the child says, I want to do, I know I can do, because my muscles obey me. And then I fulfill that desire. I carry out the action. That's the beginning of self-discipline.

The child's will is integrated through exercise and practice, which is attained by making choices and then taking the necessary actions to follow those choices through to completion. The child must also be allowed to experience the natural consequences that result from their choices. At around age four and half when several of the sensitive periods have faded, the child goes through a period of disequilibrium, and the will needs to be consciously activated. During this time the adult provides additional scaffolding or support to the child.

> And what happens is those sensitive periods have faded and there's a period of disequilibrium where they have to make the shift that now you have to consciously make choices. And…we model that. We verbalize, "Oh, well now let's think about what you could choose. Would you like me to name some choices?" And the quicker you model that, the quicker they get over the disequilibrium and get on with life. But they don't know they're supposed to make conscious choices, because sensitive periods were unconscious choices. And so now they make the shift…directed by the will.... Now over time and with repeated practice and experience what happens? That becomes integrated….I'm responsible to make my own choices. Mmm, means I might have to listen to my inner self a little bit. [I] have to know what I want to do. Now we verbalize that by, "Have you thought about what you want to do this morning? Where would you like to start this morning?.... Good idea!.... When you're done, see me. I've got something else in mind for you." And you help them with that. But then they learn the responsibilities. They've learned the Ps and Qs of existing in the social community. They get a sense that something is right for them because it's right. And it's not right because the teacher's in the room. And when she's out, that doesn't go anymore. It's right because it's right. And you don't impose that. But you let them experience it.

The will is also developed through mental concentration. As the child concentrates on an activity, movements and impulses are inhibited. The on-going participation in the activity requires that the child continually make the decision to stay involved, which activates and strengthens the will. Ultimately the developed or integrated will is the child's ability to balance impulse and inhibition.

Universal Relevance

Several participants in this study emphasized that normalization is a natural occurrence that is possible for all human beings, regardless of their individual differences. Everyone can find a personal path of normalization, even if the individual has special needs, developmental delays, or physical challenges.

One participant shared the following story to emphasize the development of self-discipline as an observable characteristic of normalization. The story illustrates how normalization began to occur for a child with Down Syndrome who came to the Montessori classroom. This story provides an excellent illustration of several components of normalization, including the types of activities that were initially offered to meet this child's developmental needs and subsequently resulted in the outcome of concentration. The advent of this child's internalized self-discipline occurred after just a few months of participation in the classroom community.

> He arrives, and he is extremely dependent, barely verbal. We actually thought he was deaf for awhile because he wouldn't respond to linguistic cues, very lacking in self-control, in terms of the control of his body, absolutely the weakest hands I have ever seen….He couldn't hold anything. He couldn't grasp anything. It reminds you of when Montessori describes the children in the asylums, and she would mold her hand around their hand so that they could grasp something….
>
> I simply provided experiences for him. So for him, his first presentation was how to turn the faucet on and off, how to open the door himself….He had concentration events. We would clock him. I think one time it was 15 minutes turning the faucet on, putting his hands in the water, turning it off, looking, turning it on, putting his hands in the water, turning it off, looking. The sliding glass door was another tremendous achievement of his because it was very heavy. What it took to coordinate his whole body to open that door, and he would open it. He would step out. He would close it. He would look in. He would open it. He would come in, close it, look out. 20 minutes.
>
> One day a few months into the year, his mother came to pick him up, and this was a boy who lit up when he saw his mother and vice-versa. And she arrived early for him, and she had not mentioned it to me…and so she just sort of shows up in the room in the middle of the morning, and her son was all the way across the room…and he was bead stringing, which was a tremendous manual achievement for him.

He was really working at it, and he saw his mother and his face lit up, and the whole impulse, you saw his body start to leap out of his chair to go run to her, and then I saw him stop. He stopped himself. He sat back down….He got all the beads back into the basket. He stood up. He put his chair into the table. He carried, walked gracefully, complete self-control, carried the basket to its place, put it on the shelf. Then he ran to his mother.

Now I think that is the best description I could give of self-regulation. It comes from the fact that he is following rules that are external to him, but he has internalized them. They make sense to him in some way, and he has adapted that this is how we act here. And he's adapted that even his mother, momentarily, is not as important as following that process. And it's even a kind of delayed, deferred gratification….It's the integration of the personality…and so the fact that this child, who was clearly developmentally challenged, had normalization and exhibited those [characteristics]…it's the same phenomenon, that every child has a normal path of development.

The Role of the Adult

During the first six years of life, children are totally dependent upon adults. They work to develop the abilities and acquire the skills of functional independence so they can begin to care for themselves and participate in the life of their family. The adult's relationship with the child during this stage of development is pivotal to the optimal development of normalization. The adult must provide an environment that secures the child's physical and psychological safety so that "trust can emerge. Without trust nothing is possible….Once the trust is there, then there is the enticement of activity. Activities that arouse the child's curiosity, attract the child's interest, and their attention." In addition to establishing a safe environment, the adult must create a relationship with each child based on unconditional love and respect.

Respect is the base of everything. When human beings are born, unless they experience the world as a safe and loving place, it's hard to connect to it. And so if they don't connect first to humans, it will be difficult to connect to the environment. Nothing works without that. And that's not always so easy….That's where we talk about the transformation of the adult.

The Transformation of the Adult

Every participant in this study emphasized the transformation of the adult as an essential component in the development of normalization. If the child is to have the freedom to follow sensitive periods of development and make choices based on personal interests, the adult must learn to trust and respect this process. This places the adult in a position of support and facilitation instead of in the role of a traditional teacher. The adult's transformation is such that the adult must learn to respect and honor the children's innate capacity to direct their own development. Learning to relate with children from a position of support can often be difficult for adults.

> That's a very difficult role because people have their ego involved. They don't want to give that up. And to be aware that I'm not the one who's going to teach the child. To really understand that I'm just going to give him the means to educate himself, and if I start to make the child learn what I want him to learn, I'm against Montessori principles. And I see a lot of that.

In Montessori programs, the word *teacher* is often avoided to remind adults of the transformation that needs to occur in their relationship with children. The use of the word *guide* or *directress* is generally preferred to the use of *teacher*.

> Teacher presumes that we have something that we're supposed to be imparting to the child. And whether we use the term *guide* or *directress*, Montessori's belief is that all of this development, all of the aspects of becoming a human being, in terms of the formation of personality, building of the intellect, building character, comes from within the child. And that our role is observing what the child is drawn to and how the child is interested and what the child needs.

Learning how to make this transition is not always easy for adults who must place "the child more at the center" and learn to become comfortable with "not being the one to control the situation." Control seems to be a recurring theme that adults must learn how to manage or to "surrender."

> It's…about working on the environment and working on yourself and letting go of your own need to control because you cannot control these children. If you do you're imposing your own, substituting your own personality for theirs, which is harmful and, of course, you will not have real normalization. You'll just have children who are obedient out

of perhaps even fear or psychological manipulation or coercion. Adults
have nasty ways of manipulating children.

A culturally acceptable way for adults to manage the behavior of children has
been through the use of rewards and punishment. However the success of
normalization requires that this practice not be used. Several participants referred to
the required change in the perspective of the adult as a "paradigm shift." One
participant talked about the tension in learning how to make this transformation, as she
had been "raised by educated parents who were under the influence of
behaviorism….It wasn't easy to learn how to give up all…those habits of control."
This participant went on to talk about Montessori's position regarding the use of
rewards and punishment.

> The best reward is intrinsic; that you have your own satisfaction from
> having done it. Montessori has always said that that's all you need, and
> outside rewards are not necessary….She said it was pretty easy to
> convince people that you could give up rewards, but it was not so easy
> to convince people that you could give up punishments as well.

The transformation of the adult begins in the Montessori year-long AMI
training course but is intended to continue throughout the adult's lifetime. To become
a Montessori guide, as opposed to a teacher demands a transformation, a shift from the
influences of behaviorism. The necessity for this transformation was discussed by the
participants in relation to the current cultural practice of *time-out*. Time-out is a
popular technique used both by parents and traditional teachers for behavior
management. Its use was mentioned by respondents in discussing obstacles that
confront adults who wish to become Montessori guides.

> Well I think managing money is good and managing human beings is
> really contrary to what I think we're talking about in terms of strength
> of character and strong human beings who really are making wise
> decisions and doing things that are the right thing to do. Time-out
> usually is for adults….How to find yourself again when you've become
> consumed by anger or you've become reactionary rather than
> responsive.

> If we say that work is the cure, then for a child who is troubled in some
> way, time-out is negative and harmful….Time-out is a message that
> you don't belong. And almost always, if there is some use of time-

out…all the children are aware of who is isolated or segregated. And so when we think about normalization, the environment is what helps somebody normalize. The environment includes the community of children, and automatically children can't be part of that process if one child is separated from the others. And the children are either growing up with fear that they'll also be put in that situation, or fear of that child who doesn't belong….A real negativity comes into the environment as a non-loving place.

Montessori as a Way of Life

Every participant emphasized that Montessori is not so much a method of education as it is an approach. It's an attitude. It's a philosophy towards life. It is a way of thinking about what it means to be human and how human life is to be nourished in order to promote optimal development. Because "this philosophy is not lived as part of mainstream society," adults who hope to implement this way of life must find ways to sustain and strengthen their own development. "We can all fall back into our personal baggage. [The new philosophy] needs to be nurtured." The nurturing of this philosophy is referred to as the spiritual development or preparation of the adult.

The spiritual preparation of the adult is a very strong concept in our Montessori philosophy. It means there must be a conversion inside of us, that makes us look at what we want the children to develop in their lives and then relate that to who we are as human beings. The spiritual aspects are the wonderful qualities we would like children to develop, but we have to live them….And so when we talk about the qualities of empathy, sympathy, loyalty, fairness, consideration, helpfulness, all of those things, we have to embody those ourselves. And so that has to take place in us. Montessori says in one of her books, it's very easy to be a Montessori teacher all you have to do is be a scientist and a saint, right? We never reach perfection, but we have to strive towards it.

Observation

Observation is the foundation and the key to making all of this work. It is "the number one tool for a Montessori guide." It is "the essence and the most important part of our work." When "observation isn't really understood…we start becoming teachers and we let go of really believing that the environment serves the child's

spontaneous activity." Observation is not easy to learn. It takes practice, and it requires honest self-reflection.

> Observation can be tainted by many other things - by preconceived ideas, by prejudices, by misconceptions, by expectations, by preferences. So you have to have that silent mind. It's called silence in action. It's like mindfulness. It means that your mind, when you enter the classroom has to be free of any preconceived ideas, any judgments, any preferences. You have to be free of that and see children as totally new each day. And if you're able to clean yourself and clean your mind…then you can observe, otherwise you can't….So if you're free everyday, then you'll respond with your inner essence as a human being to these children. But if you have expectations and you have all these preferences…and that happens in many classes, that's why human development is very important. The guide has to be able to transform herself or himself, otherwise it doesn't work. Then you're teaching with Montessori materials, but you're not really having that philosophy behind the idea.

Observation allows the adult to respond, instead of to react, to the needs of each child. "All children need to develop language and need to develop coordination and so forth, but each one will do so in a particular way." Therefore the adult observes the child's freely chosen activity for manifestations of the sensitive periods, for individual interest and the repetition that occurs with particular activities, for increasing levels of independence, and for the development of longer periods of concentration. In the beginning a child's concentration may not last long. "It may just be glimmers of concentration, but [the adult has] to encourage that by protecting it, because that is a bud that will be growing and opening. So you need to protect that fragile concentration of the child."

The adult observes the child's activity for "for signs of normalization…places where the child, instead of being restless really puts all of his or her energies into a particular activity." This includes "the ability to sustain oneself through an activity without distraction, even though there may be a huge amount of activity that's really compelling all around the child." It also includes observing for the child's increasing ability to "make choices and follow through with those choices."

The adult must learn the art of observation so that children do not feel they are being watched. Concern about being observed can interfere with concentration.

Concentration arises from "a very deep, quiet, personal engagement with something…. [When] the child truly does not feel watched and does not feel like this is what's expected of me."

The Prepared Environment

The Montessori approach to education recognizes and supports the ability of children to direct their own learning. This requires a systematically organized and well prepared environment so children have access to intelligent resources that promote sustained attention. The Montessori classroom is equipped with materials that have been designed to this end, while this study is not designed to introduce or analyze their qualities, respondents felt that it was worthwhile to briefly describe the elements that help to promote normalization.

The adult must prepare the environment both physically and psychologically to respond to the needs of each child. "It is the adult's responsibility to care for the environment in such a way that the child can be independent in it, connected to it, and nourished by it." Since the adults are part of the environment, their attitude is critical to the process of normalization. Inappropriate adult behavior is the biggest obstacle to normalization. The adult must have "the right attitude and the right relationship with the children. And it's hard for so many of them because they didn't have it. So we have to change ourselves, and it's really hard to change. [But] you can. Everyone has to change."

Once the environment has been prepared, the adult introduces the child to the activities that will lead to concentration. This is accomplished by following "a very simple formula. It's so easy." Get the children into work that satisfies their developmental needs. "For the adult who works with children of this age, you have to understand the manifestations of the sensitive periods." And then

> you use your knowledge of the developmental stages, and the needs
> and characteristics of the sensitive periods, and all of that to notice
> what the children seem to be drawn to. Or to say to yourself, well I
> don't notice that, but I know that they are probably going to be
> interested in table washing because I've seen them playing in the sink
> for the last three days. So you pick up clues from their behavior to what
> they might like to do, and you begin to offer them activities and give

them lessons….Even the most difficult, disruptive child will usually be receptive to a lesson. That one on one attention from the adult….It's not just attention, but it's *know how*, that works

Children need to be given freedom to choose what interests them. It is the adults' "responsibility…to make sure that they have the appropriate choices, basically enough wonderfully interesting things to do."

Once a child becomes interested and starts to work all these other behaviors disappear….If one thing doesn't interest them, show them something else, and if that doesn't get them going and enthused and engaged show them something else….Until something clicks….This goes back to the idea of flow. Flow is a term by Mihalyi Csikszentmihalyi. The work with the Montessori materials is very similar to what he's talking about when he talks about flow. Flow is when you're working at the exact right challenge level.

The Right Amount of Challenge. It is important to provide activities that provide the right amount of challenge to sustain the child's interest. Several participants referred to this process as needing to find "the hook." Montessori is said to have given a lecture where she drew a picture of a hook on a chalkboard and then told the adult students that this was the essence of their work. The adult's task is to find the hook that ignites the interest of each child. Once someone is hooked "into something with deep, deep interest, everything else falls into place….It never fails."

One participant referred to the chart that Csikszentmihalyi uses to describe the experience of flow and the balance between effort and arousal. Csikszentmihalyi uses the term *anxiety* to describe the level of arousal, but this participant was not comfortable with the use of that word, preferring Montessori's use of *perturbation* instead.

I think that chart Csikszentmihalyi offers in terms of what is the right level of effort so that there's arousal, with a certain level of, I don't really like the word anxiety. Montessori talks about perturbation. And it's really a beautiful term in terms of just what disturbs enough….What peeks curiosity but also with enough disequilibrium to cause some action on the child's part.

Cycle of Activity. The adult has "a pivotal role in putting the child into communication with the activity." This introduction by the adult is referred to as a

presentation or a lesson. Some participants discussed initiating a child into a cycle of activity by using a three-step sequence. The first step is choosing the activity and collecting the materials that will be needed. The activity is always chosen from the shelf instead of from another child. This classroom rule provides a "very clear indicator of when an activity is available [because] it's on the shelf." This also protects children from having things taken from them when they are not ready to release them. It offers children the psychological security to work with a material for as long as they want without being interrupted, which leads to the second step in the sequence, the work or the activity itself. And the final or third step is putting the materials back on the shelf so they are available for others. By choosing the activity from the shelf and then making the effort to set it up, the child has initiated the "psychological commitment" that seems to prepare the way for concentration to emerge.

> [This is] in contrast to a typical pre-school environment, non-Montessori environment, where most of the time, activities are kind of set up, and the child comes to the activity already set up and does something and then walks away from it. As opposed to this marvelous device that the child gathers what he's going to use and can use it in complete safety as long as he wants…and then when I'm done and I've had this marvelous concentration event, as Annette Haines calls them, I get to signify that the event is over by putting everything back and then signaling now to the rest of the group that this is available again. And that actually is very important for the social aspect of normalization, which is the mutual respect and kindness that the children display.

Once the materials have been returned to the shelf, the child often has a period of rest and contemplation after which socializing occurs before choosing another activity. It was these cycles of activity and their increasing length of concentration that were studied by Montessori.

> [This] is what Montessori was doing when she did those charts in *Spontaneous Activity and Education*. She was actually quantifying this engagement, both of individual children and of the class as a whole. And…charting out…you can quantify the cycles of activity for individuals and the group as a whole…. In the traditional program, there are no cycles of activity because it's all teacher directed. But if you give the children freedom, then you can observe something which is a natural phenomenon of nature and mental growth. We work in cycles, where it ebbs and flows in a natural way….That's what it's all about when you talk about following the child.

Can Normalization Be Taught?

When participants were asked if normalization could be taught, they all responded rather emphatically by saying, "No." And though their explanations varied, their reasons were much the same. Normalization is "something you become." It is a process that has to be experienced, "so it can't be taught." Normalization is "developed through the child's own spontaneous activity."

The adult invites children into communication with the types of activities that will promote concentration. In order to do this, the environment must be thoughtfully prepared to motivate and inspire the process. Much like the body's need for proper nutrition, children need opportunities for this type of spontaneous but developmentally appropriate activity on a regular basis.

> If there are no opportunities for good work over a period of two or three or four or five or eight days, normalization will disintegrate. It's not a steady state that we can always count on. You put children in a different environment, and they could be different children.

This participant defined *good work* in combination with talking about Csikszentmihalyi's theory of Flow. Good work is work that is pleasurable and is freely chosen. It provides the right amount of challenge, with just enough difficulty to arouse and sustain attention, but not so much challenge so as to evoke frustration. Emotions of joy, kindness, and internal harmony are the natural result.

Participants emphasized that since normalization is a personal process, it cannot, nor should it, be imposed. However, the adult can, and should facilitate the process. Tragically, it is also the adult who can become the child's greatest obstacle. Participants referred to the danger of the adult becoming an obstacle as further reason for the adult to undergo a personal transformation and continual spiritual development. According to one participant who had attended a workshop on normalization that was led by an AMI Assistants to Infancy Trainer, "All children are born normalized. They become deviated because of their encounter with the adult who doesn't understand their process of development."

When the classroom has been prepared according to Montessori principles and children are given the freedom to choose work that interests them, and it results in concentration, then normalization is sure to follow. Normalization is an emergent process that unfolds according to each child's own development. It might take the group "Six months or nine months or a two-year cycle…to become normalized….You get some groups that are so out of harmony, it takes them longer." Internal self-discipline takes practice and time to grow. Its natural unfolding cannot be pushed. Each participant emphasized that groups or classrooms don't become normalized, it is individuals who do. When enough of the individuals in a classroom become normalized, then it "becomes the paradigm of the group." And it brings others along the path more quickly. "But you don't get a normalized group as a way to normalize individuals. It doesn't work that way."

That being said, it seems that teachers sometimes attempt to impose habits of normalization onto their classes so that it looks as if the group is normalized. Participants concurred that "Montessori can be as bad or worse than any other method because it can be used as a way of controlling children, which it's not designed for." This problem was illustrated by a participant who shared a story about a graduating student who upon receiving her diploma from the teacher training course proudly declared that she would go into the classroom in September and have all of the children normalized by Christmas. In retelling this story the participant added, "I can remember shuddering….And if you'd gone into her classroom…that was imposed external discipline. That's not normalization because it wasn't internalized by any of those children. And it doesn't evoke any of the emotions of the normalized child."

Several of the participants spoke about the observable differences in classrooms where teachers attempt to impose normalization onto the group as an expectation of behavior, compared with those classrooms where it is supported and allowed to arise naturally. Although participants mentioned several ways that this difference can be observed, AMI teacher trainer Margaret Stephenson (1915-2003) is said to have shown one of the participants a fail-safe method.

> I learned a little trick from Miss Stephenson….She did it to me, and I have to admit I on occasion do it with a young teacher when I am consulting. I will have them come over and engage them in

conversation, and as we're conversing, I'm very gently moving myself out of the doorway. Now I'm facing the children and of course the teacher is facing me. And we just very gently exit the room. And while I'm engaging in some hopefully meaningful conversation, I'm watching what happens to the group of children when I walk out. Because if they notice immediately, it means that it's been imposed, and it's not theirs. That's not normalization. Nor is it what Dr. Montessori means by self-discipline. But I think there are teachers who believe that if you just impose enough expectations that your group will look normalized. But that's not normalization, and I don't consider that taught either. I consider it imposed and dictatorial and, quite honestly, abusive.

CHAPTER 5: DISCUSSION AND CONCLUSION

This chapter begins by reviewing the purpose of this study. A brief summary of the empirical research follows, establishing a clear linear relationship between the ability to focus attention and the development of self-regulation. The major portion of this chapter is the discussion of research findings, comparing Montessori's Theory of Normalization with OET and then with SDT. These theoretical comparisons are then summarized to determine if this study accomplished what was intended. The chapter ends with an acknowledgement of limitations, a discussion of implications and directions for future research, and a brief conclusion.

The Purpose of This Study

The purpose of this study was to explore the relationship between self-regulation and sustained attention (i.e., concentration). Emerging research suggested that the success of self-regulation depends upon the efficiency of the child's attentional system (Rueda, Posner, & Rothbart, 2004; Ruff & Rothbart, 1996). It was therefore recommended that curriculum be implemented to help children ages 2-7 learn to focus and sustain their attention (2004). This study attempted to answer the question of how education might provide this support by examining two developmental learning theories that emphasize self-regulation as well as Montessori's Theory of Normalization to determine whether Montessori's approach to early childhood curriculum can be viewed as an applied theory of self-regulation.

The following research questions were examined: (1) what is the relationship between self-regulation and focused and sustained attention (i.e., concentration)? This was examined through a review of the empirical research on attention in early development. This investigator's review of the literature established a clear linear relationship between self-regulation and attention, which provided the rationale for the hypothesis that Montessori's approach to normalization promotes self-regulation. (2) How do theories of self-regulation and explanations of developmental processes proposed by Csikszentmihalyi and Ryan and Deci offer support for the cultivation of

self-regulation? To answer this question the investigation examined the OET articulated by Csikszentmihalyi (1999) and the SDT of Ryan and Deci (1999; 2002). It was anticipated that these learning theories would articulate the necessary guidance to assess Montessori's Theory of Normalization as a curricular approach for developing self-regulation. (3) To what degree can Maria Montessori's Theory of Normalization be viewed as an applied theory of self-regulation? To answer this question the investigator collected interview data from 12 AMI Montessori teacher trainers. It was predicted that the normalization constructs presented by Montessori leaders would establish Montessori theory within the self-regulation concepts articulated by Csikszentmihalyi, Ryan and Deci, and the emerging research pioneered by Rothbart, Eisenberg, and colleagues. Following are the findings from this work.

Review of Empirical Research on Self-Regulation

The processes that provide humans with the capacity to consciously control emotions and behavior have been the focus of research conducted under the domain of *self-regulation*. Rueda, Posner, and Rothbart define self-regulation as the ability to control reactions to stress and maintain and focus attention, and the capacity to interpret and recognize the mental and emotional states of others as well as one's self (2004). The development of self-regulation begins in infancy, but it is during the preschool years when the most dramatic growth occurs (McCabe, et al, 2004; Bronson, 2000). Because of the governing influence that self-regulation has on children's social and cognitive development, as well as on the health of society, it is critical to identify the processes that support its optimal development (Eisenberg, et al, 2004).

With advances in neuroimaging, the anatomical reasons why young children have such difficulty with self-regulation are beginning to be revealed. Studies using functional magnetic resonance imaging (fMRI) demonstrate a number of areas in the brain that play a key role in modulating regulatory activity. Late in infancy and into early childhood a behavioral system develops which allows for the voluntary control of emotions and behavior. Rothbart, Ellis, and Posner (2004) have labeled this system

effortful control, which is the ability to voluntarily focus or regulate attention as needed (attentional regulation) as well as the ability to inhibit or activate behavior when appropriate (behavioral regulation).

The organization of temperament is an important component in the development of self-regulation. Temperament is viewed as a framework that develops early in life, forms the dispositional basis that underlies all behavior, and from which the personality develops (Rothbart, Ellis, & Posner, 2004; Saucier & Simonds, 2006). Studies of temperament use the statistical method of factor analysis to organize interrelated variables into key factors. Effortful control is one of three factors that have been delineated in Rothbart and Derryberry's model of temperament (Saucier & Simonds, 2006).

Kochanska and Knaack conducted age-graded behavioral batteries to assess the developmental trajectory of effortful control (2003). The result of their research showed that effortful control had trait like attributes and was modestly coherent by 22 months of age. By 33 months, it was highly coherent, and by 45 months, effortful control was stable and highly coherent, and it reflected robust individual differences. By children's fourth year, effortful control showed stability equal to that of IQ (2003).

In studying the link between the ability to focus attention and the self-regulatory factor of temperament, i.e., effortful control, Rothbart and colleagues hypothesized that executive attention underlies effortful control (2004). The result of their research indicates considerable development in the executive attention network between the ages of 2 and 7, with very little improvement after age 10 (2004). According to Rueda, Posner, and Rothbart the degree of successful self-regulation depends upon the efficiency of the attentional system (2004).

Although temperament influences the ability to self-regulate, studies also emphasize the plasticity of temperament and the importance of a "goodness of fit" for the child with the surrounding environment (2004; Shiner, 2006). Because the executive attention network shows substantial development between the ages of 2-7, Rueda, Posner and Rothbart suggested this would be an important time for some sort of training, by providing support for the ability to focus attention while these networks are developing (2004). Therefore Rueda, Posner and Rothbart recommended a

systematic training of attention as an important addition to preschool education (2004).

Comparison of Optimal Experience Theory (OET) with Normalization

Both OET and Normalization emphasize the importance of mental concentration in the developmental process. What is remarkable is that even though each theory was derived during different historical periods, has utilized different research and observation techniques, and has focused on different stages in human development, their findings are quite similar.

Emotions and Interest Motivate and Regulate Behavior

Theories of self-regulation assert that behavior is directed by goals, which are then controlled by feedback. Although OET agrees, the position of goals has been reversed. Goals are not external to the self but emerge from positive emotions. Emotions determine goals. According to participants in this study, normalization coincides with this position by recognizing that young children do not use goals as the primary referent by which to motivate behavior or evaluate feedback. The kinds of experiences that lead to both flow and normalization are motivated by positive emotions. Positive emotions result from following personal interest, which then motivates the desire for repetition. Mental representations form when experiences are repeated, which creates the feedback cycle. The goal, to repeat the experience to achieve the positive emotions, regulates behavior. Both OET and Normalization assert that the emotional state that results from the mental concentration that arises from actively participating in one's personal interests is highly motivating. The only difference between Normalization and OET is that the latter emphasizes that this regulatory process continues throughout the life span, whereas the process of normalization is limited to the first plane of development, from birth until age six or seven. However the value of concentration and the experience of flow remains a central element in Montessori's educational approach throughout all stages of development, as indicated by respondents in this study.

Normalization Articulates Additional Motivating Factors

In contrast to OET, Normalization articulates additional factors that motivate development during the first six or seven years of life. These include the inner directives: the absorbent mind, the sensitive periods, and the human tendencies. It is unclear whether these inner directives correspond with Piaget's view of development as a progressive construction in platforms of organization (Csikszentmihalyi & Rathunde, 1998). Another factor that distinguishes OET from Normalization is that Normalization emphasizes the drive toward adaptation motivates the young child to achieve functional independence.

The Right Balance between Challenge and Skill Development

According to OET, positive emotions occur when the self experiences a goodness of fit between personal skills and the ability to meet the challenges that emerge from the experiences that are afforded by the environment. Both OET and Normalization emphasize that curiosity and interest are hooks that arouse attention and draw the self into communication with the environment. OET and Normalization highlight the fact that without the right balance between challenge and skill development, concentration will not arise, and, therefore, interest will not be sustained. If there is too much challenge, the self becomes overwhelmed with frustration, whereas too little challenge and boredom results, preventing motivation from activating the deep personal engagement that leads to concentration.

Similarly, both theoretical perspectives articulate the slightly unpleasant state of arousal, anxiety, or perturbation as an ingredient that motivates the developmental process. However, one participant in this study suggested that *anxiety* may not be the best choice of words to refer to the developmental process of children because of the need to protect them from the stresses currently prevalent in cultural forms of anxiety. OET uses the terms *anxiety* or *arousal*, whereas Montessori used *perturbation* to discuss the emotional state activated to provoke the attraction toward developing the next level of skill. Nevertheless, the concepts are the same.

A General Systems Perspective

OET and Normalization both stress the importance of the interactive relationship between the self and the environment. Montessori created a scientifically prepared environment to support the development of concentration in young children, whereas OET articulates the governing principles used by adults who have experienced concentrated states. Csikszentmihalyi and Rathunde assert that in order to understand OET and the significance of the environment, one must recognize the dynamics within a general systems perspective (1998). The basic premise within a general systems perspective is the recognition of the individual as a self-organizing, self-constructing system, who actively seeks to produce his or her own development. Development occurs in the interaction between the individual and the multiple contexts in the environment. The person is not simply the result of these conditioned interactions but is embedded in the environment in an on-going dialectical process, creating meaning, organizing information, and developing greater complexity.

One of the properties of a living system is the creation of organization and the exertion of effort to overcome disruptions to organizational coherence. Inevitably the experiences in daily life disrupt the coherence in the organization of the system. Both OET and Normalization emphasize this developmental tendency and seek to stimulate the process through the intentional use of arousal, anxiety, or perturbation. Development takes place as the individual responds to these disruptions in organization, exerting effort to restore or maintain coherence.

In living systems, organization tends toward greater complexity. OET draws upon Piaget's theory of equilibration to delineate the optimal development of the self through increasing complexity. OET emphasizes optimal development through complexity, which is congruent with the developmental process that takes place in Normalization as indicated by respondents in this study. OET identifies these elements by combining two opposing psychological processes: differentiation and integration. Though not explicitly stated in discussions of Normalization, these processes can be easily recognized in this perspective as well.

Differentiation and Integration

According to OET, differentiation is achieved by cultivating individual skills and mastering unique abilities. Integration is experienced as the individual contributes these skills to the life of the community, building the framework for social cohesion. OET and Normalization both recognize the value in creating just enough disequilibrium or perturbation to provoke action on the part of the individual. Full involvement between the self and the environment is necessary to bring the processes of differentiation and integration into equilibrium. When the individual engages in a dynamic relationship with the environment by fully activating the processes of differentiation and integration, greater complexity of the self develops. The equilibrium between differentiation and integration requires the existence of meaningful cultural and social contexts so that the individual is provided with a wide range of opportunities in which to participate in the life of the community. Participants in this study emphasized that the Montessori prepared environment is designed to provide ample opportunities for the development of differentiation and integration, which leads to social cohesion.

Contributing Factors That Promote Concentration and Flow

Several participants in this study described how the materials in the Montessori classroom are designed to provide children with the experiential state that OET described as *flow*. The experience of flow leads to greater complexity as well as to Normalization. OET specifies the factors that promote the experiential state of concentration that is found in flow. These factors are also found in the design of the Montessori materials and in the organization of the classroom as indicated by respondents in this study. They include (1) opportunities for action and enjoyment, (2) clear goals that offer unambiguous and immediate feedback so that the child knows how well he or she is doing, (3) an adequate level of skill to meet the challenges afforded by the environment, (4) the centering of attention on a limited field of stimulus, producing concentration, (5) feelings of competence and control,(6) merging of action and awareness, resulting in concentration that becomes so strong that additional attention is not available for other concerns, (7) self-consciousness

disappearing and the sense of time distorted, and (8) activities that produce this experience are so satisfying that the desire for repetition occurs without external incentive.

The Role of the Adult and the Prepared Environment

Montessori's unique contribution is the creation of an environment that has been scientifically prepared with materials that respond to children's sensitive periods and promote concentration. The implementation of classroom practices corresponds to philosophical and theoretical principles to support the process of normalization. These principles and practices align directly with the theoretical model articulated by OET. The only difference between it and Normalization seems to be additive. Because the process of normalization occurs between the ages of 3 and 7, additional principles are included in order to address the role of the adult and the preparation of the environment to support concentration and optimal development in the young child. Even though OET does not explicitly address these topics, its theoretical principles are remarkably compatible and applicable. The adult can readily garner effective ways to support the child's development through a careful analysis of OET.

OET, in combination with Piaget's Theory of Equilibration (Csikszentmihalyi & Rathunde, 1998), agrees with Montessori's understanding of curriculum design. According to each of these theories, over-assimilation describes the imbalance that occurs when skills outweigh challenge, resulting in boredom, and over-accommodation refers to the imbalance that result when challenges outweigh the individual's perceived or actual level of skill, creating anxiety or perturbation. The adult needs to remember that curiosity and interest draw out the self, but it is boredom that initiates the process, motivating the child to search for something more stimulating to do. Similarly, anxiety or perturbation is the response to a dilemma that must be resolved. As the child begins to solve problems, the feeling of success increases and anxiety dissipates as attention begins to center on a more limited field of stimulus, thereby improving the quality of the experience. Understanding these dual processes (boredom and anxiety or perturbation) provides the adult with important

resources to recognize when to provide support and when to refrain from the impulse to rush in too quickly to rescue or redirect the child.

Children need uninterrupted time, according to the participants in this study. In the Montessori prepared environment, children are given this time along with freedom to direct their own learning. The adult introduces the children to enough interesting and challenging activities so that concentration will emerge. When the environment has been prepared to include both indoor and outdoor activities and children are given the freedom and fluidity to follow the promptings of their inner needs, they soon become masters of their own work cycle.

OET draws specific attention to the work of Baldwin (Csikszentmihalyi & Rathunde, 1998), who emphasized the social environment as a source of resistance that activates the developmental process of equilibration through stretching the child's ability to assimilate and accommodate the other. This is particularly relevant to the Montessori classroom and the way in which the adult introduces the children to the activities in the classroom via *the presentation.* In the Montessori approach, each activity is introduced to a child through a series of very simple, analyzed movements, which are mindfully enacted to provide the essential keys to motivate independent exploration and provide an image of the skills that will need to be cultivated for the child to succeed with the requisite challenge. The child is not expected to duplicate what the adult has presented, but as Baldwin emphasized, accommodates the other through the process of imitation. The imitation is not simply passive mimicry, but is a creative process whereby the actions are translated through the child's subjective experience. The self is then reconstructed through the contradictions and challenges that arise when following an activity through to completion. In emphasizing freedom of choice, Montessori recognized that knowledge precedes the ability to make real choices. Without this knowledge, choice is then simply a response to stimulus. And it is in the act of making real choices, choices that are based on knowledge, that the development of the will is strengthened.

Work and Serious Play Promote Concentration and Flow

According to OET, flow includes the combination of heightened concentration and positive affect. Activities can begin with concentration, but if they are not accompanied by positive affect, they soon become oppressive, and children will quickly lose interest. Similarly, activities that arouse positive affect but do not include any challenge, or require any skill, will dissolve into frivolity because interest cannot be sustained. OET has articulated the term *serious play*, which is directly aligned with Montessori's notion of work. According to Csikszentmihalyi, serious play or flow occur when affect and cognition are synchronized and the individual experiences undivided attention. OET refers to these synchronous times as *optimal experiences*. OET claims that optimal experiences lead to complexity and Montessori states that such experience lead to normalization. Also, both theoretical perspectives claim that it is the individual's search for optimal experience, for equilibration, for normalization, that motivates development. And just like OET, Normalization represents a self-organizing, self-constructive process that naturally occurs in a dynamic, living system. It is in this way that Normalization might be considered a developmental theory, as is OET. The only difference that seems to be found in these two theories is in their use of terminology.

A conceptual matrix that compares OET with Normalization has been created in Table 3 to determine points of convergence and discrepancy between these two theories.

Table 3 – Conceptual Matrix of Learning Theories
Optimal Experience Theory (OET) compared to Normalization (N)

Elements that Promote the Development of Self-Regulation	OET	N
Behavior is Directed by Goals which are Controlled by Feedback	√	√
Goals are not used as primary referent by which to motivate behavior or evaluate feedback	√	√
Goals are not external to the self but emerge from positive emotions	√	√
Positive emotions are the primary referent by which to motivate behavior and evaluate feedback	√	√
Positive emotions result from following personal interest, which	√	√

Elements that Promote the Development of Self-Regulation	OET	N
motivates desire for repetition		
Mental representations form by repeating the experience, creating a feedback cycle	√	√
The goal to repeat the experience to achieve the positive emotion regulates the behavior	√	√
Inner Directives Motivate Development first 7 years of Life		√
Absorbent mind		√
Sensitive periods		√
Human tendencies		√
Adaptation and the acquisition of functional independence		√
Mental Concentration Important in Developmental Process	√	√
Curiosity and interest are hooks that arouse attention and draw the self into communication with the environment	√	√
Positive emotions occur when the self experiences a goodness of fit between personal skills and the ability to meet the challenges that are afforded by the environment	√	√
The right balance between challenge and skill development leads to concentration	√	√
Too much challenge and the self becomes overwhelmed and frustrated, interest is not sustained, concentration will not arise	√	√
Too little challenge and boredom results, preventing the kind of personal engagement that leads to concentration	√	√
Slightly unpleasant state of arousal, anxiety or perturbation motivates developmental process and provokes attraction toward developing the next level of skill (similar to Piaget's equilibration)	√	√
General Systems Perspective	√	√
Highlights the importance of the relationship between the self and the environment	√	√
The individual is self-organizing, self-constructing and actively seeks to produce his or her own development	√	√
Development occurs in the interaction between the individual and their multiple contexts afforded by the environment	√	√
The individual is embedded in the environment in on-going dialectical process, creating meaning, organizing information and developing greater complexity	√	√
One property of a living system is the creation of organization and the exertion to overcome disruptions to organizational coherence	√	√

Elements that Promote the Development of Self-Regulation	OET	N
In living systems organization tends toward greater complexity	√	√
Optimal Development of the Self occurs by Increasing Complexity	√	√
Complexity of the self increases by combining two psychological processes - differentiation and integration	√	√
Differentiation is achieved by cultivating individual skills and mastering unique abilities	√	√
Integration is experienced as the individual contributes their skills to the community, building social cohesion	√	√
Full involvement between the self and the environment are necessary to bring processes of differentiation and integration into equilibrium	√	√
The experience of concentration or flow leads to greater complexity	√	√
Factors that Promote Concentration and Flow	√	√
Opportunities for action and enjoyment	√	√
Clear goals that offer unambiguous and immediate feedback so the individual knows how well he or she is doing	√	√
Adequate level of skill to meet the challenges afforded by the environment	√	√
The centering of attention on a limited field of stimulus, producing concentration	√	√
Feelings of competence and control	√	√
The merging of action and awareness resulting in concentration that becomes so strong that no additional attention is available for other concerns	√	√
Self-consciousness disappears and the sense of time is distorted	√	√
Activities that produce this experience are so satisfying the desire for repetition occurs without external incentive	√	√
Serious Play Promotes Concentration	√	√
Serious play or flow occur when affect and cognition are synchronized and the individual experiences undivided attention	√	√
These synchronous times that result in flow are called optimal experiences	√	√
Optimal experiences lead to complexity	√	√
The individual's search for optimal experiences motivate development	√	√
The Role of the Adult and the Prepared Environment		√

Comparison of Self-Determination Theory (SDT) with Normalization

SDT and Normalization both emphasize the self-organizing tendency of the individual to actively promote its own growth, while acknowledging the strength of environmental forces to obstruct this integrative process. SDT and Normalization recognize that healthy psychological growth cannot be taken for granted and will not happen automatically, asserting that optimal human development depends upon appropriate conditions of proximal and distal support. SDT has examined these conditions empirically, while Montessori prepared an environment in response to children's behavior. Both SDT and Normalization make the assertion that intrinsic motivation is the most effective way to support the development of emotional and behavioral self-regulation; however instead of self-regulation Montessori used the term, *normalization.*

Autonomy and Homonomy

According to SDT, autonomy and homonomy are two complementary processes that function to support healthy development. Autonomy and homonomy refer to the constructive and integrative tendencies that all individuals possess, which lead them toward a "more elaborated and unified sense of self" (Ryan & Deci, 2002, p. 5). A self that is more elaborated and unified is comparable to the concept of complexity articulated in OET. Autonomy and homonomy also share a resemblance to differentiation and integration, the two psychological processes referred to in OET. The complementary tendencies of autonomy and homonomy correspond with the natural processes that guide the child towards normalization.

According to SDT, autonomy refers to the individual's inner organization and the tendency toward self-regulation, while homonomy is the tendency to integrate the self with others. Autonomy resembles Montessori's observation that children strive toward inner organization and normalization. Although Montessori did not use the same terminology, the integration of the personality and normalization appear to be congruent with the inner organization and self-regulation that SDT claims are prompted by the tendency toward autonomy.

The tendency to integrate oneself with others, as defined in SDT as homonomy, is also emphasized in Normalization. The respondents in this study consistently stressed that the conditions that promote normalization include opportunities for children to spontaneously integrate themselves into the social fabric of the classroom. The community of children is a necessary component in the prepared environment and facilitates the process of normalization; this was one reason a participant in this study insisted that the popular behavior management technique of *time-out*, which removes and isolates one child from the others, was counter-productive to normalization. Along with the conditions that support the development of normalization, the outcomes that result from normalization also reflect the tendency toward homonomy in children's heightened social sense as expressed through helpfulness, kindness, compassion, and joy.

Behavioral Outcomes: Integrated to Fragmented Self

The foundation for SDT and Normalization are closely aligned in their emphasis on the integrative and active tendencies in human nature to interact with environmental contexts that can either support or impede optimal development. The research conducted in SDT identifies social-environmental conditions that promote or obstruct self-determination, which is analogous to Montessori's identification of the contextual factors that support normalization or lead to deviation. Furthermore, based on these supportive or obstructive conditions, SDT predicts a broad range of behavioral outcomes, that range from a fully integrated self to one that is highly fragmented, passive, reactive or alienated. The fully integrated self, is self-determined and self-regulated. This is surprisingly similar to the process of normalization, which specifies behavioral outcomes that range from the integrated personality to the individual whose development is obstructed by deviation.

Psychological Needs Provide a Framework to Organize the Environment

SDT emphasizes the conditions that promote growth and well-being in the development of the individual's personality and cognitive structures. These conditions are referred to as basic psychological needs. They are innate and universal. Three

psychological needs have been recognized, *competence, relatedness* and *autonomy*. These basic needs offer a framework in which to organize aspects of the environment to support optimal human functioning. Although the Montessori trainers in this study did not use these exact terms, they consistently discussed the underlying elements within each of these basic psychological needs. SDT asserts that the three basic psychological needs are motivating factors that guide growth and development. When these basic needs find resonance in the environment such that need fulfillment is achieved, then self-determination, self-regulation, and optimal functioning emerge. Similarly, Montessori stressed the importance of inner directives that motivate development. These include the absorbent mind, the sensitive periods, the human tendencies as well as the adaptive need to achieve functional independence. The Montessori environment is prepared around a framework that responds to the needs of these inner directives. And although the inner directives articulated by Montessori and the three basic psychological needs specified by SDT are not in and of themselves the same, their underlying principles in recognizing the value of designing an environment that promotes optimal development are congruent. And similarly, when the environment supports need fulfillment, SDT resembles Normalization in its claim that engagement, mastery, and synthesis are the result (Ryan & Deci, 2002). On the other hand, countering need fulfillment are the opposing forces that prohibit the satisfaction of needs. SDT claims that to the extent the environment obstructs the fulfillment of needs, the individual's motivation, growth, integrity, and well-being are diminished, which directly aligns with Montessori's concept of deviation.

According to SDT, understanding the endeavor to satisfy these basic human needs is pivotal to understanding the process of self-regulation. In the same way, Montessori claims that the child's attempt to satisfy the inner directives is central to understanding the process of normalization. The assertion by SDT that the healthy human psyche strives to satisfy psychological needs, corresponds with Montessori's concept of the inner directives as a motivating force. Both of these motivating forces, the basic psychological needs and the inner directives, represent goal objects, regardless of whether the individual is explicitly conscious of them or not. SDT and Normalization stress the importance of the individual's continual attempts to find

nutriments in the environment that will satisfy these needs and, accordingly, gravitates toward situations that provide them. The major difference between SDT and Normalization is that the former articulates basic psychological needs that motivate self-regulation across the life span, whereas the latter stresses the importance of inner directives that motivate normalization, and they are limited to the first seven years of human development.

The Need for Competence: Seek Challenges and Attain Skills

SDT states that the basic psychological need for competence leads people to seek challenges and develop skills. This basic need corresponds with the young child's need for functional independence, which was emphasized by the Montessori trainers in this study as a motivating factor that drives development. The respondents frequently used the word *competence* when referring to the behavioral outcomes that result from activities that lead to normalization. Normalization occurs through concentration, and the pathway to concentration is through meaningful activity, or work, that provides the right amount of challenge balanced with skill development.

SDT makes no mention of the value of concentration in the developmental process. According to SDT the psychological need for competence leads people to actively seek challenges and learn new skills. In this process individuals continually attempt to practice, enhance, and express their skills through interactions with the social environment. Although skill development and challenges that promote competence are central to the Montessori classroom, they are emphasized as motives for activity that will lead to concentration. Concentration leads to normalization. One participant in this study cautioned teachers who place too much emphasis on children's skill development and level of competency, because they may be forgetting the "single most important result of our work," which is to support normalization.

Ryan and Deci's assertion that people "seek challenges that are optimal for their capacities" (2002, p. 7) approximates the consistent emphasis made by respondents in this study that the adult must learn to trust the child, to follow the child, to allow the child the freedom to choose based on personal interests, while at the same time learning to observe their own adult motives and actions, so they are able to reflect

upon and let go of their need to control children's behavior. Trusting that children will seek the appropriate challenges for development is part of the attitudinal transformation the adult is required to make before entering the Montessori classroom as a directress or guide.

SDT also emphasizes that the basic need for competence includes a sense of, and personal feelings of, confidence and not just the attainment of certain skills or capabilities. In a parallel manner, feelings of confidence were frequently mentioned by Montessori participants as an outcome in the developmental process that leads children toward normalization.

The Need for Relatedness and Autonomy

According to SDT, the psychological need for relatedness comprises feelings of security, affiliation, and acceptance within the community. When discussing normalization, each participant stressed the importance of preparing the psychological environment so that every child feels secure and welcome. The importance of preparing the psychological environment was also emphasized as contributing to the transformation of the adult, particularly if that adult did not grow up with feelings of personal security and acceptance.

The Montessori classroom is designed to provide children with the freedom to choose activities based on individual interest. This corresponds with the concept in SDT of feeling the freedom and ease of being allowed to be oneself instead of being required to achieve a particular outcome or attain a certain position or role. To support the child's need for autonomy and relatedness, the adult in the Montessori classroom observes for children's interests and introduces them to activities that will "hook" and sustain their interest. Once the child is hooked and interest has been ignited, concentration is sure to follow. The mandate to "follow the child" is a pedagogical specification to follow *each* child's interests on an individual level. When personal needs are met in this way, normalization is the result and the outcome to seek connection, unity, and communion with others will naturally emerge. Social cohesion results when a community of children is provided with an environment of

psychological safety and is then given the freedom to choose from a wide variety of "wonderfully interesting things" to do without being interrupted or obstructed.

The psychological need for autonomy refers to the need to express the self through actions that result from personal interest. SDT and Normalization both stress the importance of autonomy as a fundamental requirement in achieving well-being and optimal development. Without differentiating the self through independent and autonomous actions that emerge from following personal interest, the child is not able to achieve integration into and relatedness with the social community.

Intrinsic Motivation Leads to Optimal Development

The four mini-theories that comprise SDT are unified around the concept of basic psychological needs: competence, relatedness and autonomy. According to SDT, human behavior is motivated toward the satisfaction of these needs, and when environmental contexts support the individual's ability to do so, then optimal human functioning is achieved. Optimal human functioning refers to an individual who has achieved full integration, is self-determined, and self-regulated. This level of full self-integration and self-determination is not possible for young children because of the limitations in cognitive functioning that result from their age and stage of development. However, the process of Normalization follows a similar course of integration that leads to optimal development through the integration of the personality, according to the Montessori experts who were interviewed.

In SDT, the full integration of the self, leading to self-determined, self-regulated activity, results from following the promptings of intrinsic motivation, an innate human tendency that promotes psychological growth and development. Activities chosen by intrinsic motivation are based on personal interest and are sustained through enjoyment and satisfaction. Similarly, the process of Normalization arises from activities that are freely chosen and sustained through intrinsic motivation. The only difference between SDT and Normalization is that in the latter, the activities must lead to concentration, because concentration is the normalizing agent.

SDT was formulated to examine the effects of social contexts on intrinsic motivation. The specific details formulated within the four mini-theories that comprise

SDT provide excellent resources to help adults' reflect on the quality of their influence in promoting or obstructing children's intrinsic motivation and therefore children's self-determination, self-regulation, and normalization.

A conceptual matrix that compares SDT with Normalization has been created in Table 4 to determine points of convergence and discrepancy between these two theories.

Table 4 – Conceptual Matrix of Learning Theories
Self-Determination Theory (SDT) compared to Normalization (N)

Elements that Promote the Development of Self-Regulation	SDT	N
Combines General Systems and Behavioral Perspective	√	√
Emphasizes self-organizing tendency of individual to actively promote its own growth	√	√
Individuals have natural tendency to integrate their experiences through process of internalization	√	√
Internalization and intrinsic motivation are innate tendencies that promote growth and development	√	√
Acknowledges strength of environmental forces to obstruct the integrative process	√	√
Healthy psychological growth cannot be taken for granted and will not happen automatically	√	√
Optimal development depends upon appropriate conditions of proximal and distal support	√	√
Intrinsic motivation is the most effective way to support the development of emotional and behavioral self-regulation	√	√
Autonomy and Homonomy are complementary processes that support Healthy Development of the Self	√	√
All individuals possess constructive and integrative tendencies which lead to elaboration and unification of the self	√	√
Autonomy is the tendency toward inner organization and self-regulation	√	√
Homonomy is the tendency to integrate the self with others	√	√
Behavioral Outcomes Range from an Integrated to a Highly Fragmented Self	√	√
Social-environmental conditions promote or obstruct self-determination	√	√
Differentiates between regulation and self-regulation, recognizing some aspects of the person do not constitute the self	√	√

Elements that Promote the Development of Self-Regulation	SDT	N
The self can experience volition and self-determined action or can become victim to controlling forces in the social environment that diminish the capacity for self-regulation	√	√
The fully integrated self is self-determined and self-regulated	√	√
Psychological Needs Provide a Framework to Organize the Environment to Support Optimal Human Functioning	√	√
The need for competence leads people to seek challenges and attain skills that are optimal for their capacities	√	√
The need for relatedness includes feelings of security, affiliation and acceptance within a community	√	√
The need for autonomy refers to the need to express the self through actions that result from personal interest	√	√
Psychological needs continue throughout the lifespan	√	√
The Needs of the Inner Directives Provide a Framework to Organize the Environment to Promote Concentration and Optimal Human Functioning		√
The absorbent mind		√
The sensitive periods		√
The human tendencies		√
The adaptive need to achieve functional independence		√
The needs of the inner directives (with the exception of the human tendencies) motivate development for the first 6-7 years of life		√
When the Environment Supports Need Fulfillment the Result is Full Integration, Engagement, Mastery and Synthesis of the Self	√	√
The endeavor to satisfy basic psychological needs is pivotal to understanding the process of self-regulation	√	√
Basic Psychological Needs Represent Goal Objects - Whether or Not the Individual is Explicitly Conscious of Them or Not	√	√
Behavior is directed by goals which are controlled by feedback	√	√
Intrinsic Motivation Leads to Optimal Development	√	√
Behavior is motivated toward satisfying the basic psychological needs, optimal human functioning is achieved when the environment supports the individual's ability to meet these needs	√	√
Optimal human functioning refers to an individual who has achieved full integration, is self-determined and self-regulated	√	√
Full integration of the self, leading to self-determined and self-regulated activity results from following intrinsic motivation	√	√
Activities chosen by intrinsic motivation are based on personal interest and are sustained through enjoyment and satisfaction	√	√

Summary of Theoretical Comparisons

Csikszentmihalyi recommended that scholars investigate processes that support optimal development. He claims that a central developmental question is how to create contexts within schools, families, and communities that will facilitate the enjoyment of complexity (1998). Developmental issues must be approached from this perspective because, in order to become active agents in our own ontogeny, we have to want to develop and to become more complex, and we will only do so if we enjoy the challenge. Otherwise development becomes alienated. The intrinsic motivation to grow toward greater complexity is activated by the individual's interest and positive feeling. To create challenging contextual factors to stimulate the process demands a refined analysis of intrinsic motivation. SDT provided this level of analysis.

According to OET, psychological complexity describes optimal human functioning: a dialectical process of full engagement of the self with the environment through the processes of integration and differentiation. It is not particular traits or characteristics that are specified as optimal outcomes, but rather it is the regulatory style or capacity that allows the individual to adapt to the contextual conditions in the environment, negotiating and changing the self to fit the context or the context to fit the self. In order to create contextual factors that support optimal development in young children, the adult must take into consideration the psychological needs articulated in the research conducted by SDT; namely, the need for competence, relatedness, and autonomy. The self can either experience volition and self-determined action, or it can become victim to controlling forces in the social environment that diminish the capacity for self-regulation. Recognizing the motivational impulse to satisfy these basic psychological needs provides a framework from which to organize the contextual factors that support optimal human functioning across the lifespan.

Normalization is remarkably similar to the theoretical constructs that have been articulated in OET and SDT. Normalization describes the regulatory capacity of young children to engage in a dialectical relationship with the environment, seeking challenge and skill development through differentiating and integrating themselves into the fabric of community life. Optimal development is achieved through actively

seeking greater complexity. However this regulatory style does not happen automatically. The environment can obstruct the process such that the child deviates from the path of optimal development. A prepared environment, one that is responsive to the developmental needs of the young child, is required so this process unfolds naturally. The freedom the child experiences in the Montessori prepared environment, to choose activities based on personal interest and intrinsic motivation, encourages the child to negotiate a goodness of fit to satisfy the needs of their inner directives.

Although OET and SDT provide the theoretical constructs needed to develop methodologies that can promote self-regulation, they do not provide the necessary translation to move theory to the application of informed practice. One of Montessori's unique contributions is preparing an environment that includes the types of activities that have been proven to promote concentration and self-determination. The responsive environment, in turn, provides the child with the proximal and distal support and the goodness of fit that is needed to develop self-regulation.

Did the Study Accomplish What Was Intended?

To what degree can Montessori's Theory of Normalization be viewed as an applied theory of self-regulation? This question was examined by comparing Normalization to current theoretical perspectives regarding self-regulation to determine similarities and differences. Based on these comparisons Normalization is closely aligned with both OET and SDT. Although OET and SDT each utilize different terminology, their underlying principles closely correspond with those of Normalization. The main differences seem to be additive. Since Normalization emerged as a theoretical perspective in response to young children, it includes the role of the adult as well as the elements within the prepared environment. In this way, Normalization can be understood as an applied theory of self-regulation. Is Normalization the same as Self-Regulation? When considered in comparison to the developmental theories of OET and SDT, Normalization is remarkably compatible. (Refer back to Tables 3 and 4 for comparisons.)

Limitations

Because the focus of this study was to determine if Normalization can be viewed as an applied theory of self-regulation, the investigation was exploratory. A qualitative methodology was necessary because the theoretical perspective under consideration is unique and unstudied in academe, and it has remained relatively unknown (Marshall & Rossman, 2006). Since the study addressed a topic where little research exists, participants with direct access to Montessori's oral tradition were interviewed to discuss current theoretical interpretations of Montessori's work. The present work is not an exhaustive study and provides only an initial survey of some of the most prominent components of the comparison, which need to be examined more carefully. By introducing key principles within the Theory of Normalization, the author hopes that the misinterpretations that have surrounded Montessori classrooms may begin to fall away. Scholars who ask if and how education might support the development of self-regulation will need to take a closer look at the processes within AMI Montessori classrooms, which are conducted according to Montessori's principles, to discern whether this approach deserves wider study and application.

Implications and Directions for Future Research

Preparing an Environment to Support Self-Regulation

The findings within this study have important implications that acknowledge the integrative and self-organizing tendencies of young children to regulate their own behavior when they are provided with an environment that offers a goodness of fit and the appropriate proximal and distal mechanisms of support. Therefore this work directly responds to Mischel and Ayduk's challenge that researchers begin to articulate the processes and conditions that support the volitional methods of self-regulation to counter their concerns that a new form of mechanistic behaviorism is taking place in social and personality psychology (2004).

The present study examined the theoretical foundations that promote self-regulation through focused attention. By combining OET, SDT, and Normalization this research has created a conceptual framework to articulate the constructs that

educational or child development settings can employ to support the development of self-regulation. This framework can be used to prepare environments that provide children with meaningful opportunities for full participation in their individual efforts toward self-construction. The home environment and other contexts that children navigate can also be assessed and evaluated for their capacity to support children in their quest for functional independence, for activities that offer the right balance between challenge and skill development, and for opportunities to engage in concentration without over-stimulation or interruption. These guidelines can then be offered to parents and teachers to assist them in preparing environments that foster children's self-regulation.

The research on self-regulation has suggested that it is particularly important to facilitate the development of attentional control by the age of four as this appears to be a sensitive period for brain development in the centers that govern executive control (Rothbart, Ellis, & Posner, 2004; Kochanska & Knaack, 2003). And yet American culture does not appear to value concentration or the ability to focus attention, particularly when it comes to young children. Our educational institutions, from birth through university, rarely understand this process, nor are theories related to voluntary pathways that promote attentional control included in the common educational discourse. In American universities, studies and teacher education in early childhood development emphasize *play based theory* as it has been articulated by the National Association for the Education of Young Children (NAEYC) (Bredekamp & Copple, 1997). Historically, the NAEYC has not approved of Montessori's work (Gestwicki, 2007). Examining the historical and philosophical reasons for this opposition would be an important contribution to the field of early childhood research. Additionally, our dichotomized attitudes that privilege *play* over *work* must be assessed and reconsidered in light of the emerging research on self-regulation. Is it conceivable that children need opportunities for play, serious play, and meaningful work? Early childhood proponents who represent these different schools of thought must find avenues for dialog so they are better equipped to support one another in advocating for the optimal conditions that all children deserve.

Are early childhood development or teacher education programs in this country providing the theoretical background that is needed to create the types of activities that will help children voluntarily focus their attention? Is focused attention perceived as a value? Do parents feel that activities that promote attention are worthwhile for children under the age of 7? Do adults know how to facilitate or foster activities that would promote concentration for an individual child or for a group in a classroom? Also, the adult who is interested in supporting the needs of young children must learn how to observe and yet observations are generally tainted with prejudice and preconceptions. The tendency is to select observations and interpretations that fit one's personal beliefs (Ford & Lerner, 1992). Guiding assumptions can become self-fulfilling prophecies in that they guide the choice of variables considered important as well as directing observers toward plausible explanations (1992).

Are There Sensitive Periods of Development?

Observation is an art as well as a science. It is a critical and on-going skill that the adult needs to master in order to create an environment that responds to the growing and changing needs of each child. The adult in the Montessori classroom must learn how to observe for and respond to the needs of the inner directives that Montessori referred to as the sensitive periods. An investigation of the sensitive periods and how the adult learns to observe for them would be an important contribution to the literature. With findings from the recent ability to study the human brain, it has become popularly accepted that the first three years of life are critical periods for a child's sensitivity to environmental stimulation (Zigler, et al, 2002; Gopnik, et al, 1999). During these early years the brain goes through rapid reorganization that seems to be related to the child's interaction with the environment. This raises an important question: Do humans have critical or sensitive periods of development that depend upon the correct timing whereby certain environmental cues elicit particular developmental pathways or trajectories? Do children actually miss important opportunities if they are not provided with the appropriate environmental stimulation at these critical times? In other words, is there a "when" to environmental timing and its concurrent impact upon human development?

It has been determined that there are indeed critical and sensitive periods for particular kinds of environmental stimulation in the organization of neural systems in the visual cortex and the auditory system, as well as in the acquisition of first and second languages (Bruer, 2001). However, when approaching the complexity of the human behavioral system, it is extremely difficult for researchers to utilize this terminology with any scientific specificity. Though the terms *critical* or *sensitive periods* are tempting to use as an attractive metaphor or heuristic device, other terminology is now thought to be more appropriate (2001). With the explosion of neurobiological research, it becomes possible to be more specific with the language used to discuss the role that experience plays in brain development. There are at least two ways that experience causes changes in the brain. One is referred to as experience-expectant development and the other is called experience-dependent development. The distinction provides an important theoretical framework to further clarify critical periods, plasticity, and the impact of the environment. "Claims about critical or sensitive periods are claims about experience-expectant development. Research shows that experience-expectant development involves losing preexisting synapses" (Bruer, 2001, p, 210-211).

Cycles of Activity

One of Montessori's contributions to experimental science was the documentation of the work curves that document the cycles of concentrated activity of individual children as well as the work cycles for an entire classroom. Several of these work curves were published in *Spontaneous Activity in Education* (1917, 1965). This is an area that needs to be fully examined. Conducting additional research in this area would contribute to greater understanding of the types of patterns children and classrooms go through as their abilities to concentrate and manage their own work cycles develops over time. Quite often students who are preparing to be teachers are asked to document work curves of individual children as well as of the classrooms they observe. Classroom teachers are often too busy, or perhaps they overlook the need, to continue this type of activity after they graduate. By creating a formal mechanism in which to compile these work curves over time, teachers and pre-service

teachers around the world could begin to document and archive this important element in human development, providing a data base for longitudinal information that could then be assessed and analyzed in a wide variety of ways.

The Transformation of the Adult

Because Montessori's philosophy is not lived as part of mainstream society, adults hoping to implement this educational approach must find ways to sustain and strengthen their own development. The participants in this study continually emphasized that the adult must undergo a transformation to successfully enact this perspective in the classroom. Although this transformation is initiated during the AMI teacher training course, a commitment to the adult's spiritual development is also necessary. The ability to establish a relationship with children without managing or needing to control them seems to be one of the adult's greatest challenges. The continuing goal is to create a child directed environment versus a teacher directed one. Both OET and SDT could therefore be used to establish self-reflective mechanisms for Montessori teachers to help them assess their role in supporting or thwarting the development of children's self-regulation and normalization. Identifying transformational methods that adults have successfully used for their own spiritual development would be an important addition to the literature.

The adult must learn to master their own personal ability to self-regulate, learning how to be mindful of, and transcend their ego boundaries. Montessori's prescience in combining both science and spirituality are beginning to be explored within the field of human development, where higher stages of consciousness and self-development are now being examined empirically (Alexander & Langer, 1990). This examination includes Kohlberg and Ryncarz's six-stage hierarchical sequence for moral development, associated with Piaget's logical stages (1990). Kohlberg and Ryncarz's six-stage model now has a postulated seventh metaphoric stage, a transcendental, non-dualistic experience where the self is unified with the cosmos (1990).

Similarly Alexander et al. organized their research around the ancient Vedic theory of consciousness, including "higher" stages of non-conceptual and

transcendental experience (1990). They posited a field of pure consciousness or cosmic consciousness, where the knower and the known and the process of knowing converge in a unified field of awareness. When individual awareness merges with the field of pure consciousness, the foundation for three higher stages of development can begin. Alexander et al. proposed that their life-span model is compatible with and extends the Western organismic model of ontogenesis (1990). They suggest that higher stages of consciousness are not commonly experienced by most adults simply because such development is dependent upon exposure to appropriate environmental support. Montessori's emphasis on the life-long spiritual preparation of the adult may find alignment in these more recent life-span developmental models that are beginning to explore both focused attention and transcendence.

Conclusion

This study answered the question of how education can support the development of self-regulation by investigating two developmental learning theories and one early childhood curriculum that cultivate processes that encourage individuals to voluntarily focus and sustain their attention (concentration). Studies have shown that the ability to sustain and focus attention has a positive impact on children's adaptive and maladaptive developmental outcomes, serves as a protective influence against the development of behavior disorders, and supports emotional self-regulation across the lifespan (Kochanska & Knaack, 2003; Rothbart, et al., 2003).

Emerging research in self-regulation has identified a neural network in the brain, the executive attention network, that allows children to regulate their thoughts and emotions (2004, Rothbart, Ellis & Posner, 2004). This neural network shows substantial development between the ages of 2 and 7, and there is now evidence that the environment can modify this network (Rueda, Posner, & Rothbart, 2004; Rothbart, Ellis & Posner, 2004; Klingberg, Forssberg & Westerberg, 2002; Posner, Rothbart, & Rueda, in press). Because focused attention seems to influence the development of the executive attention network, it was recommended that attention training programs be included in preschool curriculum (Reuda, et al. 2004).

One hundred years ago Montessori observed the power of concentration to transform children's temperament. Montessori used the term *normalization* to describe this self-constructive process. The Montessori classroom facilitates children's natural ability to concentrate because of its normalizing or regulating influence. Therefore, this study examined Montessori's Theory of Normalization as a curricular approach to self-regulation by comparing it to two developmental learning theories that emphasize self-regulation. The results of this comparison demonstrate that Montessori's Theory of Normalization can be viewed as an applied theory of self-regulation. Understanding Montessori's Theory of Normalization within the context of self-regulation provides a valuable resource that answers Mischel and Ayduk's (2004) question; can self-regulation be taught? The results of this study strongly suggest that education can be effectively utilized to help children gain the attention control competencies they need to achieve self-regulation.

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APPENDICES

Appendix A Recruitment Letter

OSU
Oregon State
UNIVERSITY

**College of Health and
Human Sciences**

Human Development & Family Sciences
322 Milam Hall
Corvallis OR 97331-5102 USA
Phone: 541-737-4765 · Fax: 541-737-1076

September 11, 2008

Dear (Name of Montessori teacher trainer):

I am currently a graduate student working on my doctoral dissertation research at Oregon State University on the topic of Montessori's theory of normalization.

Because you are certified as an AMI Montessori teacher trainer you represent the top authority regarding Montessori theory and practice; therefore I would very much like to talk with you about the distinctive elements within this theory, its value, and its application in the classroom, the school, and the home. I am planning to attend the Centenary Montessori Celebration in San Francisco in February, 2007 where I hope to talk with each of the AMI teacher trainers in attendance. I will arrive a few days early and stay several days later hoping to provide enough time to accommodate everyone's busy schedules. I will be staying at the Marriott Hotel. If you plan to attend the celebration would you be willing to talk with me sometime during that week? Any time at your convenience, morning, noon, or night would be greatly appreciated! Ideally I would like 1-2 hours of your time for an informal interview which will be

audio-recorded and will represent the qualitative research data used for my dissertation study.

Here's a little bit about me and the proposed dissertation study:

I received my AMI primary diploma from The Montessori Education Center in Portland Oregon in 1987 with Rita Schaefer and assisted her on the summer course in Washington D.C. from 1993-1995. My classroom experience consists of 4 years at Marin Montessori School in California and 9 years with Jacquie Maughan at Pacific Crest School in Seattle, WA. I chose to return to graduate school to pursue research in current developmental theory and its potential relevance to Montessori's theory of normalization. I was offered a graduate teaching assistantship at OSU in the department of Human Development and Family Science where I taught an undergraduate course entitled "Fostering Learning in Early Childhood". I have been struck by the power and the control of knowledge that is expressed in the bias maintained by the university toward a *play based approach* as articulated by the National Association for the Education of Young Children (NAEYC).

Each term textbook companies send me their early childhood promotional copies to review. Although these textbooks always include a section on the contributions made by Montessori, none of the chapters ever makes reference to the theoretical underpinnings that guide Montessori's work. Without understanding the process of normalization and the value of concentration, Montessori's work is being inaccurately compared to *constructivst play based* early childhood programs and as such is being misinterpreted and misrepresented. As a result, undergraduates across the nation are being led to believe that Montessori's approach to early childhood is not developmentally appropriate. This does not bode well for encouraging university students to pursue Montessori teacher training programs as a possible career option. My research topic intends to address this issue.

As you well know, Montessori's desire to protect her work was deeply influenced by the rise of Mussolini's fascist regime. And though she published several books (including lectures) much of her work is protected through AMI and the oral tradition that is passed along through the training of teachers and teacher trainers. You represent the ultimate embodiment of this oral tradition and in order to provide an in-depth and accurate analysis of Montessori's theory of normalization, I will need your participation!

Though you may not benefit directly by participating in this study, I do sincerely hope that in the future other people may benefit by your willingness to share your expertise and your understandings regarding Montessori's theory of normalization and its relevance for human development. It is my hope that by introducing normalization as a theoretical perspective with contemporary relevance, Montessori's work will be more accurately interpreted and appreciated within the university setting. Hopefully this will then inspire more university students to consider the importance in pursuing Montessori teacher training. This study may also lead to new methods for research and assessment.

Although I cannot offer you financial compensation for your participation, I would like to invite you to choose your choice of refreshments during the interview, which will be provided by the Marriott Hotel's room service.
.
If you have any questions about the project or about me, please give me a call at 541-738-2041 or you can e-mail me at: lloydka@onid.orst.edu

I will call you at the training center in the next week or so to see if you plan to attend the centenary celebration and if it might be possible to set up an interview.

Thank you in advance for your participation and support. I look forward to the opportunity to talk further with you.

Sincerely,

Kathleen Lloyd

Appendix B Informed Consent Document

Informed Consent Document

Project Title: An Analysis of Montessori's Theory

                       of Normalization

Principal Investigator: Sharon Rosenkoetter, PhD; HDFS

Co-Investigator(s):   Kathleen Lloyd, Doctoral Candidate

WHAT IS THE PURPOSE OF THIS STUDY?

You are being invited to take part in a research study designed to analyze Dr.
Maria Montessori's theory of normalization. Since some of Montessori's work
has been protected within an oral tradition and is not elaborated in a written
literature, the investigator will collect qualitative data from certified AMI
Montessori teacher trainers to examine this theory. The results will be
compiled in a doctoral dissertation and may be used for publication. The
intended use for this research will be a doctoral dissertation in Human
Development and Family Studies.

WHAT IS THE PURPOSE OF THIS FORM?

This consent form gives you the information you will need to help you decide
whether to be in the study or not. Please read the form carefully. You may ask any
questions about the research, the possible risks and benefits, your rights as a
volunteer, and anything else that is not clear. When all of your questions have
been answered, you can decide if you want to be in this study or not.

WHY AM I BEING INVITED TO TAKE PART IN THIS STUDY?

You are being invited to take part in this study because as an AMI certified Montessori teacher trainer you have received advanced training and represent the top authority regarding Montessori theory and practice.

WHAT WILL HAPPEN DURING THIS STUDY AND HOW LONG WILL IT TAKE?

If you agree to take part in this study, your involvement will last for approximately 3 months. During the first month, in February, you will be asked to participate in a 90-120 minute audio recorded informal interview conducted at the Marriott Hotel during The Montessori Centenary Celebration in San Francisco. In March or April you will be asked to read the transcript of your interview and to participate in a 15-30 minute audio-recorded telephone conversation to assess the accuracy of the written transcript and to discuss any changes that you would like to see made. During this conversation you will also be asked to respond to the suggested coding system that the researcher has developed based on the emerging patterns and themes between the combined interviews.

WHAT ARE THE RISKS OF THIS STUDY?

There are no foreseeable risks to participating in this study. Confidentiality will be maintained throughout.

WHAT ARE THE BENEFITS OF THIS STUDY?

You will not benefit from being in this study. However, we hope that, in the future, other people might benefit from this study because it hopes to promote the value of Montessori's theoretical perspective. In so doing we hope that this will help to establish an academic framework from which to more accurately interpret and assess Montessori's educational practices and methodologies.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO WILL SEE THE INFORMATION I GIVE?

The information you provide during this research study will be kept confidential to the extent permitted by law. To help protect your confidentiality, we will ask you to provide a pseudonym before the interview begins. All research logs and material will identify you by pseudonym. One aspect of this study involves making audio recordings of the interviews so that the researcher will be better equipped to accurately capture the breadth and depth of the information you have provided. Audio tapes and written transcripts of these interviews will be stored in a secure file cabinet accessible only by the student researcher. Computer files are password-protected. The cross reference document (matching participant to pseudonym) will be stored in a secure but separate location from the tapes and transcripts and accessible only by the student researcher. During the analysis process, the transcripts may be viewed (if requested) by the Principal Investigator. All audio tapes will be destroyed once the defense of the dissertation is complete. If the results of this project are published your identity will not be made public.

DO I HAVE A CHOICE TO BE IN THE STUDY?

If you decide to take part in this study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. You will not be treated differently if you decide to stop taking part in the study. Since the study involves interviews you are free to skip any questions that you would prefer not to answer. If you choose to withdraw from this project before it ends, the researchers may keep information collected about you and this information may be included in study reports.

WHAT IF I HAVE QUESTIONS?

If you have any questions about this research project, please contact:

Sharon Rosenkoetter, PhD at 541-737-8529; sharon.rosenkoetter@oregonstate.edu

or Kathleen Lloyd (Doctoral Candidate) at 541-738-2041; lloydka@onid.orst.edu

If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed):

_____

_____

(Signature of Participant)   (Date)

Appendix C Addendum to Informed Consent Document

Addendum to the Informed Consent Document

Project Title: An Analysis of Montessori's Theory of
                            Normalization

Principal Investigator: Sharon Rosenkoetter, PhD; HDFS

Co-Investigator: Kathleen Lloyd, Doctoral Candidate

WHAT WILL HAPPEN DURING THIS STUDY AND HOW LONG WILL IT TAKE?

Your involvement in this study was originally designed to last approximately 3 months. During the first month, in February, you participated in a 90-120 minute audio recorded informal interview conducted at the Marriott Hotel during The Montessori Centenary Celebration in San Francisco. In March or April you were to receive a copy of your transcribed interview and then a 15-30 minute audio-recorded telephone conversation was to be scheduled to assess the accuracy of the written transcript and to discuss any changes you would like made. Two additional interviews with AMI Montessori teacher trainers who were unable to participate during the Centenary celebration in San Francisco will be included in the study. As a result, the time frame required for participation in this study must be modified. The additional interviews will take place in July and early August. Therefore you will not receive a copy of your transcribed interview until the end of July or the first of August. At that time, and depending upon your summer schedule, arrangements will then be made for a 15-30 minute audio-recorded telephone conversation. During this conversation you will also be asked to respond to the suggested coding system that the researcher has

developed based upon the emerging patterns and themes between the combined interviews.

WHO WILL SEE THE INFORMATION I GIVE?

The information you provide during this research study will be kept confidential to the extent permitted by law. To help protect your confidentiality, we will ask you to provide a pseudonym before the interview begins. All research logs and material will identify you by pseudonym. One aspect of this study involves making audio recordings of the interviews so that the researcher will be better equipped to accurately capture the breadth and depth of the information you have provided. Audio tapes and written transcripts of these interviews will be stored in a secure file cabinet accessible only by the student researcher. Computer files are password-protected. The cross reference document (matching participant to pseudonym) will be stored in a secure but separate location from the tapes and transcripts and accessible only by the student researcher. During the analysis process, the transcripts may be viewed (if requested) by the Principal Investigator. If the results of this project are published your identity will not be made public. Since AMI teacher trainers embody an oral tradition, the content of these recorded conversations represent vital information for future generations, which is unavailable in published form. Therefore, all audio tapes will be archived by the student researcher once the defense of the dissertation is complete. If at any time these tapes are deemed valuable to the AMI Montessori community for archival purposes within a Montessori library or collection, you, the participant will be contacted for your permission. Participants may request a personal copy of their transcribed interview for personal use.

WHAT IF I HAVE QUESTIONS?

If you have any questions about this research project, please contact:
Sharon Rosenkoetter, PhD at 541-737-8529; sharon.rosenkoetter@oregonstate.edu or
Kathleen Lloyd (Doctoral Candidate) at 541-738-2041; lloydka@onid.orst.edu

If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed):

_____

_____

(Signature of Participant)   (Date)

Appendix D Interview Protocol

Interview Protocol

1. Could you tell me briefly, how you got interested in Montessori's work?

2. Who were you trained with and when?

3. When did you decide to become a teacher trainer?

4. Would you consider the transmission of Montessori's work an oral tradition?

5. Where does the term, Normalization come from?

6. Are there other modern terms or phrases that mean the same thing?

7. Are there processes or conditions that might lead to the development of normalization?

8. Do some types of children have more difficulty finding this path of normalization?

9. Why is the theory of normalization important?

10. How is this theory applied?

11. Could you talk about the role of the environment in supporting or initiating the development of normalization?

12. What is the role of the adult in supporting or helping initiate the child's development toward normalization?

13. How can you tell when a child is truly engaged in a piece of work and is concentrated as opposed to being busily occupied?

14. What is the role of observation?

15. What are the obstacles to that process?

16. Can normalization ever be taught?

17. Can this theory be applied outside the classroom?