A PEEK AT THE PLAYGROUND: HOW TEACHER’S STYLE AND ENGAGEMENT IMPACTS CHILDREN’S PLAY

by

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A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology in the Graduate School of The University of Alabama

TUSCALOOSA, ALABAMA

2013
ABSTRACT

The current study was a replication and extension of our previous study (Kendrick et al., 2011) which examined the play behaviors of preschool children (range: 2-5.5 yrs old) and how teachers’ presence and engagement may impact children’s play while on the playground. In the current study we also examine the influence of teachers’ style on children’s play while on the playground. Two sites were examined over a five week period; one served as the control group and the other as the experimental group. Within the five-week timeline, both groups participated in weekly teacher instruction consisting of being in close proximity (i.e. within 3 feet) of the children in the playground.

Behaviors of the teachers and children were observed, recorded and coded at three time points (baseline, 3 weeks, and 5 weeks). The analyses revealed that initially having teachers in close proximity to children while on the playground reduced children’s onlooker behavior and increased their parallel play. Over time children appeared to habituate to the teacher’s proximity as they resumed play behaviors seen at baseline.

Interestingly, teacher proximity also had an impact on teacher’s engagement style. For example, both groups of teachers displayed more neutral, rule enforcer or director of play styles at baseline, but over time both groups moved toward more child directed styles. When examining more closely the impact of teacher training in the experimental group, which involved strategies to facilitate complex play and reduce aimless and onlooker behaviors, the experimental group compared to the control group (those who did not receive training), seemed to have a more negative impact on children’s play behavior. That is, more aimless behavior and less simple social play was observed in the experimental group indicating that the teacher training was not helpful in facilitating
children’s social skill development. Methods for coding and analyzing data as well as implications of the teacher training are further discussed.
DEDICATION

This dissertation is dedicated to everyone who helped me and guided me through the trials and tribulations of creating this manuscript. In particular, my mentor Dr. Maria Hernandez-Reif; my husband, Mark Kendrick, my family and close friends (especially Elyse McLaughlin) who stood by me throughout the time taken to complete this important work.
LIST OF ABBREVIATIONS AND SYMBOLS

- \(a\)  Cronbach’s index of internal consistency

- \(df\)  Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data

- \(M\)  Mean: the sum of a set of measurements divided by the number of measurements in the set

- \(p\)  Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

- \(t\)  Computed value of \(t\) test

- \(<\)  Less than

- \(=\)  Equal to

- \(X^2\)  Chi square
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CHAPTER 1
INTRODUCTION

Play is a crucial element for the healthy development of all domains (physical, social, emotional, and cognitive) in the young child (Saracho, & Spokek, 1998).

Article 31 of the United Nations High Commission for Human Rights recognizes the importance of play as a right for all children to be able to freely engage in. The National Association for the Education of Young Children (NAEYC, 2012) maintains that play is an important vehicle for children’s social, emotional, and cognitive development, as well as a reflection of their development. Because play serves as a key facilitator in the healthy development of children, it is essential to nourish children’s motivation and capacity to fully engage in play (Sanderson, 2010). Other experts such as psychologists, educators, and pediatricians also acknowledge the importance of play in children’s development (Burdette, & Witaker, 2005; Frost, 1998; Milteer, & Ginsburg, 2012; Sanders, 2010). Widely recognized as a universal behavior in children, play is the means by which children explore their world, develop social competence, and develop a sense of self (Sanderson, 2010).

Playfulness, according to Sanderson (2010) is the expression of the child’s drive to freely and pleasurably engage with, connect with, and explore the surrounding world. The capacity within each child to fully and freely engage in play is represented in the following four domains: Active Engagement, Internal Control, Social Connection, and Joyfulness.

Active Engagement assumes that to be completely engaged, the child must be intrinsically motivated to participate in the given activity. The engagement is not shaped by external rules or demands, but rather it is intrinsically motivated (Rubin et al., 1983; Smith & Vollstedt,
The activity is done for its own sake and the child is process-oriented (rather than product-oriented) in his approach (Sanderson, 2010).

*Internal Control* refers to the child’s sense of safety, balance, and competence that allows for comfortable engagement with the surrounding world. Internal control relates to playfulness in that a child must first feel safe and secure before engaging in playful behavior. The child believes that he/she can influence his/her environment, and has a sense of freedom in the degree to which he engages in that environment, and the perception that he/she can meet challenges and experience success in that environment. Internal control also refers to the child’s ability to self-regulate. A child can only fully and freely engage in play if he/she is able to control his/her level of participation in the play so as not to be overwhelmed (Sanderson, 2010). Internal locus of control in play occurs when the object is determined by the wishes of the child (Rubin et al. (1983). The implication that the child is in control of his/her involvement in play provides a foundation for the internal control domain of the proposed measure.

*Social Connection.* Social connection refers to the child’s cooperative interaction with others and the surrounding world. Social connection and social competence are integral parts of the play experience. It is through play that children connect with peers in complex ways and learn more about themselves and the world. Social competence is distinguished from social connection in that the latter refers to the child’s very basic motivation and drive to interact with others, as well as his interest and enjoyment of playing with others (Sanderson, 2010). Social competence refers to not just the desire to interact with others and engage but the ability and success in which a child is able to interact and engage with others. One could argue that social connection is a pre-requisite for social competence. To illustrate the difference, an onlooker child could have the desire to engage and interact with others but lack the skill or ability to
enter play with others. An aimless child may lack both the social connection (the desire) as well as the ability (competence).

*Joyfulness* refers to the child’s sense of love, fulfillment, and hope that is expressed with displays of pleasure and exuberance. Joyfulness is a necessary and universal component of the definition of play and is characterized by the child’s uninhibited abandon in the play activity. Joyfulness is in part derived from the dispositional criterion of positive affect advocated by many researchers and theorists, such as Krasnor & Pepler (1980), Piaget (1962), and Smith and Vollstedt (1985).

**Play as Context: Preschool and Playground**

The preschool environment offers young children multiple opportunities for development, and learning, often through the medium of play. Preschool play has been shown to help children adjust to elementary school (Ladd & Price, 1987) by helping to build and develop creativity, problem solving skills, and making friends (Burdette, & Whitaker, 2005). Collectively, these social skills are developed by working in groups, sharing, resolving conflicts, and learning to negotiate (Erikson, 1985; Hurwitz, 2003; McElwain & Volling, 2005; Pellegrini & Smith, 1998). These skills can be observed inside the classroom as well as on the playground.

Indeed, the playground may be one of the richest, yet understudied environments to observe and study children’s play (Adams, 1993; Neal & Palmer, 1990; Prosser, 1982; Wilson, 2008). The playground environment offers opportunities for studying how children interact with peers and practice socialization skills (Cullen, 1993; Greenfield, 2004; Pellegrini 2005; Sluckin, 1981) while also providing an environment for children to be creative (Blatchford, 1998; Burdette, & Whittaker, 2005; Pellegrini; Sutton-Smith, 1997; Wilson, 2008) and engage in fantasy play (Ouvry, 2003).
The playground provides many venues for children to self select the backdrop for their play, such as the gymnasium (climbing area), or the swings. Unlike the more traditional structure of indoor instruction, which is often guided and directed by teachers, outdoor play is typically undirected or unstructured. Medical doctors’ Burdette and Whitaker (2005), in an effort to resurrect free play, suggest that the nature of unstructured outdoor play helps the child’s brain to shape and optimally develop as a result of an enriched environment that promotes a variety of activities, and spontaneity. Adults may perceive and relate to children differently on the playground than they do indoors allowing them to run and make noise unlike indoors where adults expect children to sit still and be quiet (Rivkin, 1998). Although this is not always the case, as evidenced in a recent study in which teachers did not allow much more freedom on the playground as they did inside the classroom (Maynard, & Waters, 2007). Nonetheless, children may perceive the outdoor environment differently, believing that work happens inside while play happens outside (Singer & Revenson, 1996).

Children often exhibit different play behaviors in different settings (Rigby & Gaik 2007). In the playground environment children become the masters of their play, making decisions about whom they want to play with, how they want to play and what type of activities they wish to engage in (Cullen, 1993; Kern, & Wakeford, 2007; Pellegrini, 1988; Pepler, & Craig, 1995). Potentially, outdoor play offers children the opportunity to create their own games, and possibly practice classroom concepts, such as sharing, working together, problem solving, and cooperating (Militeer & Ginsburg, 2012; Perry, 2001, 2003; Wilson, 2008). Outdoor play also allows for spontaneous exploration, creativity, and opportunities to engage in the joys of movement (Burdette, & Whitaker, 2005). As a result, the playground is a prime location for exploring a variety of behaviors demonstrated by young children.
A large majority of playground research has focused on safety issues, such as studying the structural aspects of playground equipment (Frost, 1986; Hayward et al., 1974; Moore, 1988). Other playground studies have focused on aggression and rough and tumble play (Hart & Sheehan, 1986; Pellegrini & Smith, 1998; Tannock, 2008). Recent playground studies appear to be interested in examining ways to increase physical activity of young children (Cardon, Cauwenberghe, Labarque, Leen Haerens and Bourdeaudhuij, 2008; Hannon, & Brown, 2008; S. Kreichauf, 2012). I believe we need to understand the more normative play that occurs on the playground, and I am not alone in this interest. Rigby and Gaik (2007) indicated that children exhibit different play behaviors in different settings and that more research is needed to help identify factors that influence children’s play. This information can be helpful in aiding the teacher in her planning with the goal of enhancing and scaffolding children’s development with particular attention to developing social play skills. While play has certainly been studied, it seems that there is a gap in what is occurring during normative play on the playground and what influences that play.

**Play as it relates to Social Competence**

Play provides children with the opportunity to act out social roles and learn social rules (Stagnitti, 2004). Mead (1934) proposed that play’s primary function was to socialize children into their cultural world, its norms, and rules. Bateson (1955) believes that play is significantly influenced by its environment and shaped by the immediate context. Play may be perceived of as a paradigm in which children can develop socially and gain better understanding about their world as well as a better sense of identity.

The opportunity to engage in play with peers allows for further cultivation of social competence, which is one goal of preschool teachers. Through play, children engage in positive relationships with their peers (Ladd, 2005; Raver & Zigler, 1997). To be considered
socially competent a child has to attain his own social goals and be mindful of the social goals of others (Ladd, 2005; Raver & Zigler, 1997). Children’s actions (e.g. sharing toys, taking turns, helping others, and verbal interactions) and how they integrate themselves into peer groups, reflect their level of social competence (Bruder & Chen, 2007; Ladd, 2005; Obradović, Van Dulmen, Yates, Carlson, & Egeland, 2006; Webster-Stratton & Hammond, 1998).

Social competence involves a child’s development of pro-social and communication skills and the ability to self-regulate (Denham, Blair, DeMulder, Levitas, Sawyer, Auerbach-Major, & Queenan, 2003; Lobo & Winsler, 2006). Problem solving and negotiation skills are a part of the skill set that enables children to better resolve conflict and get along with peers (Reynolds, 1990; Webster-Stratton & Lindsay, 1999; Youngstrom, Wolpaw, Kogos, Schoff, Ackerman, & Izard, 2000).

Children’s social development is an important predictor of school readiness, academic achievement, social adjustment, conduct problems, and interpersonal relationships (Denham, et al., 2003; Ladd, 2005; Raver & Zigler, 1997). Children who lack an appropriate level of social competence tend to be impulsive and aggressive and tend to have conduct problems (Bruder & Chen, 2007; Ladd, 2005; Webster-Stratton & Hammond, 1998). Children’s social competence levels are often negatively associated with internalizing and externalizing problem behaviors (Denham, et al., 2003; Gouley, et al., 2008; Webster-Stratton & Lindsay, 1999). However, children with higher levels of social competence are more successful at peer relationship (Webster-Stratton & Hammond, 1997; Youngstrom, et al., 2000). Socially competent children are better at integrating themselves into play situations with their peers, which leads to more positive social experiences and more positive attitudes about school (Denham, et al., 2003; Ladd & Price, 1987; Uren & Stagnitti, 2009; Webster-Stratton & Lindsay, 1999).
In summary, the preschool years are vital for the development of social and emotional skills as it is often the first time that children interact with peers resulting in opportunities for more complex relationships and interactions (Denham, et al., 2003; Gouley, et al., 2008; Lobo & Winsler, 2006; Rimm-Kaufman & Pianta, 2000). The preschool environment, particularly the playground, fosters and supports many opportunities to further develop socially by encouraging children to relate to peers in various ways (Rimm-Kaufman & Pianta, 2000), such as simple social/cooperative or pretend play.

**Play as Observable Behavior: Classifications**

Mildred Parten was one of the first to identify and categorize play behaviors. In her research she describes five types of behaviors seen during play: 1) *solitary play* (playing alone), 2) *onlooker* (watching other children playing, but not directly participating in play), 3) *parallel play* (engaging in the same activity as another child and playing next to, but not with, the other child), 4) *associative play* (playing with other children, but each child has a different goal), and 5) *cooperative play* (sustained interactive play with at least one child, and the play involves a common goal or activity) (Parten, 1932).

In the 1980s, Carollee Howes identified five additional styles seen during play (1980, 1988): 1) *aimless* (walking aimlessly), 2) *simple social interaction* (at least two children interacting with one another and the behavior changes as a result), 3) *complimentary reciprocal* (playing with role reversal), 4) *cooperative social pretend* (pretend play between two or more children), and 5) *complex social pretend* (cooperative social pretend with the addition of assigning or verbalizing roles or script for play).

Basic peer play behaviors, such as *complimentary reciprocal* play, emerge around 18 to 24 months (Brownell, 1986; Howes, 1988) and further develop in complexity at around 42 to 48 months (Garvey, 1977). Children who engage in more complex play earlier in development
tend to be more prosocial and less aggressive and withdrawn in subsequent periods (Howes and Matheson, 1992). In addition, complex peer play in the preschool years may project social competence with peers in later years (Howes & Matheson, 1992). Therefore, it may be of benefit to study and observe children’s play development with a goal towards facilitating and developing play skills by targeting children who engage in aimless and onlooker behaviors and encouraging more complex play behaviors, such as pretend play.

The Many Roles of the Teacher

Should teachers play or not play with children in the playground? There are many conflicting opinions regarding the role the teacher should assume during children’s free play, especially during outdoor play. Sometimes teachers fail to engage children during play for fear of inhibiting or suppressing children’s spontaneous play or interfering with peer interactions (Garvey, 1990; Harper, & McCluskey, 2003; Kontos, & Wilcox-Herzog, 1997; Scarlett, Naudeau, Salonius-Pasternak, & Ponte, 2011). Thompson (2007) found that the suppression of play resulted in children noticing adults’ concerns and internalizing these concerns. Similarly, our previous study indicated that adult proximity to children playing in the playground suppressed children’s spontaneous play, suggesting that teachers may have difficulty supporting, promoting or maintaining peer play (Kendrick, Hernandez-Reif, Hudson, & Jeon, 2011). Thus, adult proximity in the playground may limit children’s freedom of expression and spontaneity and ultimately impact children’s social skill development.

The reasons why children become inhibited or suppress their play when an adult enters play are unknown. Interestingly, this inhibition has been both documented in typical and special needs children following adult peer play, irrespective of the population being studied (Harper & McClusky, 2003). Peer play inhibition could be a result of the actions of the adult who inadvertently suppresses or inhibits play by being directive rather than a co-play partner.
Another reason may be that the child views the adult as a more attractive play partner than a peer and abandons peer play for adult interaction (Harper & McClusky, 2003). Examining adult-child interaction during a play period may reveal what aids or hinders children’s playfulness (Harper & McCluskey, 2003; Rigby, & Gaiik, 2007).

Some teachers may assume the primary role of administrator/safety monitor in the playground. In that role, they ensure that the playground is well staffed, equipped, and safe, while making sure children know how to safely navigate and make use of the playground. (Jacobs, 2001; Kern, & Wakeford, 2007). Safety is undisputedly one of the most important roles of a teacher while on the playground. However, some teachers report that they are so consumed with monitoring safety and problem solving that they have little time to observe the developing play of children (Jarvis, 2007). Other teachers report being concerned about keeping children’s clothes clean and become preoccupied with closely monitoring children’s actions (Maynard, & Waters, 2007). Reynolds (1990) suggests that the teacher’s role is to supervise and oversee children’s learning by managing the environment, moving around the playground, and regulating safety as well as interfering as little as possible so as not to inhibit play. There is no dispute that one of the primary roles of teachers on the playground is that of safety monitor. However, are there other roles for teachers in the playground?

Anecdotally, some teachers appear to view outdoor play as a break in which to relax after a period of formally guiding classroom activities. Some teachers view free time as an opportunity to take a coffee break, talk with other adults or even plan lessons for the classroom (Jones & Reynolds, 2011). Teachers who follow this view are often seen congregating and socializing with each other on the playground while keeping a general watch on the children without attending to the developing nature of play. Some child development experts argue that a teacher should be stimulating and helping young children learn, even on the playground.
Interestingly, at the early inception of kindergartens, the term *recess* was not considered to be an adequate term for outdoor play as the best kindergarten teachers never considered outdoor play to be a recess or break from their work. Instead, these teachers continued to be intentional, and planned with the development of the child in mind even in the outdoor environment (Frost, 2010).

Some teachers are very intentional in the role of stage manager in play. They, along with some experts, believe that the teacher’s role is to establish or orchestrate an environment that supports and elicits play, controlling but not dominating, and offering help or extending play when necessary (Bodrova, & Leong, 2006; Vygotsky, 1977), such as by providing props, continual organization, and observing the flow of play (Jones, & Reynolds, 2011).

One method of implementing the role of stage manager and trying to fulfill the goals as set out by Perry (2001) is to have teachers strategically positioned near children’s play. At least from a safety standpoint, having teachers in closer proximity to children playing seems to reduce injuries as well as bullying (Morrongiello & House, 2004; Schwebel & Bounds, 2003; Schwebel et al., 2006) and problem behaviors (Franzen & Kamps, 2008), which may set a more inviting environment for peer play. In a recent survey study, it was the perception of the teachers and parents, that teachers being in closer proximity to children on the playground yielded “good student outcomes in play,” although the variable “student outcomes” was not well defined in the study (Kern & Wakeford, 2007).

Other teachers take on roles of educator and social skills builder, facilitating problem-solving and negotiation strategies among children (Frost, 1992; Kern & Wakeford, 2007; Santa, 2007; Sawyers, 1994). Perry (2001) recommends two methods for fulfilling these goals, 1) indirect coordination, which basically follows the idea of setting the stage or environment to support play; and 2) intervening by either interruption or by joining the play activity. For
example, teachers may intervene when they see potential danger emerging, such as children climbing up the slide as another child is attempting to slide down the slide, or when two children are in dispute over the same toy (Reynolds 1990). Thus, another role of the teacher is to serve as a mediator.

In another study, teachers seemed unaware of the potential uses and benefits of the playground environment (Maynard, & Waters, 2007). Teachers who engage in play with children often direct play rather than allow the children to direct the play. Some teachers feel that there needs to be purpose to the play and therefore have a hard time seeing the benefit of child-directed play (Maynard, & Waters, 2007). Child directed play is when the child selects and engages in play for play’s sake. There is no specified purpose other than joyous spontaneous engagement of activity that the child initiates.

In highly structured environments—defined as teachers providing guidance, rules, modeling and feedback of activities—lower peer interactions are observed; in contrast, in low structured environments—defined as little teacher praise or feedback, more novel and innovative or imaginative play by children—more leadership and higher peer social play are observed (Carpenter, & Huston-Stein, 1980; Huston, Carpenter, Atwater, & Johnson, 1986; Huston-Stein et al. 1977). Teachers sometimes feel uncomfortable engaging children in play and adopt a more stereotypical role that a teacher should instruct rather than participate (Jones & Reynolds, 2011). However, there are many experts who support the idea of teachers engaging children in play. Vygotsky (1978), and subsequently El’konin (1978), supported the idea of adults (caregivers) modeling or acting out play for children, and entering, engaging and ultimately scaffolding children’s play. Many researchers in the late 1970’s to the early 1990’s found results of more complex, elaborate play, as well as longer duration of play periods when the caregiver was engaged with the child as a play partner (Biezer & Howes, 1992; Dale, 1983;
Dunn, 1986; Dunn & Dale, 1984; Dunn & Wooding, 1977; Slade, 1987). However, one distinction in all these studies was that the caregiver was the mother. It was also discovered that some mothers were better at teaching pretend play than others.

Some preschool teachers are more adept at engaging children in play than others. In fact, there are instructions for teachers on how to engage children in play. For example, the High Scope curriculum outlines that teachers should engage children in play by using techniques referred to as SOUL. They instruct the adult to first be silent (S), observe (O), understand (U) and listen (L). They give concrete tips on entering into play with the idea of expanding and extending play, while engaging and enlisting others into play. For example if a child is playing at the sandbox filling pots and colanders a teacher may observe this behavior and think about sitting next to the child to ask the child to put into words what he is doing. The teacher may expand this by asking questions, or even participating in the same actions and having the child explain to other children what he is doing as a way of inviting others in (Epstein, & Hohmann, 2012)

Project Joy Foundation (which is partnered with the company Life Is Good, 2011) is an organization that teaches and encourages adults to enter into play as a way of aiding and understanding children’s development. One of the advantages of the teacher as a playmate is that she/he can help bridge the gap of cultural diversity in children who may not understand the culture of play in a new environment. The teacher can help facilitate play by modeling and acting out scripts that are culturally relevant to the diverse students in her class in an effort to educate and facilitate social interaction (Jones & Reynolds, 2011).

In summary, it appears that many experts believe that during outdoor play, teachers should monitor for safety and set the stage or environment for play. There are many opportunities that the playground provides for children’s whole development, which teachers
can facilitate. One barrier, however, is that teachers may not know when to intervene in children’s play or how to engage children during play. Additionally, it seems that teachers are unaware of how they are perceived by children and may unintentionally suppress play rather than encourage play. They may be unaware that they are directing play or interrupting play rather than facilitating it. Teachers may also not know how to enter children’s play and relinquish control to allow the child to be the director of play. A thoughtful teacher engages children who may be unfamiliar or unskilled in play and then moves toward the periphery as children steer play (Jones & Reynolds, 2011). If teachers are not familiar with the concept of child directed play, it may be necessary to educate and train them. Previous research indicates that when adults attempt to enter and facilitate play, no matter how well intentioned, it decreases the incidence of peer play. So what should the role of teacher be? Should they play or not play? That is, should the teacher continue to play the role of an educator even on the playground or should the teacher assume a more playful role in the playground? We hope to find some of the answers with this study.

**Previous Study**

In the previous study (Kendrick, et al. 2011), preschool children’s (range 2.5- 5 yrs. old) play behaviors in specific areas of the playground (the climbing area and the sandbox area) were recorded in a pre (baseline)-post (teacher training) design. The aims were to examine if there were differences in the children’s play styles in these two areas of the playground, and if placing teachers in specific playground zones facilitated children’s play styles.

Following a one-hour teacher training, teachers were assigned to specific playground zones to monitor safety and facilitate the children’s play and/or enhance the children’s peer interactions. The teacher training involved being randomly assigned to strategic areas of the
playground (zones) and receiving instructions on how to interact with children by using “I” messages (i.e. “I am scared when you climb up the slide because you could get hurt”). In addition, teachers were taught how to be aware of tone of their voice and body language. Teachers also learned how to problem solve and help children negotiate with the goal of increasing social play among preschool age children.

The results revealed that when teachers were placed in close proximity to the children in the playground, children’s play behaviors decreased in the sandbox. In the climbing area, play remained unchanged except for simple social play, which decreased (see Table 1). These findings support other findings that teachers have a dampening effect on children’s play styles (Fowler, & Lubeck, 1992; Garvey, 1990; Harper, & McCluskey, 2003; Kontos, & Wilcox-Herzog, 1997; Scarlett, Naudeau, Salonius-Pasternak, & Ponte, 2011; Thompson, 2007). One possible reason for the reduced play may have been due to a novelty effect of having the teachers in closer proximity in the playground, given that prior to the teacher training teachers in the preschool often congregated with other adults and were rarely in the playground next to the children as they played. Another reason for the children’s decreased play might have been that the quality of the teacher-child interaction dampened play. For example, if the nature of the interactions was teacher-directed rather than child-directed and the teacher dominated the play experience, the teacher-child interaction in the playground may have led to suppressed play. However, in the previous study we did not code for the teacher interactions, only the children’s behaviors. Therefore, replication and extension of the previous study may help to better understand the impact teachers have on children’s play behaviors on the playground.

**Proposed Study**

One aim of the current study is to replicate the master’s thesis to determine if the earlier findings are a true phenomenon or an anomaly. The current study expanded and improved on
the previous study by using an experimental design that included a control group and a curriculum group. The previous study involved one site and was a within-group study. The improved experimental design was expected to better examine if it is the proximity of the teacher that suppresses play or if it is the nature or quality of the teacher-child interaction that impacts children’s play styles in the playground. The present study included two sites, rather than one, and expanded the length of time involved in data collection from three weeks to five weeks (see Appendix A) to allow for normalization of the children to the teachers in the playground as well as to allow more time for the development and implementation of the curriculum.
CHAPTER 2
HYPOTHESES

The literature reveals mixed findings on the role of the teacher in children’s play. On one hand you have many experts who promote the active engagement of adults in children’s play as a means of scaffolding and expanding play. However, on the other hand you have studies, such as our previous study, that indicate that teacher involvement in the playground suppresses children’s play. The current study is driven by several research questions:

1. First, does teacher proximity in the playground suppress children’s play behaviors as found in our previous study (Kendrick, et al. 2011)? It is possible that just the presence of the teacher in the playground dampens children’s play? If teachers dampen play, then, children are expected to play less when teachers are in close proximity to children who are playing on the playground.

2. Second, does teacher presence in the playground create a novelty effect? Over time will preschool children habituate to the presence of a teacher in the playground?

One limitation in the thesis study (Kendrick et al., 2011) was that we did not allow children time to normalize to the teachers’ presence before we began data collection in the post phase. It is possible that the teacher being in close proximity to children was a novel concept for children, as a result the children focused and interacted more with the teacher than with their peers. If children habituate to having teachers in the playground, then we should see an initial decrease in play as in the previous study, but over time children’s play should rebound at the final data collection time point as by then sufficient time should have elapsed to allow for normalization of children to the teacher on the playground.
3. Third, over time, will teachers who participate in a playground curriculum have a positive impact on preschool children, indicated by greater frequency of children engaging in social play behaviors such as simple social, and pretend play and a decrease in frequency of observed aimless and onlooker behaviors? By extending the length of time that teachers are in the playground, and by further developing the curriculum for teachers, it is expected that teachers will have a positive impact on the playground. If this hypothesis is supported, then we should see a significant difference in play behavior between the curriculum group and the control group at the final data collection point. Specifically, the children in the curriculum site are expected to: 1) display higher social competence as scored by the Social Competence and Behavior Evaluation (SCBE – 30 short form) (LaFreniere, & Dumas, 1996), 2) more playfulness as indicated by the Playfulness Assessment Profile – Preschool Edition, PAP (Sanders, 2010), and 3) higher frequency of simple social and pretend play, and 4) a reduction in observed aimless and onlooker behaviors.
CHAPTER 3

METHODS

Purpose

The purpose of this study was to replicate and extend the master’s thesis study titled *Teacher directed play versus natural play in the playground*. Specifically, as in the master’s thesis, it was expected that teachers’ proximity to children in the playground would reduce children’s play behaviors compared to baseline (Ho1). However, over time children were expected to habituate to teachers in the playground and play behaviors were expected to return to baseline levels (Ho2). Additionally, more social play (simple social and pretend) was expected to be observed from groups of children whose teachers participated in a teacher curriculum training focused on facilitating play in the playground (Ho3). As a result of an increase in social play, reduced frequencies were expected of aimless and onlooker behaviors in the curriculum group.

These hypotheses were tested by 1) videotaped coding of children playing in the playground at three different time points across five weeks (i.e. week 2 (baseline), week 3 (proximity) and week 5 (proximity vs. curriculum)), 2) an extended timeline from the master’s thesis to allow for the children to normalize their behaviors to teachers being in the playground, and 3) an experimental design that included one group of teachers who participated in a teacher curriculum training and another group of teachers who continued their regular playground activities (control group). See Appendix A. Additionally, unlike in the Masters’ thesis, teachers were also videotaped. The teacher videotapes were then examined and coded for *global teacher playground styles* (i.e. negative, neutral, safety monitor, director of
play, facilitator of play, child directed player, and peer player), on the playground as well as teacher-child interactions (i.e. who initiated the interaction, and what was the result in children’s play following the interaction). (see Appendices H and I).

**Procedure**

The study was conducted across two preschools. One school received teacher curriculum training and one did not. All preschool classes within the site participated in either the assigned curriculum or the control. That is, classrooms were not randomized within each site. This preserved the integrity of the experiment by reducing the likelihood of teachers within a site sharing information regarding the curriculum instructions with their colleagues who might have been assigned to the control group. Lead teachers across both sites were selected to be the primary teacher to implement the instructions. In all but one classroom this was the case. In one classroom, the lead teacher did not want to be videotaped but still wanted to participate. In this case the assistant teacher, who was a full time employee in the class, served as the targeted teacher to implement the instructions with the children throughout the duration of the study.

**Participants**

Six classrooms from each school were selected to participate resulting in a total of 12 classrooms for the study. One hundred seventy-six typical preschool age children ages 2.5-5 years (mean 3 years; 55% male 45% female) and 12 teachers provided consent. All consented/assented children from the 2.5 – 5 year old preschool classrooms at each site were included in the study.
**Equipment and Training**

*Equipment: Videotaping Children and Teachers in the Playground*

The climbing apparatus areas at both preschool playground sites were videotaped by four trained researchers (two at each site) who held small handheld camcorders (Hitachi DZ-MV580A). In an effort to easily identify the targeted teacher to be videotaped, colored identification badges were made for the teachers to wear while on the playground. Additionally, teachers who were to be recorded were also asked to wear a wireless lapel microphone so that audio recordings would be more audible for coding.

*Researcher Training*

The researchers helping with the study received training on the use and operation of the camcorders and where to stand in the playground to videotape the children and teachers. Researchers were also instructed to minimize talking with the children as much as possible. Following training, the researchers practiced across two days using the camcorder on the playground the week before the start of the study (week 1) while the teachers and children were engaged in their normal play on the playground (see Appendix A). This provided the teachers and children an opportunity to habituate to the researchers and the camcorders prior to initiating the study. During this practice session, researchers took their positions on the playground and practiced videotaping the children, which included changing out video discs and becoming familiar with the environment and angles they were to videotape. In all, four researchers participated in the videotaping phase each day. One researcher videotaped the climbing area while the other researcher videotaped the targeted teacher. This was done across two sites simultaneously.
Assessments

Background Questionnaires

Parents were asked to complete a background demographic questionnaire, which addressed basic questions about the child such as gender, race, age, as well as basic information about the parents such as occupation, education and age. This information was used to examine possible differences in the family characteristics across the two sites (see Appendix B).

All teachers were asked to complete a background questionnaire, which asked about age, educational background and experience level. This information was used to examine possible differences in the teacher characteristics across the two sites (see Appendix C).

Playfulness Assessment Profile – Preschool Edition, PAP (Sanders, 2010)

Teachers completed the PAP on each child in their classroom at baseline and then again at the conclusion of the study. This assessment is comprised of 20 questions that ask the teacher to evaluate the child’s playfulness, such as “engages in play without encouragement or praise” and “child takes initiative during play with others.” Each item is answered using a Likert scale ranging from 1 (not true) to 4 (completely true). The items are then scored to reflect an overall measure of playfulness with the higher numbers corresponding to higher playfulness. The scale is also comprised of four subscales that examine factors of playfulness: 1) active engagement, 2) internal control, 3) joyfulness, and 4) social connection. The PAP scale was designed to evaluate preschoolers’ level of playfulness and was originally intended to adjust classroom practice to enhance playfulness as needed. Specifically, the scale was intended to evaluate play-based interventions by examining play episodes over a minimum two week period (Sanderson, 2010). This measure was helpful in evaluating the effectiveness of the curriculum that was designed for this study on promoting play or children’s playfulness. This
scale is a new, but reliable and valid, teacher-report measure of playfulness in preschool-age children. It has strong reliabilities for all four factors: Active Engagement ($\alpha = 0.89$), Internal Control ($\alpha = 0.92$), Joyfulness ($\alpha = 0.91$), and Social Connection ($\alpha = 0.91$), which all contribute to an overall view of a measure of playfulness in young children.

*Social Competence and Behavior Evaluation (SCBE – 30 short form) (LaFreniere, & Dumas, 1996)*

Teachers also completed the SCBE-30 for each child in their class at baseline and again at the conclusion of the study. The SCBE-30 is the short form used to assess preschoolers’ social competence and behavior. It was designed for research purposes, particularly for use in longitudinal studies that examine social development and intervention studies as an outcome measure to assess treatment effects (LaFreniere & Dumas, 1996). In the current study, the measure was used to assess intervention effects on children’s social skill development. This scale is comprised of 30 questions such as “goes unnoticed in a group” and “remains apart, isolated from the group.” Each item is scored on a Likert scale ranging from 1 (never) to 6 (always). Higher numbers reflect higher social competence. This measure yields three subscales: Anger-Aggression, Social Competence, and Anxiety-Withdrawal; each factor scale consists of 10 items. The SCBE-30 has shown high inter-rater and test-retest reliability, internal consistency, and stability. Internal consistencies of factor scales ranged from $\alpha = .80$ to $\alpha = .92$ (LaFreniere & Dumas, 1996).

**Timeline for the Control and Curriculum Groups**

The 5-week study included a warm up week. (See Appendix A). Both sites participated in the 5-week study. One site served as the control group (proximity) and the other site served as the experimental group (Child And Teacher, or CAT curriculum group). Training sessions
were held at each site, with all of the teachers at the same site receiving the same instructions. Below is a description of the five weeks.

**Week 1: Warm Up and Set up**

At each site, classes were scheduled to come out to the playground for approximately 30 minutes, one classroom at a time. Each classroom had a lead and an assistant teacher and approximately 15 children. The first week of the study involved no data collection. Researchers responsible for videotaping the children and teachers during recess were on the playgrounds pretending to be videotaping. Teachers and children were not aware that the cameras were not turned on. One researcher targeted the children playing in the climbing area while another researcher targeted and pretended to record the designated teachers, which were the teachers in close proximity to the climbing area. This warm up time allowed researchers the opportunity to become familiar with the set up and equipment while also allowing the participants the opportunity to normalize to the researchers’ presence and the camcorders. The mock videotaping occurred during the regularly scheduled playground times on two days during the warm up week.

**Week 2: Baseline and Training**

**Baseline**

During this week, baseline data were collected at both preschool sites. As previously mentioned, the data collection involved videotaping the participants where one camera focused on the children playing on the climbing area of the playground and the other camera focused on the designated teacher. During the baseline week, participants were videotaped naturally engaging or playing in the playground. No instructions were provided to the teachers during this phase.
**Proximity training for Control and Curriculum Groups**

At the end of the baseline data collection phase, all teachers received instructions that were to be implemented the following week. The instructions consisted of asking one teacher to supervise the children in the playground while in close proximity (defined as within 3 feet) to the climbing area while the other teacher was free to supervise any area he/she may choose on the playground.

**Week 3: Midpoint Videotaping of Proximity Effects and Instructions for Control and Curriculum Groups**

Data were collected during this week as described during Baseline. The group activities at this midpoint were as follows:

*Control Group*

Teachers were told to continue with instructions as given in the week prior. See above Proximity training.

*Curriculum Group: Child and Teacher (CAT) curriculum*

Teachers participated in a two-hour training session. To begin the training session a pre-test was administered to the teachers. It asked questions such as “What is play?,” “What are styles of play?,” and “What is your current subjective unit of play (SUP)? In other words on a scale of 1-100 how playful do you feel right now?” (Gross, 2011). The purpose of the pretest was to assess the teachers’ knowledge and approach to play. Following the pre-test, in the first hour, teachers were invited to participate in a parachute activity as an icebreaker and as an effort to get them in a playful state of mind. This activity involved inviting the participants to give suggestions for ways we could play with the parachute such as shaking it to the tune of music or making a tent out of it. Following the activity, the teachers were asked to define playfulness and reflect on their own feelings of play and playfulness in that moment.
Discussion involved presenting a formal definition of playfulness as an attitude or motivation to freely and joyfully engage with, connect with and explore the world around them. The concept of playfulness was further broken down into four domains including 1) Active Engagement, 2) Internal Control, 3) Social Connection, and 4) Joyfulness (please refer to the Introduction for definitions) (Gross, 2011; Sanderson, 2010). The curriculum leader presented the idea that any activity can be considered play (i.e., chores) if it contained the attitude of playfulness. The curriculum encouraged teachers to discuss that in order to encourage playfulness in others (i.e., children) the teacher should model playfulness. The training progressed into identifying and defining different types of behaviors seen during play on the playground (aimless, onlooker, solitary, parallel, simple social, and pretend). Teachers were encouraged to share specific examples and anecdotes about the children in their class who exhibited these various behaviors.

In the second hour of training, teachers participated in another group play experience of cooperative musical chairs. Cooperative musical chairs is a game that is a little different than the traditional musical chairs of having one less chair than participants in the game who try to sit when the music ends. Instead of competing for chairs when the music ends, all participants are invited to work together at having all participants up on the chairs in some way so that the feet do not touch the floor. Therefore, participants may be creative and stand on the chairs, sit on each other’s laps, or whatever creative way they can work to achieve the common goal. The purpose of presenting this game was to help teachers 1) identify and emphasize the domains of playfulness (active engagement, internal control, social connection, and joyfulness), 2) challenge thinking about facilitating play (i.e., encouraging creative ideas for play, inviting participants as they feel comfortable engaging) while also 3) monitoring safety. Following the game, these concepts were discussed.
Teachers were also taught how to enter into children’s play using a modification of a component of the High Scope (Hohmann, & Weikart, 1995) approach to preschool education (Adult-Child Interaction guide) and an Interaction style checklist (see Appendix D). Concepts such as SOUL were introduced. SOUL represents teaching adults to enter children’s play by being silent, observing, understanding, and listening. Teachers were also introduced to concepts such as matching the pace and activity of the children, communicating on the children’s physical level, taking turns playing with the children, following the children’s lead, and encouraging the children to extend their actions and communications. The Interaction Style Checklist served as a guide for the Teacher interaction module. (See Appendix D).

Teachers were also taught how to target and engage onlooker and aimless children to enter into play. Chapter 12 (Initiative and Social Relations) of The High Scope Educating Young Children manual (Hohmann, Weikart, 1995) was used to develop a module to achieve this objective. Teachers reviewed the different play styles of children and were presented with strategies on how to target, through observations, those children who may want to engage in play with others but need assistance. They were taught strategies on how to become play partners with these children, with the goal of the child developing play skills and ultimately engaging in autonomous peer play. Role-playing offered opportunities for teachers to begin to practice some of these techniques. Teachers were left with instructions to begin practicing observing play styles of children and to try to engage children in play paying special attention to children demonstrating aimless and onlooker behaviors. Following the training session, teachers completed a post-test, which asked the same questions as the pre-test (“What is play?” “What are styles of play?” and “What is your SUP?”). The purpose of the post-test was to assess knowledge gained during the training session.
Week 4: no video recording / Practice week/ Maintenance Session

During this session, the control group site was instructed to continue their task of having a teacher in close proximity of the climbing area (see Proximity training) and another teacher wandering around the playground. The experimental group, or curriculum site, was given the week to practice implementing concepts learned at the end of week 3.

At the end of week 4 the teachers in the experimental site participated in a maintenance meeting session, which allowed time to reflect on the previous week’s practice and to receive feedback from the PI who observed the practice throughout the week. The PI then reinforced concepts learned during week three. Additionally, the experimental site received training on how to facilitate children’s problem solving and negotiations while on the playground. The introduction of techniques to enhance these skills included the use of “I messages”; which is a technique where the teacher frames a problem behavior by owning it. For example, a teacher may say, “I am scared when you climb up the slide” and follows up with an explanation as to why it is undesired (e.g., “because you could hurt yourself”). Other techniques for problem solving and negotiations included assisting children with expressing their feelings in words and encouraging the children to come up with solutions. The teacher would then make sure the agreed solution was carried out.

Week 5: The End Point

Data were collected as described in the baseline phase.

Fidelity

Throughout the 5 week timeline of the study, the principle investigator randomly visited the two sites to insure that videotaping was going as planned, and that teachers were compliant with instructions. If the teachers were not following the instructions, the PI would gently remind the teacher about the instructions such as “Remember you need to be in close
proximity to the climbing area today.” The PI also held weekly meetings for the researchers to receive and give feedback about how the study was progressing and to address any issues that may have arisen, such as equipment problems. Additionally, the principle investigator provided verbal feedback to the teachers in the curriculum group at the training session following week 4 (the practice week) based on practices (both positive and needing improvement) observed. This feedback was then discussed prior to week 5 (the end of the study).

**Videotape Coding**

*Overview*

A time-sampling coding sheet was constructed to code the videotapes for 1) the number of children in the area, 2) number of interactions observed (defined as two or more children interacting in such a way that it elicits change of another child’s behavior as a result of an action or verbal exchange), and 3) the play styles (aimless, onlooker, solitary, parallel, simple social and pretend) (Howes & Matheson 1992), as was done in the previous study. A codebook was developed that included operational definitions and detailed descriptions of all behaviors to be coded (See Appendix H). Coders were then trained to 85% reliability on the behaviors to be coded. Disagreements were resolved through discussion, and reviewing the video until agreement was reached. A primary coder was assigned to look at 30-seconds of the videotape, stop the video, and then coded all of the applicable variables just described. This continued until all of the videotapes were coded. A secondary coder was assigned to code 20% of the videotapes for reliability purposes. Inter-observer reliability between the primary and second coders was calculated and reached Kappa .85 agreement. Additionally the primary coder was asked to re-code at least 20% of her previously coded videos at random to prevent against coder fatigue. She met reliability of Kappa .90 with herself.
Coding Children’s Behaviors from videotapes

Behavior Mapping

The videotapes were coded using behavior mapping rather than coding each individual child’s play style or interaction. That is, rather than focusing on individual children, global scores were assigned to the overall group of children’s play behaviors visible within the videotape recording for 30 second intervals. This method was implemented in order to examine and code group behaviors in an effort to see how play impacted the collective group. The coding of the global playground behaviors took into account all the children, and all the possible interactions and behaviors viewed within the time segments. Behavior mapping has recently been reported in the literature in other studies (Miller 2010; and Raymundo, Kuhnen, & Soares, 2011). Raymundo and colleagues conducted a study examining behaviors of children in specific areas on a preschool playground and used a similar system where they examined 11 behaviors of 65 children ranging in age from 3-5 years and coded behaviors every five minutes for the duration of a 40 minute play period. One difference was that they conducted live coding and in the current study (as well as the master’s thesis study), the behavior mapping was applied or coded from the videotapes. Miller (2010) used behavioral mapping to examine children’s behaviors in outdoor garden areas across multiple sites. She also conducted live coding and examined collective behavior of young children, but at six-minute intervals. In our previous study (Kendrick et al., 2011), we coded the videos using similar behavior mapping techniques, but at 30 second intervals. In the master’s thesis, the results depicted children’s overall behavior in the playground within a designated area (see Kendrick et al., 2011). While coding for individual children’s behaviors has been the standard and proven successful in the literature, behavior mapping provides an alternative, more efficient way of looking at play behaviors.
One of the benefits of examining global behaviors is time efficiency. As a result of focusing on a single area instead of on individual children, a substantial amount of data can be collected in a relatively short amount of time. To put this in perspective, in our previous study (Kendrick, et al., 2011), data were collected for two time points on 58 children on two areas of the playground (climbing area and sandbox) in a matter of 3 weeks. Our total time spent collecting these data was approximately 2 hours across the 3 weeks. However, if we were to use the more traditional method of following individual children for an even shorter span of time (i.e. 5-10 minutes per child) we would have spent approximately 9 ½ hours, or approximately 3 and ½ times longer just to collect baseline data and it would have taken many months to track 58 children in the playground at two time points.

In the current study, one aim is to examine teacher impact on play in the collective group. By using behavior mapping in our previous study, we were able to see that when the teacher was in closer proximity the play behaviors were significantly impacted and depressed. We may not have seen that trend by following individual children. When a teacher is in close proximity and playing ceases, or children no longer play in that area, we are better informed about how the environment impacts children’s overall play.

**Play Codes**

Specifically, the coder recorded the frequency of the following behaviors for each 30-sec videotaped segment: (a) *aimless* (directionless, a wandering child); (b) *solitary* (alone); (c) *onlooker* (looking at others playing, but not involved in play); (d) *parallel play* (children playing in the same area, engaged in the same activity, but showing little or no awareness of each other); (e) *simple social play* (at least two children interacting with each other resulting in the behavior of one child changing because of the interaction); and (f) *pretend play*, which is play between two or more children in which there is a pretense, or make believe but no
directed roles; an example of this type of play may be a child crawling around and pretending to be a dog and the other children petting the child who is acting as a dog. This type of play may or may not involve scripts or descriptives such as a child saying, “I’m the daddy, walking the dog” (Howes & Matheson, 1992).

**Coding Teacher Behaviors from videotapes**

*Video Coding*

Teacher videos were also coded in 30-second intervals. Two waves of data were coded from the teacher videotapes. The first one examined the global teacher playground styles (i.e. negative, neutral, safety monitor, director of play, facilitator of play, child directed player, and peer player), and another wave of data was coded to examine and record children’s race, gender, as well as what styles of play the children were involved in when the teacher began approaching the children, during the interaction with the teacher, and immediately following the interaction with the teacher. Who initiated the interaction (teacher or child) was also assessed. A 5-minute time interval was used in another study that examined frequencies of teachers’ interactions with children on the playground (Franzen & Kamps, 2008). However, upon preliminarily reviewing our videos, we felt that a 30 second time interval would be more appropriate.

*Global teacher playground styles*

After previewing several videos, a codebook and coding scheme were created that examined the teacher’s playground interactive style (see Appendices I and J). Styles include the labels “negative, neutral, safety monitor/rule enforcer, director of play, facilitator of play, child directed player, and peer player.” These styles were influenced by High Scope’s Interaction Style Checklist (Enz and Christie (1994) and Wilcox-Herzog Ward’s (2004) work, to categorize teacher’s play interaction styles with children. From Enz and Christie’s (1994)
work included as well as modified some of the styles and descriptors as follow: 1) The *negative* style includes a teacher who demonstrates less than optimal interactions with children. Behaviors for the negative teacher might include yelling at children when interacting or speaking to the children; walking away from, or even ignoring children, when children are speaking or attempting to interact with the teacher. 2) The *neutral* category would include behaviors such as the teacher not engaging with the children, engaging with other adults instead of children, or simply standing to the side being inactive/passive; 3) The *safety monitor/rule enforcer* teacher is an adult who is primarily concerned with the rules of the playground. This teacher may watch children play, but when she interacts with children it is for the purpose of enforcing rules or instructing on how to use equipment safely (i.e., how to slide down the slide rather than climb up the slide); 4) *The director of play* teacher is one who instructs and manages play. This teacher may or may not be at a distance from the children and may or may not be on eye level when communicating with children. This teacher tends to point while giving verbal directions (such as “go play with that group over there”) rather than interacting or facilitating play; 5) the *facilitator* of play, unlike the director of play, is on eye level with the children, and may even have physical contact. The facilitator helps the children use materials and find activities to play with. This teacher scaffolds play and utilizes teachable moments by asking open-ended questions and giving comments. 6) The *child-directed player* is immersed in children’s play. This teacher is typically on the children’s physical level, following the children’s suggestions and the actions suggested by the children. The child-directed teacher waits for the children to initiate conversation, and she accepts children’s explanations while listening attentively. 7) The *peer player* teacher is joyful, and enthusiastically engages in play with children in a peer like fashion. This teacher is
spontaneous, and childlike, even silly and looks like the other children by playing in the same synchronous way.

Our coding scheme was also influenced by Malinda Colwell’s (1994) coding scheme, which examined adult-child synchrony. In much the same way, each global teaching playground style was coded from the videotapes by ranking and observing the interactions and behaviors of the teachers while on the playground. Coders viewed and recorded teacher style every 30-second segments of video footage for 15 minutes (a time that was equivalent to both sites). Then the mode or most frequent category code for each teacher in the 15 minutes of observation (baseline, proximity, and post time points) was determined, and this mode was used as the teacher’s global behavioral style (i.e., safety monitor, director, facilitator etc.) for that phase (i.e., baseline, proximity, post).
CHAPTER 4

RESULTS

Power Analyses

A power analysis using the Gpower computer program (Erdfelder, Faul, & Buchner, 1996) indicated examining children’s play behaviors would require a total number of 271 time intervals to detect medium effects ($d=.3$) with $80\%$ power using an independent sample t test with a Bonferonni corrected alpha at $0.00833$, or 608 time intervals for a small effect ($d=.2$). Based on the proposed study design, we anticipated 480 time intervals for examining children’s behaviors resulting in an effect between small and medium. The analyses presented in this section were corrected for significance with an alpha $p \leq 0.008$.

Background

To address the issue of comparability between the two sites, the family background data (see Appendix B) were examined between the two groups (child gender, race, parent age, education) using ANOVAs and chi square analyses. Results indicated that the only significant difference between the two sites was race of children ($X^2=12.5$, $p=.006$) with the control site having slightly more diversity in race compared to the experimental site (see Table 2).

Additionally, the teacher background data (see Appendix C) were examined between the two groups (teacher age, race, classroom age, experience, and training) using ANOVAs and chi square analyses to assess comparability. No significant differences were found between the two groups of teachers, therefore; we will consider the teachers to be comparable (see Table 3).
Children’s videotape data

Proximity Effects

To address the first hypothesis of whether or not teachers’ proximity in the playground suppresses children’s play behaviors (aimless, solitary, onlooker, parallel, simple social, pretend), as found in our previous study (Kendrick, et. al, 2011), chi square analyses were conducted on baseline play vs. week 3 play across both sites (control and curriculum). Proximity data revealed 1) a significant decrease in onlooker behavior ($\chi^2=13.17$, $p < .001$), 2) a significant increase in parallel play($\chi^2=12.09$, $p = .001$), 3) a trend towards decrease simple social ($\chi^2=4.54$, $p = .03$), and 4) a trend towards decrease pretend play ($\chi^2=3.02$, $p = .08$). (See Table 4).

Do children habituate to the teacher in the playground over time?

The second hypothesis of whether or not teachers’ presence in the playground creates an initial novelty effect and subsequently children habituate to teachers’ presence was tested using chi square analysis to compare the control group play behaviors from week 3 to the end of study (week 5). The findings indicated a significant increase in both onlooker behavior ($\chi^2=18.78$, $p < .001$) and simple social play ($\chi^2=15.22$, $p < .001$). Increase trends were found for solitary, parallel, and pretend play, while aimless behavior trended down. (see Table 5).

Does the teacher playground curriculum facilitate social play in the playground?

Chi square analysis examined baseline compared to week 5 play behaviors within sites (control group and curriculum group). The control group had an increase in solitary play ($\chi^2=17.15$, $p < .001$) and simple social play ($\chi^2=29.94$, $p < .001$). The curriculum group had an increase in aimless ($\chi^2=22.12$, $p =.001$) and a decrease in simple social play ($\chi^2=39.05$, $p < .001$) (see Table 6).
Teachers’ videotape data

What roles do teachers engage in while on the playground?

To begin with, we conducted a Smirnov test to look at the distribution of Global teacher scores between the two sites (control and curriculum) which revealed a significant difference in distribution (p < .001). Therefore, to examine the differences in distribution we ran chi square analyses. The analysis looked at the baseline distribution for Global Teacher scores by site (χ² = 23.61, p < .001, see Figure 1).

Figure 1. A Comparison of Teacher Global Style Distribution at Baseline
Does the proximity or curriculum training have an impact on teachers’ global style?

Next we looked within comparing Global Teacher scores by site from baseline to week 5 (end of study), which showed significant change at both sites (Control $\chi^2 = 59.97, p < .001$; Curriculum $\chi^2 = 47.05, p < .001$, see Figures 2 and 3).

**Figure 2. A Comparison of Global Teacher Styles from week 2 (baseline) to week 5 (end of study) for the Control Group**
Is there a change in individual teachers global style rating on the playground across time?

Due to the small sample size (12 teachers total) we visually inspected the data using ABA style graphs for each teacher individually examining the categorical style (mode) at each of the three time points (baseline, proximity, curriculum). Trends in behaviors were evident, such as whether or not they remained stable, or changed in their teaching style from time 1 (baseline) to time 2 (proximity) to time 3 (curriculum).
Figure 4. Individual Global Teacher Styles across baseline (week 2), proximity (week 3), and end of study (week 5) for the Control group.
Figure 5. Individual Global Teacher Styles across baseline (week 2), proximity (week 3), and end of study (week 5) for the Curriculum group.
These data were also analyzed qualitatively by visually comparing the graphs by site (curriculum group vs. the control group) across time points (baseline, proximity, end of study) to see if the curriculum training had a positive impact on the teachers’ behavioral styles on the playground. (see Figure 6).

Figure 6. Global Teacher Styles across week 2 (baseline), week 3 (proximity), and week 5 (end of study) by site (control and curriculum).

Which groups of children do the teachers approach on the playground?

To address this question, we aggregated the teacher video data and ran t-tests to examine children’s behaviors at the approach of the teacher (just prior to interaction). At week 2 (baseline) teachers in the control group approached more children who were engaged in parallel play compared to the teachers in the curriculum group, t(9)=2.57, p = .03. Additionally, more teachers in the control group approached children during week 2 (baseline) who were not playing t(9)=4.685, p <.001, or simply talking and not playing t(90=2.37, p=.038.
During week 5 (the end of the study) the children’s behavior were examined just prior to the teachers’ approach to see what children did in response to the closer proximity of the teacher. The findings revealed that more teachers in the control group than in the curriculum group approached children engaged in simple social play, $t(9)=6.28$, $p<.001$. Also, more teachers in the control group than in the curriculum group approached children who were not playing, $t(9)=3.9$, $p=.006$ or children who were talking but not playing $t(9)=8.10$, $p<.001$. However, interestingly at week 5 more children in the control group than in the curriculum group tended to follow the teacher and not engage in play, $t(9)=6.64$, $p<.001$.

*What do children do following the teacher interaction on the playground?*

The next question we wanted to address was what did the children do following the interaction with the teacher. At week 2, immediately following the teacher interaction, children in the curriculum group were trending toward more aimless behavior, $t(9)=2.20$, $p=.078$. The curriculum group children also engaged in less parallel play $t(9)=2.67$, $p=.018$ and less simple social play $t(9)=1.75$, $p=.087$ compared to the children in the control group. Interestingly the control group had more children stop playing $t(9)=2.92$, $p=.011$ and more children talking but not playing $t(9)=2.40$, $p=.04$ than the curriculum group.

During week 5, again, there is less simple social play after the teacher left in the curriculum group compared to the control group $t(9)=7.72$, $p<.001$. In addition, the control group again had more children who stopped playing $t(9)=3.53$, $p=.006$ as well as more children who talked but did not play, $t(9)=4.67$, $p=.001$. More children in the control group than in the curriculum group were also found to continue to follow the teacher but not engage in play, $t(9)=2.76$, $p=.034$. 
Does the proximity of the teachers have an impact on teachers’ perception of the children’s playfulness and social competence?

To address the impact of the proximity of teachers on children’s play and social development, we asked teachers to complete assessments of playfulness (PAP) and social competence (SCBE-30) for each of the children in their classroom at two time points (pre, post). The PAP data were examined using repeated measures ANOVA. The results indicated a main effect of time for playfulness (F(1,168) =34.58, p <.001, $\eta^2=.171$); however, there was no significant interaction effect of time by site (F(1,168) =.006, p > .05, $\eta^2=.00$). The SCBE-30 data were also examined using repeated measures ANOVA. The results indicated a main effect of time for social competence (F(1, 168)= 789.85, p <.001, $\eta^2=.825$) The SCBE data also indicated a time by site interaction effect (F(1, 168)= 3.84, p = .052, $\eta^2=.002$). (see Table7 and Figure 7).

Figure 7. Time by Site effect of the Social Competence Behavior Evaluation (SCBE) of preschool children as rated by their teachers at baseline and end of study.
CHAPTER 5

DISCUSSION

The playground is a rich environment for studying what influences children’s play, yet few playground studies exist. In the master’s thesis we began to examine how the environment may shape the play of young children. We found that children engage in more complex social play in the climbing area compared to the sandbox area. We also discovered in that particular study that when teachers were placed into zones to be in closer proximity to the children, those children typically stopped playing (Kendrick, et al., 2011). This led to several questions that spawned the dissertation study. In particular we wanted to replicate and extend our previous study, and more closely examine the impact that teachers have on children’s play while on the playground. One of the limitations of the thesis was that the focus was on the children and less on how the teachers were engaging children to determine how they impacted children’s behaviors. For example, what was the style of the teacher? Did she engage the children? Was she perhaps more directive, that is, leading and taking over play? Does the teacher style matter? Do teachers engage in child-peer play to extend and scaffold complex social play? Can teachers be taught about the nature of play and how best to engage children in the playground?

Do teachers’ proximity to children in the playground affect their behavior?

In the current study, with respect to teacher’s proximity, the teacher’s presence reduced onlooker behavior and increased parallel play. The presence of the teacher in the playground also dampened simple social and pretend play. Interestingly at baseline, the majority of teachers were coded as neutral, rule enforcer or director of play, which may not be conducive to allowing spontaneous, creative peer play. These preliminary findings of teacher style may explain why the proximity of teachers to children in the playground suppresses play. However, their style does not explain why onlooker behavior decreased and parallel play increased.
Do children habituate to the teacher in the playground over time?

In the thesis we found that the teacher’s presence suppressed children’s play. In the current dissertation, we examined whether over time children habituated to the teacher in the playground and resumed normal play. That is, the dissertation examined if extending the amount of time the teachers spend in close proximity to the children (i.e., from 1 week in the thesis to 3 weeks in the dissertation) would result in children resuming play and returning to baseline play levels.

In the dissertation, teachers’ presence in the playground did not reliably decrease children’s play behaviors. Nonetheless, the comparison of baseline to the end of the study revealed that the children habituated to the presence of the teacher on the playground, as their play behaviors at the end of the study were at, or greater than, baseline. Thus, the dissertation confirmed the hypothesis that over time, children habituate to teachers in the playground and resume or increase social play. However, greater onlooker behavior was also observed, suggesting that teachers did not naturally encourage children to play.

Which teacher behavior is more likely to facilitate social play in the playground: Proximity, or Curriculum Engagement?

Teacher proximity in the playground over a 5 week period had a greater impact on promoting simple social behavior. The teachers’ ratings of the children’s social behavior (SCBE-30) supported this finding for the proximity control group, but not for the curriculum group. Teacher proximity was also related to more children engaged in solitary play. Future research is needed to examine why children engage in solitary play when teachers are in the playground.

The teacher curriculum seemed to have a negative impact on the children in that their children increased in aimless behavior and decreased in simple social play from baseline to the
end of the study. These are not optimal changes. The findings are surprising because teachers in the curriculum group were coded as improved in teacher style by the end of the study. Perhaps teachers’ improved styles, specifically decreased emphasis in rule enforcer and director of play and increased focus on facilitating play, were not related to children’s social skill development in the playground. Further research is needed to examine other factors that might relate to children’s social play.

*Teachers’ videotape data*

*What roles do teachers engage in while on the playground?*

At the beginning of the study, the majority of the teachers across both sites fell into the neutral, rule enforcer or director of play styles. This is not surprising, as there is an expectation for teachers to provide foremost for safety of the children thus necessitating the rule enforcer style or director of play. Additionally, as teachers may see this time as a break from classroom engagement with the students, teachers may feel more comfortable being neutral in the playground. These findings support the anecdotal and general impression that overall teachers are not naturally inclined to engage children in play and perhaps view their role on the playground to be more supervisory rather than interactive.

*Did the proximity or curriculum training have an impact on teachers’ global style?*

With little intervention, other than being asked to remain in close proximity to the children, teachers in the control group become less neutral, better at facilitating play and more child-directed over time. The curriculum group also became less neutral and more child-directed. However, their child-directed style was not as pronounced as the control group. In the curriculum site, where we expected to see the most change in global style we found that two out of six teachers trended upward in their styles. For example they went from a director of play to a facilitator of play. That is, they were more responsive to the children and asked more
open ended questions rather than just making suggestions first and taking over the play interaction. However, that being said, we also found that three out of the six teachers had little or no change in style across time, and that one teacher actually trended downward from rule enforcer to neutral. As a result of these findings, we conclude that overall for this study the curriculum was not particularly helpful in aiding teachers in facilitating children’s social play. Anecdotally, however, there was some promising video footage where teachers in the curriculum group at moments achieved the child directed style and almost reached peer play. Additionally, following the study when debriefing the teachers of the curriculum group, they suggested that they felt that they needed more time to feel comfortable with the behavioral style changes implied in the curriculum. Thus, can teachers be taught about the nature of play and how best to engage in children in play? Based on the current findings, the answer to this question is that the majority of teachers do not seem to understand the nature of children’s play. However, that a few teachers successfully improved in their interaction style is encouraging. Further research is needed to better determine how to help teachers understand their role in the playground and their impact on children’s behaviors.

In the control group where teachers were instructed simply to be in close proximity to the children, three out of six teachers trended upward in style. Two went from director of play to facilitator, and one went from neutral style to facilitator. One teacher had no change in style and two trended downward from rule enforcer to more neutral style.

These results suggested that the curriculum did not appear to have much impact, whereas being in close proximity to children seemed to promote more engagement and interaction. This is likely due to being in close proximity, teachers are able to monitor for safety, enforce the rules, and perhaps be more aware of the actions of the children and may be more inclined to participate or offer suggestions during play sessions. However, it may be too early to dismiss
the curriculum training. Perhaps, as suggested by the curriculum teachers at the debriefing, they needed more time. The overwhelming picture is that it seems that people need more time to change behaviors. One third of the teachers did not change their behavior at all, even when some were asked and instructed to. Future research might examine if teachers’ age affects their proclivity to change interaction style when they participate in a curriculum intervention. Future studies might also need to be conducted to span the school year.

Which groups of children do the teachers approach on the playground?

To address this question, we examined children’s behaviors when the teacher approached (just prior to interaction). At the beginning of the study, the control group teachers approached more children (than the curriculum group) who were not playing or engaged in parallel play. By the end of the study, the control group teachers approached children engaged in simple social play. Perhaps being in close proximity allowed the teacher over time to take a greater interest in children who were interacting. Perhaps teacher approach reinforced children’s behavior to engage in social play. Interestingly, more children began following the teacher in the control group compared to the curriculum group. Perhaps the children began to also take an interest in what the teacher was doing. Further research is needed to clarify these findings.

What do children do following the teacher interaction on the playground?

The question of what did the children do following the interaction with the teacher was important as we were interested in finding out if the teacher would suppress or help scaffold play. That is, if the teacher engaged the children and then stepped back, could the children sustain peer play? What we found was that following the teacher interactions, the curriculum group children were more aimless, engaged in less parallel play and also engaged in less simple social play. However, pretend play was not changed. This is not at all what we had
anticipated or intended. Again, perhaps this may be attributed to needing more time for the teachers as well as the children to acclimate to the teacher engaging children in play. Because pretend play is a higher level of play, perhaps these children were more engrossed in their game and were oblivious to the teachers. This is an interesting finding and was also seen in the thesis study.

Interestingly the control group had more children stop playing and more children talking, but not playing following the interaction. Also more children followed the teacher after the interaction in the control group compared to the curriculum group. These findings suggest that teachers impact children’s behaviors in the playground and may disrupt play.

*Does the proximity of the teachers have an impact on teachers’ perception of the children’s playfulness and social competence?*

Based on the previous study (Kendrick, et al., 2011) a decrease in both playfulness and social competence was expected for the control site from baseline to end of study. In contrast, children in the curriculum group were expected to be perceived as having higher levels of playfulness and social competence by their teachers. The findings revealed that all teachers perceived the children as increased in playfulness and social competence by the end of the study. With the passing of time, teachers reported that the children became more comfortable and competent in play and social interactions. What is interesting about these results is that this also may support our rebound hypothesis. That is, that unlike the master’s thesis where teachers seemed to suppress play behaviors by being in closer proximity, these results show a perceived increase in playfulness and social competence over time despite the teachers being in closer proximity. However, the results might also suggest that perhaps there is a proximity effect from the perspective of the teachers regarding awareness of children’s playfulness and
social competence. That is, perhaps when teachers are in closer proximity they seem more aware of the specifics of children’s play.

**Conclusion**

In summary, this study does answer some of our previous questions, but it leaves us with even more unanswered ones. Like in our previous study, teachers’ proximity impacts children’s play. However, after the teacher has been on the playground for several sessions, children appear to habituate to her presence and resume and even increase in simple social peer play. At the same time, teachers’ playground presence over time is also related to more children looking at other children playing (onlooker). If teachers are in close proximity to children and they interact with them, children stop playing and appear to follow the teachers around. Teachers need to be instructed on how to help children engage with other children rather than stopping play.

Unfortunately, the task of instructing teachers how to interact with children in the playground is arduous. In our study, the majority of the teachers failed to follow the curriculum. Apparently changing established behaviors and roles that the teachers have taken on is a challenging task that was not successfully achieved in the 5 week study.

It is still a desirable goal to see if teachers can scaffold and extend play on the playground. Many experts on child development support this idea of scaffolding. However, more research on how it can be accomplished in different environments is needed, such as the playground. We also have to explore the idea that perhaps it is enough for the teacher to be the rule enforcer and facilitator to promote a safe environment for children to engage in spontaneous, free, creative play. It certainly is not negatively impacting the child to have the teacher in close proximity. Perhaps children need to have that free time that the playground provides to develop on their own in their own time. Perhaps the peers are all the scaffolding
that children need to thrive and develop. The bottom line is that there are a whole host of studies that can be done to explore how the normative development of children is impacted (both enhanced and inhibited) on the playground.
REFERENCES


## Appendix A - Study Timeline

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Site 1: warm up (natural)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Teacher Instruction – Proximity both sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Teacher Instruction Site 1 – Proximity Site 2 – 2 hour training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Teacher Instruction Site 1– Proximity Site 2 – 1 hour maintenance/ feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B. Parent’s Background Questionnaire

Participant # ___________ Date ___________ School : ______

Child:
Date of birth: _______________ Age: ____________ _____ male ____ female

Mother:
Race: ___ White    ___ Black   ___ Asian   ___ Native American   ___ Other
Age: _______ Occupation: ________________________________

Education:
___ Under 7 Years of School   ___ 7-9 Years of School   ___ 10-11 Years of School
___ High School Graduate   ___ 1-3 Years of College (including technical degree)
___ Four Year College Graduate   ___ Professional (M.A., M.S., Ph.D., M.D.)

Father:
Race: ___ White    ___ Black   ___ Asian   ___ Native American   ___ Other
Age: _______ Occupation: ________________________________

Education:
___ Under 7 Years of School   ___ 7-9 Years of School   ___ 10-11 Years of School
___ High School Graduate   ___ 1-3 Years of College (including technical degree)
___ Four Year College Graduate   ___ Professional (M.A., M.S., Ph.D., M.D.)
Appendix C. Teacher Background Questionnaire

Participant # ___________ Date __________ School: ______
Age: ____________ Classroom age range: ___________
Position: ___ Lead Teacher ___ Assistant Teacher

Race: ___ White ___ Black ___ Asian ___ Native American ___ Other

Education:
___ Under 7 Years of School ___ 7-9 Years of School ___ 10-11 Years of School
___ High School Graduate ___ 1-3 Years of College (including technical degree)
___ Four Year College Graduate ___ Professional (M.A., M.S., Ph.D., M.D.)

Years of experience working with children aged 2.5-5yrs: _______________________

Have you received any prior training regarding your role/responsibilities on the playground?
___ yes ___ no

(If yes, please describe)
__________________________________________________
__________________________________________________
__________________________________________________

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Appendix D.

Interaction Style Checklist
Adults support children’s active learning most effectively through a child-oriented interaction style. This checklist can provide a framework for assessing the interaction style of adults in the early childhood program. Each item describes something that can be observed when adults interact responsively with children.

1. Adults play and communicate with children on their physical level. For example, they sit on the ground with children and communicate face to face.

2. Adults enter children’s play by being silent, observing, understanding, and listening (SOUL).

3. Adults use the same toys and materials the same way that children do.

4. Adults match the pace of their activity or speech to the child’s pace.

5. Adults take turns with children in contributing to play or conversation.

6. Adults follow the child’s lead in conversation by waiting for the child to initiate conversation and by listening and responding to children’s conversational topics.

7. Adults sometimes use comments or personal observations as conversation openers.

8. Adults acknowledge what children say to clarify meaning and encourage the child to continue the conversation.

9. Adults encourage children to extend their actions and communications by offering personal comments, new ideas, and suggestions related to the child’s chosen activity or conversational topic.

10. Adults accept children’s explanations.

11. Adults use questions sparingly and relate them to children’s ongoing activities.
Appendix E. Playfulness Assessment Profile – Preschool Edition

PLAYFULNESS ASSESSMENT PROFILE- PAP

INSTRUCTIONS:

On this questionnaire, there are statements that describe how children might act or feel. Please read each statement and mark the response that describes how this child has behaved in your classroom.

Please mark every statement. If you don’t know or are unsure of your response to a statement, give your best guess.

INSTRUCCIONES:

En este cuestionario, hay las declaraciones que describen cómo niños quizás actúen o quizás se sientan. Lea por favor cada declaración y marque la respuesta que describe cómo este niño se ha comportado en su “classroom.”

Marque por favor cada declaración. Si usted no está seguro de su respuesta a una declaración, elija la respuesta que usted piensa está correcto.
<table>
<thead>
<tr>
<th>Playfulness Assessment Profile – Preschool Edition (Sanders, 2011)</th>
<th>Not True</th>
<th>Somewhat True</th>
<th>Mostly True</th>
<th>Completely True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Child engages in play without encouragement or praise</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Child engages in play enthusiastically (e.g., eagerly, passionately)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Child moves freely and actively during play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Child finds lots of different play activities interesting and engaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Child shows curiosity in play (e.g., explores objects, asks questions)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. When playing, child has an “I can do it” attitude</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Child continues in challenging play even when feeling frustrated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Child takes initiative during play with others (e.g., suggests new games, recommends new rules)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Child shares ideas and suggestions during play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Child participates in play both as a leader and a follower</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Child smiles often during play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. Child celebrates his/her successes (e.g., smiles, laughs, dances, “jumps for joy”)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Child laughs at silly or funny things during play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. During play, child engages in silliness (e.g., does silly things that make others laugh)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Child enjoys music and dance activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Child plays cooperatively with other children (e.g., plays as a team member)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Child plays harmoniously with others (e.g., gets along with peers, negotiates minor conflicts)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. Other children choose to play with the child</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. Child freely joins others in play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. Child helps others during play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
### Appendix F – Social Competence and Behavior Evaluation (SCBE- 30 short form)

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>Cannot Evaluate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Negotiates solutions to conflicts with other children</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Easily frustrated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Gets angry when interrupted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Comforts or assists another child in difficulty</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Worries</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Timid, afraid (e.g., avoids new situations)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Sad, unhappy or depressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Inhibited or uneasy in the group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Screams or yells</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Accepts compromises when reasons are given</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Inactive, watches the other children play</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>13. Maintains neutral facial expression (doesn’t smile or laugh)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>14. Remains apart, isolated from the group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Takes other children and their point of view into account</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Hits, bites or kicks other children</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
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<tr>
<td>17. Cooperates with other children in group activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Gets into conflict with other children</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. Irritable, gets mad easily</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. Shares toys with other children</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
<tr>
<td>21. Doesn’t talk or interrupt during group activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>22. Attentive towards younger children</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<tr>
<td>23. Goes unnoticed in a group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. Works easily in groups</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. Hits teacher or destroys things when angry with teacher</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. Helps with everyday tasks (e.g. distributes snacks)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27. Forces other children to do things they don’t want to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28. Opposes the teacher’s suggestions</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<td>29. Defiant when reprimanded</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>30. Takes pleasure in own accomplishments</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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</table>
Appendix G

Teacher Play Curriculum – 2 hour training

Teacher Objectives:
1. Help get teachers to get into a playful frame of mind
2. Have teachers define playfulness
3. Teachers examine their own views of play/playfulness (subjective units of play “SUP”)
4. Teachers will identify and define different styles of play
5. Introduce SOUL (silent, observing, understanding, listening) as a strategy of engaging children on the playground
6. Help teacher’s understand the role of being as playmate

1. Warm up: (15 minutes) Parachute game to break the ice

2. Pretest (5 minutes)
   Teachers are given a pretest asking them to define play, identify play styles of children, and to identify how playful they are feeling by introducing them to “SUP” and asking them on a scale of 1-100 how playful are they feeling.

   The purpose of the pretest is to assess teachers’ prior knowledge and to measure against the posttest the successfulness of meeting the objectives of the training (i.e., are teachers more playful at the end of the training? Can they identify different play styles of children?)

3. What is play/playfulness? (20 minutes)

   “Playfulness is the motivation to freely and joyfully engage with, connect with, and explore the surrounding world” (Playmaker training, 2011). It is a feeling that affects how we perceive an activity. With a playful approach any activity can be fun, even chores (i.e., cleaning up). There are four components or domains of playfulness (Playmaker, 2011), joyfulness, social connection, internal control, and active engagement.

   Reflection: Own views of play/playfulness – reflection (5 minutes)/ SUP (subjective units of playfulness). Did their subjective units of play change from the pretest following the activities and discussion?

   Group discussion of learning outcomes: (15 minutes)
   Teachers should now be able to define playfulness. Teachers should at this time be able to recall their own views of play and the importance of the feeling of playfulness. Teachers should be in a more playful frame of mind. Teachers will understand the importance of being a playful role model for children.
4. **Introduce Types of Play** (20 minutes)
   - Aimless
   - Onlooker
   - Solitary
   - Parallel
   - Simple social
   - Pretend

Reflection: Can you think of children in your class who fit these descriptions? Give specific examples of behavior observed in your classroom/playground

**Game:** Cooperative Musical Chairs (10 minutes)
Motive: Introduce ideas for facilitating, monitoring safety, encouraging ideas for play, inviting participation, as teachers feel comfortable

5. **SOUL** (15 minutes)
   - Teacher directed vs. child directed
   - SOUL (silent, observing, understanding, listening)
   - Observe – target the aimless or onlooker child.
   - Communicate on child’s level - Invite them to play
   - Match child activity
   - Let the child lead – listen to the child’s language
   - Take turns with the child - follow the child’s lead
   - Encourage the child to extend actions and communications
     - Open ended questions

6. **Teacher as playmate** – discuss with teachers strategies on how to enter children’s play Role play activity – (10 minutes)

   Group Discussion of Learning outcomes: At this point the teachers should be able to begin to identify the play styles of children on the playground. They should then begin to target aimless and onlooker children to engage them in play and facilitate their play transitions with peers. They should be able to practice the concepts and strategies learned such as SOUL.

7. **Post test** (5 minutes)

   Directions for the following week(s): Practice the concepts learned in the training. Try to identify the play styles of the children while on the playground. Teachers should practice engaging children in play without directing play.
Appendix H. Code Book for Children’s Play Behaviors on the Playground

Coding will be done in 30 second intervals. Start your stopwatch and look at the video. Stop the video after 30 seconds and record all activity you observed on the coding sheet for that interval.

# of children - record all numbers of children visible within the time frame

# of interactions - It is very important to be able to identify an interaction between children. An interaction has occurred when the children’s behavior has changed because of what was said or done between 2 or more children.

Social play - check all that apply

**Alone**- If a child is alone and there are no adults or other children within three feet code as aimless or solitary

  **Aimless** - When the child is unoccupied or walking aimlessly within the 30 second interval, code this category. If the child is in timeout, code this category.

  **Solitary** - When the child is clearly playing by him/herself, with no other children nearby involved in the same type of activity, the child is engaged in Solitary Play. It may include shoveling sand, sliding down the slide, or squatting or sitting by him/herself.

If there are other children within three feet of the child, code complexity of peer play (social play). It is ok if an adult is also within three feet of the child and it is ok if the adult is involved in the play, but code for the behavior with the peer not the adult.

Remember – there is no interaction between children for Aimless, Solitary, Onlooker, or Parallel play

**Peers but No Interaction**

**Onlooker** When the child is looking at her peers playing, but is not involved in play. If child is wandering from one peer activity to the next within the 30 second interval code as Aimless. If child is clearly observing one peer activity for most of the interval mark onlooker.

**Parallel** This refers to at least two children who are engaged in the same activity, playing with the same type of toy, or playing in the same area.
(e.g. sandbox area). While they are playing, they may or may not show awareness of each other. The awareness does not result in any change in behavior on the part of either child.

Examples of Parallel:

- One child speaks to another child but is totally ignored
- One child is spoken to by another but totally ignores that child
- Two children look at each other during the 30 second interval. The exchange must be more than a cursory glance on the part of both children.
- Two children look at each other at the same time and then look away
- One child bumps into another child but no words are exchanged.
- One child reaches in front of another child but no words are exchanged.

Peers with Interaction

**Simple Social** At least two children are interacting with each other and their behavior changes in some way because of the interaction. For example, one child says, “Look at this sandcastle I made!” to the other and the second child walks over to look at the child’s sandcastle.

Two children take turns, such as pointing to buckets of sand. While taking turns, they are playing with each other and there is some understanding that one child’s behavior follows the other. However, there is no “script” for the play and it is generally uncomplicated.

To code Simple Social, you must identify that two or more children are actually interacting with each other, either through conversation or taking turns in a game.

Turn taking means that all the children in the interaction do the same type of behavior as part of the interaction. There is no “role reversal” because there are no differences in the roles of the participants. All participants are doing the same thing, even though they cooperate on when they perform the behavior, by taking turns.

Examples of Simple Social:

- One child pulls another child in a wagon but may never take a turn riding in the wagon
• One child pushes another child on a swing but may never take a turn being pushed on the swing

• Children are playing a game such as “Simon says” or “Duck, Duck, Goose”

**Pretend** This is play that occurs between two or more children and involves a pretense, make believe or fantasy, or projecting an imaginary situation onto an actual one, as in “make believe” play.

Examples of pretend play could involve:
(a) behavior (pretending to be asleep),
(b) substitute objects (pretending a cloth is a pillow), or
(c) imagining objects (pretending there is a pillow where there is no object).

More examples:
• Name roles ("I’m the doctor"),
• Explicitly assign roles ("You be the sister"),
• Go out of the role to modify the script ("The car hit you, but don’t die"),
• Make a proposal to pretend ("Let’s pretend it’s snowing and we’re out in the cold"),
• Prompts each other ("Talk in a baby voice"), or
• Make it explicit in other ways that they are engaged in pretend play.

It only requires that an imaginary situation has been agreed upon by one child and at least one other child. Pretend play can also involve imagined roles and situations, such as pretending to play a doctor or members of a family, drive to the movies, or be a bear.

Do not code this level of play if the child is engaged in an imaginary situation on his/her own, with no other child involved. The child must have at least one other child who is involved in, and cooperates with, the imaginary situation in some way, whether actively or passively (hence the term “cooperative pretend”).

**Pretend play does not have to include verbal exchanges between the children, but it must include pretend acts that both children appear to understand.**
Appendix I. Code Book for Global Teacher Playground Style

**Directions**: Watch the video of the teacher’s behavior on the playground for 30 seconds. Use the following codes and descriptors to code the behavior for the targeted teacher on the” Global Teacher Playground Style Code Sheet.”

-1: Negative

- Putting child in time out
- Yelling at children
- Walking away/ignoring child

0: Neutral

- Not engaging with children
- Engaging with adult
- Standing to the side/inactive

1: Safety Monitor/Rule Enforcer

- Teacher is in the area of the children on the playground. May even be on eye level with children. The teacher’s interaction is mainly focused on the rules and safety.
- Watching children play
- Enforcing rules
  - i.e. “We don’t hit our friends”
- Using words such as “Don’t do…” and “Do This…” and “No” “you’re ok”
- Instructing children on how to use equipment appropriately/safely such as:
  - How to slide down slide rather than climb up slide;
  - Not having more than one child down a slide at a time.
  - Making sure shoes were tied
- Concerned with clean up/equipment
- Uses a firm tone when directing children

2: Director of Play (Teacher directed)

- May be standing at a distance from children
- May not be on level when communicating with children (i.e. standing rather than getting on child level)
- Pointing while giving directives rather than going over to child or groups of children to communicate
  - “Go play with that group over there” (verbal direction without interaction or facilitation)
PLAYING AND PLAYFULNESS ON THE PLAYGROUND

- “You can play with that blue bucket”
- “Why don’t you play chase with them?”
- “Go get me that shovel over there “
- “Why don’t you get the water for making mud pies”
- “You build the castle”

3: Facilitator of Play

- Making suggestions during some engagement of play
  - “Sammy, what do you think Johnny can do to help us with this building?”
- Is at eye level with children when communicating
- May have physical contact to help reassure child (i.e. secure base) / nurturer (i.e. hugs)
  - “it’s ok, we can play with …”
- Bringing children together (one child to a group or groups together) and helps them engage in play by offering suggestions
- Teacher may initially be involved in play but then steps back to allow child play to continue without her
- Speaking with children in order to enhance their play such as:
  - Teacher takes turns with children in conversation
  - Asking open ended questions
  - Scaffolds play
  - Utilizing Teachable moments (i.e. discussing how high we should build something)
  - “Do you know that the deeper you dig the more wet the ground is?”
  - Using comments or personal observations as conversation openers or extenders by giving extra information (i.e. “your red car is going really fast”)
- Helping children use materials
- Helping children find activities to play with

4: Child Directed Player

- Getting on physical level with children
- Following suggestions of child
- Using the toys and materials same way child does
- Accepting child’s explanation
- Acknowledging what children say to clarify meaning and encourages conversation
- Waiting for child to initiate conversation
- Using questions sparingly and relates them to ongoing activities
- Listening attentively to child when speaking
5: Peer player

- Enthusiastic about playing with children
- Joyful
- Engaging in children’s activities (active engagement) without purpose, or teachable moment, but just because, or for sake of play
- Laughing
- Spontaneous
- Turn taking
- Child like
  - Same level
  - Same pace
  - Same language/action as other children
- Silly
- Using materials in same childlike
Appendix J. Code Sheet for Global Teacher Playground Style

<table>
<thead>
<tr>
<th>Code Sheet for Global Teacher Playground Styles</th>
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<tbody>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>S.O.</td>
</tr>
<tr>
<td>5: enthusiastic about playing with children, joyful, actively engaged without purpose or teachable moment – just for sake of play, turn taking, childlike, silly</td>
</tr>
<tr>
<td>4: teacher on level with children, follows suggestion of child, uses materials and toys same way child does, accepts explanations, encourages conversation, uses questions sparingly and relates them to ongoing activities, listens attentively</td>
</tr>
<tr>
<td>3: makes suggestions during engagement of play, on level with children, may have physical contact (secure base/nurturer), brings children together, offers suggestions, may be involved with play but then steps back, use of personal observations as conversation starters, talks w/ children, helps use materials</td>
</tr>
<tr>
<td>2: may be observing at a distance, not on level with child, use of pointing and directives rather than going over to group of children</td>
</tr>
<tr>
<td>1: Teacher in area but interaction focused on safety/rules, rule enforcement, using equipment safely, firm tone</td>
</tr>
<tr>
<td>0: No interaction, inactive, neutral</td>
</tr>
<tr>
<td>-1: negative, putting child in time out/yelling at child, ignoring or walking away from child</td>
</tr>
</tbody>
</table>

**Time (30 second intervals)**

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<th>1:00</th>
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<th>4:00</th>
<th>4:30</th>
<th>5:00</th>
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### Table 1. (Kendrick et. al, 2011)

**Percent of Children Engaged in Observed Behaviors on the Playground Pre vs. Post**

**Teachers being assigned to specific playground zones (zone defense training).**

<table>
<thead>
<tr>
<th>Sandbox Area</th>
<th>Zone Defense Training</th>
<th>Pre</th>
<th>Post</th>
<th>$\chi^2$</th>
<th>p-value</th>
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<td><strong>SOCIAL PLAY</strong></td>
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<tr>
<td>Aimless</td>
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<td>74(%)</td>
<td>26(%)</td>
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<td>59(%)</td>
<td>41(%)</td>
<td>27.88</td>
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<tr>
<td>Onlooker</td>
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<td>74(%)</td>
<td>26(%)</td>
<td>18.54</td>
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<tr>
<td>Parallel</td>
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<td>61(%)</td>
<td>39(%)</td>
<td>13.97</td>
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<tr>
<td>Simple social</td>
<td></td>
<td>62(%)</td>
<td>38(%)</td>
<td>13.89</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Pretend Play</td>
<td></td>
<td>80(%)</td>
<td>20(%)</td>
<td>11.09</td>
<td>.001</td>
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<table>
<thead>
<tr>
<th>Climbing Apparatus</th>
<th>Zone Defense Training</th>
<th>Pre</th>
<th>Post</th>
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<td>67(%)</td>
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<td>40(%)</td>
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<tr>
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<td>62(%)</td>
<td>38(%)</td>
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<td>69(%)</td>
<td>31(%)</td>
<td>43.45</td>
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<tr>
<td>Pretend Play</td>
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<td>49(%)</td>
<td>51(%)</td>
<td>1.88</td>
<td>.170</td>
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(Bonferroni corrected alpha p=.008)
Table 2

Demographic Data (mean = M; sample size = n) for Children and Parents (Standard Deviations are in Parentheses)

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<tr>
<th></th>
<th>Control</th>
<th>Curriculum</th>
<th>F</th>
<th>X²</th>
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*Demographic Data (mean = M; sample size = n) for Children and Parents (Standard Deviations are in Parentheses)*

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Table 3.  

Demographic Data (mean = M; sample size = n) for Teachers (Standard Deviations are in Parentheses)

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<td></td>
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<td>1</td>
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<td></td>
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<tr>
<td>College grad</td>
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Table 4. Effects of Teacher Proximity on Children’s Playground behaviors (both sites)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Baseline</th>
<th>Week 3</th>
<th>$X^2$</th>
<th>p</th>
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<tbody>
<tr>
<td>Aimless</td>
<td>3%</td>
<td>3%</td>
<td>.05</td>
<td>.82</td>
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<tr>
<td>Solitary</td>
<td>88%</td>
<td>84%</td>
<td>1.57</td>
<td>.21</td>
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<tr>
<td>Onlooker</td>
<td>34%</td>
<td>22%</td>
<td>13.17</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Parallel</td>
<td>39%</td>
<td>52%</td>
<td>12.09</td>
<td>.001*</td>
</tr>
<tr>
<td>Simple Social</td>
<td>71%</td>
<td>63%</td>
<td>4.54</td>
<td>.03</td>
</tr>
<tr>
<td>Pretend</td>
<td>34%</td>
<td>28%</td>
<td>3.02</td>
<td>.08</td>
</tr>
</tbody>
</table>

Bonferonni corrected alpha p=.008
Table 5. Novelty effects for control group week 3 compared with week 5

<table>
<thead>
<tr>
<th></th>
<th>Week 2 (baseline)</th>
<th>Week 3 (proximity)</th>
<th>Week 5 (end of study)</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aimless</td>
<td>6%</td>
<td>6%</td>
<td>2%</td>
<td>4.41</td>
<td>.036</td>
</tr>
<tr>
<td>Solitary</td>
<td>73%</td>
<td>83%</td>
<td>92%</td>
<td>6.62</td>
<td>.010</td>
</tr>
<tr>
<td>Onlooker</td>
<td>8%</td>
<td>8%</td>
<td>25%</td>
<td>18.78</td>
<td>.0001*</td>
</tr>
<tr>
<td>Parallel</td>
<td>44%</td>
<td>39%</td>
<td>48%</td>
<td>3.07</td>
<td>.080</td>
</tr>
<tr>
<td>Simple Social</td>
<td>42%</td>
<td>57%</td>
<td>76%</td>
<td>15.22</td>
<td>.0001*</td>
</tr>
<tr>
<td>Pretend</td>
<td>21%</td>
<td>19%</td>
<td>26%</td>
<td>2.93</td>
<td>.087</td>
</tr>
</tbody>
</table>

Bonferonni corrected alpha $p=.008$
Table 6. Comparison of Children’s’ Play behaviors between sites from baseline to week 5.

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Week 5</td>
<td>X^2</td>
<td>p</td>
<td>Baseline</td>
<td>Week 5</td>
<td>X^2</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>Aimless</td>
<td>6%</td>
<td>2%</td>
<td>2.71</td>
<td>.099</td>
<td>1%</td>
<td>13%</td>
<td>22.12</td>
<td>.0001*</td>
<td></td>
</tr>
<tr>
<td>Solitary</td>
<td>73%</td>
<td>92%</td>
<td>17.15</td>
<td>.0001*</td>
<td>94%</td>
<td>88%</td>
<td>4.89</td>
<td>.027</td>
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</tr>
<tr>
<td>Onlooker</td>
<td>8%</td>
<td>25%</td>
<td>9.91</td>
<td>.002</td>
<td>44%</td>
<td>41%</td>
<td>.50</td>
<td>.479</td>
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</tr>
<tr>
<td>Parallel</td>
<td>44%</td>
<td>48%</td>
<td>.35</td>
<td>.556</td>
<td>37%</td>
<td>44%</td>
<td>2.39</td>
<td>.122</td>
<td></td>
</tr>
<tr>
<td>Simple Social</td>
<td>42%</td>
<td>76%</td>
<td>29.94</td>
<td>.0001*</td>
<td>82%</td>
<td>56%</td>
<td>39.05</td>
<td>.0001*</td>
<td></td>
</tr>
<tr>
<td>Pretend</td>
<td>21%</td>
<td>26%</td>
<td>.75</td>
<td>.39</td>
<td>40%</td>
<td>42%</td>
<td>.35</td>
<td>.554</td>
<td></td>
</tr>
</tbody>
</table>

Bonferonni corrected alpha p=.008

Table 7. Playfulness and Social Competence in Preschoolers: Pre-Post Repeated Measures results for the PAP and the SCBE-30
## PLAYING AND PLAYFULNESS ON THE PLAYGROUND

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Curriculum</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>PAP</td>
<td>57.95(12.68)</td>
<td>61(12.62)</td>
<td>60.01(11.44)</td>
<td>63.26(12.24)</td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time*Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCBE-30</td>
<td>60.29(10.78)</td>
<td>68.71(12.98)</td>
<td>60.51(9.06)</td>
<td>67.75(10.54)</td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time*Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Time: 4.05, p = .05
- Time*Site: .119, p = .731
- Time: 277.77, p < .01
- Time*Site: 5.19, p = .02