SOCIAL DOMINANCE IN PRESCHOOL: PREDICTING AFFILIATION AND COERCION THROUGH INTERACTIONS AND RELATIONSHIPS

By

Megan C. Fedor

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ABSTRACT

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Previous research has indicated a variety of factors impact affiliative and coercive interactions and relationships between peers. This study continues this work by examining how individual characteristics and characteristics nested within a relationship impact affiliation and coercion. 104 preschool children were observed during freeplay. Teachers completed ratings for each child and children completed sociometric nominations. Results indicated that children rated high on social dominance and prosocial resource control were more likely to engage in social play. Children played with children that they nominated as preferred peers, and did not have conflict with those that they nominated as disliked peers. Children who were high on social dominance were more likely to engage in social play. Finally children who were rated as high on coercive resource control and low on bistrategic resource control were more likely to be in conflicts compared to their peers. Overall the study indicated certain individual and dyadic characteristics are related to affiliation and conflict.

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INTRODUCTION

The opportunities for children to interact with peers increase dramatically during the preschool years, with children spending more time in social rather than solitary play (Blurton-Jones, 1972) and upwards of 50% of their time with peers rather than adults (Ellis, Rogoff & Cromer, 1981). The way in which preschoolers navigate this increased time in peer interactions is important, as peer relationships promote the development of a variety of social and cognitive skills that are predictive of later social and emotional well-being (Rubin, Bukowski & Parker, 2006).

Preschooler's peer relations are unique in that they frequently represent children's first *horizontal* relationships, meaning that all members start off with a relatively equal balance of power (cf. child/parent relationship). Because of this, one of the developmental tasks that arise in peer relationships is how to negotiate power in terms of controlling limited resources (e.g., toys, friends). Children use a variety of strategies to gain and maintain control of these limited resources, including coercive (e.g., aggressive), prosocial (e.g., cooperative) and bistrategic strategies (e.g., a combination of the former) (Charlesworth, 1996; Hawley, 1999, 2002, 2003; Hawley & Little, 1999; LaFreniere & Charlesworth, 1983; Pellegrini, Roseth, Mliner, Bohn, Van Ryzin et al., 2007; Roseth, Pellegrini, Bohn, Van Ryzin, & Vance, 2007; Roseth, Pellegrini, Dupuis, Bohn, Hickey et al., 2011; Vaughn, Vollenweider, Bost, Azria-evans, & Snider, 2003). Theory and research related to preschoolers' social dominance, defined as naturally occurring differences in resource control (Hawley, 1999; Pellegrini, 2008), suggest that children using bistrategic strategies are more likely to control resources than children using only coercive or prosocial strategies. The use of bistrategic strategies is also positively related to social dominance status, increased levels of peer regard, attention, and affiliation (Hawley, 2003;

LaFreniere & Charlesworth, 1983; Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011).

Clarifying the behavioral antecedents (e.g., resource control strategies) and social consequents (e.g., increased peer regard, attention, and affiliation) of social dominance has increased understanding of the social context in which preschoolers' peer relations occur. Yet a gap in knowledge remains about the actual peers and peer groups with whom socially dominant preschoolers interact. Accordingly, the purpose of this dissertation is to examine whether social dominance is associated with increased affiliation with preferred peers and with peers characterized by commensurate levels of social dominance.

This introduction is divided into three parts. Part One introduces two levels of analysis for preschoolers peer relations: interactions and dyadic relationships. Part Two applies these levels of analysis to preschoolers' social dominance, explaining how one level of analysis (e.g., coercive and affiliative interactions) informs other levels (e.g., social dominance relationships). Part Two also reviews theory and research on preschoolers' social dominance, discussing the role that social dominance plays in preschool children's dyadic relationships. Finally, Part Three summarizes the specific hypotheses tested in this dissertation.

Peer Interactions and Relationships

Preschoolers' peer relations may be understood in terms of two levels of analysis: interactions and dyadic relationships.

Interactions. An *interaction* is defined as a "social exchange between children in which participants' actions are interdependent, such that each actor's behavior is both a response to, and stimulus for, the other participant's behavior" (Coplan & Arbeau, 2009). Thus, in its most basic form, an interaction is a behavior of one individual towards another (e.g., Child A takes X from

Child B) (Hinde, 1979). Historically, children's peer interactions have been characterized dichotomously in terms of *affiliative*, or "moving toward others" (e.g., cooperation, prosocial behaviors), and *coercive*, or "moving against" or "moving away from others" (e.g., aggression) (Rubin et al., 2006, p. 576). Underlying this perspective is the assumption that affiliative interactions index social competence while coercive interactions index social incompetence (Bukowski, 2003; Hawley, 2007; for a review of antisocial correlates, see also Coie & Dodge, 1998). More recent work challenges this view, however, as a functional perspective reveals that both affiliation and coercion may be used in the service of resource control. This perspective will be discussed more fully in Part Two of this introduction.

Relationships. According to Hinde (1979), a history of interactions between two individuals forms the basis of a dyadic relationship, which in turn influences the type and range of subsequent interactions between those individuals. For preschoolers, this means that different histories of dyadic interactions yield different kinds of peer relationships (Brownell & Brown, 1992; Gifford-Smith & Brownell, 2003). For example, some dyadic interactions may result in affiliative peer relationships, coercive peer relationships, or peer relationships characterized by *both* affiliative and coercive interactions.

Affiliative relationships. Affiliative relationships are characterized by a history of affiliation (e.g., cooperation, prosocial behavior) and, presumably, promote social competence by socializing affiliative behavior. Traditional views of friendship formation suggest that individual differences such as sex, ethnicity, and socioeconomic status predict with whom peers affiliate with and, over time, form friendships (McPherson, Smith-Lovin & Cook, 2001). Research on preschoolers' affiliative relationships also tends to emphasize the role of demographic characteristics such as sex (e.g., Fabes, Martin, & Hanish, 2003) and race (e.g., Shrum, Cheek &

Hunter, 1988), as well as behavioral homophilies (e.g., Rubin, Lynch, Coplan, Rose-Krasnor & Booth, 1994; for a review see Vaughn & Santos, 2009). This dissertation study contributes to this literature by testing whether social dominance status is associated with preferred play partners.

Coercive relationships. Coercive relationships are characterized by a history of *conflictual bouts*, defined as agonistic events in which one child shows resistance (e.g., facial expression, posture, tone of voice), physical aggression, or verbal aggression in opposition to the influence attempt, anger, aggression, or argument of another child (Verbeek & de Waal, 2001; see also Shantz, 1987). Presumably, coercive relationships promote social incompetence by socializing the use of aggression in conflictual bouts (see e.g., Patterson, DeBaryshe, & Ramsey, 1989). Among preschoolers, such conflicts often involve a struggle for objects or directing themes of play (Chen, Fesin & Tam, 2001; Laursen & Hartup, 1997), both considered to be desired resources (Hawley, 2002). This dissertation study contributes to this literature by testing whether social dominance status predicts who initiates and who is the target of conflictual bouts.

Social Dominance Interactions and Dyadic Relationships

Evolutionary theory (Darwin, 1859/1884; Hawley, 1999; Pellegrini, 2008) suggests that resources are needed to promote survival, and are conceptualized as material (e.g., nesting sites), social (e.g., mates), and informational (e.g., the acquisition of the latter two resources). For preschoolers, resources range from materials, such as toys, to relationships, such as friends and preferred playmates (Hawley, 2007; Pellegrini, Roseth, Van Ryzin & Solberg, 2011; Pusey & Packer, 1997; Roseth et al., 2011).

Interactions. It is important to recognize that social dominance is conceptualized as a relational variable indexing relative differences in the ability to control resources (Hawley, 1999; Pellegrini, 2008). Thus, rather than index dominant and non-dominant (subordinate) behaviors,

social dominance indexes resource control status relative to other members of the group (Hawley, 1999; Pellegrini, 2008; Roseth et al., 2011). At the group-level, this relative comparison yields a continuum with children on the high end of the continuum accessing more resources than children at the low end. Importantly, theory and research suggest that once social dominance status is established within a group, group-level conflictual bouts tend to decrease (Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011). Thus, over time, social dominance is associated with decreasing competition (e.g., aggressive conflict) over resources, presumably because individuals become increasingly aware of their rank and the relative costs and benefits associated with continued competition.

Research suggests that, like non-human primates (e.g., de Waal, 1986) and older children (e.g., Hawley, 2003; Pellegrini & Bartini, 2001), preschool children use both prosocial (e.g., sharing, cooperating, turn taking) and coercive resource control strategies (e.g., hostile and aggressive resource control attempts) to gain access to desired resources (Charlesworth, 1996; Hawley, 1999, 2002, 2003; Hawley & Little, 1999; LaFreniere & Charlesworth, 1983; Pellegrini et al., 2007; Roseth et al., 2011; Roseth et al., 2007; Vaughn et al., 2003). This functional perspective of preschoolers' affiliative and coercive behaviors challenges traditional views exclusively linking coercion to peer dislike and suggests a more complex relationship between coercion and affiliation.

Focusing on social dominance and affiliation, Strayer (1989; 1992) examined the correlation between affiliation and social dominance in a sample of 1- to 5-year-old children. Social dominance was conceptualized solely in terms of coercive behavioral correlates, defined as "initiated conflict: attack, threat and competition" (p.155) and affiliation was measured by adding the total affiliative activity received (e.g., proximity, social orientation, physical contact,

gesture). Results indicated that social dominance was correlated with affiliation among 4- and 5year old children and thus, supported the view that high social dominance status is associated with increased levels of affiliation.

LaFreniere and Charlesworth (1983) examined social dominance and affiliation in a short-term longitudinal study of 18 preschool children. Observational data were collected for a 9month period and the authors measured social dominance rank (defined as attacks, physical struggles or assertiveness) and affiliation (defined as the proportion of time a child spent in interactive play). Results suggested that children who are socially dominant also affiliate at greater rates with their peers. Similar to Strayer however, dominance was conceptualized solely in terms of coercion, rather than other types of resource controlling strategies, such as prosocial and bistrategic strategies.

Finally, Roseth et al. (2011) examined social dominance and resource control strategies in a short-term longitudinal study of 88 preschool children. Observational data were again collected for a 9-month period but the authors defined social dominance status in functional terms (i.e., naturally occurring differences in resource control) rather than particular behaviors (e.g., coercion). Results suggested that rates of both coercive and prosocial resource control strategies varied as a function of social dominance status, and that children who engaged in postconflict reconciliation were most-liked by peers. These findings suggest that the social consequences of resource control competition depend on more than single behavioral tendencies such as using more or less coercion than other children, and that even preschoolers tend to prefer peer interactions involving both coercive *and* affiliative behaviors over interactions only involving only coercion.

In sum, research on preschoolers' social dominance has examined the relationship between coercive resource control strategies and peer affiliation (LaFreniere & Charlesworth, 1983; Strayer, 1980b; 1989; 1992) and the acceptability and effectiveness of both coercive and affiliative resource controlling strategies (Hawley, 2002, 2003; Roseth et al., 2011). What is missing from this work is a more precise view of how social dominance and bistrategic resource control strategies relate to interactions with particular social partners. After all, different social relationships are thought to afford different interactions patterns (Hinde, 1979), and social dominance relationships in particular may be associated with different play states and different social consequents. The next sections consider this issue more specifically by examining whether different play states (social vs. parallel play) and sociometric correlates (like versus dislike nominations) depend on social dominance.

Social dominance and play state correlations. Broadly, children's affiliative play may be divided into two categories: *social play* (e.g., interactions with peers) and *parallel play* (e.g., playing beside peers). Social play is affiliative in nature, and allows for resource control opportunities in terms of proximity to peers, the opportunity to gain desired toys from playmates, and the direction of roles and themes of games. Parallel play lacks an interactive component and is characterized by close proximity and mutual awareness of playmates (Howes & Mathenson, 1992). Parallel play affords resource control opportunities in terms of proximity to peers and the opportunity to gain desired resources. This dissertation examines whether socially dominant preschoolers (i.e., bistrategic resource controllers) are more likely than non-dominant peers to engage in social and parallel play. Specifically, this dissertation examines whether children who

bistrategic resource control strategies more than peers and (b) are rated by teachers as being higher on social dominance.

Sociometric "like" nominations, observed social play, and social dominance. Children higher on the social dominance continuum within a group are afforded greater access to desired resources and are considered to be socially competent (Hawley, 2002; 2003; LaFreniere & Charlesworth, 1983; Pellegrini, 2008; Roseth et al., 2011; Strayer & Strayer, 1976). Theory and research also suggest that preferential access to resources makes socially dominant preschoolers' attractive to peers, at least as measured by sociometric ratings (Pellegrini, 2008; Roseth et al., 2007; Roseth et al., 2008). What is missing from this research is observational evidence that socially dominant children do in fact affiliate more frequently (e.g., actually interact with) with peers with whom they prefer to affiliate (e.g., peer preference nominations).

Previous research on preschoolers' social dominance has operationalized prosocial resource control in terms of control over play (e.g., Hawley, 2002; 2003; LaFreniere & Charlesworth, 1983), affiliative interactions (Pellegrini et al., 2007; Roseth et al., 2011; Strayer & Strayer, 1976), and peer regard (Pellegrini et al., 2007; Roseth et al., 2011; Vaughn & Waters, 1983) but ignored who, exactly, affiliates with whom, and whether social dominance is associated with actually spending time with desired play partners. To date, therefore, there exists no observational evidence that socially dominant children do in fact have more affiliative opportunities than other children. This dissertation addresses this void by testing whether socially dominant children tend to affiliate (spend at least 10% of their freeplay time) with their desired play partners (measured by peer preference nominations) at a greater proportion than less dominant children. Specifically, this dissertation examines the correspondence of peer preference nominations to actual time spent with peers (e.g., child A plays with 3 of 3 peers they nominated

as preferred playmates; child b plays with 1 of 3 peers they nominated as preferred playmates). Simple regression is then used to determine if social dominance and resource control strategies predict correspondence between peer nominations and time spent with peers.

Sociometric "dislike" nominations, observed conflict, and social dominance. Because socially dominant children are able to negotiate the balance between resource control and affiliation, it may be the case that these children are aware of whom they acquire or attempt to acquire resource from, and whether or not that outcome will result in a disliked outcome (Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011). Because of this, socially dominant children may show a higher degree of consistency between children they dislike, and children with whom they have actual coercive conflict. This dissertation attempts to answer this question by examining the consistency between sociometric nominations of "dislike" and actual conflict, as it relates to social dominance status. Cluster analysis was used to determine if social dominance and resource control strategies predicted correspondence between negative sociometric nominations and actual conflict.

Dyadic relationships. The current study is examining social dominance through preschoolers interactions and relationships. One goal is to examine how the use of social dominance and different social dominance strategies are related to affiliative and coercive relationships in preschool years. It may be the case that over time, children use different strategies at different developmental time periods due to changes in their ability to recognize successful strategy use, or acceptable behavior according to teachers, parents and peers. While the current study is not examining changes in strategy use over time, it is examining the manifestation of multiple strategies in the preschool years, and how the use of those strategies may relate to relationship formation. Examining this with a preschool sample is particularly

important due to several factors. First, preschool can be thought of as sensitive period for the development of peer relationships (Hay, Caplan & Nash, 2011). It is at this point where peer play increases due to opportunity (e.g., preschool) and the development of skills such as perspective taking, theory of mind and empathy. Thus, the interactions between children are ever increasing.

Secondly, and in accordance with the first reason, children at this age have had fewer socialization opportunities compared to older children. For instance, children are just learning classroom rules and norms, and likely these are not yet internalized. Given this, the interactions children have with one another will likely be informed at least partially by instinctual resource controlling bids, rather than socialized resource controlling bids. Thus, the manifestation of social dominance and social dominance strategies may differ as a function of age due to the increasing socialization opportunities throughout development. Together this makes preschoolers particularly unique to study because it provides a window into first dyadic peer relationships without the socialization of acceptable social dominance strategies.

This next section links social dominance to preschoolers' affiliative and conflictual dyadic relationships.

Social dominance and observed social play. Social dominance hierarchies are characteristics of groups that may facilitate or restrict with whom children interact (Rubin et al., 2006). Children with a higher dominance status within a group may have the opportunity to socialize with peers with similar status, reinforcing beneficial and accepted behavioral correlates of resource control. Conversely children who are on the low end of a social dominance continuum may want to affiliate with children of a higher dominance status, yet their place on

the continuum is prohibitive of doing so. Thus, these children may continue to socialize with submissive or coercive resource controllers, which in turn impacts their own socialization.

Even in preschool, children affiliate selectively (Fabes, Martin & Hanish, 2009), often based on behavioral and status homophiles (Vaughn & Santos, 2009). However research has yet to examine how preschool social dominance hierarchies impact dyadic affiliation. It may be the case that children high on the social dominant continuum within a group spend time with other highly dominant children (e.g., birds of a feather). However it may be the case that highly socially dominant children recognize that in order to maintain resource control, they need to affiliate with children of lower dominance status.

Past work has used child level analysis of social dominance status and resource control within a classroom as predictors of affiliation (LaFreniere & Charlesworth, 1983; Hawley, 2002, 2003; Strayer, 1980b; 1989; 1992; Roseth et al., 2011). This dissertation adds to this literature by using social network analysis to determine how the characteristics of the relationship, rather than the individual may impact affiliation (Wasserman & Faust, 1994). Social network analysis is relevant to the peer relationships literature as it considers the collection of individuals within a relationship as predictors of interactions (e.g., affiliative or coercive) and outcomes (e.g., resource exchange) within that relationship. Thus, the individual within the context of the dyad is taken into account, rather than simply one's individual characteristics or behaviors (Wasserman & Faust, 1994).

Social network analysis has been used in past research on peer relations to investigate the nature of affiliative dyadic relationships. For instance, Mercer and DeRosier (2010) found that pairs of children in middle school who were similar in feelings of isolation were more likely to affiliate with one another. Additionally, research has found adolescent peer affiliation to be

based on externalizing and internalizing similarity within dyads (Snijders et al., 2007; Veenstra & Steglich, 2011). Additionally, some research with social network analysis has begun to examine negative peer structures. For example, Huitsing and Veenstra (2012) examined how classroom social network structure influenced bullies and victims of bullying among elementary school children. We know of no previous research using social network analysis to examine affiliative and coercive relationships in preschool settings.

Another aim of this dissertation is to use social network analysis to examine how similarity in social dominance status and resource control strategies relates to affiliative relationships. Similarity across these variables would be consistent with the demographic homophily hypothesis. In this study, affiliation is measured by observational data of actual time spent affiliating with a peer, and similarity in dominance status within groups is determined by finding the difference scores between partners.

Social dominance status and observed conflict. Traditional views of conflict suggest that conflict results from individual characteristics, such as genetic predispositions, environmental affordances or constraints (e.g., one's status within a social dominance hierarchy), and the combination of the two (de Waal, 2000). More recent conceptualizations of conflict emphasize the way dyadic relationships contribute to conflictual outcomes. For example, De Waal's (1996, 2000) Relational Model provides one account of the likelihood of conflict between a pair of individuals. The Relational Model posits "that the tendency to initiate aggression increases with the number of opportunities for competition, the resource value and the reparability of the relationship, while it decreases with the risk of injury and the value of the relationship" (de Waal, 2000, p. 27). Thus, individuals who spend more time together, have highly valuable resources to exchange and the ability to reconcile may be more likely to have conflictual bouts. Conversely, partners who have few opportunities to interact, have less attractive resources, and lack the

ability or desire to reconcile may have fewer conflicts.

Consistent with the Relational Model, social network analysis may provide insight as to the characteristics nested within the preschoolers' dyadic relationships that predict conflict. Accordingly, another purpose of this dissertation was to investigate the nature of dyadic relationships, and how their characteristics may predict conflict between pairs of children, even after social dominance hierarchies have formed.

Social dominance and conflict role. A gap in the social dominance literature lies in understanding how social dominance relates to roles (e.g., *initiator*, *target*) within conflicts. Thus, a goal of this dissertation was to investigate the role that relationship characteristics, such as social dominance and resource control strategies, have on conflictual bouts during a spring term, presumably after social dominance hierarchies are already well established. Based on the notion that a dominance status is stable within our sample, and conflict is more likely to be initiated when an attractive resource is at stake (de Waal, 2000), it was predicted that those initiating conflict would hold a lower social dominance rank relative to their chosen partner. Targets, on the other hand were predicted to have greater social dominance and resource control, attracting conflict based on their greater access and acquisition of desired resources.

Measurement Related Questions

As a whole this study aims to add to the literature by examining affiliation and coercion through direct observations. Previous work has used teacher nominations to determine affiliative and coercive relationships between peers. Additionally previous work has also used sociometric nominations to determine liked and disliked peers. However these measures do not capture who children are *actually* spending time with, and who children are *actually* having conflict with.

This study may help provide support for previous methods used to measure affiliative and coercive relationships, or it may set a new standard for the measurement of dyadic relationships.

The following section addresses three remaining questions surrounding the measurement of social dominance, resource control, and sociometric nominations by preschool children.

Teacher-rated social dominance and resource control. Aggression has been defined as physical or verbal behaviors with the intention to cause harm towards another (e.g., Shantz, 1987). However, recent work has shown that not all aggression may have the same antecedent. Dodge and Coie (1987) discussed the emergence of proactive and reactive aggression. The former, which is of interest for the purpose of this dissertation, is that which results from a desire to dominate or gain resources, such as nesting sites or territory for nesting sites (Dodge & Coie, 1987). Engaging in proactive aggression results from the attempt to gain accesses to desired resources, and thus harm is a means to an ends, rather than indiscriminate (i.e., reactive) aggression. Some forms of proactive aggression have been conceptualized as social dominance and even social competence, in that the outcome is the acquisition of necessary resources, while still maintaining positive relationships with others (i.e., reconciliation) (Bukowski, 2003; Pellegrini, 2008). Based on this type of aggression, Dodge and Coie (1987) developed a reliable measure of social dominance, measuring proactive aggression, as rated by adults.

While Dodge and Coie's measure of social dominance focuses on proactive aggression, ethologists (de Waal, 1986; Hinde, 1982; Tinbergen, 1963) suggested that social dominance was not necessarily always aggressive in nature. Early on, dominance was conceptualized as a means to access resources (e.g., food, mating) in the presence of others. Hawley's Resource Control Theory (Hawley, 1994) suggested that aggression (*coercion*) is one means to access resources, but that affiliative behaviors (*prosocial*) can also be a means to gaining access to resources. This

theory goes a step further in suggesting *function* (e.g., resource control) over *form* of behavior (e.g., aggression) (Hawley, 2007). Hawley (2003) developed a measure to determine social dominance through the use of both prosocial and coercive strategies. Because Hawley's theory relies on multiple strategies, and specifically, a non-aggressive strategy, it has been presupposed that Resource Control, as conceptualized by Hawley (1994) may be a different construct from that of proactive aggression, as conceptualized by Dodge and Coie (1987). Yet research has yet to establish if these two measures are related, and if so, to what degree. The current dissertation used partial correlations to examine the relationship between the two social dominance measures.

Like traditional views of aggression, Dodge and Coie's (1987) conceptualization of social dominance is one of an individual level variable. That is, social dominance is thought to be a characteristic of the child, and is measured as such (Dodge & Coie, 1987; Dodge, Coie, Pettit & Price, 1990). However also like aggression, social dominance has more recently been conceptualized as a group level variable, such that ones' social dominance rank can only be considered in comparison to others' social dominance rank (e.g., Strayer, 1976). For instance, in one setting, child B may be less dominant than child A, and more dominant than child C, giving them a social dominance rank between those two peers. However, in another setting (such as another classroom), child B's social dominance status is dependent on others within that setting.

Although this view of social dominance is dependent on one's dyadic relationships with peers, studies have yet to measure social dominance in a way that represents this dyadic nature. No previous work has both conceptualized and measured social dominance relationships from a dyadic perspective. The current study adds to this literature by using multiple methods, including direct observations, to examine how the nature of relationships among peers and social dominance status impact affiliation and coercion. This is important because it's the first study to

provide consistency between a dyadic conceptualization of social dominance and the methods used to study it.

Sociometric nominations and observed play and conflict partners. A secondary methodological question is exactly what is measured through sociometric nominations made by preschool children. Sociometric procedures were created by Jacob Moreno (1934) to determine individual's preferences towards others and more recently have been defined as "a large class of methods that assess the positive and negative links between persons within a group" (Cillessen, 2009). These methods are used frequently in modern peer relation literature to assess people's preference for members in a peer group (e.g., Cillessen & Borch, 2006; Hawley, 2002; Rodkin, Farmer, Pearl & Van Acker, 2000; Roseth et al., 2011), and have been shown to be consistent over time (Crick, Casas & Mosher, 1997). Procedurally, in preschool samples children are asked to nominate peers that they "like to play with" and "do not like to play with" by pointing at classmates pictures. At the dyadic level, sociometry enables researchers to better understand friendship and antipathies and, at the group level, to create a continuum of acceptance and rejected group members. Although this yields an index of acceptance within a group (Cillessen, 2007), research has cast doubts on whether or not children actually play with their preferred playmates (Foot, Chapman & Smith, 1980; Strayer, Strayer & Chapeskie, 1980). Thus, this dissertation contributes to the literature by using observations of actual play and conflict to determine if children's sociometric nominations capture actual dyadic relationships, or just preference within a group.

Current Study

To summarize, the broad goal of the dissertation is to examine social dominance and the strategies used by preschoolers to access and maintain control over resources in the context of

preschoolers' peer relationships. At the individual level, it was predicted that social dominance, and specifically, prosocial and bistrategic resource controlling strategies would be indicative of the amount of time children spend in social and parallel play states. It was also predicted that social dominance and resource control strategies would be associated with affiliation, desired playmates and conflict with specific partners, as indicated by sociometric nominations. Additionally, it was hypothesized that homophily in terms of social dominance status and resource control strategies would predict affiliation and coercive relationships, and social dominance and resource control scores would predict roles in dyadic conflict. Finally, measurement questions concerning social dominance, resource control, and sociometric measures are also examined.

METHOD

Preschoolers

The data for this dissertation were collected in seven classrooms located at four Head Start centers in a Midwestern city in the United States from February 2009 through April 2009. Classrooms I, II, and III met five mornings per week, and Classrooms IV, V, VI and VII met five afternoons per week. Procedures associated with this study were reviewed and approved by the sponsoring university's Institutional Review Board, IRB# 08-823D, and also by the Head Start District Office and the individual classroom teachers. Permission slips were sent home by each classroom teacher and children with signed permission slips participated in the study.

In all, 98% of preschoolers participated in the study, totaling 104 children (55 girls) ranging in age from 41 to 73 months (M = 55.71, SD = 7.17). Classrooms included multi-aged students. Across the entire sample, 39% of the children were African-American, 19% were Hispanic, 20% European-American, and 2% Asian-American, and 20% represented multiple ethnic groups. Admission into Head Start is based on income; families must meet state income (low) eligibility requirements. The sample included one child on the autism spectrum; the child with autism was not included in analyses. Four children left the school during data collection, six children joined the school during the year. Only children who were present from the start until the end of the study were used for analysis purposes.

Observational Procedures

Video recordings of freeplay were conducted every weekday the preschool was in session during the eight week observational period by ten graduate and undergraduate student researchers. Prior to entering classrooms the researchers participated in a training regimen that involved videotape viewing and discussions. Before data collection began, student researchers

entered the classrooms and mock-recorded the students so that the children would get acclimated to a researchers presence. Data collection began after two weeks of practice taping. Across the semester, on average, each student was recorded six times. Numbers varied due to absences from school.

Children were observed according to focal and event sampling procedures and continuous recording rules. Due to the rare nature of coercive competitive events, event sampling took precedence over focal observations. Each day observers entered a classroom with a predetermined, randomized list of children to videotape. All observations were conducted during free-play periods lasting approximately one hour, and children were observed in their classrooms, gymnasiums, and playgrounds. In all locations, researchers moved around the room to film the focal child in a manner unobtrusive to the children. Reactivity was likely minimal as the children became accustomed to the researchers' presence.

Focal sampling/continuous recording rules (Pellegrini, 2004) governed focal observations. Working from randomized lists, observers located individual children and recorded behaviors in a 10-minute period. A variety of behaviors were recorded but those relevant to this dissertation were the child's play states. Play states of interest for this dissertation study were *social play* (dyadic social interaction, either associatively or cooperatively), *parallel play* (focal child is playing beside, but not with others), and *solitary play* (focal child plays alone and is not affected by peers). The proportion of time in play states were derived from play in a particular state (e.g., social play) divided by total amount of play regardless of state.

Event sampling with continuous recording rules (Pellegrini, 2008) were followed when an observer saw a conflict event in which one child shows resistance (e.g., facial expression, posture, tone of voice), physical aggression, or verbal aggression in opposition to the influence

attempt, anger, aggression, or argument of another child (Verbeek & de Waal, 2001; see also Shantz, 1987). Thus, this study focused on conflict events involving both a resource-control attempt *and* resistance to the resource-control attempt. When an agonistic event was detected involving children other than the focal child, focal sample/continuous recording stopped and observers shifted to event sampling. Thus, event sampling always took precedence over focal samples. For each conflict event, the identity of the initiating child and the identity of the target child were noted.

Video Coding

After video recording, videos were transferred onto computers for behavioral coding using Mangold Interact, a video coding software program. Video coding provides many advantages compared to live coding, such as the ability to take multiple passes, discrepancy discussions to avoid observer drift, and blind interobserver checks (Yoder & Symons, 2010). A team of four graduate and undergraduate students coded coercive competition behaviors and play states as defined previously. If multiple play states occurred within a ten-second interval, the play state that the child was predominantly engaged in (i.e., > 5.01 seconds) was coded. During focal and event sampling, peers and teachers with whom the focal child was interacting with, playing near, or observing were coded. Interrater agreement was established by double-coding a randomly selected 10% of the focal observations (*Kappa* = .85). Any discrepancies during coding were resolved through discussion.

Teacher Ratings

Children's classroom teachers completed an adapted form of the *Teacher Checklist* (Dodge & Coie, 1987), a 1-7 Likert-like scale shown to be a valid measure of social competence (e.g., Pellegrini & Long, 2002; Pellegrini et al., 2007; Roseth et al., 2007). Children were rated

on a variety of subscales, but for the purpose of the proposed dissertation, only the five item subscale related to social dominance (e.g., "dominates classmates"; Cronbach's *alpha* = .94) was used. Children's classroom teachers also completed a measure adapted from Hawley's (2003) *Resource Control* Inventory, a 1-7 Likert to assess children's resource control strategies. Teachers were asked to complete an 18 item scale designed to assess the children's relative frequency of prosocial resource control (e.g., "'has plans that are liked by others", "gets what he/she wants by being nice"; Cronbach's *alpha* = .80), coercive resource control (e.g., "gets what he/she wants by bullying", "gets what he/she wants by tricking others"; Cronbach's *alpha* = .92) and general resource control (e.g., "seems to win over peers", "gets the best role in games with peers"; Cronbach's *alpha* = .91). Results were standardized within classrooms. The variable of bistrategic resource control was derived from combining coercive and prosocial resource control scores (Hawley, 2003b).

Sociometric Nominations

Sociometric interviews were conducted with individual children, with interview questions based on a peer-nomination measure used in prior research with preschool-age children (Crick, Casas & Mosher, 1997). Children were interviewed by one of the research associates. Procedurally, peer nominations began with the adult holding up a picture board containing individual pictures of each of the child's classmates, including opposite-sex peers. Following standard procedures, children were asked to point to three peers in response to the following questions: Someone you like to play with; someone you don't like to play with; and a special friend. Each child's individual scores were determined by summing the number of nominations received from their peers, to get an index of peer preference.

Data Analysis

Descriptive statistics. Descriptive analyses were used to examine the relationship between teacher rated social dominance and resource control, as well as the relationship between social dominance and play states. Partial correlations were used in order to control for age and sex, and percentages were used to examine the match between children's actual sociometric nominations ("like" and "dislike") and actual play and conflict. Match is defined as consistency between one preschooler's nomination of a peer and observed play, or observed conflict with that peer.

Social network analysis. Social network analysis was used to answer the questions regarding the accuracy of sociometric nominations in relation to actual play/conflict and social dominance scores, of who plays with whom, who has conflict with whom, and conflictual roles between dyads. In general, social network models allow us to determine the relational components that influence individual behavior (e.g., *influence models*) and affiliatory (or coercive) relationships (e.g., selection models) (Frank, 2011). This dissertation focuses on selection models by attempting to determine how individual characteristics impact the likelihood of affiliative relationships between peers and the likelihood of coercive relationships between peers. Important in the use of social network models is the recognition of both the individual characteristics that impact affiliation or coercion, and the characteristics nested within the group that impact affiliation or coercion (Frank, 2011). Level 1 analysis is that which examines the relationship between the dyad in order to determine the likelihood of affiliation or coercion. For instance, research has indicated that children of similar age are more likely to spend time together (Rubin, Lynch, Coplan, Rose-Krasnor & Booth, 1994; for a review see Vaughn & Santos, 2009). Thus, a child's age only predicts affiliation when considering its relation to the age of another peer. For the purpose of this dissertation, analysis of this kind is described as

being at the level of the *dyad*. Level 2 analyses are those that examine the characteristics of the individual that might predict affiliation or coercion. For instance, research has indicated that older children within a class are more likely to have social interactions with peers (Fabes, Martin & Hanish, 2009). Thus a child's age in this case may predict the likelihood of affiliation when comparing an older child to a younger child. For the purpose of this dissertation, analysis of this kind is described as being at the level of the *individual*. Classroom effects were controlled for by including classrooms as dummy variables in these models.

RESULTS

Social Dominance and Resource Control

The first goal was to determine if the teacher-rated social dominance measure was correlated with the teacher-rated resource control measure and its subscales, while controlling for age (Table 1). Results indicated that the teacher-rated social dominance measure was highly positively correlated with overall teacher-rated resource control (r = .87, p < .01), coercive resource control (r = .72, p < .01), prosocial resource control (r = .58, p < .01), and bistrategic resource control (r = .85, p < .01). As expected, results suggest that the two measures were highly positively related.

Social Dominance and Play State

The study's second goal was to determine the relationship between observed play states (e.g., social play, parallel play, and solitary play) and teacher-rated social dominance, controlling for age. As indicated by Table 1, teacher-rated social dominance was positively correlated with observed social play (r = .25, p < .01), as was overall teacher-rated resource control (r = .18, p < .05), prosocial resource control (r = .31, p < .01), and bistrategic resource control (r = .25, p < .01). Interestingly, teacher-rated coercive resource control was not significantly correlated with observed social play, and prosocial resource control was negatively correlated with observed social play, and prosocial resource control was negatively correlated with observed social play (r = ..17, p < .05). Results suggest that social dominance and, in particular, prosocial and bistrategic forms of resource control was negatively related to observed social play with peers, while prosocial resource control was negatively related to observed solitary play.

Sociometric "Like" Nominations

The third goal was to examine correlations between children's sociometric "like" nominations and observed social play and teacher-rated social dominance.

Sociometric "like" nominations and observed play partners. The first analyses examined the consistency between sociometric nominations of "like-most" (i.e., children nominated as "like to play with") and the actual time spent playing with their nominated peers. Overall, there were 201 (67%) matches between nominated peers and actual play partners. Boys' nominations matched 69% of the time, and girls' nominations matched 62% of the time. Fiveyear-old children had a higher match between nominations and actual social play (69%), followed by 4- (67%) and 3-year-old children (57%).

Sociometric "like" nominations, observed social play, and social dominance status. The next analyses examined if matches between sociometric like-most nominations and actual social play varied as a function of teacher-rated social dominance. The following two level model was run to determine whether sociometric nominations predicted actual play in relation to individual social dominance status:

LEVEL1: $TieSocial_{ii'} = \theta_0 + \theta_{ii'}(absDom) + \theta_{2ii'}(Similar - gender) + \theta_{3ii'}(Abs.Age) + v_{ii'}$

LEVEL2:

$$\begin{aligned}
\theta_{0i} &= \gamma_{00} + \gamma_{01}^{i} (Female) + \gamma_{02}^{i} (absage) + u_{0i} \\
\theta_{1i} &= \gamma_{10} \\
\theta_{2i} &= \gamma_{20}
\end{aligned}$$

The variables of actual play and sociometric nomination were analyzed in level 2, and social dominance status in level 1, controlling for age and sex. In contrast to the hypothesis, results showed that children with higher social dominance scores were not significantly more likely to match like-most nominations and actual play partners compared to other children (b = .28, p =

.27). Similar models were created to determine this relationship with prosocial resource control and bistrategic resource control. Results did not prove to be different; that is, children with higher social dominance scores were not significantly more likely to match like-most nominations and actual play partners compared to other children (b = .21, p < .64; b = .17, p <.45). Taken together and contrary to the hypothesized relations, results suggest that social dominance, prosocial resource control, and bistrategic resource control were unrelated to the likelihood of matching like-most sociometric nominations and actual social play.

Similarity in social dominance status and observed social play. The next set of analyses examined whether similarity in social dominance scores predicted who played with whom during social and parallel play. These analyses used the absolute difference of scores between two children with regards to social dominance, prosocial resource control, coercive resource control and bistrategic resource control to determine if there is a homophily effect between scores and social and parallel play. Hierarchical Linear Modeling was used to estimate the effects of the dyad (Level 1) and individual (Level 2) effects on observed social play and parallel play (see Table 2). The model that was used is as follows:

$$LEVEL1: \\ \left(\log \frac{p:socialplay[w_{ii'=1}]}{1-p[w_{ii'}]}\right) = \theta_0 + \theta_{ii'}(AbsDom) + \theta_{2ii'}(Similar - gender) + \\ \theta_{3ii'}(Abs.Age) + \theta_{4ii'}(AbsPRC) + \theta_{5ii'}(AbsCRC) + \theta_{6ii'}(AbsBRC)$$

$$\begin{split} LEVEL2: \\ \theta_{0i} &= \gamma_{00} + \gamma_{01}^{i}(Female) + \gamma_{02}^{i}(cenage) + \gamma_{03}^{i}(Dom) + \\ \gamma_{04}^{i}(PRC) + \gamma_{05}^{i}(CRC) + \gamma_{06}^{i}(BRC) + u_{0i} \\ \theta_{1i} &= \gamma_{10} \\ \theta_{2i} &= \gamma_{20} \\ \theta_{3i} &= \gamma_{30} \\ \theta_{4i} &= \gamma_{40} \\ \theta_{5i} &= \gamma_{50} \\ \theta_{6i} &= \gamma_{60} \end{split}$$

Results did not show evidence of a statistically significant relationship between social dominance or resource control and likelihood of actual play. However, same sex (b = 2.7, p < .01) and similar age (b = -.12, p < .01) predicted social play. That is, children of the same sex and similar in age were more likely to play together. At the individual level, results showed that children with higher social dominance scores within their class engaged in a higher rate of social play between pairs (b = .6, p = .04).

There was no evidence that the likelihood of parallel play between pairs was associated with social dominance or resource control. In fact, only same sex (b = 5.02, p < .01), and similarity in age (b = -0.12, p = .04) were predictive of dyadic-level parallel play. At the

individual level, results showed that children with lower bistrategic resource control scores within their class engaged in higher rates of parallel play (b = -6.44, p = .01).

Sociometric Dislike Nominations and Conflict

The first goal was to examine consistency between sociometric nominations of peer dislike (i.e., children nominated as "I don't like to play with") and observed conflictual bouts. Overall, there were only 62 matches (21%) between nomination and actual conflict. Boys had a match between conflict and negative nominations 25% of the time, and girls had nomination and conflict match 18% of the time. Three-year-old children had a higher match between nominations and actual conflict (30%), followed by 4-year-old children (19%) and then 5-year-old children (19%).

The next set of analyses examined whether matches between sociometric nominations of peer dislike and actual pair conflict varied as a function of social dominance status (Table 3). A two level model was run to determine whether sociometric nominations predicted actual conflict in relation to individual social dominance status. The variables of actual conflict and sociometric nomination were analyzed in level 2, and social dominance status in level 1, controlling for age and sex. However, results showed that children in with higher social dominance scores were not more consistent in nominating children with whom they had previous conflicts as disliked playmates. This model also considered coercive resource control to determine consistency between the children's likelihood of matching like-least nominations and actual conflict (F(1,95) = .147, p = .70). These finding suggests that social dominance and coercive resource control were unrelated to consistency between sociometric nominations of 'like-least' and observed conflict.

Similarity in Social Dominance Status and Observed Conflict

The fifth goal was to examine whether similarity in social dominance status was associated with the frequency of observed conflictual bouts. The same procedures used for social dominance status and observed social play were used in this analysis to determine the relationship between dyadic variables. HLM analysis was used, utilizing the following model:

$$\begin{split} LEVEL1: \\ &\left(\log \frac{p:conflictualbout[w_{ii'=1}]}{1-p[w_{ii'}]}\right) = \theta_0 + \theta_{ii'}(AbsDom) + \\ &\theta_{2ii'}(Similar - gender) + \theta_{3ii'}(Abs.Age) + \theta_{4ii'}(AbsPRC) + \\ &\theta_{5ii'}(AbsCRC) + \theta_{6ii'}(AbsBRC) + \theta_{7ii'}(SocialPlay) + \theta_{8ii'}(ParaPlay) \end{split}$$

$$LEVEL2:
\theta_{0i} = \gamma_{00} + \gamma_{01}^{i}(Female) + \gamma_{02}^{i}(cenage) + \gamma_{03}^{i}(Dom) + \gamma_{04}^{i}(PRC) + \gamma_{05}^{i}(CRC) + \gamma_{06}^{i}(BRC) + u_{0i}
\theta_{1i} = \gamma_{10}
\theta_{2i} = \gamma_{20}
\theta_{3i} = \gamma_{30}
\theta_{4i} = \gamma_{40}
\theta_{5i} = \gamma_{50}
\theta_{6i} = \gamma_{60}$$

Dyadic level analysis only provided evidence for one relationship between conflict and the predictors in the model. Specifically, children who spent more time playing together during social play were more likely to have dyadic conflict (b = .01, p < .01). Individual level analysis showed that children who were younger (compared to the mean – grand mean centered) (b = .01

.01, p = .051) and male (b = -.11, p = .052) were marginally more likely to be involved in conflicts. Children that had higher coercive resource control scores (within classrooms) (b = .18, p < .05) were more likely to be involved in conflicts. Additionally, children with lower bistrategic resource control scores were more likely to get involved in conflicts as well (b = -.26, p = .02).

Social Dominance Status and Conflict Role

The final set of analyses examined whether social dominance status predicts the role of the initiator and target in observed conflict. HLM modeling was used to predict these relationships.

Initiator. Table 4 presents the results of the role of initiator and relationship history between dyads. Dyadic analysis suggested that when a conflict occurs between with a peer with whom a child frequently engages in social play, that child is likely to be the initiator (b = .01, p < .01). Individual level analysis suggested that children who were younger (compared to the mean) (b = -.01, p = .05), males (marginally, b = -.06, p = .10) and children who have higher social dominance scores (within classrooms) (b = .01, p = .02) were more likely to be initiators of conflict.

Target. Table 4 also presents the results of the role of target and relationship history between dyads. Dyadic level results suggest that there is a significant effect for conflict role as target and social play. That is, when a child conflicts with a partner with whom they frequently engage in social play, the focal child is more likely to be the target (b = .01, p < .01). At the individual level, results suggested that males (b = -.06, p = .05) and younger children (marginally, b = -.00, p = .06) were more likely to be targets of conflict. Additionally children

with higher social dominance scores (within classrooms) were more likely to be targets of conflict (b = .01, p < .01).

DISCUSSION

The purpose of this study was to examine how social dominance and resource control strategies used by preschool children impact affiliative and coercive interactions and relationships.

Teacher-rated Social Dominance and Resource Control

The first question of this study was to determine if two measures, both attempting to measure social dominance, were related. Results indicated strong partial correlations between Dodge & Coie's (1987) measure of social dominance and Hawley's (2003) measures of coercive resource control, prosocial resource control and bistrategic resource control. This is the first known work to attempt to correlate these two differing measures of social dominance and the results support the view that the two measures are highly related. Dodge and Coie's (1987) conceptualization of social dominance is one of proactive aggression. That is, social dominance is an aggressive strategy that is a means to an end to gain access to desired resources. Hawley's (1999) conceptualization of social dominance is one of multiple strategies (cf. one single, aggressive strategy) that, when used tactically, can be predictive of social competence. This is of particular interest, because while Dodge and Coie's (1987) measure of social dominance primarily relies on aggressive, albeit proactive, behaviors Hawley's measure uses multiple strategies, one of which is affiliative in nature (i.e., prosocial resource control). Past work has relied on these differing conceptualizations of social dominance as well. For instance, studies conducted by LaFreniere and Charlesworth (1983) and Strayer (1989; 1992) show the relationship between affiliation and social dominance through a lens of aggressive strategies, whereas multiple Hawley studies (e.g., 1999, 2002, 2007) suggest that social dominance needs to be understood as not just aggressive strategy use, but as a blend of multiple strategies. The high

correlations between these two measures provide support for the notion that *function* of the social dominance behaviors (e.g., to gain access to resources) rather than *form* (e.g., actual type of behavior) is key in understanding social dominance as a whole.

Social Dominance and Play States

The second goal of this study was to determine the relationship between social dominance and observed social play, parallel play and solitary play. Results indicated that social dominance, prosocial resource control and bistrategic resource control were positively correlated with social play, and that prosocial resource control was negatively correlated with solitary play. This is of particular importance, because although past studies have illustrated that children who are socially dominant are preferred by peers, and have access to more resources, no known work has studied this relationship using video taped observational data and both the Dodge and Coie and Hawley measures of social dominance. These findings provide support for previous results indicating that social dominance is associated with higher rates of affiliation in preschool populations (LaFreniere & Charlesworth, 1983; Strayer, 1989; 1992), and that children who use multiple strategies (e.g., coercive and prosocial) are preferred playmates of peers (Roseth et al., 2011). This provides further support for the affiliative nature of certain social dominance strategies, as well as suggests that social dominance as measured by Dodge and Coie may actually indicate children who are using multiple strategies, rather than only more aggressive strategies. Taken together, this growing body of work supports the notion that peer affiliation is associated with the use of multiple resource controlling strategies, perhaps using aggressive strategies to gain resources and affiliative strategies to maintain and mend relationships (Pellegrini, 2008; Roseth et al., 2011). Of course, it is not known whether bistrategic and prosocial strategies lend themselves to greater social play opportunities, or if children who

engage in greater rates of social play develop these strategies as a result of social play experiences. Future research should continue to examine how these processes interact developmentally to inform affiliative relationships and behaviors within those relationships.

Sociometric "Like" Nominations

The next goal of this study was to examine correlations between sociometric "like" nominations, observed social play, and social dominance. Results indicated that approximately two-thirds of preschoolers nominated children with whom they play as preferred peers, and this was consistent regardless of the social dominance status of the nominating children. Findings did not support the hypothesis that socially dominant peers may spend more time with preferred peers compared to less socially dominant children. However, the results suggest that most children tend to nominate children with whom they actually play. Sociometric measures are used throughout peer relations as an indicator or *preference* for other peers from preschool through adolescence (Cillessen, 2009). And although past work has illustrated that sociometric nominations represent actual affiliation. The results of the current study are important to the field because they provide evidence that children as young as preschool age can reliably use sociometric nominations to indicate with whom they play.

Similarity in Social Dominance States and Observed Social Play

Another goal of this study was to determine whether social dominance status impacted who plays with whom during social and parallel play using social network analysis. These results add to the literature by providing the first evidence as to how the nature of the dyadic relationship influences social play. While social network analysis has been used to determine affiliation in peer relationships in older children (Huitsign & Veenstra, 2012; Mercer &

DeRosier, 2010; Snijders et al., 2007; Veenstra & Stegich, 2001), this is the first known work to use the analytic technique to describe the relationship between preschool children's affiliative relationships based on social dominance and resource controlling behaviors. More specifically, this is the first known work to examine how social dominance and resource controlling strategies relate to affiliation. Past work has shown that social dominance is associated with increased peer regard (Roseth et al., 2011), and affiliation (LaFreniere & Charlesworth, 1983), however no work has examined this relationship through the use of social network analysis and examining multiple strategies (i.e., coercive, bistrategic, prosocial resource control). This is especially important when understanding the trajectory of conceptualization of social dominance. Early work assumed social dominance to be an individual level variable, reflecting characteristics of the individual. More recent work, however has shown that social dominance is dependent on the context, such that one's dominance status is relative to other's within a group. In spite of this new understanding, work has continued to measure social dominance as an individual level variable. However this study is the first study known to examine this group level variable with a group level analysis.

Results of the study, not surprisingly, indicated that same sex and similar age children were more likely to affiliate at the dyadic level during social play and parallel play. This is consistent with research on homophilies in preschool, suggesting that affiliation in preschool often results from similarity of surface features such as sex, race and age (Epstein, 1989; also see Vaughn & Santos, 2009).

Results also indicated that several individual behavioral characteristics were predictive of social and parallel play (rather than dyadic level variables). Children with higher social dominance status within their class were more likely to engage in social play, while children with

lower bistrategic resource control scores were more likely to engage in parallel play. Children who are high on social dominance within classrooms are typically well likely by peers (e.g., Hawley 2002; Hawley & Little, 1999; Roseth et al., 2011; Strayer & Noel, 1986) and social dominance has also been shown to be positively related to social competence (Vaughn & Waters, 1981). Therefore these children may be engaging in greater rates of social play as a result of their elevated levels of attraction to their peers in concert with the increased social competence it takes to maintain social interactions (compared to parallel or solitary play). Conversely, the use of coercion, especially after social structures such as social dominance hierarchies have already been formed, tends to be disliked by peers (Roseth et al., 2011), so these children may have less affiliative opportunities and thus find themselves in parallel play situations rather than social play due to their resource control strategy of choice.

Results also indicated that children with low scores on bistrategic resource control were more likely to play in parallel play compared to peers. Using bistrategic resource control as a strategy is associated with high levels of liking by peers (e.g., Roseth et al., 2010), and requires the use of multiple strategies to gain access to resources, possibly indicative of social competence. If a child is not particularly socially skilled in terms of resource control, he/she may not have as many opportunities to play in social play, and may find themselves on the outside, looking in. This may be while children low on bistrategic resource control find themselves around, but not playing with peers. Future research should examine this relationship in more depth however. For instance, it can be hypothesized that the current study's results are due to a deficit in social skills and the potential unattractiveness of low bistrategic resource controlling playmates, but next steps need to examine the relationship between the use of strategies and

social competence, as well as children's like or dislike of low bistrategic resource controlling peers.

Sociometric "Dislike" Nominations

In terms of conflict, this study measured the relationship between sociometric "dislike" nominations and actual conflict between the nominator and the nominated. Results showed only 21% consistency between the nomination and actual conflict. This suggests that something other than actual conflict between and individual child and a particular peer accounts for dislike. In this study, conflict was conceptualized as a competition for limited resources (Chen, Fesin & Tam, 2001; Hawley, 2002; Laursen & Hartup, 1997), and conflict does not always result in long term negative outcomes (e.g., reconciliation). It may be the case that conflict is not always a predictor of dislike then, because the nature of conflict may involve the use of multiple strategies (i.e. bistrategic resource control), resulting in a struggle for resources, but also reconciliation (Roseth et al., 2011). Additionally the current results indicated that a predictor of conflict was more time spent together in social play. Consistent with the relational model, children are having conflict with those whom they are around more frequently. Thus, conflict is not an indicator of dislike, but possibly an indicator of affiliation, and perhaps even preference. One question that remains is what do negative nominations represent, if they do not represent conflict. It may be the case that negative nominations are more associated with coercive behaviors, or a lack of frequent interactions. Next steps for research include determining what, if any, types of interactions negatively nominated peers have with their nominators.

Conflict also occurs less frequently after social dominance hierarchies are formed (Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011). It may also be the case that conflict is infrequent enough after social dominance hierarchies have been formed that

consistency between dislike nominations and conflict is harder to measure. Coercive resource control however, is predictive of dislike especially after social dominance hierarchies have formed, and more consistency may be seen between coercive behaviors and dislike nominations. Consistency between dislike nominations and actual conflict did not increase when using social dominance status as a predictor. Children with high social dominance scores were no better at nominating a match between disliked and actual conflict. This may be more support for the notion that disliked peers are not disliked due to dyadic conflict per se, but for another reason, such as coercive behaviors, the absence of prosocial behaviors, or the lack of post-conflict reconciliation (Roseth et al., 2011).

Similarity in Social Dominance and Observed Conflict

Another goal of this study was to determine whether social dominance status impacted who conflicts with whom using social network analysis. Results suggested that conflict is more frequent between children who engage in high amounts of social play together, and more frequent between children of the same sex. This findings provide support for de Waal's (2000) Relational Model, which suggests that conflict occurs when there are greater opportunities to have aggressive interactions and/or greater opportunities for reconciliation. Results of this study provided evidence for a homophily effect in terms of affiliation. That is, children who are more similar with respect to sex and age, are more likely to engage in social play with one another. When children engage in social play, they have greater opportunities to compete for desired resources (e.g., toys, themes of play), which may result in conflict. Additionally if peers engage in greater rates of social play with one another, their dyadic relationship is primarily affiliative in nature, and thus opportunities for reconciliation may be more likely. Future research should

investigate post-conflict reconciliation tendencies and use social network analysis to determine how reconciliation impacts affiliation and conflict in dyadic relationships.

Consistent with previous research, results indicated that younger children and boys were more likely to engage in dyadic conflict, compared to older children and girls (Clark-Lempers, Lempers & Ho, 1991). Sex differences were not altogether clear, however, due to reasons such as small sample sizes, making differences difficult to detect (Hay, Caplan & Nash, 2009). Some research does suggest though that children's socialization may impact the degree to which they are involved in conflict. For instance, girls' aggression tends to be ignored more than boys, and girls tend to relinquish objects of dispute more quickly than boys (Fagot & Hagan, 1985; Ross, Tesla, Kenyon & Lollis, 1990). This may result in fewer conflicts due to ignored aggression and the lack of persistence in contests over resources.

At the individual level, results also indicated that children with high coercive resource controlling scores were also more likely to engage in dyadic conflict. Coercive resource control measures resource control attempts that are aggressive in nature. Using aggressive behaviors alone (without the use of prosocial behaviors) is not associated with acceptance especially after social dominance hierarchies are established (Roseth et al., 2011). Additionally, children who are low on acceptance ratings tend to engage in increased rates of conflict (Putzllaz, Hellstern, Sheppard, Grimes & Flodis, 1995). It may be the case then that children who are engaging in coercive resource controlling strategies are engaging in behaviors that are disliked by peers (i.e., proactive aggression), are disliked by peers, and are engaging in greater conflict in order to attempt to gain access to desired resources. This pattern may be cyclical, in that the aggressive resource controlling attempts correlate with continue dislike by peers, and this dislike by peers resource for resources, causing a need for continued frustration and aggressive

attempts at resource control. Future research is needed however to determine if this relationship is causal, or if these variables are moderating the relationship between coercive resource control and conflict.

Lastly, at the individual level, children with low bistrategic resource controlling scores were more likely to engage in dyadic conflict. According to Resource Control Theory, the ability to use multiple strategies in different contexts may be suggestive of social competence (Bukowski, 2003; Hawley, 2002; Hawley, 2007; Underwood, 2003; Vaughn, 1999). Additionally, numerous studies have indicated that conflict decreases after social dominance hierarchies form within a group (Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011). Children engaging in low rates of bistrategic resource control may be low in measures of social competence, which could potentially be evident by increased rates of dyadic conflict (compared to peers) after social dominance hierarchies have formed, consistent with the data in the current study, which was taken in the last months of a year round preschool program.

Social Dominance Status and Conflict Role

The final goal of this dissertation was to use social network analysis to examine how social dominance may impact one's role within conflict (e.g., initiator or target of conflict). Results did not reveal any significant result suggesting that social dominance or resource control strategies do not predict one's role in dyadic conflict. This is surprising because research has suggested that conflict late in the term (i.e., after social dominance hierarchies are stable) is disliked, and thus it was hypothesized that those initiating conflict may be disliked, and not particularly strategic. Additionally, individual who are considered to be socially dominant and strategic resource controllers were thought to be attractive targets for conflict, given their control over desired resources. However the results of the current study do not support these hypotheses.

It may be the case that the infrequent nature of conflict made these constructs difficult to capture. Future research needs to investigate how roles in conflict are influenced by status.

At the individual levels, results indicated that younger children, boys and children with high social dominance scores were more likely to initiate *and* be the targets of conflict. This may suggest that the lack of results using social network analysis to determine conflict role may be the result of the general composition of those engaging in conflict. That is, the profile for initiators and targets of conflict are similar (i.e., boys, younger, and high on social dominance scores), and because of this, dyadic analysis may not show any differences in role due to the similarity in characteristics of the individuals engaging in conflict.

Practical Implications

There are several practical implications related to the results of this study. First, in a general sense, this study provides a window into the development of dyadic peer relationships, based on interactions, both affiliative and coercive in nature.. Understanding how and why children form relationships with peers is important because it sheds light on the beginning stages of peer relationships. At the individual level, this work helps make teachers and parents aware of potential correlates and behavioral modifications (e.g., resource controlling strategies, amount of social play with particular peers) associated with different types of play, the frequency of peer conflict, and between whom peer conflict occurs. We know that play is important and develops a variety of strategies and these may be the characteristics is related to increase in play opportunities.

Secondly, this study's results provide evidence that children do indeed have preferred playmates and do actually play with those playmates. When facilitating interactions in classrooms and in play situations, teachers and parents should be sensitive to the child's intent in

picking playmates, and also provide opportunities for socialization with other peers, as children may continue to play with a particular child because he/she likes them but may shut out other opportunities because they do have a preferred playmate.

Third, this study suggests a need for parents and teachers to understand the reasons for conflict among peers, recognizing that they are not necessarily negative or maladaptive. Given that conflict occurs between playmates, and negative nominations do not relate to conflict, we must consider, what are the benefits of conflict? Peer relationships are likely benefiting from these interactions, such as staying together after conflict, and reconciling. Thus, allowing children to have conflict, and resolve conflict together rather than with intervention is likely aiding in the development of important social and emotional skills.

Finally, similar to understanding that conflict is not necessarily a negative type of interaction, and may in fact be beneficial, it is also important to recognize the reason or developmental purpose behind different strategies used in resource control. So, for example, aggressive toy taking may be followed by reconciliation behaviors, which ultimately may alleviate some of the negative association with the coercive interaction. As teachers and parents, it is important to recognize the interaction (e.g., snatching a toy) nested within the relationship (e.g., friendship with reconciled).

Limitations and Conclusions

There are several limitations that should be acknowledged when interpreting the results of this study. First, the data for this study was collected in an eight-week period in the spring term of a year round preschool program. The time frame resulted in each child being observed approximately six times each, for a 10-minute period, or approximately 60 minutes over the

course of eight weeks. Increasing the amount of time each child is observed would likely provide a richer picture of the nature of dyadic relationships between peers.

A second limitation is the generalizability of the results due to the time in which data collection took place. The current study collected data during the end of the spring term of a year round preschool program. Previous research has shown that resource controlling strategies vary is use and acceptance during a school term (Roseth et al., 2011), and that conflict fluctuates in frequency over time (Pellegrini et al., 2007; Roseth et al., 2007; Roseth et al., 2011). The results may illustrate the nature of dyadic relationships and social dominance for a static period of time, but might not be generalizable in terms social play partners, social dominance and resource controlling strategies, and conflict roles, social dominance and resource controlling strategies over the course of the school year. For instance, this study's results found that the roles of conflicting dyads (i.e., initiator and target) are similar in respect to social dominance and resource controlling strategies in the spring. However data collecting including the fall term may show unique relationship dynamics due to the unstable social dominance hierarchy early in group formation. Additionally research has suggested that certain strategies, such as coercive resource control has been associated with peer preference in the fall term but then associated with peer dislike in the spring term (Roseth et al., 2011). Future research should continue to use social network analysis to capture the unique relationship between coercive and affiliative dyads in preschool, but do so over a longer period of time to determine how already established behavioral changes over time impact the nature of the dyadic relationship.

Finally the sample used in the current study may limit the generalizability of the results. Head Start centers are unique in their demographics because their purpose is to provide preschool for low-income populations. The homogeneity of the sample then, is considered to be

a limiting factor. For instance, this sample had approximately 300 conflicts over the course of an eight-week period. This number may be large in comparison to data from other samples (Roseth et al., 2011). The relationship between resource controlling strategy, social dominance and conflict may vary as a function of the potentially more normative nature of conflict in this particular sample. Future research needs to extend this work to a more diverse sample to increase the generalizability of its results.

Despite its limitations, the study contributes to literature in several important ways. First, this study provides evidence that Hawley's (2002) measure of resource control strategies and Dodge and Coie's (1987) measure of social dominance are similar in construct. Although social dominance tends to emphasize proactive aggression while resource control strategies differentiate between coercive and prosocial forms, the two constructs were highly correlated. This suggests that the underlying characteristics of being socially dominant and/or controlling of resources are interrelated, and require multiple, related strategies. This provides a more complete picture for the operationalization of the social dominance as defined by the controlling of desired resources.

Second, this study provides evidence through social network analysis that preschool children affiliate based on social dominance homophiles. Social dominance represents a variety of behaviors that result in social dominance hierarchies, and this study shows that children of similar social dominance status' affiliate together. This provides insight as to group formation and affiliation in preschool peer relations. Additionally, some of the behaviors captured by social dominance measures and resource control measures are similar to those captured by perceived popularity measures that are used in the elementary school years. The current study provides evidence for affiliation based on these behaviors, and may be the first evidence of the formation

of groups based on characteristics related to perceived popularity. Future research should examine the affiliative nature of children over time to determine if affiliation based on social dominance status in preschoolers is correlated with affiliation based on perceived popularity in early and middle childhood.

A third contribution of this study is providing evidence that actual dyadic conflict does not equate to dislike among preschool children. Traditional views of conflict have equated the aggressive nature of resource competition as unskilled and maladaptive (Brook & Newcomb, 1995; Bukowski, 2003; Coie & Dodge, 1998; Coie, Dodge & Kupersmidt, 1990). However recent literature has suggested that resource control attempts are adaptive (for a review, see Hawley, 2007) and that using difference strategies, such as resource controlling strategies and reconciliation are associated with peer preference in preschool samples (Hawley, 2002; Hawley & Little, 1999; Roseth et al., 2011). The results of this study provide further evidence that engaging in conflict with peers does not necessarily result in a disliked peer status. This also suggests that future research should continue to unpack the relationship between conflict and peer acceptance, as well as behavioral correlates related to low status peers.

2 3 4 5 6 7 8 1. Social dominance score .87** .72** .58** .85** .25** -.08 -.07 2. Resource control .70** .56** .83** .18* -.05 -.05 3. Coercive resource control .15** .83** .11 -.04 .02 4. Prosocial resource control .62** .31** -.14 -.17* 5. Bistrategic resource control .25** -.05 -.09 6. Social play (%) 7. Parallel play (%) 8. Solitary play (%)

Partial Correlations for Teacher-rated Dominance, Resource Control, and Observed Play

* $p \le .05$. ** $p \le .01$.

Relative Social Dominance, Resource Control, and Play Type

Independent Variables	Social Play	Parallel Play
Level 1		
Social dominance	-0.58 (0.40)	0.12 (1.16)
Prosocial resource control	-0.16 (0.32)	1.15 (0.92)
Coercive resource control	-0.21 (0.39)	0.78 (1.11)
Bistrategic resource control	-0.52 (0.42)	-0.58 (1.45)
Same sex	2.71** (0.55)	5.02** (1.60)
Absolute age	-0.12** (0.05)	-0.19* (0.09)
Level 2		
Social dominance	0.60* (0.29)	0.11 (1.34)
Prosocial resource control	-0.31 (0.48)	2.38 (1.47)
Coercive resource control	-0.20 (0.57)	2.81 (2.04)
Bistrategic resource control	0.15 (0.76)	-0.11 (0.05)*
Sex	-0.41 (0.33)	-6.44 (2.48)
Age	-0.01 (0.02)	-0.07 (0.08)
Intercept	3.17** (0.44)	11.75** (2.64)

Note. Standard errors are in parentheses. * $p \le .05$. ** $p \le .01$.

Relative Social Dominance, Resource Control, and Conflict

Independent Variables	Conflict
Level 1	
Social dominance	04 (.03)
Prosocial resource control	01 (.02)
Coercive resource control	.02 (.03)
Bistrategic resource control	00 (.05)
Same sex	.07 (.03)
Absolute age	.00 (.00)
Social play partners	.01** (.00)
Parallel play partners	00 (.00)
Level 2	
Social dominance	.07 (.04)
Prosocial resource control	.11 (.06)
Coercive resource control	.18* (.08)
Bistrategic resource control	26* (.11)
Sex	00 (.00)
Age	11 (.05)
Intercept	.50** (.12)

Note. Standard errors are in parentheses.

 $p \le .05$ $p \le .01$

Conflict Role as Initiator or Target and Relationship History

Independent Variables	Initiator	Target
Level 1		
Social dominance	-0.00 (0.00)	-0.00 (0.00)
Prosocial resource control	-0.01 (0.02)	-0.01 (0.02)
Coercive resource control	0.02 (0.02)	0.01 (0.03)
Bistrategic resource control	-0.00 (0.03)	-0.01(0.03)
Same sex	0.04 (0.03)	0.04 (0.03)
Absolute age	0.00 (0.00)	0.00 (0.00)
Social play partners	0.01** (0.00)	0.01** (0.00)
Parallel play partners	-0.00 (0.00)	-0.00 (0.33)
Level 2		
Social dominance	0.01* (0.00)	0.01** (0.00)
Prosocial resource control	-0.00 (01)	-0.00 (0.03)
Coercive resource control	0.02 (0.02)	-0.00 (0.05)
Bistrategic resource control	-0.00 (0.02)	-0.03 (0.06)
Sex	-0.06 (0.04)	-0.06* (0.03)
Age	-0.01* (0.00)	-0.00 (0.00)
Intercept	0.18** (0.04)	0.20** (0.04)

Note. Standard errors are in parentheses. * $p \le .05$ ** $p \le .01$ REFERENCES

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