AN EXPLORATORY STUDY OF PRESCHOOL TEACHERS' BEHAVIORS DURING CHILDREN'S OUTDOOR PLAY

By

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(Under the direction of Charlotte Wallinga)

ABSTRACT

The purpose of this study was to describe the behaviors of preschool teachers during children's outdoor play and investigate possible relations between those behaviors and teachers' physical activity and nutrition practices. Participants were 42 lead and assistant teachers from Georgia child care centers. Data were collected using measures designed for the *Evaluating the Effectiveness of UGA Early Childhood Curriculum Materials in Georgia Child Care Centers* (Bales, Coleman, & Wallinga, 2008). Data analysis consisted of bivariate correlations and t-tests. Teachers spent 33% of outdoor observations in sedentary activity and 35% facilitating children's play. Analyses revealed trends toward decreased sedentary behavior and increased facilitation of play in teachers with more education. Trends toward decreased sedentary activity were also noted in teachers with healthy nutrition practices and limited time spent in screen-related activities. Implications related to preschoolers' physical activity were discussed.

INDEX WORDS: Physical Activity, Preschool, Teachers, Sedentary Activity

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by

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CHAPTER 1

Introduction

Childhood overweight and obesity have garnered international attention with the number of children exhibiting symptoms increasing at alarming rates (Wang & Lobstein, 2006). The World Health Organization (WHO) (2009) states childhood obesity is "one of the most serious public health challenges of the 21st century" ("Childhood overweight and obesity," para. 1). In the United States, the prevalence of childhood overweight and obesity have increased dramatically since the 1970s (Ogden, Carroll, & Flegal, 2008).

Researchers and clinicians utilize the body mass index (BMI) as the standard to assess a child or adolescent's propensity to be overweight or obese (Barlow & the Expert Committee, 2007). BMI is calculated using a formula that includes height and weight measurements for children. BMI-for-age percentile is determined by using the BMI formula plotted in growth charts to account for children's and adolescents' age and sex. Because body fat changes as children and adolescents age and differs between males and females, percentiles were developed to provide a more accurate measurement of body mass index in these age groups (The Center for Disease Control [CDC], 2009a).

Overweight in children is considered to be a BMI that is at or above the 85th percentile. Obesity in children is considered to be a BMI at or above the 95th percentile (CDC, 2009a). In 2005-2006, Ogden, Carroll, and Flegal (2008) found that 10.9% of children and adolescents ages 2-19 were at or above the 97th percentile BMI for their age in the United States.

Childhood overweight and obesity pose a significant health concern for youth. Children and adolescents considered overweight and/or obese are at increased risk for cardiovascular disease risk factors, including high blood pressure, high cholesterol, and Type 2 diabetes (Freedman, Mei, Srinivasan, Berensen, & Dietz, 2007). Additionally, childhood overweight/obesity may have dangerous repercussions for children as they develop. O'Brien et al. (2007) determined in a longitudinal study that children with high BMIs ($\geq 85^{th}$ percentile) had an increased risk of remaining overweight and/or obese through adolescence. Similarly, children who were considered overweight or obese at any time during their preschool years were five times as likely to be overweight or obese at 12 years of age (Nader, O'Brien, Houts, Bradley, Belsky, Crosnoe et al., 2006). Further, obesity in childhood has been associated with obesity in early adulthood, especially if one of the children's parents was also obese (Whitaker, Wright, Pepe, Siedel, & Dietz, 1997). In an effort to provide appropriate care and support to prevent childhood overweight and obesity, it is important to examine the environments and influences that may affect children's weight.

Many influences have been cited as correlates for the increase in childhood overweight and obesity (Hinkley, Crawford, Salmon, Okley, & Hesketh, 2008; Sallis, Prochaska, Taylor, 2000; Tucker, 2008). Two primary variables that have been noted include genetic transmission and parental behaviors. Genetic transmission has been noted as a positive correlate for childhood overweight and obesity. In a national study of genetic transmission it was observed that children with overweight/obese parents and/or grandparents were more likely to be overweight or obese (Davis, McGonagle, Schoeni, & Stafford, 2008; Gibson et al., 2007); however, it has not been determined whether or not this relation is based on genetics or behavior modeling.

Parental behaviors have been widely researched as variables that may influence children's weight (Anderson & Butcher, 2006). Lindsay, Sussnar, Kim, and Gortmaker (2006) suggest that eating practices and physical activity are two areas in which parents may have the most direct influence concerning children's health and weight. For instance, several studies have considered the effect parents have on children's eating practices, especially using sweets as rewards and pressuring children to eat (Clark, Goyder, Bissell, Blank, & Peters, 2007; Johannsen, Johannsen, & Specker, 2006; Powers, Chamberlin, Van Schaick, Sherman, & Whitaker, 2006; Rhee, 2008). Evidence suggests that utilizing such practices may have a negative effect on children's ability to self-regulate their food consumption (Rhee, 2008).

Another area in which parents may be able to affect childhood overweight and obesity is physical activity (Lindsay et al., 2006). Parents' physical activity behaviors may affect children's perceptions about physical activity (Finn, Johannsen & Specker, 2002; Taylor et al., 2009; Timmons, Naylor & Pfeiffer, 2007). Parental physical activity levels have also been positively related to rates of children's activity levels (Spurrier, Magarey, Golley, Curnow, & Sawyer, 2008; Taylor et al., 2009; Timmons et al., 2007). More specifically, both fathers' and mothers' participation in physical activity has been shown to positively impact children's physical activity levels (Spurrier et al, 2008; Taylor, 2009).

Decisions parents make concerning their children's safety may be salient to the recent increase in childhood overweight and obesity (Anderson & Butcher, 2006; Dwyer et al., 2008; Story, Kaphingst, & French, 2006). Parents' concerns about children's safety during play were viewed as a deterrent to their participation in physical activity (Dwyer, 2008). Parents who feel anxious about community safety may regulate children's opportunities for outdoor activity (Weir, Etelson, & Brand, 2006).

Decisions to place children in childcare could also affect children's health and weight. As of 2005, almost 50% of children under the age of five with employed mothers had regular child care arrangements (Capizzano & Main, 2005). While a significant portion of children were cared for by family members, friends or neighbors, approximately 24% of these children were in center-based care (Federal Interagency Forum on Child and Family Statistics, 2007).

Because many preschoolers spend at least 35 hours per week in center-based care (Capizzano & Main, 2005), the need to describe the environment in which these children spend the majority of time becomes salient to research concerning childhood overweight and obesity. Although only a limited amount of research has been conducted describing the nutritional environment in child care (Kaphingst & Story, 2009), there have been several studies concerning children's physical activity while in child care (Bower et al., 2008; Dowda, Pate, Trost, Almeida, & Sirard, 2004; Pate, Pfeiffer, Trost, Ziegler, & Dowda, 2004). Child care centers have frequently been cited as having a significant effect on preschoolers' participation in physical activity (Finn et al., 2002; Hinkley et al., 2008; Pate et al., 2004; Tucker, 2008). Pate et al. (2008) and Tucker (2008) found that preschoolers do not receive adequate amounts of moderate-to-vigorous physical activity during the hours in which they are enrolled in child care.

In an effort to improve moderate-to-vigorous physical activity in preschoolers, several national recommendations have been provided (American Academy of Pediatrics; National Association for Sports and Physical Education [NASPE], 2002). The National Association for Sports and Physical Education (2002) recommends adults (e.g. teachers) initiate 60 minutes of structured physical activity every day, in addition to the 60 minutes of unstructured play children should be offered. These recommendations place an amplified amount of responsibility on teachers providing consistent physical activity for preschoolers.

Because preschool teachers provide care for children, it is necessary to understand how they may influence childhood overweight and obesity; however, this issue remains complex. The majority of the literature concerning early childhood teachers and child care providers addresses teachers' views of their role during children's free play (Kontos, 1999; Samberg & Pramling-Sammuelsson, 2005) or teachers' specific attitudes towards physical activity (Dwyer et al., 2008). Other studies concerning children's physical activity consider teachers' level of education (Dowda, Trost, Pate, Almeida, & Sirad, 2004; Poest, Williams, Witt, & Atwood, 1989) and teachers' language on the playground (McKenzie, Sallis, Elder, Berry, Hoy, Nader et al., 1997). While several studies have attempted to utilize teachers as initiators of physical activity through planned activity (Brown, Googe, McIver, & Rathel, 2009; Sallis, McKenzie, Alcaraz, Kolody, Faucette, & Hovell, 1997) there are a limited number of studies that described teachers' behaviors during preschoolers' active, outdoor play (Bower et al., 2008; Cardon, Van Cauwenberghe, Labarque, Haerens, & De Bourdeaudhuij, 2008; McKenzie et al., 1997; Tucker, 2008). Similar to parents' effect on the environments their children occupy, regular interactions with teachers within center-based care may have an effect on children's physical activity. In order to understand how preschool teachers' behaviors may have an effect on children's physical activity, it is important to first describe these behaviors during children's opportunities for physical activity, namely, outdoor play.

Purpose of Study

The purpose of this study is to describe teacher behaviors during preschoolers' active, outdoor play at center-based child care facilities. More specifically, this study will explore teachers' behaviors that relate to modeling or facilitating preschoolers' physical activity. Further,

this study will investigate whether any relations exist between teachers' behaviors and their personal nutrition and physical activity practices.

CHAPTER 2

Review of Literature

The following is a review of the literature concerning physical activity in preschoolers, as well as the factors associated in providing environments that may help or hinder children's participation in physical activity. This review will specifically focus on (a) the importance of physical activity for preschoolers (b) current recommendations for children ages 3-5 concerning physical activity, (c) trends in physical activity levels of preschoolers at home and in center-based care, and (d) the role of preschool teachers in facilitating physical activity for this age group.

Physical Activity in Preschoolers

Physical activity is an important part of normal development for children ages 3-5 years. Pelligrini and Smith (1998) assert that children are most likely to engage in exercise play, or physical activity, during the preschool years. Physical activity supports the formation of neural structures, laying the foundation for motor skills that will be utilized throughout a child's life (Timmons et al., 2007).

Physical activity has been shown to positively affect preschoolers' physical development. Engaging in physical activity in combination with proper nutrition can aid in bone growth and integrity in preschoolers (Janz et al., 2006). Physical activity allows for the practice of gross motor skills, creates muscle endurance and differentiation, and offers opportunities to enhance sensory perception (Hills, King, & Armstrong, 2007; Pelligrini & Smith, 1998). Physical activity lays the foundation for a broader range of physical skills that can contribute to preschoolers'

psychosocial development in addition to their physical development (Pelligrini & Smith, 1993; Stork & Sanders, 2008).

Physical activity during the preschool years has also been shown to be a positive predictor of children's social and cognitive development (Pelligrini & Smith, 1993). During physical activity, children have opportunities to interact and cooperate with their peers, prompting rehearsal in a variety of socialization opportunities (Hills et al., 2007). Physical activity offers children a forum for acquiring social-negotiation skills. Children may engage in physical activity that promotes social interaction and assists children in learning rules and cooperative games (Timmons et al., 2007). Children may also gain problem solving and creative thinking skills through opportunities for active free play. For example, children engaging in cooperative games are often able to experiment by changing rules or negotiating the entrance/exit of other children in the game (Pelligrini & Smith, 1993). Through the acquisition of these social skills, preschoolers gain a sense of self-esteem and enjoyment (Burdette & Whitaker, 2005).

In addition to the numerous developmental benefits, physical activity is also an important factor in combating childhood overweight and obesity (Barlow and the Expert Committee, 2007). Children's opportunities for physical activity have decreased with the steady increase in television viewing and other sedentary activities (CDC, 2009b; The Council on Sports Medicine and Fitness and The Council on School Health, 2006; Dowda, et al., 2009; Jago, Baronowski, Baronowski, Thompson, & Greaves, 2005; Spurrier et al., 2008). National and individual state standards have been constructed to provide guidelines for the types and amount of time preschoolers should be engaged in physical activity in an effort to decrease sedentary activity in this age group (NASPE, 2002).

Recommendations for Physical Activity

In the past, recommendations for physical activity in educational or home settings were only available for school-age children and adolescents. With the obesity epidemic affecting children as young as 2 years old (CDC, 2009c), it becomes important to provide recommendations to guide supervising adults in providing appropriate physical opportunities for these young children. Recommendations, however, vary based on the issuing agency. The following is a summary of the recommendations for physical activity in preschoolers.

The American Academy of Pediatrics (AAP) (Davis et al., 2007) recommends that parents of preschoolers reduce the amount of sedentary transportation (e.g. strollers, cars) they utilize and increase their walking distances with their families. Parents are encouraged to limit preschoolers' television viewing time to less than two hours per day. Additionally, it is recommended that these children have increased opportunities for active free play, focusing on exploration and experimentation and limiting the amount of adult instruction. In general, the AAP suggests that all children participate in at least 60 minutes of primarily unstructured physical activity per day.

To assist in providing more concrete guidelines for those who supervise young children, the National Association of Sport and Physical Education (NASPE) (2002) published physical activity recommendations for children ages 3-5 years; these recommendations utilize recent research related to preschoolers' physical activity combined with information from specialists in motor development, exercise, and movement to develop guidelines. The NASPE recommends children spend 60 minutes a day in structured, or adult-organized physical activity per day. Further, children should spend 60 minutes to several hours a day engaged in unstructured, or child-initiated physical activity. Also, the NASPE recommends that children are given the

appropriate tools and instruction to build fundamental motor skills and that these skills are taught by educators who are familiarized with the importance of physical activity (NASPE, 2002).

The NASPE recommendations concerning structured (adult-initiated) activities have also been cited by the National Association for the Education of Young Children (NAEYC) in *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8*, a manual for early childhood educators (Copple & Bredekamp, 2009). Tomlinson and Hyson (as cited in Copple & Bredekamp, 2009) utilize NASPE guidelines to assert the need for adult instruction during physical activity to promote preschoolers' physical development:

> *While children may develop many of their physical capabilities through play, they also need planned movement activities, explicit instruction (both verbal and modeled), and structured physical skill development opportunities to guide them in becoming physically active and healthy for a lifetime…* (Copple & Bredekamp, 2009, p.117).

Recommendations concerning preschoolers' physical activity may be delineated at the state level as far as regulating the amount of physical activity provided to children during hours of center-based child care. For instance, Bright from the Start: the Georgia Department of Early Care and Learning (BFTS) promotes active play from a developmental standpoint in the *Early Childhood Education Program Content Standards for Preschool Programs* (2007). These standards were designed to align with standards for grades K-12 in Georgia and serve as a foundation for instruction in preschool classrooms to promote and assess children's developmental growth and learning. Standards emphasize the inclusion of sufficient amounts of gross motor activities to develop coordination, balance, and strength both indoors and outdoors.

For instance, *Health and Physical Development Standard 1b* states children should "[c]oordinate movements to perform tasks," (p. 58) such as walking, jogging, and skipping in rhythm to simple music.

BFTS also provides regulations for child care learning centers that standardize the licensing of a center within the state of Georgia. *The Rules for Child Care Learning Centers* (2006) designates the amount and type of physical activity with which preschoolers should be engaged. It states children should participate in a "variety of activities… including indoor and outdoor play" (BFTS, 2006, p. 7). Specifically, the document requires that "[c]enters operating five (5) hours or more per day shall provide each child who is not an infant at least one and one-half (1 1/2) hours of outdoor activity per day" (BFTS, 2006, p. 8). Licensing regulations, however, are often considered the minimum standard of practice in Georgia child care centers. *The Early Childhood Education Program Content Standards* and *The Rules for Child Care Learning Centers* serve as an initial source of regulation in the state of Georgia for preschoolers' engagement in physical activity in child care.

While specific recommendations have been created to encourage preschoolers' physical activity levels, more than half of this age group does not engage in significant amounts of physical activity (Tucker, 2008). Identifying trends that exist in preschoolers' physical activity levels both at home and in child care centers offers some insight into preschoolers' patterns of activity and areas that need increased study and intervention.

Physical Activity at Home

In general, research concerning the amount of physical activity in which preschoolers are engaged has focused significantly on the influence of parents. Both parental physical activity levels and parents' engagement in physical activity with their children have been found to have

positive associations with preschoolers' physical activity (Hinkley, Crawford, Salmon, Okely, & Hesketh, 2008; Poest et al., 1989; Sallis, Prochaska, & Taylor, 2000). Parents' physical activity behaviors may affect children's perceptions about physical activity (Finn, Johannsen & Specker, 2002; Taylor et al., 2009; Timmons, Naylor & Pfeiffer, 2007). Finn et al. (2002) conducted a study concerning preschool aged children and found using multiple linear regressions that when paternal BMI was high, it related to a decrease in children's activity levels. Parental physical activity levels have also been positively related to rates of children's activity levels (Spurrier, Magarey, Golley, Curnow, & Sawyer, 2008; Taylor et al., 2009; Timmons et al., 2007). In a longitudinal study of preschoolers' physical activity (N=244) however, Taylor et al. (2009) indicated that parents' physical activity was only weakly correlated with children's physical activity at ages 3 and 4.

More specifically, fathers may be influential in preschoolers' engagement in physical activity. Timmons, Naylor, and Pfeiffer (2007) reviewed pertinent literature concerning preschoolers' physical activity and revealed children with physically active fathers were 3.5 times more likely to be physically active themselves. Through multiple regression analyses, Taylor et al.(2009) reported that fathers' physical activity was a small, but significant predictor of children's physical activity (p=.024).

Gustafson and Rhodes (2006) assert in a review of correlates that mothers' physical activity plays an important role in older children's levels of physical activity; however, research concerning mothers' effect on preschoolers is limited. Taylor et al. (2009) indicated in their longitudinal study of preschoolers that mother's participation in physical activity was weakly correlated with 3- and 4-year old children's activity levels. In support of this finding, Spurrier et

al. (2008) discovered preschoolers' outdoor playtime was positively associated with greater frequency of mother's participation in physical activity.

Although it seems clear that parents have an influence on their preschoolers' physical activity during their time at home, it does not fully explain children's activity levels during center-based child care. Therefore, in the following section, factors will be delineated that may affect preschoolers' physical activity during their participation in center-based child care.

Physical Activity in Child Care Centers

Preschoolers' physical activity has also been studied in the child care setting. In a systematic review of the literature, Tucker (2008) examined 39 primary studies with a total of 10,316 participants and found nearly half of preschoolers in child care do not engage in sufficient physical activity (operationalized as at least 60 minutes of moderate-to-vigorous physical activity per day). Furthermore, when directly observing the physical activity levels of preschoolers (*N*=281), Pate et al. (2004) determined that children engaged in moderate-to-vigorous physical activity (MVPA) (operationalized as ≥ 3 metabolic equivalents [METs]) for approximately seven minutes per hour. These authors asserted that this level of engagement would not allow preschoolers to reach 120 minutes of physical activity recommended per day for this age group. Pate, McIver, Dowda, Brown and Addy (2008) conducted a study with a greater number of participants (*N*=539), which yielded similar results; namely, that preschoolers were only engaged in MVPA (operationalized as movement greater than slow, easy motions) for 3.4% or approximately nine minutes of a five hour observation period. Pate et al. (2008) suggested that preschoolers who spend 30 hours per week in child care will spend 25 of 30 hours in sedentary activities and less than one hour engaged in MVPA. In general, studies concerning preschoolers' physical activity report the lack of physical activity they experience.

In order to effectively address the disparity between the amount of physical activity preschoolers need and the amount in which they are actually engaged, researchers have investigated specific factors related to the demographics of child care facilities. Variables examined in these studies have outlined the amount of physical activity children engage in by gender, age, and ethnicity. Findings that boys tend to be more active or involved in greater amounts of MVPA than girls are common in the literature (Cardon & De Bourdeaudhuji, 2008; Pate, McIver, Dowda, Brown, & Addy, 2008; Pate, Pfeiffer, Trost, Zielger, & Dowda, 2004; Poest, Williams, Witt, & Atwood, 1989). In contrast, a recent longitudinal study reported no sex differences in level of physical activity in which preschoolers were engaged (Taylor, Murdoch, Carter, Gerrard, Williams, & Taylor, 2009).

Children's age may also play a role in the lack of physical activity they engage in during child care. Pate et al. (2004) found in their sample of 247 children that 4 and 5 year old children engaged in less physical activity than 3 year old children. In general, the literature supports the conclusion made by Pate (2004), citing increased focus on academic activities as a factor in the decrease in physical activity in older children (Pate, McIver, Dowda, Brown, & Addy, 2008; Taylor et al., 2009).

Preschoolers' ethnicity may have implications for their physical activity behavior as well. McKenzie et al. (1997) studied a bi-ethnic sample of preschoolers (N = 287) over 2.2 years and noted that European-American children were significantly more active than Mexican-American children during recess periods. Research by Pate et al. (2004) provides further support for the assertion that ethnicity could play a role concerning preschoolers' physical activity. In a sample of 247 preschoolers (161 African-American, 86 European-American), African-American children engaged in significantly more vigorous physical activity than European-American

children. While these studies contribute information that is helpful in understanding factors that may affect children's participation in physical activity, they still have not uncovered the underlying, center-specific variables that affect preschoolers' participation in physical activity.

A significant number of studies suggest that variance in preschoolers' physical activity levels is associated with the specific child care center they attend (Bower et al., 2008; Dowda, Trost, Pate, Almeida, & Sirad, 2004; Pate et al., 2004; Pate et al., 2008; Story, Kaphingst, & French, 2006). Therefore, further investigation concerning the differing variables (e.g. physical environment, center-specific policies, and preschool teachers) that may affect preschoolers' physical activity in child care centers is necessary.

Variables Affecting Physical Activity in Child Care Centers

Because child care center regulations are only minimum requirements for guiding daily operations, differences may exist in the delivery of preschoolers' care. Variables that are frequently cited as affecting physical activity levels of preschoolers include: a) the physical environment, which encompasses portable and fixed play equipment, space allotted for physical activity, and children's perceived safety; b) center-specific policies which relate to the promotion of physical activity, such as policies related to center quality and time allotted for physical activity; and c) preschool teachers whose qualifications and behaviors may or may not promote physical activity.

Physical Environment

The physical environment can play an integral role in opportunities for physical activity. Using the Environmental and Policy Assessment and Observation scale (EPAO), Bower et al. (2008) determined that child care facilities that had higher physical activity environmental scores (based on active/sedentary opportunities, portable/fixed play equipment, staff behaviors, physical

activity training and education, and physical activity policies) had preschoolers who were more physically active and less sedentary. Further, Bower found that the amount and type of portable and fixed play equipment was also significantly correlated to preschoolers' engagement of MVPA. Hannon and Brown (2008) reported findings related to the use of portable playground equipment as an intervention for preschoolers' outdoor play settings. The addition of portable playground equipment such as hurdles, hoops, tunnels, and balance beams significantly increased physically active behaviors in preschool-aged males and females.

Besides equipment that can assist preschoolers in initiating and maintaining higher levels of physical activity, the amount of space allotted for active play may also contribute to physically active behaviors. In a sample of 738 Belgian preschoolers, physical activity (measured as the number of steps taken during an observation period) increased in both genders when more space was available for children (Cardon, Van Cauwenberghe, Labarque, Haerens, & De Bourdeaudhuij, 2008). Environments with a combination of sun protection, vegetation and contrasting ground structures promoted physical activity in preschoolers in Stockholm, Sweden (Boldemann et al., 2006).

Safety is another factor in the physical environment that may affect preschoolers' physical activity. In a qualitative study utilizing focus groups, teachers from child care facilities in Sydney, Australia considered safety a barrier to preschoolers' physical activity. Beginning in the home, teachers stated that overprotective parents of lower socioeconomic status were modeling behaviors that favored sedentary activities because they were perceived as "safe" (Dwyer, Higgs, Hardy, & Baur, 2008). These behaviors were then personified by preschoolers who would limit their activity due the risk of injury during their time in center-based care.

Teachers also noted that regulations concerning playground equipment specifications (e.g. height restrictions on climbing apparatus) limited children's opportunities to engage in creative play or discovery during outdoor play (Dwyer, Higgs, Hardy, & Baur, 2008). Teachers speculated that policies intended to promote preschoolers' safety could actually inhibit the child's initiation or engagement in physical activity.

Center Specific Policies

Center specific policies have been noted to affect preschoolers' levels of physical activity. Child care facilities' commitments to quality care and policies that reflect that goal have also been noted to affect preschoolers' levels of physical activity (Dowda, Pate, Trost, Almeida, & Sirard, 2004). Using the Early Childhood Environment Rating Scale-Revised (ECERS-R), a scale instrument used to assess process quality (e.g. protection of health and safety, building positive relationships, and opportunities for stimulation and learning from experience) in early child groups, Dowda et al. (2004) determined that child care centers which were rated highly on the ECERS-R correlated negatively with the time preschoolers spent in sedentary activities. Children in higher quality centers had more opportunities for teacher-child interactions, due in part to more field trips related to physical activity and smaller class sizes (Dowda et al., 2004). Dowda et al. (2004) concluded that teacher-child interactions may have contributed to preschoolers' participation in physical activity.

Other center-specific policies have been shown to influence preschoolers' physical activity. Time allotted for outdoor play has proven a strong correlate to children's physical activity levels (e.g. McKenzie et al., 1997). Several studies suggest that offering preschoolers extended periods of time outdoors relates to a decrease in their activity level. This may be attributed to previous engagement in physical activity indoors structured by teachers, young

children's short-attention span due to lack of appropriate stimulation, or children's proclivity to expend energy early in their outdoor playtime (Cardon et al., 2008; Dowda et al., 2004). Cardon et al. (2008) speculated that increased amounts of time outdoors may be associated with lower levels of physical activity in preschoolers due to fatigue or boredom, which would cause rapid declines in activity levels.

In a longitudinal study conducted by McKenzie et al. (1997), 287 children were observed during outdoor play during preschool, then 2.2 years later in elementary school. McKenzie et al. determined that compared to elementary school recess, preschool recess periods were substantially longer (14.1 vs. 25.9 minutes) which resulted in children being less physically active in preschool than elementary school. McKenzie speculated that the decrease in preschoolers' physical activity may have been due to immediate energy expenditure early in their outdoor play followed by an immediate and sustained decline in physical activity for the rest of outdoor play. In a study concerning preschool policies, Dowda et al. (2004) discovered that increased amounts of free time during outdoor play decreased preschoolers' MVPA. According to Dowda, this may have been related to teachers' level of education and the availability of resources (e.g. portable equipment) related to physical activity.

In addition to time allotted for play, Bower et al. (2008) determined that the Environment and Policy Assessment and Observation (EPAO) subscale "Active Opportunities," (which includes total minutes of active opportunity, number of occasions of structured activity, and number of occasions for outdoor play) was the strongest correlate of the percentage of time preschoolers engaged in MVPA and mean physical activity intensity. In this study, "Active Opportunities" was also cited as the most important predictor of all physical activity variables (intensity, proportion of time in MVPA, and proportion of time in sedentary activity) (p= .001).

In post-hoc analysis which controlled for total minutes of active opportunity, Bower et al. found that total minutes for active opportunity did not fully explain children's physical activity behaviors. This finding suggests that although the number of occasions to engage in and the amount of time available for physical activity are important, there may be additional variables that could significantly contribute to preschoolers' physical activity behaviors.

Other factors from the study conducted by Bower et al. (2008) could assist in explaining preschoolers' physical activity behaviors. Although other EPAO subscales were not as highly correlated with measures of children's physical activity as "Active Opportunities" (r = .513), "Physical Activity Training and Education" (r =.404) (training for staff, children, and/or parents that may increase physical activity knowledge or participation) and "Staff Behaviors" (r =.352) (interactions between staff and children that promote or discourage physical activity) exhibited a level of significance worthy of further investigation.

Results related to child care staff behaviors exhibited by Bower et al. (2008) have been substantiated in the literature. Other research indicates that adults such as child care staff may play a significant role in preschoolers' engagement in physical activity (Cardon et al., 2008; Dowda et al., 2004; McKenzie et al., 1997; Poest et al., 1989). In the following section, literature concerning preschool teachers' involvement, perceptions, and attitudes concerning children's physical activity will be reviewed.

Preschool Teachers

Preschool teachers can play a significant role in children's growth and development. Teachers who engage in positive social interactions with preschoolers have shown to enhance children's cognitive activity (Howes & Smith, 1995). In 2002, the National Institute of Child Health and Human Development Early Child Care Research Network (NICHD) conducted a

study which found that the quality of a teacher (e.g. meaningful interactions between children and adults) was indirectly related to child outcomes such as social, language, and cognitive development. Teacher training, emotional environments teachers create, and teacher sensitivity have all been noted to indirectly affect children's outcomes (National Institute of Child Health and Human Development Early Child Care Research Network [NICHD], 2002).

In the recommendations for physical education professionals, the NASPE (2002) identified teachers as influential role models of appropriate physical activity behaviors for children. Regrettably, the literature available suggests that preschool teachers may not be fulfilling their role as models of physical activity (Cardon et al., 2008; McKenzie et al., 1997).

Several studies have included teacher presence/absence as a variable that may affect preschoolers' physical activity levels. Cardon et al. (2008) found step counts for children increased when fewer teachers were supervising; however, this was only significant for girls in this study. Cardon suggested this phenomenon may be explained by preschool teachers modeling sedentary behaviors or being uninvolved in children's play. The conclusions drawn by Cardon in this investigation illustrate that preschool teachers' behaviors may influence children's activity levels. Cardon deduced that teachers who supervised children while sitting or standing still may be modeling sedentary behaviors during outdoor play, inadvertently reducing children's step counts.

McKenzie et al. (1997) considered not only whether teachers' presence affected preschoolers' physical activity, but also whether teachers' direct prompts for children to engage in activity had an effect. During a preschool recess period (M=25.9 minutes), teachers who were present 95% of an observation, only prompted verbally or nonverbally (e.g. tossing out a ball) 35% of the time during the observations. In the same study, preschoolers who did receive

prompts from teachers or peers would comply with requests for engagement in activity 89% of the time. Taken together, these two results provide evidence that when given the proper encouragement, preschoolers will engage in physical activity; however, McKenzie et al. noted in this study that preschool teachers need training to identify opportunities to provide appropriate prompts to children.

An investigation conducted by Brown et al. (2009) supports the assertion that preschool teachers can positively influence children's physical activity, but are not sufficiently engaged in behaviors (such as modeling or direct interaction) that promote physical activity. Using direct observation for a sample of 372 children, Brown et al. (2009) observed that during outdoor play, preschoolers primarily engaged in sedentary activities. Further, preschool teachers rarely utilized intentional methods (e.g. verbal prompts and/or modeling) to promote or increase children's physical activity. Interestingly, during observations in which children were engaged in teacher-arranged physical activity and music, their MVPA increased. Brown recommended that preschool teachers strategically involve themselves in children's outdoor play to encourage physical activity.

To understand possible factors that contribute to preschool teachers' lack of involvement in children's physical activity, researchers have conducted investigations concerning the relation between preschoolers' physical activity and teachers' education and training (Dowda, et al., 2004; Poest et al., 1989). Preschool teachers' training has been shown to affect children's time in both MVPA and sedentary activities (Dowda et al., 2004). When compared to preschools with fewer college educated teachers, preschools with more college educated teachers exhibited higher percentages of time with children engaged in MVPA. Dowda et al. (2004) concluded that this could be related to several factors within the individual preschool's policies such as smaller

class sizes or hiring policies that favor teachers with college education. These policies would allow for more quality teacher-child interaction during the day, in addition to having teachers who would be more likely to integrate physical activity into the daily curriculum.

Poest et al. (1989) noted that preschool teachers with two year degrees in early childhood education utilized more movement activities to assist in learning than teachers with a Bachelor's/Master's degree in elementary education. Poest cited that teachers with elementary education backgrounds (17% of teacher sample) may have limited training in child development and lack understanding as to the importance of motor skill development. These studies offer information that suggests that increased amounts of education for teachers, especially in the areas of early childhood development, may provide support for preschoolers' engagement in physical activity.

Teachers' personal engagement in physical activity offer insight into how they approach modeling physical activity for children. McKenzie, LaMaster, Sallis and Marshall (1999) asked a sample of 18 fourth- and fifth-grade school teachers to record their personal leisure physical activity over a 2-year period. This was compared to direct observations of teacher-directed physical activity. Authors of this study found teachers who were more physically activity in their leisure time were more likely to provide more fitness activities (activities that engaged children in more MVPA) ($p < .02$). Additionally, teachers who reported more leisure-time physical activity spent more time promoting fitness ($p < .02$). Although these findings do not describe preschool teachers, it is important to note that teachers from this study who engage in leisure physical activity in their personal lives are more likely to actively participate and engage children in physically active behaviors.

Preschool teachers' attitudes toward modeling of physical activity may also contribute to children's physical activity. In a qualitative interview study, preschool teachers tended to view parents as the primary source of modeling of physical activity (Dwyer et al., 2008). They also noted that parents were not fulfilling their modeling obligations, but did not mention themselves as an additional source of physical activity modeling. Other studies reviewing preschool teachers' roles during children's free play found that teachers most often engaged in roles that assisted children with play preparation and continuation, rather than by directly engaging or enhancing play (Kontos, 1999). Kontos (1999) found that teachers in this study had a high amount of interaction with children during their free play, but that the quality of these interactions varied. Preschool teachers encouraged play through providing and preparing toys and play settings, but limited their direct engagement with children to play-process or peer-oriented talk. These behaviors reflect teachers' capacity to engage in children's free play in an effort to encourage the continuation of play; however, few studies (Brown, Googe, McIver, & Rathel, 2009; McKenzie et al., 1997) have evidenced a translation of this ability during outdoor play.

Attitudes about gender may also affect preschool teachers' engagement with children during opportunities for physical activity. Sandberg and Pramling-Samuelsson (2005) observed gender differences expressed during interviews with preschool teachers in Sweden concerning their attitudes toward preschoolers' outdoor play. Both male and female teachers acknowledged men's willingness to participate and/or initiate play with children. Female teachers preferred play characterized by sedentary activities and did not participate in children's active play. As noted earlier, preschool aged boys are more active than preschool aged girls (Cardon & De Bourdeaudhuji, 2008; Pate, McIver, Dowda, Brown, & Addy, 2008; Pate, Pfeiffer, Trost,

Zielger, & Dowda, 2004; Poest, Williams, Witt, & Atwood, 1989). Further, Cardon et al. (2008) discovered girls became more active during outdoor play when teachers left the play area. Taken together with the Sandberg and Pramling-Samuelsson (2005) investigation, it seems that preschool teachers' attitudes, preferences, and behaviors concerning outdoor play may have an effect on children's activity levels.

The literature concerning the effect of preschool teachers on children's physical activity is limited. Furthermore, there is little empirical research that supports the outside influences that may affect preschool teachers' behaviors during opportunities to provide modeling and/or encouragement of children's physical activity. Influenced by ecological contexts perspective (Bronfenbrenner, 1979), the existing literature concerning preschoolers' physical activity does not account for indirect influences that occur in the child care setting. The research available regarding preschool teachers' attitudes and behaviors concerning physical activity suggest that their personal and professional lives may influence children's activity levels. In order to gain a better understanding of these indirect influences, an ecological perspective has been applied to the existing literature to form a theoretical model of influences on preschoolers' physical activity.

Ecological Perspective on Preschoolers' Physical Activity

Urie Bronfenbrenner (1979) asserted that children's development does not progress independent of the environment or interactions in which they transpire. Instead, the child exists within nested contexts that interact with one another to create an environment that impacts the child's development. Bronfenbrenner's ecological perspective can be applied to identify influences that exist within the child care center in an effort to determine the contexts that may affect children's physical activity. As such, the literature reviewed has been applied to the

theoretical contexts of Bronfenbrenner's ecological perspective to explore the environments related to preschoolers' physical activity.

Bronfenbrenner (1979) analyzed the nested contexts in which a child develops on five levels: microsystems, mesosytems, exosystems, macrosystems, and chronosystems. Microsystems are considered the "pattern of activities, social roles and interpersonal relations" (p. 39) experienced by the developing child (Bronfenbrenner, 1994). It is within the closeness of this context that the child achieves and sustains development. Traditionally, the family has been the central context for the developing child (Bronfenbrenner, 1986). Child care centers, however, have become a significant microsystem within the nested contexts of a child's development due in part to more parents in the workforce, as well as their perceptions about preparing children for school (Marshall, 2004; NICHD 2002). Preschool teachers' interactions with children may enhance or inhibit their development. The literature concerning children's physical activity documents the impact preschool teachers' actions have on children's participation in active outdoor play (Cardon et al., 2008; McKenzie et al., 1997).

Because the child is developing within multiple contexts, linkages between microsystems must exist. The interactions between microsystems such as home and child care centers are considered to be the mesosystem. Mesosystem influences on children's physical activity in the literature are limited, but a study by Dwyer and colleagues (2008) used parents and preschool teachers to explore factors that influence children's physical activity. Results from this qualitative study showed the overprotective nature of parents conflicted with preschool teachers' notions concerning the need to provide opportunities for free and explorative play for children. In this instance, the mesosystems of the home and the child care center are in conflict with each other, which can influence the child's physical activity.

Children's physical activity may also be affected by contexts with which they never directly come into contact. Bronfenbrenner (1994) considers these contexts the exosystem because they "indirectly influence processes within the immediate setting" (p. 40) in which the child develops. For instance, teachers' education and attitudes surrounding roles within the child care setting have been cited as possible correlates to children's physical activity (Dowda et al., 2004; Kontos, 1999; Poest et al., 1989; Sandberg & Pramling-Samuelsson, 2005). Although not mentioned explicitly in the literature, teachers' personal health practices may also have an effect on modeling of physical activity.

Bronfenbrenner (1979) identified contexts which may indirectly affect the developing child through societal constructs such as culture and government. The American Academy of Pediatrics (2006), which disseminates information and research to all medical doctors in the United States, provided recommendations to address the growing epidemic of overweight and obesity in preschoolers. Doctors then provide the information to parents of preschoolers. Similarly, other national and state organizations have provided recommendations that have influenced child care center policies concerning outdoor and active play (e.g. NASPE, 2002 and BFTS 2006). These policies, designed to support children's development, are examples of the macrosystem, a system of influences with which the child (microsystem) never comes in contact.

Finally, Bronfenbrenner addressed the concept of time, termed chronosystem, as a system that also shapes the development of a child. Chronosystems can be individual or global. For instance, examining the cumulative effects of an increasingly technological society is relevant to understanding the chronosystemic influences on children's physical activity considering recent trends in preschooler overweight and obesity (Ogden, Carroll, & Flegal, 2008). The advent of sedentary activities such as television-viewing, video and computer games have affected

children's play routines (Anderson & Butcher, 2006). Child care centers may employ technology such as this for learning and/or free play activities (e.g. Dowda et al., 2004). These sedentary activities may limit the number of active opportunities given to children in child care centers (e.g. Bower et al., 2008).

Using Bronfenbrenner's ecological perspective, it is clear that there are numerous influences that can affect children's physical activity. The existing literature has provided information concerning the exosystemic influence of parents, such as parents' personal engagement in physical activity, their BMI, and attitudes about children's physical activity; however, parents are not the only mesosytemic influence in preschoolers' lives.

Combining information from the limited body of literature concerning preschool teachers shows that the exosystem (teachers' personal and professional lives) may have an indirect influence on children's physical activity. A teacher's attitudes, beliefs, education, and personal health practices are all exosystemic influences that may affect the manner in which he/she provides encouragement, guidance, and modeling during children's physical activity. Literature concerning teachers' behaviors during children's physical activity is limited. Available research shows teacher-initiated activities and teacher prompts do encourage children's physical activity (Brown, Googe, McIver, & Rathel, 2009; McKenzie et al., 1997); however, there is little research that describes teachers' typical behaviors during outdoor play. Further, understanding the influences that drive these typical behaviors during children's outdoor play has yet to be investigated. In order to understand the exosystem as it affects children's physical activity, it will first be necessary to describe teachers' behaviors during children's physical activity and any personal or professional factors that may be related to those behaviors.

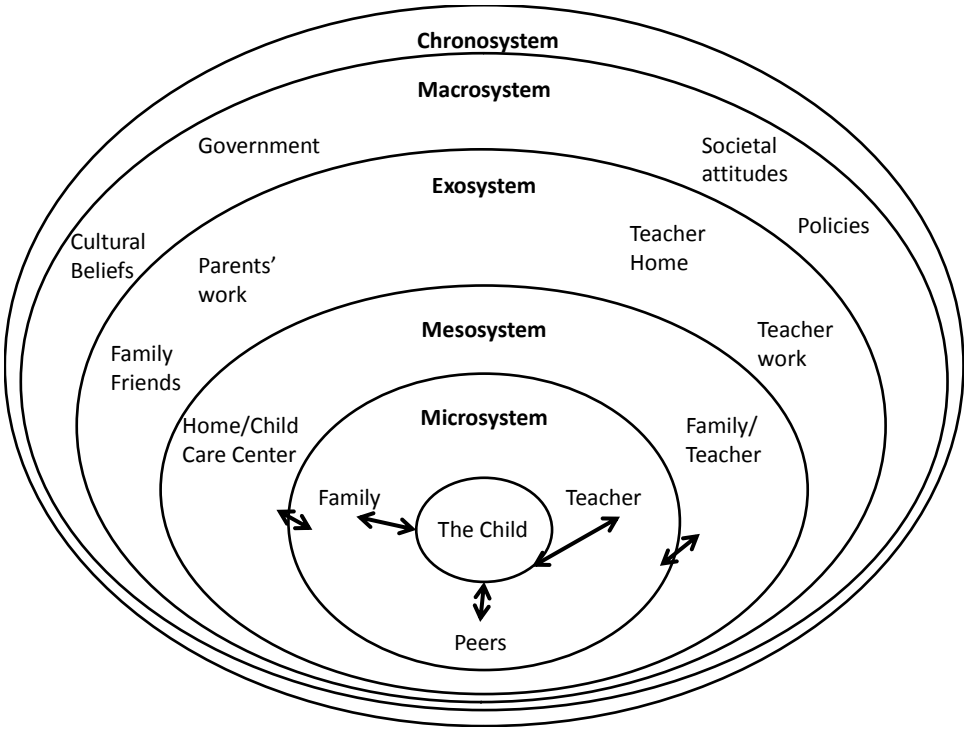

Figure 1: Bronfenbrenner's Ecological Model

Summary

The increased incidence of childhood overweight and obesity in children ages 3-5 has garnered attention in both the medical community and among early childhood education professionals. Trends in the research show that the amount of physical activity in which young children engage is lower than the recommendations for preschoolers. Some of the variability in children's activity levels can be traced back to the child care center they attend (Dowda et al., 2004; Finn et al., 2002; Tucker, 2008). While several aspects of the child care environment have been researched, including the physical environment and policies specific to child care centers, little research has been conducted concerning teachers' typical behaviors during outdoor play and the indirect influences (e.g. teacher education, language and personal health practices) that may affect their encouragement and active modeling of physical activity. Informed by

Bronfenbrenner's ecological perspective, it is apparent that investigations pertaining to the exosystemic influences of preschool teachers on children's physical activity are warranted.

Hypotheses

This study will explore the behaviors in which preschool teachers are engaged during preschoolers' active, outdoor play. Based on a review of the literature, the following hypotheses were generated:

1. Teachers' education will not affect the amount of time spent in sedentary activity during children's outdoor play.
2. Teachers with more education will spend more time facilitating children's outdoor play.
3. Teachers with more years of experience in teaching/child care will spend more time facilitating children's outdoor play.
4. Teachers who spend more time reacting to misbehavior will spend less time facilitating play during children's outdoor play.
5. Teachers who exercise more will spend more time facilitating children's outdoor play.
6. Teachers who engage in more computer and television screen time away from work will spend more time in sedentary activity during children's outdoor play.
7. Teachers with healthy personal nutrition practices will spend less time in sedentary activity during children's outdoor play.

CHAPTER THREE

Method

The following chapter contains information concerning the methodology of this study. This section will include: (a) an overview of the *Eat Healthy, Be Active Curriculum*, (b) an explanation about the recruitment of participants, (c) descriptions of participants, (d) a summary of the design of the *Evaluating the Effectiveness of UGA Early Childhood Curriculum Materials in Georgia Childcare Centers* study, (e) descriptions of the measures used in the present study, and (f) information concerning data analysis for the present study.

Eat Healthy, Be Active Curriculum

The *Eat Healthy, Be Active* curriculum was created in 2005 by three faculty members at the University of Georgia in Athens, GA as part of a grant funded by Bright from the Start: Georgia Department of Early Care and Learning (BFTS). The curriculum is an integrated unit concerning nutrition and physical activity for early childhood educators to use with preschoolers. Developmentally appropriate activities were produced for children ages 3-5 that integrated nutrition and physical activity concepts into science, music, math, art, dramatic play, and teacher-directed activities such as large group, reading, and group outdoor activities. An *Eat Healthy, Be Active* resource kit was constructed in conjunction with curriculum to include most non-consumable supplies, equipment, and resources necessary to perform activities and guide lessons. Activities and resources developed were piloted with children ages 3-5 prior to publication. Since its inception, the *Eat Healthy, Be Active* curriculum has been approved by

Bright from the Start: Georgia Department of Early Care and Learning (BFTS) and has been taught to child care trainers and providers throughout the state of Georgia.

The present study utilized data from a 2007-2008 study funded by Bright from the Start: Georgia Department of Early Care and Learning (BFTS) to evaluate the effectiveness of the *Eat Healthy, Be Active (EHBA)* curriculum and resource kits developed by Bales, Coleman, and Wallinga (2006). The *EHBA* study was conducted from March 2008 to September 2008 in Georgia child care centers.

Recruitment

Participating centers were recruited from a list of 85 centers recommended by local resource and referral agencies in Athens and Atlanta, Georgia areas. To participate, child care centers in the *EHBA* study had to meet the following criteria: (a) centers operated more than six hours per day, (b) centers had a licensing capacity of at least 40 children, and (c) preschool teachers (instructing children ages 3-5) did not hold state teacher certification. Principal researchers rationalized that teachers with state teacher certification would not receive as many benefits from participation in this study because concepts related to physical activity would have been addressed in conjunction with their certification process. Teachers who did not hold state certification would be less likely to have experience with this information and would benefit the most from participation in the study. A purposive sample of 19 eligible child care centers was selected to participate based on the above criteria and child care center director consent.

Directors of the 19 identified child care centers recommended a maximum of two classrooms of 3- to 5-year-olds within the center to participate. Lead and assistant teachers in selected classrooms were invited to participate in the study. Teachers who agreed to participate in the *EHBA* study agreed to (a) attend a 3-hour training session in a central location, (b)

participate in 2-3 observations in their classroom, (c) complete surveys and forms related to the *EHBA* study, and (d) implement the *EHBA* curriculum, if assigned to the experimental group.

Participants

Participants from the *EHBA* were 44 lead and assistant teachers, 19 directors, and 175 children from 19 child care centers in Georgia. A total of 42 teachers from selected classrooms who had returned completed consent form and were present at Time 1 for data collection included in the present study (See Appendix A for director and teacher consent forms). The sample of teachers in the *EHBA* study was all female. The ethnicity of participants included Caucasian (61.1%), African-American (33.3%), Hispanic (5.6%) and those reporting multiple ethnicities (< 2%). Approximately, 72% of participants held the position of lead teacher. Teachers' education varied. Participants ranged in highest level of education completed including: (a) 5.6% of teachers had completed an elementary education, (b) 33.3% had a high school diploma or GED, (c) 13.9% of teachers completed a technical school degree, (d) 36.1% had some college education completed, and (e) 11.1% of teachers had completed an undergraduate education. No participants in this study held a graduate degree. The average number of years working in early childhood education was 5.9 years; however, years of experience ranged from 0-10 or more years.

Design

Survey Design

The *EHBA* evaluation project utilized a quasi-experimental design. Preschool teachers were assigned to either control or experimental groups. Groups were divided so that teachers could attend a training workshop in close proximity to the centers with which they were

affiliated. A blind treatment was utilized so neither teachers' nor trained observers were aware of which group they were assigned to reduce observation biases.

At Time 1, child care directors reported center-level demographics and trained *EHBA* observers conducted direct observations of participating teachers. Observers visited child care centers in pairs and collected data from separate classrooms simultaneously. Direct observations of teachers in both experimental and control groups occurred during preschoolers' outdoor play and lunch time by trained *EHBA* observers. Observers also conducted interviews with preschoolers about nutrition and distributed the Teacher Health Practices (THP) survey for both experimental and control groups.

Prior to Time 2, the experimental group was trained in the *EHBA* curriculum. This training included an overview of childhood overweight and obesity, break-out sessions that demonstrated large group and free play activities from the *EHBA* curriculum to participating teachers, and offered facilitated discussion concerning ways in which to promote and model physical activity for children. The control group was trained in Family Involvement. Family Involvement training included discussion and activities aimed at providing teachers with ideas to involve parents and families in children's education. Control group trainings did not include any specific information concerning physical activity.

At Time 2, trained *EHBA* observers visited child care centers in the experimental group and observed teachers implementing *EHBA* curriculum activities in the classroom. Teachers completed surveys concerning their opinions about the *EHBA* curriculum. The control group was not observed during Time 2.

At Time 3, trained *EHBA* observers collected data concerning center-level demographics, observations of teachers during preschoolers' outdoor play and lunch time, interviews with

preschoolers about nutrition, and teacher health practice surveys at both experimental and control centers. Principal investigators employed a combination of self-administered questionnaires and structured observations in order to understand how the *EHBA* curriculum affected preschool teachers' ability to instruct preschoolers concerning health and nutrition. See Table 1 for a time line of the *EHBA* study.

Table 1

EHBA Study Time Line

Time	Control Group	Experimental Group
1	Classroom Information Checklist (CIC) Observation of Outdoor Play (OOP) Teacher Health Practices (THP)	Classroom Information Checklist (CIC) Observation of Outdoor Play (OOP) Teacher Health Practices (THP)
Training	Family Involvement	*EHBA* Curriculum
2	No Data Collected	Observation of *EHBA* curriculum implementation Teacher Implementation Survey
3	Classroom Information Checklist (CIC) Observation of Outdoor Play (OOP) Teacher Health Practices (THP)	Classroom Information Checklist (CIC) Observation of Outdoor Play (OOP) Teacher Health Practices (THP)

Measures

The present study utilized teacher-specific data collected during Time 1. Data were extracted from observations during preschoolers' outdoor play and teachers' self-reported health practices. Teacher demographics were also utilized in the present study.

Demographics

The *Eat Healthy, Be Active* and Family Involvement Pre-Workshop Survey (See Appendix B) were designed for trainings conducted prior to Time 2 of the *EHBA* evaluation project. The *Eat Healthy, Be Active* Pre-Workshop Survey was a self-administered survey that contained questions concerning preschool lead and assistant teachers' current knowledge related to health and physical activity behaviors/practices for young children (Bales, Coleman, & Wallinga, 2008). The Family Involvement Pre-Workshop survey was also self-administered and included questions related to perceptions about family composition and engagement strategies teachers employed with families. Both surveys contained self-reported demographic information including: (a) age, (b) sex, (c) ethnicity, (d) highest educational attainment, (e) current position at their child care center of employment, and (f) the number of years of experience in early childhood education. Teachers in the experimental and control groups completed the *Eat Healthy, Be Active* and Family Involvement Pre-Workshop respectively prior to trainings.

Structured Outdoor Observations

The Observation of Outdoor Play (OOP) measure (see Appendix B) was designed to document teachers' social interactions during preschoolers' outdoor play (Bales, Coleman & Wallinga, 2008). The OOP measure was piloted in Head Start classrooms at McPhaul Child Development Lab at the University of Georgia campus in Athens, GA. Reliability testing was conducted among *EHBA* observers until inter-rater reliability reached 0.8 or above.

Structured outdoor observations began 5 minutes after a participating classroom was led outside by teachers for outdoor play. Observers documented the time at which preschoolers' outdoor play began, the time they began their observation of a teacher, and the time the observation was completed. Observers recorded information concerning lead and assistant teachers' physical activity and interactions related to children's activity every 15 seconds for 7 minutes per teacher using a standardized timer and observation measure. Observers rated teachers on the following activities: (a) sitting, which included resting a portion of the body against a stationary object during outdoor play; (b) being very active, which included activities such as running, walking quickly with or without play materials, jumping, et cetera; (c) facilitating play, which included playing with a child (sitting or active), language that promoted or enhanced play, pretending/imagining, setting up equipment, or helping with rules or organization of play; (d) superficial only, which included brief interactions with children that did not support or encourage play; and (e) reacting to misbehavior, which included redirecting aggressive behaviors, repeating rules for outdoor play, preventing or stopping children from injuring themselves, and preventing a child from misusing play equipment. Multiple activities could be recorded within each 15-second interval.

If a teacher was absent or left the observation area, observers marked "Left Area" on the Observation of Outdoor Play measure (OOP) until the teacher's return. If the teacher did not return after 3 minutes, the observation was terminated. At the end of a 7-minute structured observation, observers recorded information about the equipment available for outdoor play use, examples of active behaviors children engaged in during the observation, specific examples of language teachers used to encourage active play, and other comments about the observation.

Scheduled Outdoor Play

The Classroom Information Checklist (CIC) (see Appendix B) was designed to collect baseline information about the classrooms in which observations were to be conducted (Bales, Coleman, & Wallinga, 2008). Observers documented age/ethnicity of children present in the classroom during observation, as well as scheduled times for selected classroom activities (free play, large group, lunch, and outdoor play). The present study utilized information concerning the scheduled time for outdoor play in order to compare time scheduled for outdoor play to time observed in outdoor play.

Teacher Self-Reported Health Practices

The Teacher Health Practices (THP) measure (see Appendix B) was adapted for the *EHBA* evaluation project from questions on *The Healthy Educator's Checklist* (CapRock Press, 2002) and the *USDA- California Checklist* (University of California at Davis, 1998). This self-administered questionnaire measured teachers' personal healthy and unhealthy behaviors, unrelated to their instruction of preschoolers.

The THP survey utilized a 21-item, 4-category Likert-type scale. Teachers responded to statements about their health and nutrition habits by circling, "Rarely," "Sometimes," "Regularly," or "Every Day" to describe their behavior. For the present study, a subset of questions from the original THP measure were grouped together into three categories to provide a numeric score for the following behaviors: (a) screen time, which included statements concerning activity related to computers, television, or electronic games e.g. "I watch 2 or more hours of TV (including movies)," (b) healthy nutrition practices, which included statements concerning eating practices, e.g. "I eat 3 or more servings of vegetables a day," and "I eat breakfast," and (c) amount of exercise preschool teachers engage in, e.g. "On average, how often

do you exercise for at least 30 minutes at a time?" This question offered response categories: "Never," "Less than once a month," "A few times a month," " 1 – 2 days a week," "3 – 4 days a week," "5 – 6 days a week," "Every day," and "Other." See Table 2 for questions used in the teacher health practices scores.

Observer Training

EHBA observers were five graduate students in the Department of Child and Family Development at the University of Georgia in Athens, GA. Observers met with principal researchers once a week for six weeks for a minimum of three hours per session to be trained in the measures utilized in the study. Observers coded video-taped segments of children's play as initial training in order to establish inter-rater reliability on the Observation of Outdoor Play (OOP) measure. Additionally, observers practiced coding the OOP measure during direct observations of outdoor play at McPhaul Child Development Lab and Athens-area child care centers. Observers participated in practice and reliability testing until inter-rater reliability reached 0.8 or above.

Table 2

Teacher Health Practices (THP) Sub-Scales

Score	Questions
Screen Time Behavior	I watch 2 or more hours of TV (including movies)
	I spend an hour or more on the internet (outside of work)
	I spend an hour or more playing video games
Healthy Nutrition	I eat 3 or more servings of fruit a day
Practices	I eat 3 or more servings of vegetables a day
	I eat whole wheat bread
	I eat green salads
	I drink at least 6 glasses of water during the day
	I limit my intake of trans fat
	I drink reduced-fat or fat-free milk
	I eat breakfast
	I eat regular meals and snacks
Amount of exercise	On average, how often do you exercise for at least 30 minutes at a time?

Data Analysis

Teachers' demographic information was coded using two items from the Pre-Workshop Survey: (a) teachers' highest educational attainment and (b) number of years spent working in child care/early childhood education (see Appendix C). Because the majority of the present sample had not completed some form of higher education (such as a technical school or undergraduate degree), the original categories were collapsed to examine whether or not higher education was related to sedentary activity, as suggested by the literature. Teachers' highest educational attainment was collapsed into two categories, those with some college education or higher (including a technical college degree, 4-year degree, and/or a Master's degree) and those with a high school diploma or lower (including GED equivalent or elementary school education).

The number of years teachers spent working in child care/early childhood education was collapsed into two categories; those who had 0-6 years of experience in this field and those who had 7 years or more in the field. Literature concerning children's physical activity has classified teachers' years of experience in similar categories; teachers with 10 or less years of experience and teachers with more than 10 years of experience (Faucette, McKenzie & Patterson, 1990). Due to the measurement constraints (e.g. no explicit response variable for teachers with more than 10 years of experience), participants in the present study were divided into two approximately even groups; preschool teachers with 0-6 years of experience (n = 20) and teachers with 7 or more years of experience (n = 16).

Selected survey items from the Teacher Health Practices (THP) measure were divided into two separate category scores. The first score represented teachers' personal healthy nutrition practices. The score was a summation of 9 survey questions concerning consumption of fruits, vegetables, grains, water, and dairy, as well as 3 survey items concerning consumption of regular

meals and snacks. The second score was a composition of 3 survey items that describe teachers' personal screen time behaviors. Survey items explored the regularity and amount of time teachers spent watching television and movies in addition to computer and video game usage.

Data from the Observation of Outdoor Play (OOP) measure were examined to remove teachers who had left the observation area for 3-minutes or more. The OOP measure was a 7 minute structured observation. Observers documented the amount of time teachers were absent from the observation area. Observers terminated documentation if teachers did not return within 3 minutes of leaving the observation area. Two subjects were eliminated from the sample because they were absent for 3 or more minutes, thus terminating their observation and rendering the data incomplete. The sample used in analyses of preschool teachers' outdoor activity behaviors in the present study was composed of 40 lead and assistant teachers who had completed a 7 minute observation

Data collected on participants prior to Time 2 (*EHBA* or Family Involvement Pre-Workshop survey) was matched with participant data from the Observation of Outdoor Play to assist in analyses of personal nutrition and activity practices. Because participation in the *EHBA* study was voluntary, not all participants observed in Time 1 were present at the site of their assigned training to complete the Pre-Workshop survey. As such, 36 participants were utilized in data analyses concerning personal nutrition, activity and screen time practices because they had completed both the Observation for Outdoor Play and Pre-Workshop survey.

Using data collected during Time 1 of the *Eat Healthy, Be Active (EHBA)* evaluation project, analyses for this study were conducted utilizing SPSS 16.0. In order to describe the activity of preschool teachers during children's outdoor play, the mean and standard deviation of the sample was calculated concerning the following categories of activity: (a) sitting, (b) very

active, (c) facilitating play, or (d) reacting to misbehavior based on observations collected using the OOP measure.

Descriptive Statistics

Percentage tables were generated to describe the amount of time teachers spent in each of four categories. The variables used from the 7-minute observation using the OOP measure were: (a) sitting, (b) very active, (c) facilitating play, and (d) reacting to misbehavior. Additionally, the amount of time scheduled for outdoor play as documented on the CIC measure was compared to the actual amount of time spent during outdoor play, as documented by the OOP measure.

In addition to providing descriptive information concerning preschool teachers' behaviors during outdoor play, investigating possible factors that related to these behaviors were analyzed. Seven hypotheses were formed to explore potential relations among teachers' outdoor play behavior, professional demographics, and personal health practices.

Hypothesis One

Independent t-tests were conducted to evaluate the hypothesis that teachers' education has no effect on sedentary activity. The independent variable, teacher education, was collapsed into two categories: (a) those with a high school education or less and (b) those with some college education or more.

Hypothesis Two

Independent t-tests were conducted to examine the hypothesis that teachers with more education would spend more time facilitating children's play. Similar to hypothesis one, teacher education was described using the two categories listed above.

Hypothesis Three

Independent t-tests were conducted to examine the hypothesis that teachers with more experience in child care and early childhood education would spend more time facilitating children's play. The variable used to describe teacher experience was an item taken from the *EHBA*/Family Involvement Pre-Workshop survey in which the number of years was collapsed into two groups: (a) 0-6 years of experience and (b) 7 or more years of experience.

Hypothesis Four

Bivariate correlations were conducted to investigate the hypothesis that teachers who spend more time reacting to misbehavior would spend less time facilitating children's play. The variables, reacting to misbehavior and facilitating play, were mean times calculated from observations utilizing the OOP measure.

Hypothesis Five

Bivariate correlations were conducted to explore the hypothesis that teachers who exercise more would spend more time facilitating children's play. The variable that describes the amount of time teachers exercise was taken from the THP measure item, "On average, how often do you exercise for at least 30 minutes at a time."

Hypothesis Six

Bivariate correlations were conducted to examine the hypothesis that teachers who engage in more computer and television screen time spend more time in sedentary activity during children's outdoor play. The variable describing computer and television screen time was a screen time score composed of three-survey items from the THP measure concerning frequency of computer, television, and video game usage.

Hypothesis Seven

Bivariate correlations were conducted to examine the hypothesis that states teachers who utilize beneficial personal nutrition practices would spend less time in sedentary activity during children's outdoor play. The variable describing beneficial personal nutrition practices was a nutrition score comprised of 9 survey items from the THP measure.

Table 3

Variables and Statistics Used for Hypotheses

	Variable		
Hypothesis	Independent	Dependent	Statistic
1	Teacher Education High School/GED or less Some College or more	Sedentary Activity Mean of Total Time Engaged	Independent t-test
2	Teacher Education High School/GED or less Some College or more	Facilitating Play Mean of Total Time Engaged	Independent t-test
3	Teacher Experience 0-6 years 7-10+ years	Facilitating Play Mean of Total Time Engaged	Independent t-test
4	Reacting to misbehavior Mean of Total Time Engaged	Facilitating Play Mean of Total Time Engaged	Bivariate Correlation
5	Teacher Self-Reported Exercise	Facilitating Play Mean of Total Time Engaged	Bivariate Correlation

6	Screen Time	Sedentary Activity Mean of Total Time Engaged	Bivariate Correlation
7	Healthy Nutrition Practices	Sedentary Activity Mean of Total Time Engaged	Bivariate Correlation

CHAPTER FOUR

Results

The purpose of this study was to describe teacher behaviors during preschoolers' active, outdoor play at center-based child care facilities. The results of this study are presented in two sections: (a) descriptive information about teachers' behaviors during preschoolers' outdoor play is reported, and (b) statistical results for each of the study's seven hypotheses are stated. Ancillary findings related to the study will also be reported.

Descriptive Statistics

This study documented both the scheduled and observed amount of time allocated to preschoolers for outdoor play. Children's scheduled outdoor play ranged from 30 minutes to 155 minutes during morning hours. The average time for children's scheduled outdoor play was 53 minutes (M = 52.8, SD = 23.3). The actual time children spent in outdoor play during teacher observations ranged from 0 minutes to 70 minutes, with the average outdoor play time lasting 40 minutes (M = 39.97, SD = 17.3). Overall, the amount of time observed for preschoolers' outdoor play was less than the amount of time scheduled.

Using the Observation of Outdoor Play (OOP) measure, preschool teachers' active and sedentary behaviors, as well as the amount of time they facilitated play and reacted to misbehavior were observed. Twenty-four preschool teachers did not spend any part of their observation in sedentary behaviors. The remaining 16 teachers in this study (N = 40) were marked sedentary at least once during outdoor observation with 7 of those teachers spending an entire observation period in sedentary activity. The amount of time spent in sedentary behaviors

ranged from 0 to 7 minutes. Teachers averaged 2.28 minutes in sedentary activity during preschoolers' outdoor play (M = 2.28, SD = 3.11) or 32.5% of a 7 minute observation being sedentary (see Table 5).

During a 7 minute observation, 26 teachers were never marked active during an observation. Only 7 teachers participated in activity that was considered active; however, bouts of active behaviors were brief. Three teachers were observed using active behaviors for 15 seconds, 3 teachers were considered active for 45 seconds, and only 1 teacher exhibited active behaviors for 3.25 minutes. On average, teachers spent 11.34 seconds (M =.189, SD=.593) or 2.7% of a 7 minute observation spent being very active (see Table 5).

The OOP measure was also used to determine the amount of time preschool teachers spent reacting to children's misbehavior and facilitating their play. Thirty-seven teachers reacted to misbehavior during preschoolers' outdoor play. The amount time spent reacting to misbehavior ranged from 0 to 3 minutes, but on average teachers spent one minute reacting to children's misbehavior (M=1.01, SD=.821). Teachers spent the majority of their time facilitating preschoolers' play, averaging 2.44 minutes during observation (M=2.44, SD=2.23). Time spent facilitating play ranged from 0 to 6.50 minutes. When surveying the entire observation of children's outdoor play, preschool teachers spent 35% of their time facilitating play and 15% of their time reacting to children's misbehavior (see Table 5).

Ancillary Findings

Because the average amount of time in which preschool teachers engaged in facilitating children's play and the average amount of time spent in sedentary activity, supplementary analyses were conducted. Correlational analyses were performed to investigate possible relation between preschool teachers' sedentary activity and time spent facilitating children's outdoor

play. Analyses revealed teachers who spent more time facilitating children's play actually spent less time in sedentary activity (r = -.159); however, this relationship failed to reach significance (see Table 6).

Table 4

Frequencies and Percentages of Preschool Teacher Professional Demographics

Variable	*n*	%
Education		
Elementary	2	5.6
High School Diploma/GED	12	33.3
Technical College Degree	5	13.9
Some 4-year College	13	36.1
Undergraduate Degree	4	11.1
Graduate Degree	0	0
Years of Experience		
0 – 6	20	55.6
7 – 10 or more	16	44.4

Table 5

Mean Minutes and Percentages of Preschool Teacher Behavior During Outdoor Play

Activity	*M*	% [a]
Sedentary	2.28	32.5
Active	.189	2.71
Facilitating Play	2.44	34.9
Reacting to Misbehavior	1.01	14.5

[a] Percentages are based on 7-minute OOP observation. Categories are mutually exclusive and percentages do not add up to 100%.

Table 6

Intercorrelations Among Subscales for Preschool Teachers

	1	2	3	4	5	6
1. Sedentary	-	-	-	.136	.096	- .086
2. Facilitating Play	-	-	-.372*	.151	-	-
3. Reacting to Misbehavior	-	- .372*	-	-	-	-
4. Amount of Exercise	.136	.151	-	-	-	-
5. Screen Time Score	.096	-	-	-	-	-
6. Healthy Nutrition Practice Score	- .086	-	-	-	-	-

*$p < .05$

Testing of Hypotheses

Hypothesis One

Teacher education was hypothesized to have no effect on their sedentary activity during children's outdoor play. Teachers with less education (M = 2.43 minutes) spent approximately 30 seconds (.481 minutes) more in sedentary activity than teachers with more education (M = 1.95 minutes); however, this difference was not significant (t =.460, df = 34, p =.648). Teacher education was divided into two groups: (a) less education, which included teachers with a high school education or less (n = 15); and (b) more education, which included teachers with some college, technical college, undergraduate, or Master's degree (n = 21) (see Table 7).

Hypothesis Two

It was hypothesized that teachers with more education would spend more time facilitating play during children's outdoor play. Using the education groups above, an independent t-test was performed. Preschool teachers with more education (M = 2.65 minutes) spent 48 seconds (.805 minutes) more facilitating play than teachers with less education (M = 1.85 minutes). This difference, however, did not reach significance (t = 1.030, df =34, p =.311) (see Table 7).

Hypothesis Three

Teachers with more years of experience in teaching/child care were hypothesized to spend more time facilitating play during children's outdoor play; however, results from an initial Pearson correlation analysis showed a slight negative relation between years of experience and facilitating play (r = -.323) which approached significance (p =.062). Years of experience were then divided into two relatively even groups to maximize variability for an independent t-test: (a) less experience, which included teachers with 0 – 6 years of experience (n =20); and (b) more experience, which included teachers with 7 or more years of experience (n =16). Teachers with

more experience spent about one less minute (.94 minutes) facilitating play than teachers with less experience. This difference, however, was not significant ($t = 1.22$, $df = 34$, $p = .231$) (see Table 8).

Ancillary findings. To better understand why the findings ran counter to the proposed hypothesis, additional analyses were conducted. Separate correlations were used to analyze the two "years of experience" groups (one including only teachers with 0-6 years of experience and one including only teachers with seven or more years of experience). When examining only the teachers with 0-6 years of experience, the correlation performed comparing experience to amount of time facilitating play revealed a significant negative relation ($r = -.476$, $p < .05$). However, the relation between experience and facilitating play disappeared when examining teachers with 7 or more years of experience ($r = .009$).

In an effort to explain why the negative correlation did not exist among teachers with 7 or more years of experience and facilitating play, frequency tables were formulated to observe mean times spent facilitating play by year. Examining the average time spent facilitating play by years of experience revealed that as teachers increased in years of experience from 0 to 6 years, they decreased the amount of time spent facilitating play. A similar trend was not found for teachers with 8 or more years of experience (see Table 9). A specific trend among teachers with 7 or more years of experience was not exhibited and frequencies indicated that three times as many teachers had 10 or more years of experience as had 7 or 8 years of experience (see Table 10). Because teachers with more than 10 years of experience were all grouped into the same category, it was difficult to decipher if a downward trend (i.e. as teachers increase in years of experience, the amount of time they facilitate play decreases) existed among teachers with 7 or more years of experience.

Hypothesis Four

It was hypothesized that teachers who spent more time reacting to misbehavior would spend less time facilitating play during children's outdoor play. This hypothesis was confirmed and was found to be significant (r = -.372, p <.05) (see Table 6).

Hypothesis Five

It was hypothesized that teachers who exercised more would spend more time facilitating play during children's outdoor play. Results from the analysis demonstrated a positive correlation (r =.159) indicating a weak relation between the amount teachers exercised and the amount of time they spent facilitating play; this relation, however, was not significant (p = .379).

Hypothesis Six

Teachers who engage in more computer and television screen time were hypothesized to spend more time in sedentary activity during children's outdoor play. Teachers screen time score (evidenced by higher computer and television screen time scores) was weakly related to time spent in sedentary activity (r =.096); this relation was not significant (p =.576).

The dependent variable, computer and television screen time, was a score composed of a sub-scale from the Teacher Health Practices measure which included the following: (a) self-reported time viewing television and movies, (b) self-reported time spent using the internet, and (c) self-reported time playing video and/or computer games. The computer and television screen time score was 0 for least amount of time engaged in screen time behaviors and 12 for the most amount of time engaged in screen time behaviors. Preschool teachers' computer and television screen time score ranged from 0 to 10, with lower scores demonstrating less time spent in screen time activities. On average, teachers scored 4 out of 12 indicating less time spent in screen time activities (M = 3.84, SD = 2.15) (see Tables 6 and 11).

Hypothesis Seven

It was hypothesized that teachers with healthy nutrition practices would spend less time in sedentary activity during children's outdoor play. There was a negative relation between teachers with healthy nutrition practices (evidenced by higher healthy nutrition practices scores) and sedentary activity (r = -.086); this relation did not reach significance (p = .620) (see Table 6).

The dependent variable, healthy nutrition practices, was a score composed of sub-scales from the Teacher Health Practices (THP) measure which included the following: (a) self-reported frequencies of consuming recommended amounts of fruits, vegetables, grains, and milk; (b) self-reported frequencies of regular meal and snack consumption; (c) self-reported frequencies of water consumption; (d) self-reported frequencies of limiting trans fat. Scores ranged from 0 being the least healthy nutrition score to 36 indicating the most healthy nutrition score. Preschool teachers' healthy nutrition practices scores ranged from 13 to 33. Teachers' average healthy nutrition score was 22 out of a possible 36 with higher scores indicating healthier nutrition practices (M = 22.3, SD = 4.98) (see Table 6 and 12).

Table 7

Sedentary Activity and Facilitating Play Means for Preschool Teacher Education Level

	Education				
	Less	More	*t*	*df*	*p*
Sedentary	1.95	2.43	.460	34	.648
	(2.99)	(3.22)			
Facilitating Play	1.85	2.65	1.03	34	.311
	(2.05)	(2.47)			

Note. Standard Deviations appear in parentheses below mean.

Table 8

Facilitating Play Means for Preschool Teacher Professional Experience

	Years Experience				
	0 – 6	7 – 10 +	*t*	*df*	*p*
Facilitating Play	2.74	1.80	1.22	34	.231
	(2.49)	(2.02)			

Note. Standard Deviations appear in parentheses below mean.

Table 9

Frequencies and Percentages for Preschool Teachers with 7 or More Years of Experience

Years Experience	*n*	%
7	1	6.2
8	3	18.8
9	0	0
10 or more	12	75.0

Table 10

Mean Time Spent Facilitating Play by Preschool Teachers Professional Experience

Years Experience	*M*	SD
0	6.25	-
1	3.17	1.51
2	3.88	3.00
3	3.20	3.09
4	3.15	2.61
5	.625	.884
6	.625	.884
7	0	-
8	3.25	.354
10	1.82	2.24

Table 11

Frequencies and Percentages of Teacher Computer and Television Screen Time Score

Screen Time Score	*n*	%
0	1	2.6
1	2	5.3
2	8	21.1
3	10	26.3
4	3	7.9
5	7	18.4
6	3	7.9
7	1	2.6
8	2	5.3
9	0	0
10	1	2.6

Note. Maximum score = 12.

Table 12

Frequencies and Percentages of Teacher Nutrition Practices Score

Nutrition Practices Score	*n*	%
13	1	2.6
14	2	5.3
15	0	0
16	1	2.6
17	2	5.3
18	2	5.3
19	3	7.9
20	2	5.3
21	7	18.4
22	1	2.6
23	3	7.9
24	2	5.3
25	3	7.9
26	2	5.3
27	1	2.6
28	0	0
29	1	2.6
30	2	5.3
31	2	5.3

32	0	0
33	1	2.6

Note. Maximum score = 36.

CHAPTER FIVE

Discussion

The purpose of this study was to describe teachers' behaviors during preschoolers' active, outdoor play. Data collected during the *Evaluating the Effectiveness of a UGA Early Childhood Curriculum Materials in Georgia Child Care Centers* study was used to describe teachers' sedentary and active behaviors, as well as time spent facilitating play and reacting to misbehavior. Further, this study tried to identify factors that may contribute to teachers' behaviors during outdoor play. Variables used in this study to investigate personal attributes that may affect teachers' behaviors during children's outdoor play were teachers' education, years of experience in early childhood education, personal computer and television screen time, and personal exercise and healthy nutrition practices. A discussion of the results, in addition to limitations, implications and directions for future research will be presented.

Teacher Behavior During Outdoor Play

Data collected concerning teachers' behaviors during outdoor play provided information about the time spent in differing levels of activity and how they engaged with preschool children. Data was related to the amount of time available for children's outdoor play. In general, time scheduled for morning outdoor play was approximately 53 minutes; however, the average time children actually spent in outdoor play was approximately 40 minutes indicating that teachers often reduced children's scheduled outdoor play.

NASPE guidelines suggest preschoolers receive 120 minutes of physical activity per day. In Georgia, BFTS directs child care centers and teachers to provide at least 90 minutes of

outdoor play per day. Due to limited observation time, this study was unable to determine if teachers and child care centers provided opportunities for the recommended amount of physical activity for preschoolers.

Possible factors contributing to preschool teachers' premature suspension of outdoor play in this study earlier than scheduled may include safety concerns related to weather. *EHBA* data collection occurred during summer months in Georgia, which tend to be warm and humid. Preschool teachers concerned with children's safety may have reduced outdoor play time to prevent overexposure to heat and possible dehydration.

Providing less time for preschoolers' outdoor play may have been based on teachers' perceptions of children becoming fatigued or bored. Previous studies discovered that extended amounts of time available for children's free play resulted in decreased amounts of physical activity that authors perceived as fatigue, boredom or disinterest (Cardon et al., 2008; McKenzie et al., 1997). Tomlinson and Hyson (2009) assert that observing and adapting activities to meet children's individual needs and interests during outdoor play is an important component in developmentally appropriate practice; however, it is preferred to utilize adult-directed activities and a variety of equipment to redirect children's interests toward physical activity. Although this study cannot conclude that preschool teachers did not attempt to adapt activities to reengage children in physical activity, it seems teachers in this study may benefit from information and training related to extending outdoor play activities versus early suspension.

Teachers' activity during preschoolers' outdoor play was primarily sedentary in nature (M = 2.28 minutes) as measured by the Observation of Outdoor Play (OOP). There are very few studies that directly observed teachers' activity during preschoolers' outdoor play making it difficult to determine how these results compare to other preschool teachers' behaviors;

however, consistent with the present study, research concerning elementary, middle, and high school teachers showed they dedicated minimal time to active participation and promotion of physical activity through modeling (Martin & Kulinna, 2005). Martin and Kulinna (2005) provide evidence that teachers across many age groups may be deficient in providing appropriate examples of physical activity to children.

Preschool teachers in the present study spent the majority of outdoor time facilitating play (M = 2.44). Kontos (1999) noted that preschool teachers most often enacted the role of the "stage manager," gathering items to initiate or enhance children's play, giving children suggestions for play activities, or physically managing the equipment involved in children's play. The role of the "stage manager" and the manner in which preschool teachers in the present study facilitated play have distinct similarities; facilitating play in the *EHBA* study included engaging children in any sort of play (active or otherwise), using language that promoted or continued children's play, pretending or imagining with children, setting up or retrieving lost equipment for children, or suggesting games and assisting with rules. Based on anecdotal text from the Observation of Outdoor Play measure (OOP), teachers who facilitated play spent their time preparing children for play (e.g. applying sunscreen for outdoor play and providing water), preparing safe play areas (e.g. wiping off water from playscapes), or gathering items to promote or enhance play. Text from the OOP also suggests that teachers would use questions or verbal encouragement to promote children's outdoor play.

Findings indicate that preschool teachers who spent more time facilitating children's play actually spent less time in sedentary activities; however, as discussed previously, this study's definition of facilitating play incorporated a wide-range of activities that could constitute facilitating children's outdoor play. The Observation of Outdoor Play (OOP) measure was

limited in that there was no way to detail behaviors that were neither sedentary nor active. For instance, anecdotal text from the OOP stated teachers slowly walked from one location to another during children's play, stood and observed play, as well as participated in other behaviors that were not sedentary, but did not meet the criteria to be considered active. Further, this measure did not document teachers' activity levels as they facilitated preschoolers' outdoor play, making it difficult to describe specific techniques teachers employed to assist children in play. While these ancillary findings positively contribute to depicting preschool teachers' behaviors during outdoor play, future studies may want to refine the term "facilitating play" as it relates to promoting and continuing children's physical activity.

Results from the descriptions in this study add to the current body of information available concerning preschool teachers by illustrating time allotted for children's play and teachers' activity levels during outdoor play. Since little is known about the influence preschool teachers' behaviors on children's outdoor play, continued investigations are needed to describe the specific interactions teachers have while preschoolers are engaged in outdoor play. Further definition of these behaviors will assist in understanding the possible influence preschool teachers may have on children's physical activity.

Exosystemic Influences on Teacher Behavior During Outdoor Play

In addition to describing preschool teachers' behaviors during outdoor play, this study explored exosystemic influences that may contribute to the behaviors seen during children's outdoor play. Using an ecological perspective, teachers' personal and professional demographics were used to investigate possible relations to their sedentary and facilitative behaviors. The following sections will address results related to hypotheses concerning teachers' education, years of professional experience, and personal activity and nutrition practices.

Hypothesis One

Teacher education was hypothesized to have no effect on the amount of time preschool teachers spent in sedentary activity during children's outdoor play. Results from this sample indicate teachers with less education (high school diploma, GED, or less) spent 30 seconds more in sedentary activity as compared to teachers more education (some college, technical college degree, or undergraduate degree), disproving the hypothesis. This finding corresponds with data concerning adults' engagement in physical activity which suggests that adults with some college and higher (e.g. undergraduate/technical school degrees) engage in more total physical activity than adults with high school education or less (CDC, 2007). Although results from this study related to teacher education were not significant (p = .648), there are few studies investigating teachers' level of education and their behaviors during children's outdoor play to substantiate these results.

Possible explanations for the lack of significance may be due to the sample in this study. The sample size in this study was relatively small and did not contain many teachers who had completed degrees such as a technical school or undergraduate degree (n = 9). Due to the lack of diversity among teachers within the sample, differentiation among higher levels of education was not possible. The majority of preschool teachers included in the higher education group had not completed an undergraduate or technical school degree.

Because there were so few teachers who had completed a degree program, investigating the effects of particular programs of study or majors was not possible. Poest et al. (1989) found that preschool teachers with elementary education degrees utilized less movement activities than teachers with a two year degree in early childhood education. Poest attributed this disparity to the lack of information provided to elementary education students concerning child development and

the importance of motor skill development. It is possible that teachers with more education in the present study had academic backgrounds that were limited in these areas as well, offering an explanation for the lack of active interactions with children during outdoor play. For example, anecdotal evidence from workshop facilitators noted two lead teachers indicated they had obtained degrees in social work and one assistant teacher who completed a degree in computer technology. Examining the differences and prevalence of particular majors and areas of study will be an important area of study in future investigations.

Hypothesis Two

Preschool teachers with more education were hypothesized to spend more time facilitating play during children's outdoor play. Analyses conducted in this study confirmed that teachers with some college, technical college and undergraduate degrees spent almost one more minute (approximately 12% more observation time) than teachers with a high school diploma or GED in facilitating children's play during a seven minute observation. Cluster analyses concerning teachers' interaction behaviors performed by de Kruif, McWilliam, Ridley and Wakely (2000) substantiate this finding; differences in preschool teachers' education level accounted for their facilitative behaviors during children's play.

The wide range of education levels within the higher education group of teachers, small number of participants with some level of higher education, and a broad definition of facilitating play used in this study may have contributed to the lack of significance of this finding. This finding, however, does provide important information that adds to the current body of research related to children's physical activity; the trend in this small study which indicates teachers with more education spend more time facilitating preschoolers' outdoor play has to date not been investigated in the literature.

Hypothesis Three

Preschool teachers with more years of experience were hypothesized to spend more time facilitating play during children's outdoor play; however, this study found that teachers with seven or more years of experience facilitated play a minute less than teachers with six or less years of experience. This result was not significant. Research concerning teachers' years of experience is mixed; studies indicate teachers' facilitation of play was not different among teachers with varying levels of experience (e.g. Kontos, 1999), however, teachers with more experience have been noted to positively influence children's academic achievements (Croninger, Rice, Rathbun, & Nishio, 2007).

Additional analyses indicated that teachers with 0-6 years of experience spent more time facilitating children's play than teachers with 7 or more years of experience. A possible explanation for this may be that as preschool teachers gain experience (measured in years), they may experience job burnout. A study by Connor, Son, Hindman, and Morrison (2005) reported teachers with more years of experience led classrooms characterized by decreased warmth and sensitivity, increased teacher control, and detachment. According to Connor, Son, Hindman, and Morisson, these factors negatively contribute to teachers' facilitation of children's activities. In contrast, studies concerning teacher burnout state that younger and more inexperienced teachers exhibit more characteristics of burnout (e.g. lack of active involvement) than older and more experienced teachers (Lau, Yuen, & Chan, 2005; Schwab & Iwanicki, 1982). These ancillary findings seem to corroborate with the work of Connor, Son, Hindman, and Morrison in that teachers with less experience (0-6 years) spend more time facilitating children's play.

Hypothesis Four

Preschool teachers spent 1.10 minutes reacting to misbehavior during a 7 minute period, which is equivalent to 14.5% of outdoor play observations. It was hypothesized that teachers who spent more time reacting to misbehavior would spend less time facilitating children's play, which was confirmed in analyses. These significant results are supported by conclusions from de Kruif, McWilliam, Ridley and Wakely (2000) who reasoned that teachers who spent more time sustaining children's play through observations and questions were less likely to spend time redirecting children's behavior.

Hypothesis Five

Preschool teachers who engaged in more exercise during their personal (non-work time) were hypothesized to spend more time facilitating play during children's outdoor play. A correlational analysis revealed that teachers who spent more time exercising during personal time spent more time facilitating children's play. This finding, however, was not significant. Trends evidenced from this analysis are similar to conclusions made by McKenzie, LaMaster, Sallis, and Marshall (1999). They found elementary school teachers who engaged in more leisure-time physical activity also spent significantly more time promoting physical activity through prompts and active facilitation.

Unlike McKenzie, LaMaster, Sallis, and Marshall (1999), this study did not restrict facilitation of children's play strictly to physical activity. The broad definition of facilitation may account for the weak positive relation between teachers' personal exercise practices and facilitating play. Because facilitating play was a broad construct that included activities such as preparing children for play and providing items to enhance their play, the current results may not be reflective of teachers' facilitation of physically active play.

On average, preschool teachers in this study engaged in personal exercise practices 1 – 2 days a week for at least 30 minutes at a time, well below the 2 hours and 30 minutes per week of exercise for adults recommended by the Center for Disease Control (CDC) (2009d). Comparing teachers' self-reported exercise practices to CDC recommendations suggests that most teachers in this study were not physically active during their leisure time, which according to the literature may correspond with less physical activity during children's outdoor play (McKenzie, LaMaster, Sallis & Marshall, 1999).

Hypothesis Six

It was hypothesized that preschool teachers who spent more personal time engaging in computer and television activities (measured by a screen time score) would spend more time in sedentary activity during children's outdoor play. Although the results were insignificant, trends from this analysis indicated teachers who had higher screen time scores (equivalent to more time spent in television and computer screen activities) may be more likely engage in sedentary behaviors during children's outdoor play. There is little literature available concerning teachers' personal screen time practices as they relate to their physical activity during preschoolers' outdoor play to validate the trend evidenced in the present sample.

These insignificant findings may be due in part to preschool teachers' self-reports concerning their personal activities. In this study, preschool teachers were asked to report on the amount of time spent engaging in computer, television, and video game related activities, respectively. Taken separately, the average score of each question favored responses that indicated minimal engagement in computer/internet activity, television and movie viewing (less than 2 hours per day), and limited use of video games (See Table 9). These results contradict a recent study by the Nielsen Company (2009) which found adults spent approximately 141 hours

a month (approximately 4.7 hours per day) in television viewing and 26 hours using the internet (approximately 52 minutes per day).

A possible explanation for the lack of significance in this study may be that teachers chose to under report the amount of time spent in different screen activities. Since each participant understood the nature of the measure as an inquiry into their personal health practices, teachers may have chosen to underreport to seem healthier. Another possible explanation for the lack of significance may be the phrasing of questions in the Teacher Health Practices (THP) measure. Preschool teachers in this study were all women, the majority of whom were 20-39 years of age. Providing age-appropriate examples of activities related to screen time behaviors, such as time spent on the internet visiting social networking sites or reading news using the internet, could have offered cues to assist participants in increased accuracy in reporting their activities. Broad statements used in the THP may have resulted in under reporting.

Hypothesis Seven

Preschool teachers who had healthy nutrition practices (measured by higher scores on the healthy nutrition practices sub-scale) were hypothesized to spend less time in sedentary activity during children's outdoor play. Results from correlational analyses, although insignificant, show trends indicating teachers with higher scores concerning healthy nutrition practices may spend less time being sedentary during children's outdoor play. A recent study by Hartline-Grafton, Rose, Johnson, Rice, and Webber (2009) found in a sample of 373 elementary school teachers, 40% tended to be obese and most did not practice healthy nutrition habits. These teachers' nutrition practices failed to reach recommended daily amounts of whole grains (45% of sample), milk (86%), fruits (25%) and vegetables (58%) while exceeding the recommended amount of dietary fat for adults. This research conducted by Hartline-Grafton, Rose, Johnson,

Rice and Webber contradicts the present study's results concerning teachers' healthy nutrition practices, however it fails to elucidate information related to teachers' sedentary behaviors during outdoor play. Because literature concerning the effect of teachers' personal health practices on their behaviors during children's outdoor play is limited, substantiating the trend illustrated in this study is difficult.

The lack of significance in this finding may be due in part to some over reporting by participants. Preschool teachers' average score concerning healthy nutrition practices was 22 out of a possible 36 points on the Teacher Health Practices (THP) survey. The average score in this study indicated most teachers had healthy nutrition practices, which contradicts findings from previous studies (Hartline-Grafton, Rose, Johnson, Rice, & Webber, 2009). Similar to hypothesis six, teachers in the present study understood that this survey was a reflection of their daily habits, which may have led them to skew their answers towards healthy practices to mirror their perceptions of desirable data for investigators.

Limitations

The present study adds to the current body of literature concerning preschool teachers by describing their behaviors during children's outdoor play; however, limitations still exist. Due to purposive sampling methods in *Evaluating the Effectiveness of UGA Early Childhood Curriculum Materials in Georgia Childcare Centers*, the present study may not be generalizable to all preschool teachers for several reasons. First, child care centers in which participants were employed were suggested by child care resource and referral agencies in the state of Georgia. The result of this sampling method was a fairly homogenous sample that lacked variability in demographics (e.g. teachers' level of education and years of experience).

Second, data concerning teachers' behaviors were collected primarily during summer months. Because data were not collected during other times during the year, it is unknown whether or not teachers' behaviors were affected by warmer temperatures. Additionally, data concerning teachers' behaviors were only collected during the morning (8 a.m. to approximately 12 p.m.). Observing preschool teachers during afternoon hours over several months would have offered additional information about preschool teachers' behaviors in varying outdoor weather conditions.

Third, teachers' exercise and healthy nutrition practices were based on self-reports of physical activity and nutritional behaviors. Teachers in this study may have over- or under-reported on these behaviors to appear highly engaged in healthy practices, causing results to counter national trends in adult physical activity and nutrition practices. Utilizing multiple means of reporting physical activity and healthy nutrition practices (e.g. self-reports, accelerometry readings, and direct observations) may have provided a more accurate account of teachers' personal health practices.

Fourth, this study was limited by a small sample size. Because the original *EHBA* evaluation study only evaluated a maximum of two classrooms per child care center, open recruitment was not an option to obtain more participants. Additionally, teachers were invited to participate in the study by the director of the child care center in which they were employed. Sample size was also limited by geographic location. Because of the time-intensive nature of data collection, recruitment for the *EHBA* evaluation study was limited to child care centers in the northeast Georgia region.

Fifth, observations of teachers' behaviors during preschoolers' outdoor play were also subject to limitations. Trained observers only collected data concerning teachers' behaviors for

seven minutes during outdoor play, although the average amount of time outdoor play in this study was 40 minutes. It is possible that the seven minutes in which observers collected data on individual teachers' behaviors was not representative of their behaviors throughout children's outdoor play. Extending observations of teachers' behaviors would provide a more accurate description of their activity during preschoolers' outdoor play.

Sixth, this study used Bronfenbrenner's ecological perspective to examine possible exosystemic influences that could affect the developing child's physical activity behaviors. Unfortunately, no data were recorded concerning children's physical activity with respect to teachers' behaviors during outdoor play. The lack of child-related data limited findings in this study because there was no way to compare exosystemic influences (e.g. teachers' personal exercise and nutrition practices, teacher education) to children's physical activity. Despite the inability to correlate teachers' exosystemic influences with preschoolers' physical activity, identifying possible relationships among exosystemic variables and teachers' behaviors provides the first step in sorting out the influence preschool teachers have on the developing child's physical activity.

Seventh, issues regarding the variable "facilitating play" were present. Definitions for "facilitating play" in the Observation of Outdoor Play measure encompassed behaviors that ranged in activity level and were not specific to behaviors that promoted children's physical activity play. Although trends in a correlational analysis indicated teachers who engaged in more facilitation of children's play may be less sedentary, the broad definition of the variable did not assist in delineating teachers who were engaging children in moderate-to-vigorous physical activity from teachers who were facilitating play that was less active. Providing more specific definitions of facilitative behaviors that encourage children's physical activity (e.g. adapted

children's play to extend physical activity, modeled active behaviors, started new game using existing outdoor play materials) may have provided a clearer description of preschool teachers' behaviors.

Implications

Teachers in the present study seem to primarily use sedentary behaviors to facilitate play. Further, trends in this study show preschool teachers' personal and professional demographics may have an effect on the manner in which they conduct themselves during children's outdoor play. Utilizing an ecological perspective, results from this study have implications for individuals working with preschoolers, educators, and legislators concerned with promoting physical activity and preventing childhood overweight and obesity in young children. Applications of the findings of this study are discussed as they specifically relate to preschool teachers, their training and education, and policy.

Preschool Teachers

Results from this study noted teachers with higher educational attainment modeled outdoor play for preschoolers that was less sedentary in nature and promoted children's play through facilitation. Conversely, teachers with more years of experience spent less time facilitating children's play. Furthermore, there may be additional factors not investigated in this study that contribute to teachers' limited facilitation of active, outdoor play. Active, outdoor play may coincide with teachers' scheduled break time, limiting the amount of time they have to engage with preschoolers in physical activity. Misconceptions may also exist among preschool teachers related to children's physical activity, such as the belief that all children are naturally active or physical activity has no affect on children's development. Additionally, teachers may not be able to recognize opportunities to facilitate children's active play or know what

facilitating active play looks like without having concrete examples such as videos or live observation. Facilitation of preschoolers' active outdoor play is a multifaceted skill that teachers may have difficulty mastering without proper information, guidance, and support.

Findings from this study point to the continued need to provide training and education for preschool teachers and others who care for children during child care hours. While technical college or undergraduate degrees are advantageous in promoting children's physical activity during outdoor play, consistent and continual training focused on specific techniques teachers can use to encourage physical activity could be equally effective. Preschool teachers may also benefit from education focused on the benefits of exercise for children and themselves, developmentally appropriate ways to facilitate physical activity and training in the current recommendations for children's physical activity.

Training and Education

Findings from this study have expanded the current area of research concerning preschoolers' physical activity by describing their teachers' behaviors during children's outdoor play, as well as providing information about possible personal and professional variables that may affect these behaviors. Despite preschool teachers' reported healthy personal practices, their behaviors during children's outdoor play were primarily sedentary. Facilitation of play seemed to consist primarily of preparing and safe-guarding play areas. Implications for enhancing training and education to focus on specific techniques to assist teachers in facilitating physically active play are evident.

Training and education for preschool teachers focused on defining facilitation of children's outdoor play as it pertains to physical activity may be useful. Preschool teachers, regardless of education, can benefit from delineation of behaviors that assist children in

increasing or sustaining physical activity during outdoor play. An important topic often neglected is providing information and practical examples of developmental concepts and milestones for the age group with which teachers work. This foundational knowledge will assist teachers in understanding other concepts that can be applied during outdoor play to assist in promoting physical activity. For instance, because findings in this study indicate teachers spent over one-third of preschoolers' outdoor play in sedentary activity, education related to the concept of modeling as a mode of learning for children may be beneficial in decreasing teachers' sedentary activity. Providing information concerning modeling of physically active play coupled with guided practice for teachers in modeling behaviors would be an effective education strategy for promoting developmentally appropriate methods to encourage children's physical activity. Additionally, training programs such as the *Eat Healthy, Be Active* curriculum continue to provide information about childhood overweight and obesity as well as suggestions for teacher-encouraged activities to promote children's physical activity.

Understanding why physical activity is necessary to children's development is paramount for preschool teachers. Continuing education focused on how physical activity benefits preschoolers physically, cognitively, and emotionally may assist teachers in creating a greater understanding of the role physical activity plays in children's development. Similarly, continuing education that focuses on the benefits teachers may experience when engaging in physical activity with children is encouraged. Teachers in this study were primarily sedentary and reported limited engagement in physical activity during their leisure time, creating a deficit for their personal health. Promoting the simultaneous benefits of teachers' active participation in physical activity could assist in creating outdoor play environments characterized by active children and engaged teachers.

Further, it is important that teachers be informed of the current recommendations for preschoolers' physical activity. As noted in the review of literature, several specific recommendations exist for preschoolers concerning the amount of physical activity they receive per day. NASPE guidelines suggest preschoolers receive 120 minutes of physical activity per day, with 60 of those minutes facilitated by adult caregivers. Disseminating this information to teachers is the first step in assisting children in reaching their physical activity needs. Trainings that focus on providing recommendations can also provide practical examples of how to accumulate 60 minutes of adult-directed activity to assist teachers in meeting these goals.

Using training and education can help preschool teachers better understand their role in preschoolers' physical activity, the importance of modeling physical activity for children during outdoor play, and meeting preschoolers' recommended physical activity needs through short, hands-on activities that accumulate physical activity throughout the day. As more information related to preschoolers' physical activity is gathered through research and practice, continued training will be imperative to ensure teachers and children continue to follow recommendations and yield benefits from outdoor play.

Policy

Reviewing these findings from an ecological perspective yields implications for policy-making. Bronfenbrenner's ecological perspective presupposes that macrosystemic influences such as government and policy may have an effect on the microsystem. Under these assumptions, policies established to include physical activity and motor skill building as an essential part of preschool education would have an effect on both preschool teachers and the children they educate. Currently, many early child care center policies concerning children's outdoor play are general and lack focus regarding physical activity. Using recommendations

such as those from the National Association of Sport and Physical Education (NASPE), policy could be created that offered child care centers, directors, and preschool teachers specific guidelines for providing developmentally appropriate physical activity to young children. Further, in light of the increased sedentary nature of young children, policies related to academic pursuits at the state and national levels should be re-evaluated to consider the developmental importance of physical activity to young children as learning opportunities. Incorporating the acquisition and maintenance of gross and fine motor skills through physical activity in early childhood assists children in understanding many academic concepts such as math and language. Creating policies that place greater emphasis on the importance of physical activity could assist in greater participation in physical activity by preschool teachers and their students.

Recommendations for Future Research

Although the present study offers new information concerning preschool teachers' behaviors during children's outdoor play, research in this area is imperative. Future research related to preschool teachers during children's outdoor play will provide additional information beneficial in understanding social contexts influencing children's physical activity.

Larger, more diverse samples and extended observation are needed in this area of research. Larger samples will assist researchers in further investigations of teachers' behaviors during preschoolers' outdoor play. A greater number of participants will increase the variability of the sample and provide additional opportunities to explore indirect variables that may affect preschoolers' physical activity. While direct observation is an effective method for describing preschool teachers' behaviors during children's outdoor play, potential investigations should consider employing a long-term, longitudinal study. Extended periods of data collection that occur at multiple times of day, for several days over a prolonged period of time would allow

researchers to gather a more accurate description of preschool teachers behaviors during children's outdoor play.

It is recommended that future research also include data related to children's behaviors in conjunction with preschool teachers' behaviors during outdoor play. Information from the review of literature suggested preschool teachers' personal health practices may have an effect on children's physical activity; however, data were not collected concerning children's behaviors during outdoor activity. Future studies may be able to empirically test the indirect effect of teachers' personal health practices as they relate to children's physical activity, enhancing the limited literature available regarding this subject.

The overarching need to expand the literature concerning preschool teachers' influence on children's physical activity is apparent. Future research may attempt to investigate specific theoretical concepts that teachers may or may not employ to children's engagement in physical activity. For instance, the concept of modeling has been noted in early childhood literature as an important device for scaffolding the creation of novel thoughts and actions (Nielsen & Christie, 2008). Modeling is also considered an important means of conveying concepts in physical education and motor skill development. It seems that this concept has yet to be investigated as it relates to teachers encouraging children's engagement in physical activity.

Conclusions

The purpose of this study was to describe preschool teachers' behaviors during children's outdoor play. Using Bronfenbrenner's ecological perspective, this study also explored teachers' personal health practices and professional demographics as possible influences on their behaviors during outdoor play. Preschool teachers in this study had limited engagement in physically active behaviors and remained primarily sedentary during children's outdoor play,

however, they did spend a significant amount of time facilitating children's play. Despite teacher reports of healthy nutrition practices and reports of limited screen time behaviors, activity levels during children's outdoor play were low.

Because preschool teachers are influential adults in children's lives, their activity levels and engagement in children's outdoor play have important implications related to preschoolers' physical activity. Preschool teachers need more training and information related to physical activity during children's outdoor play, as well as practical examples of and opportunities to practice facilitating children's outdoor play using developmentally appropriate techniques. Establishing policies that emphasize increased importance on children's engagement in physical activity and state-delineated guidelines concerning the type and amount of physical activity are needed to hold preschool teachers accountable for providing services that promote young children's health. Moreover, continued research concerning the role preschool teachers play in children's physical activity is necessary in order to promote an environment dedicated to children's healthy growth and development.

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APPENDICES

APPENDIX A

HUMAN SUBJECTS CONSENT LETTER

Director Consent Letter
(Form X-01-B)

Your child care center has been invited to participate in a research study that is evaluating early childhood curriculum materials. The purpose of this study is to find out whether different materials are effective in helping teachers educate young children through hands-on activities. The information will help us improve the materials and training workshops we provide. Results of the evaluation project will be shared via an evaluation report, short summaries, presentations at professional conferences, and through publications. Your center is being invited to participate because you teach classes of children ages 3 to 5 years.

What Will Happen During the Study
Centers who agree to participate will be randomly divided into two groups that will test out different curriculum materials and approaches. Within your center, two classrooms serving 3- to 5-year-olds will be randomly chosen to participate. During the study, observers will come into the center three times to observe children and teachers at different times of the day. All centers will receive a visit at the very beginning of the study and at the very end (about 2 to 4 months later). Before each of these visits, teachers will be asked to fill out a short survey. During the visit, the observers will watch classroom activities at different times during the day and make notes about what they observe. The observers will do their best to disrupt the class as little as possible while they are watching. Observers will also ask a few children in each classroom to participate in two short activities, a sorting activity and a very brief interview. (Children will only be asked to participate if their parents sign a consent form first.)

After the first visit, all of the teachers in the selected classrooms will attend a free 3-hour training workshop, and will be asked to complete a survey at the beginning and the end of the workshop. The surveys will help us find out what the teachers already understand and what they learn during the workshop. We will also ask for their feedback on the workshop and materials.

Depending on the group your center is assigned to, your teachers may be asked to choose a week to implement some of the activities learned in the training workshop in their regular classroom curriculum. If your center is in this group, the researchers will supply each classroom with a copy of the curriculum and a resource kit of materials to help you do the activities with children. On one day during that week, observers will come into the center to observe the children involved in the activities. At the end of that week, the lead teacher will be asked to fill out a survey to tell us which activities they used, and whether the children enjoyed them. If your center is in the other group, you will not receive a visit at this time and will not be asked to complete any forms.

The final visit will happen several weeks later, and will be the same as the first visit. Teachers will be asked to fill out another short survey and to give feedback about the curriculum and resource kit if they used them. Observers will watch classroom activities again, and will interview the same children who participated at the beginning. Shortly after the final visit, you (the director) will be contacted by phone to complete a short exit interview. The interviewer will ask you about your impressions of the project and your feedback on the visits made by project staff.

Benefits and Risks
Teachers in the selected classrooms will receive 3 hours of free state-accepted child care training as a part of this project. When all teachers in a selected classroom complete all parts of the project, that classroom will receive a basket of early childhood materials worth about $200 (a total of 2 baskets worth $400 per center). The teachers will choose from one of two baskets at the training workshop. There are no anticipated

risks or discomforts from participating in this project.

Your Rights as a Participant
Participating in this project is voluntary. You are not required to sign the consent form, and you will not be forced or pressured to participate. You can refuse to complete any of the forms at any time. You may request to have the results of your participation returned to you, removed from the University, or destroyed. The information you provide will be confidential. All data sheets with information about your child will be stored in a locked office at the University of Georgia, and only the members of the research team will have access to them. The researchers will keep the sheets for one year, during which time the data will be entered into a computer data set. All information that could identify you individually will be destroyed after one year.

The results of your participation will be confidential. All data will be analyzed and reported as group averages. No information that could identify your child individually will be shared with anyone (not even the child care center staff) without your prior consent, except as required by law.

This project is being conducted by **Dr. Diane Bales (706-542-7566; dbales@uga.edu)**, **Dr. Mick Coleman (706-542-4899; mcoleman@fcs.uga.edu)** and **Dr. Charlotte Wallinga (706-542-4899; cwallinga@fcs.uga.edu)**, faculty members in the Child and Family Development Department, Dawson Hall, The University of Georgia, Athens, GA 30602. If you have any questions about this project, don't hesitate to contact any of the researchers at any time.

Consent Statement

I, _____, agree to take part in the research study titled "Evaluating the Effectiveness of UGA Curriculum Materials in Child Care Centers in Georgia." My participation is voluntary; I can refuse to participate or stop taking part at any time without giving any reason, and without penalty. I can ask to have information related to my participation returned to me, removed from the research records, or destroyed. I understand the procedures described above. My questions have been answered to my satisfaction. I have been given a copy of this form.

Director's Signature:

Director's name *(please print)*	Signature	Date

Researchers' Signatures:

Diane W. Bales Name of Researcher	Signature	Date
Mick Coleman Name of Researcher	Signature	Date
Charlotte Wallinga Name of Researcher	Signature	Date

Researchers' Contact Information:
Telephone: 706-542-7566
Email: dbales@uga.edu

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*Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address **IRB@uga.edu***

Teacher Consent Letter
(Form X-02-B)

Your child care center has been invited to participate in a research study that is evaluating early childhood curriculum materials. The purpose of this study is to find out whether different materials are effective in helping teachers educate young children through hands-on activities. The information will help us improve the materials and training workshops we provide. Results of the evaluation project will be shared via an evaluation report, short summaries, presentations at professional conferences, and through publications. You are being invited to participate because you are a teacher in a class of children are between 3 and 5 years old.

What Will Happen During the Study
Centers will be randomly divided into two groups that will test out different curriculum materials and approaches. During the study, observers will come into the center three times to observe children and teachers at different times of the day. All centers will receive a visit at the very beginning of the study and at the very end (about 2 to 4 months later). Before each of these visits, you will be asked to fill out a short survey. During the visit, the observers will watch classroom activities at different times during the day and make notes about what they observe. The observers will do their best to disrupt the class as little as possible while they are watching. Observers will also ask a few children in your classroom to participate in two activities, a sorting activity and a very brief interview. (Children will only be asked to participate if their parents sign a consent form first.)

After the first visit, you will attend a free 3-hour training workshop, and will be asked to complete a survey at the beginning and the end of the workshop. The surveys will help us find out what you already understand and what you learn during the workshop. We will also ask for your feedback on the workshop and materials.

Depending on the group your center is assigned to, you may be asked to select a week to include some of the activities learned in the training workshop into your regular classroom curriculum. If your center is in this group, the researchers will supply you with a copy of the curriculum and a resource kit of materials to help you do the activities with children. You will be asked to do two specific large group activities during that week, and to use other activities within the curriculum as appropriate. On one day during that week, observers will come into the center to observe the children involved in the activities. At the end of that week, you will be asked to fill out a survey to tell us which activities you used, and whether the children enjoyed them. If your center is in the other group, you will not receive a visit at this time and will not be asked to complete any forms.

The final visit will happen several weeks later, and will be the same as the first visit. You will be asked to fill out another short survey and to give feedback about the curriculum and resource kit if you used them. Observers will watch classroom activities again, and will interview the same children who participated at the beginning.

Benefits and Risks
You will receive 3 hours of free state-accepted child care training as a part of this project. When you and your co-teachers complete all parts of the project, your classroom will receive a basket of early childhood materials worth about $200. You and your co-teachers will choose from one of two baskets at your training workshop. There are no anticipated risks or discomforts from participating in this project.

Your Rights as a Participant
Participating in this project is voluntary. You are not required to sign the consent form, and you will not be forced or pressured to participate. You can refuse to complete any of the forms at any time. You may request to have the results of your participation returned to you, removed from the University, or destroyed. The information you provide will be confidential. All data sheets with information about you will be stored in a locked office at the University of Georgia, and only the members of the research team will have access to them. The researchers will keep the sheets for one year, during which time the data will be entered into a computer data set. All information that could identify you individually will be destroyed after one year.

The results of your participation will be confidential. All data will be analyzed and reported as group averages. No information that could identify you individually will be shared with anyone (not even the child care center director) without your prior consent, except as required by law.

This project is being conducted by **Dr. Diane Bales (706-542-7566; dbales@uga.edu), Dr. Mick Coleman (706-542-4899; mcoleman@fcs.uga.edu)** and **Dr. Charlotte Wallinga (706-542-4899; cwallinga@fcs.uga.edu)**, faculty members in the Child and Family Development Department, Dawson Hall, The University of Georgia, Athens, GA 30602. If you have any questions about this project, don't hesitate to contact any of the researchers at any time.

Consent Statement

I, _____, agree to take part in the research study titled "Evaluating the Effectiveness of UGA Curriculum Materials in Child Care Centers in Georgia." My participation is voluntary; I can refuse to participate or stop taking part at any time without giving any reason, and without penalty. I can ask to have information related to my participation returned to me, removed from the research records, or destroyed. I understand the procedures described above. My questions have been answered to my satisfaction. I have been given a copy of this form.

Teacher's Signature:

_____	_____	_____
Teacher's name *(please print)*	Signature	Date

Researchers' Signatures:

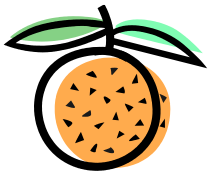
Diane W. Bales	_____	_____
Name of Researcher	Signature	Date
Mick Coleman	_____	_____
Name of Researcher	Signature	Date
Charlotte Wallinga	_____	_____
Name of Researcher	Signature	Date

Researchers' Contact Information:
Telephone: 706-542-7566
Email: dbales@uga.edu

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address ***IRB@uga.edu***

APPENDIX B

EAT HEALTHY, BE ACTIVE DATA MEASURES



Eat Healthy, Be Active
Pre-Workshop Survey
(Form T-03-E)

1. How much do you know about each of the following? *(Please circle one response for each item.)*

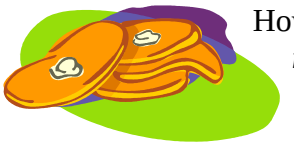
Problems of childhood overweight	I don't know anything	I know a little	I know a lot
Body mass index (BMI) and its importance	I don't know anything	I know a little	I know a lot
Consequences of childhood overweight	I don't know anything	I know a little	I know a lot
Factors that contribute to childhood overweight	I don't know anything	I know a little	I know a lot
Adult-child feeding dynamics	I don't know anything	I know a little	I know a lot
Using MyPyramid for Kids to teach nutrition to young children	I don't know anything	I know a little	I know a lot
The importance of physical activity for young children	I don't know anything	I know a little	I know a lot
Helping children identify hunger and fullness	I don't know anything	I know a little	I know a lot
Facilitating children's outdoor play	I don't know anything	I know a little	I know a lot
Ways to help families reinforce healthy eating and physical activity at home	I don't know anything	I know a little	I know a lot
How to incorporate physical activity into dramatic play	I don't know anything	I know a little	I know a lot
Good children's books on nutrition and physical activity	I don't know anything	I know a little	I know a lot

List 3 children's books about healthy eating or physical activity:

1. _____

2. _____

3. _____



How important do you consider each of the following? *(Please circle one response for each item.)*

Encouraging children to eat a variety of foods	Not at all important	Somewhat important	Very important
Limiting sugar in children's diet	Not at all important	Somewhat important	Very important
Providing water when children are thirsty	Not at all important	Somewhat important	Very important
Teaching children what "hungry" and "full" mean	Not at all important	Somewhat important	Very important
Cutting down on fat in children's diet	Not at all important	Somewhat important	Very important
Introducing children to new foods	Not at all important	Somewhat important	Very important
Eating everything on your plate	Not at all important	Somewhat important	Very important
Giving children time to be physically active each day	Not at all important	Somewhat important	Very important
Playing with children on the playground instead of just watching them	Not at all important	Somewhat important	Very important
Getting families involved in teaching healthy eating	Not at all important	Somewhat important	Very important
Encouraging families to be physically active together	Not at all important	Somewhat important	Very important
Cooking or preparing foods with children	Not at all important	Somewhat important	Very important
Making mealtimes pleasant for children	Not at all important	Somewhat important	Very important
Sitting with children while they eat	Not at all important	Somewhat important	Very important
Teaching children about specific vitamins and minerals	Not at all important	Somewhat important	Very important
Serving juice whenever children want it	Not at all important	Somewhat important	Very important
Being patient when children don't want to try a new food	Not at all important	Somewhat important	Very important
Encouraging children to eat breakfast	Not at all important	Somewhat important	Very important

Tell Us About Yourself....

How many workshops have you attended on nutrition, healthy eating, or physical activity for young children (before today)?

_____ None _____ 1 _____ 2 _____ 3 _____ 4 _____5
_____ 6 _____ 7 _____ 8 _____ 9 _____ 10 or more

What is your age range?

_____ 18 – 19
_____ 20 – 29
_____ 30 – 39
_____ 40 – 49
_____ 50 – 59
_____ 60 – 69

What is your gender?

_____ Female
_____ Male

What is the highest level of education you have completed? *(Please check only one.)*

___ Elementary education
___ High school diploma or GED
___ Technical college degree
___ Some 4-year college
___ Undergraduate degree
___ Graduate degree

Which of the following best describes your racial or ethnic group?

_____ African American
_____ Asian
_____ Caucasian
_____ Hispanic
_____ Multiracial
_____ Other _____

Which of the following best describes your current position in the early childhood classroom?

_____ Lead Teacher
_____ Assistant Teacher
_____ Other _____

How many years have you worked in the child care or early childhood field in any capacity?

_____ less than 1
_____ 1
_____ 2
_____ 3
_____ 4
_____ 5
_____ 6
_____ 7
_____ 8
_____ 9
_____ 10 or more

What age group(s) do you work with currently? *(Please check all that apply.)*

___ Infants or toddlers
___ Preschoolers (3-, 4-, or 5-year-olds)
___ School-age children (6-year-olds and older)

How many children are in your classroom regularly?

_____ 3 or fewer
_____ 4 – 6
_____ 7 – 12
_____ 13 – 18
_____ 19 or more

Family Involvement
Pre-Workshop Survey
(Form T-05-C)

1. To what degree do you believe each the following is a real family, somewhat like a family, or not a real family. *(Circle one response for each situation.)*

Children who live with and are cared for by their grandparents.	This is Not a Real Family	This is Somewhat Like a Family	This is a Real Family
Children who live with and are cared for by their single father.	This is Not a Real Family	This is Somewhat Like a Family	This is a Real Family
Children who live with and are cared for by a gay or lesbian couple.	This is Not a Real Family	This is Somewhat Like a Family	This is a Real Family

2. How important do you believe the following activities are for working with parents? *(Circle one response for each situation.)*

Inviting parents to attend a parent-teacher conference.	Very Important	Somewhat Important	Not at all Important
Sending home activities for parents to work on with their children.	Very Important	Somewhat Important	Not at all Important
Inviting parents to help with classroom celebrations.	Very Important	Somewhat Important	Not at all Important
Conducting classes for parents on child guidance and/or other topics.	Very Important	Somewhat Important	Not at all Important
Inviting parents to help with field trips.	Very Important	Somewhat Important	Not at all Important
Inviting parents to the classroom to work with children.	Very Important	Somewhat Important	Not at all Important

3. To what degree do you believe the following situations represent barriers to working with parents? *(Circle one response for each situation.)*

Parents have busy schedules.	Strong Barrier	Somewhat of a Barrier	Weak Barrier
Parents are not interested in working with teachers.	Strong Barrier	Somewhat of a Barrier	Weak Barrier
Teacher do not have enough time to work with parents.	Strong Barrier	Somewhat of a Barrier	Weak Barrier
Teachers do not have the skills to work with parents.	Strong Barrier	Somewhat of a Barrier	Weak Barrier

4. How much do you know about the following parent activities? There is **NO** right or wrong answer. It is fine if you do not know anything, a little, or a lot about the activity. *(Circle one response for each situation.)*

Interactive Bulletin Boards	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Activity Calendars	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Family Backpacks	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Family Surveys	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Home-School Logs	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Thank-You Notes	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Family Resource Centers	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity
Creative Awards	I Do Not Know Anything About This Activity	I Know a Little About This Activity	I Know a Lot About This Activity

5. How many workshops on working with families have you attended before this one? *(Check one response.)*

_____ None _____ 1 _____ 2 _____ 3 _____ 4 _____ 5
_____ 6 _____ 7 _____ 8 _____ 9 _____ 10 or more

6. What is your age range? *(Check one response.)*

___ 18 - 19 ___ 30 – 39 ___ 50 - 59
___ 20 – 29 ___ 40 – 49 ___ 60 – 69 ___ 70 - 79

7. What is your gender? *(Check one response.)*

___ Female
___ Male

8. What is the highest level of education you have completed? *(Check one response.)*

___ Elementary education ___ Some 4-year college
___ High school diploma or GED ___ Undergraduate degree
___ Technical college degree ___ Graduate degree

9. Which of the following best describes your racial or ethnic group? *(Check one response.)*

_____ African American _____ Hispanic
_____ Asian _____ Multiracial
_____ Caucasian _____ Other _____

10. Which of the following best describes your current position? *(Check one response.)*

___ Child care provider: Lead teacher ___ Director of a child care program
___ Child care provider: Assistant teacher ___ Resource and referral staff member
___ Public or private school teacher ___ DECAL site director
___ DECAL resource coordinator ___ DECAL consultant
___ Student ___ Other _____

11. How many years have you been in the child care or teaching field in any capacity? *(Check one response.)*

_____ less than 1 _____ 4 _____ 8
_____ 1 _____ 5 _____ 9
_____ 2 _____ 6 _____ 10 or more
_____ 3 _____ 7

12. Which age group do you work with at the current time? *(Check all that apply)*

___ Infants or toddlers ___ School-age children (6-year-olds and older)
___ Preschoolers (3-, 4-, or 5-year-olds) ___ I do not currently work with children

13. How many children are in your classroom regularly?

_____ 3 or fewer _____ 7 – 12
_____ 4 – 6 _____ 13 – 18
_____ 19 or more

Observation of Outdoor Play
(Form CL-04-B)

Center Code _____ Teacher Code _____ Visit Date _____

Outdoor Play start time: _____ Obs start time: _____ Obs end time: _____

Instructions: Begin observing the lead teacher *5 minutes after the outdoor play period begins*. At the end of those 7 minutes, begin a new observation sheet and observe the assistant teacher for 7 minutes. If the teacher is not present when the specified observation period begins, mark "L" for "Left Area" next to the time in the Time box. If the teacher does not return at the end of 3 minutes, terminate observation of that teacher and move on to the next part of the observation.

Time	Sitting*	Very active*	Facilitating play	Superficial only	Reacting to misbehavior
0:00					
0:15					
0:30					
0:45					
1:00					
1:15					
1:30					
1:45					
2:00					
2:15					
2:30					
2:45					
3:00					
3:15					
3:30					
3:45					
4:00					
4:15					
4:30					
4:45					
5:00					
5:15					
5:30					
5:45					
6:00					
6:15					
6:30					
6:45					

Refers to behavior of the **teacher, not the children.*

Observer Notes on Observation Period

1. What types of materials were available for children's use during outdoor play? (Include large-motor equipment and smaller toys.)

2. List the types of *active* play that children were engaged in during your 7-minute observation period.

3. What language did teachers use to encourage active play? Give specific examples if possible.

4. Other comments on this outdoor play session or your observations:

Classroom Information Checklist: Preliminary Data Collection Visit

(Form CL-01-B)

Center Code _____ Lead Teacher Code _____ Visit Date _____

Instructions: Before you observe outdoor play or lunch, spend about 10 minutes observing the overall classroom. Please collect the following pieces of information about the classroom you are observing.

Part 1: To be completed at the beginning of the day

Age Range of Children *(Ask teacher)*

Youngest Child's Birth Date ____ / ____ / ___

Oldest Child's Birth Date ____ / ____ / ___

Age Range (calculate after visit) _____

Observer's Race/Ethnicity Estimate: In the following boxes, please record your best estimate of the number of children present who fit into each racial/ethnic group. (Please do *not* ask teachers, parents or children to share racial/ethnic information. We are only interested in your impressions.)

Race/Ethnicity	**Number of Children**
African American	
Caucasian	
Hispanic	
Asian	
Other/Multiracial	
Unable to determine	

Classroom Schedule: From the posted daily schedule, write down the times that the following activities happen. **Include both beginning and ending times.** If more than one time is listed, include all times on the schedule.

Activity	**Time(s) on Schedule**
Ex: Free Play	*10 – 10:45; 2 – 2:30, 4 - 5*
Free Play	
Large Group	
Lunch	
Outdoor Play	

Part 2: To be completed ***by the end*** of the day

A.E.C.M.
Please check the one category below that best describes the amount of early childhood materials in the classroom you are observing. (Note: You will also complete an A.E.C.M. rating on the other classroom in the center some time during the day. Record that rating on the next page.)

____ Minimal amount of materials present; children are bored or fighting over materials
____ Some materials present
____ A substantial and rich variety of materials present
____ Too many materials present; room is overcrowded or children are overwhelmed

T.C.I.
Please check the one category below that best describes the overall quality of teacher-child interaction in the classroom you are observing. ***(See the classroom measures protocol for more specific definitions of the categories. Mark "mostly positive" only if positive interaction is regular and consistent across the whole day and all teachers in the room.)***

____ Mostly negative or discouraging
____ Somewhat negative or discouraging
____ Neutral; neither negative nor positive
____ Somewhat positive or encouraging
____ Mostly positive or encouraging

A. P.
Please look at the classroom schedule for the day you are observing, and note the active play times on the written schedule. During the day, record the actual amount of time children are given for active play activities. Include all time in outdoor play, as well as any physical, active indoor games.

Time of Day	Minutes of A.P. Scheduled	Actual Minutes Given for A.P.
Morning (arrival – 12 p.m.)		
Afternoon (12 p.m. – closing)		
TOTAL		

A.E.C.M.: Other Classroom

Some time during the day, please go to the other observed classroom in the center and complete an independent assessment of the amount of early childhood materials in that classroom, using the same scale you used for your classroom. Check the one category below that best describes the amount of early childhood materials in the classroom you are observing. ***Do NOT consult with the other observer when you make your rating.*** We are interested in comparing two independent assessments of each classroom's materials.

____ Minimal amount of materials present; children are bored or fighting over materials
____ Some materials present
____ A substantial and rich variety of materials present
____ Too many materials present; room is overcrowded or children are overwhelmed

Teacher Health Practices
Pre-Project Survey
(Form T-01-B)

Before you participate in the project, we would like to know your thoughts about your own practices. **There are no "right" or "wrong" answers**; we're just interested in your thoughts. This information will be kept confidential, and will not be shared with anyone outside this research project (not even your director or other teachers in your center). **Please circle the best answer for each question.**

I plan and prepare healthy meals.	Never	Rarely	Sometimes	Regularly	Every Day
I eat 3 or more servings of fruit in a day.	Never	Rarely	Sometimes	Regularly	Every Day
I eat 3 or more servings of vegetables in a day.	Never	Rarely	Sometimes	Regularly	Every Day
I eat whole wheat bread.	Never	Rarely	Sometimes	Regularly	Every Day
I eat green salads.	Never	Rarely	Sometimes	Regularly	Every Day
I drink fruit juice.	Never	Rarely	Sometimes	Regularly	Every Day
I drink regular (not diet) soft drinks.	Never	Rarely	Sometimes	Regularly	Every Day
I drink at least 6 glasses of water during the day.	Never	Rarely	Sometimes	Regularly	Every Day
I limit my intake of trans fat.	Never	Rarely	Sometimes	Regularly	Every Day
I add salt to foods when I eat.	Never	Rarely	Sometimes	Regularly	Every Day
I drink reduced-fat or fat-free milk.	Never	Rarely	Sometimes	Regularly	Every Day
I exercise for at least 30 minutes a day.	Never	Rarely	Sometimes	Regularly	Every Day
I eat breakfast.	Never	Rarely	Sometimes	Regularly	Every Day
I eat regular meals and snacks.	Never	Rarely	Sometimes	Regularly	Every Day
I use tobacco (either smoking or smokeless).	Never	Rarely	Sometimes	Regularly	Every Day
I eat French fries or potato chips.	Never	Rarely	Sometimes	Regularly	Every Day
I eat fast food.	Never	Rarely	Sometimes	Regularly	Every Day
I get 7 to 8 hours of sleep per night.	Never	Rarely	Sometimes	Regularly	Every Day
I watch 2 or more hours of TV (including movies).	Never	Rarely	Sometimes	Regularly	Every Day
I spend an hour or more on the internet (outside work).	Never	Rarely	Sometimes	Regularly	Every Day
I spend an hour or more playing video games.	Never	Rarely	Sometimes	Regularly	Every Day

How would you rate your overall health?

____ Excellent
____ Very good
____ Good
____ Fair
____ Poor

On average, how often do you exercise for at least 30 minutes at a time?
(check the one best answer)

_____ Every day
_____ 5 – 6 days a week
_____ 3 – 4 days a week
_____ 1 - 2 days a week
_____ A few times a month
_____ Less than once a month
_____ Never
_____ Other: _____

List the type(s) of exercise you do regularly.

About how long has it been since you last visited a doctor or other health care provider for a routine checkup (not for a specific injury, illness, or condition)?

_____ Within the past year
_____ 1 – 2 years ago
_____ 3 – 4 years ago
_____ 5 or more years ago
_____ Never
_____ Don't know

***Reference**: This measure was adapted from questions on "The Healthy Educator's Checklist" by CapRock Press (www.caprockpress.com) and from questions on the "USDA – California Checklist" for the Food Stamp Nutrition Education Program at the University of California, Davis (fsnep.ucdavis.edu).*

Teacher ID# _____ Center# _____

APPENDIX C

SURVEY ITEMS

Items from Eat Healthy, Be Active Measures (Bales, Coleman, & Wallinga, 2008)

Demographic Items

1) What is the highest level of education you have completed? *(Please check only one.)*

___ Elementary education ___ Some 4-year college

___ High school diploma or GED ___ Undergraduate degree

___ Technical college degree ___ Graduate degree

2) How many years have you worked in the child care or early childhood field in any capacity?

_____ less than 1 _____ 4 _____ 8

_____ 1 _____ 5 _____ 9

_____ 2 _____ 6 _____ 10 or more

_____ 3 _____ 7

Scheduled/Observed Outdoor Play

1) **Classroom Schedule:** From the posted daily schedule, write down the times that the following activities happen. **Include both beginning and ending times.** If more than one time is listed, include all times on the schedule.

Activity	**Time(s) on Schedule**
Ex: Free Play	*10 – 10:45; 2 – 2:30, 4 - 5*
Free Play	
Large Group	
Lunch	
Outdoor Play	

2) Obs start time: _____ Obs end time: _____

Teacher Health Practices

1) I eat 3 or more servings of fruit a day
2) I eat 3 or more servings of vegetables a day
3) I eat whole wheat bread
4) I eat green salads
5) I drink at least 6 glasses of water during the day
6) I limit my intake of trans fat
7) I drink reduced-fat or fat-free milk
8) I eat breakfast
9) I eat regular meals and snacks
10) I watch 2 or more hours of TV (including movies)
11) I spend an hour or more on the internet (outside of work)
12) I spend an hour or more playing video games
13) On average, how often do you exercise for at least 30 minutes at a time?*(check the one best answer)*

_____ Every day
_____ 5 – 6 days a week
_____ 3 – 4 days a week
_____ 1 - 2 days a week
_____ A few times a month
_____ Less than once a month
_____ Never
_____ Other: _____