

ABSTRACT

Title of thesis: THE EFFECTS OF OBSERVED FRIENDSHIP
FORMATION ON GROUP LEVEL PEER
EXPERIENCES: A STUDY OF BEHAVIORALLY
INHIBITED PRESCHOOLERS

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Early social withdrawal places children at a greater risk for later internalizing disorders and peer difficulties. However, positive friendships can serve as a buffer against this trajectory. Currently, very little is known about if friendships develop between preschool aged withdrawn children, and how this affects their group level peer processes. The purpose of the current study was to examine whether socially withdrawn children who made a friend demonstrated gains in social skills in their preschool classrooms over an 8-week period during which they had participated in an intervention designed to increase social interaction and decrease social reticence. Overall, the children who made a friend over the intervention period had less observed reticent behavior and more prosocial behavior in their preschool classrooms both before and after the intervention period. These children entered the intervention with more advanced social skills and were able to utilize them to develop a meaningful friendship.

THE EFFECTS OF OBSERVED FRIENDSHIP FORMATION ON GROUP
LEVEL PEER EXPERIENCES: A STUDY OF BEHAVIORALLY INHIBITED
PRESCHOOLERS

by

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Introduction

Social Withdrawal

For most children, the preschool years are one of the most formative and fundamental periods in their development. During this time, children expand their cognitive and social-cognitive (e.g., theory of mind) abilities, work on managing and experiencing their emotions, and begin to develop moral principles. This period is also often when a child learns how to navigate the social world of the peer group. While the majority of children enter into this new world with an eagerness to play and interact with peers, a subset of children is wary to initiate and engage in social interaction. This wariness may have its origins in dispositional traits (e.g., behavioral inhibition; shyness; Rubin, Coplan, & Bowker, 2009) and may evolve into the consistent display of social withdrawal when the child encounters both unfamiliar and familiar peers (Coplan & Rubin, 2010). Withdrawal from the social company of peers that derives from dispositionally-based behavioral inhibition and the inability to regulate emotions is often accompanied by feelings of fear and anxiety when in social company (Rubin, Bowker, Barstead, & Coplan, 2018).

In contrast to social withdrawal that may have its origins in dispositional traits pertaining to emotions and emotion regulation, *active isolation* is a developmental construct that derives from peer rejection. That is, some children spend time alone when in social groups because they are actively disliked and rejected by their age-mates (Rubin et al., 2015). For example, the display of aggressive behavior by young children is often accompanied by peer rejection and exclusion (Rubin, Bukowski, & Bowker, 2015). Over time, however, children whose social withdrawal derives from behavioral inhibition and

fearfulness, become increasingly viewed by peers as socially inappropriate, and by the preschool years, their withdrawal may result in active isolation (Rubin et al., 2018).

Additionally, *social withdrawal* is related to other constructs that involve the evocation of fear in the presence of social company (e.g., behavioral inhibition, shyness, and reticence; Rubin et al., 2018). *Behavioral inhibition* (BI) refers to constitutional bias to respond to unfamiliar events by showing anxiety (Kagen, 1989). *Shyness* is defined as excessive wariness, unease, and self-consciousness in contexts of social novelty or perceived social evaluation (Crozier, 1995). *Reticence* has been defined as the frequent spending of time observing, unoccupied, or watching others from afar when in familiar social company. While the present work focuses on the construct of social withdrawal, it also draws on literature from the previously described interrelated domains.

It is important to note that under all the wrong circumstances, social withdrawal can develop in very young children and remain relatively stable through adolescence. For example, in one of the first studies of the origins, correlates, and consequences of social withdrawal, children who were identified as highly withdrawn in kindergarten maintained their withdrawal through the early school years and were subsequently found to be more lonely, depressed, and to have lower self-perceptions of social competence in later childhood (Rubin, Chen, McDougall, Bowker, & McKinnon, 1995). Indeed, the stability of social withdrawal may continue into adulthood. A national longitudinal study conducted in New Zealand revealed that children who were shy at age 3 were non-assertive and had little desire to form social bonds at age 26 (Caspi et al., 2003).

As social withdrawal continues to develop over middle childhood and adolescence, it becomes associated with increasingly negative outcomes and places the

withdrawn child at risk for later maladjustment. For example, socially withdrawn children are at a higher risk for developing such internalizing symptoms as rejection sensitivity, negative self-regard, loneliness, anxiety and depression (Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; Nelson, Rubin, & Fox, 2005; see Rubin et al., 2009 for a review). This trajectory is exacerbated when anxiously withdrawn children are also experiencing peer exclusion (Gazelle & Ladd, 2003). For example, in a study of children from the United States, Russia, and China, beginning from ages 4 to 6 years old, it was found that withdrawn children were actively disliked by their peers (Hart et al., 2000). The relation between social withdrawal and negative peer relationships strengthens with age and may lead to later victimization. By middle school, children with symptoms of social withdrawal are experiencing much more victimization than their typical peers (Rubin et al., 2009).

Due to the long-term negative trajectory of social withdrawal and the increased risk for a multitude of negative consequences, it is imperative to intervene in the lives of socially withdrawn children at a very early age. Shyness and social withdrawal become progressively more noticeable to the peer group over time, which leads to the association between withdrawal and peer rejection increasing with age (Ladd, 2006). It becomes significantly more difficult to affect change in children with social and emotional difficulties later in childhood; consequently, early intervention programs are necessary to help these children decrease their withdrawal and change their future trajectories of negativity (Heckman, 2002).

Cool Little Kids (CLK) is one current intervention program for parents aimed at preventing internalizing disorders among behaviorally inhibited/socially withdrawn

children (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005). This program focuses on providing psychoeducation to parents about the origins and development of internalizing disorders in children. CLK teaches parents strategies to modify their preschool child's fears and distress, as well as those of their own, and encourages in vivo exposures for the child. *Cool Little Kids* (CLK) has proved to be successful in reducing future anxiety disorders for withdrawn children (Rapee et al., 2005). In a follow up study 11 years later, the girls who participated in CLK as preschoolers displayed fewer internalizing disorders, lower parent reported anxiety symptoms, and less self-reported life interference as compared to the group of teenagers who made up the control group as preschoolers (Rapee, 2013). Given that CLK is a brief and low-cost intervention, these short term and longitudinal findings are promising. However, this program may be more effective for some children than others.

The current study draws participants from the *Turtle Program*, another early intervention program aimed at redirecting socially withdrawn children off maladaptive trajectories. In contrast to CLK, the Turtle Program includes interventions for both preschool *children* and their parents (Chronis-Tuscano et al., 2015; Chronis-Tuscano, Danko, Rubin, Coplan, & Novick, 2018). The parent component is an adaption of Parent Child Interaction Therapy (PCIT, Eyberg, Nelson, & Boggs, 2008) including psychoeducation and in-vivo parent-child coaching. The child component uses an adapted version of Social Skills-Facilitated Play (SSFP, Coplan, Schneider, Matheson, & Graham, 2010) to encourage social interactions, improve social problem solving, and to regulate emotions in putatively anxiety inducing social situations. Preliminary evaluations of the Turtle Program have shown promising results, including improvements

in both parent and teacher reported anxiety symptoms (Chronis-Tuscano et al., 2015). Additionally, the Turtle Program has shown treatment effects in the preschool classroom. Children participating in the Turtle Program increased in-school *observed* group play behaviors and social initiations made to peers (Barstead et al., 2018). Given that anxious withdrawal has a significant impact on social and non-social behavior in the peer group (Barstead et al, 2018), it remains to be seen how the Turtle Program affects the development of *dyadic* relationships in anxiously withdrawn preschoolers.

Friendship

Friendship can be conceptualized as the strong, positive affective bond that exists between two persons and that are intended to facilitate the accomplishment of socioemotional goals (Hartup & Stevens, 1997). Friendships are among the crucial human experiences that help promote a child's mental, physical, and emotional development and well-being. Friendships allow the provision of emotional and social support, instrumental help, warmth and affection, and security (Rubin, Bukowski, & Bowker, 2015). Between 60% and 80% of children and adolescents are reported to have a mutually agreed upon best friend (Laursen, Bukowski, Aunola, & Nurmi, 2007).

Friendships have varying characteristics depending on factors such as age, gender, and ethnicity. However, there are similarities to be found in all friendships. To be characterized as a friendship, each member of a given dyad must affirm the existence of the relationship, and each partner should view the relationship as pleasant, fun, and likable. In addition, the relationship must be formed and maintained voluntarily (Rubin, Fredstrom, & Bowker, 2008). In contrast to other relationships, such as those with family

and generally with peers, friendships are more likely to be egalitarian and voluntary (Rubin et al., 2015).

Friendships vary greatly as a function of age and begin to develop during the preschool years. Preschool aged children are capable of forming mutual friendships that consist of the sharing of feelings, play, mutual affection, and mutual concern (Howes & Lee, 2006). While young children are able to form friendships, the development and maintenance of these friendships is highly dependent on such social-cognitive and social skills as perspective taking, communication and social problem solving skills (Brownell & Brown, 1992). Friendships in preschool aged children are unique in that friends are chosen on the basis of their interactive play. Early friendships are largely based on companionship and compatibility of play style (Howes, 2009; Rubin, Lynch, Coplan, and Rose-Krasnor, 1994). Friendships developed during the preschool period show significant stability. For example, in one study, Gershman and Hayes (1983) found that two-thirds of preschoolers who had a mutual friend maintained that friendship when asked to nominate their friends 6 months later.

While early friendships may seem inconsequential because they are largely play based, they actually play a significant role in child development. Friendships during the preschool years are very important in the growth of many social skills. When interacting with friends, children are developing their social and moral understandings, conflict resolution and cooperation skills, and learning how to manage both relationships and emotions (Dunn, 2004). These initial friendships may also be important for the development of future friendships. While there have been relatively few studies examining the trajectory of early friendships, preliminary longitudinal studies have found

stability in the friendship quality of children from early childhood into adolescence (Kramer & Kowal, 2005). Additionally, relationship experiences and social understanding in early friendships predict later friendship quality (Dunn, 2004). While this field of research is still emerging, it appears that having good quality friendships during the toddler years predicts later good friendships.

Although observational methods to study friendships are common in the middle childhood and adolescent years, most current research on early childhood friendships uses parent or teacher report as the method of determining both who a child is friends with and the quality of the child's friendship (Rubin, Bukowski, & Bowker, 2015). Exceptions to the reliance on parent and teacher reports do exist, however. Several researchers have examined friendships in young children observationally. Howes (1988) has determined the existence of friendship *observationally* using "friendship scans" during which children are observed in five minute intervals over a free play period. Children are identified as being friends if the dyad is (1) within 3 feet of each other, (2) engaged in interactive social play, and (3) expresses shared positive affect during at least 30% of the friendship scans. This criterion has been used in much of the observational work on early childhood friendships. For example, Howes and Phillipsen (1992) used this definition and followed one-year-old infants in the daycare setting until age 4. This work indicated that friendships between pairs of girls and cross-gender friendships were more likely to be maintained longitudinally than boy-boy friendships. Additionally, Hinde and colleagues created a criterion for "strong associates" in preschool aged children consisting of the pair spending at least 30% of the observation period together over multiple observation periods (Hinde, Titmus, Easton, & Tamplin, 1985). Some

observational work has been done identifying friendships in early childhood. However, the vast majority of this work uses a non-selected sample of typical children, and no work to date has examined the observational *involvement* of friendship in socially withdrawn preschoolers.

As children grow older, friendships become very important for personal wellbeing. Primarily, friendships are a crucial source of social and emotional support. Children with friends consistently report higher levels of self-esteem and self-worth, and lower levels of loneliness than their peers without friends (Bagwell, Newcomb, & Bukowski, 1998). Support from friends is especially important in times of stress or transition and can buffer against many negative effects. For example, having a mutual friend can protect the child from peer-victimization, internalizing, and externalizing problems (Erath, Flanagan, & Bierman, 2007). Additionally, friendships are beneficial for academic achievement. In comparison to rejected children, children with friends have higher grades, satisfaction with school, motivation to learn, and perceived academic competence (Wentzel, 2017). The importance of developing and maintaining friendships begins in early childhood, when these relationships aid in the growth of social and emotional skills, and becomes increasingly important as the child ages, when friendships serve as sources of support, buffer against negative effects, and promote academic achievement.

Friendships in Socially Withdrawn Children

The impact of social withdrawal on the development and maintenance of friendships can be best understood using Robert Hinde's model of dialectical relations (Hinde, 1987; Rubin, Bukowski, & Bowker, 2015). Hinde's model theorizes that social

interactions and relationships are affected by individual characteristics, the groups within which interactions and relationships occur, and the culture within which social interactions and relationships occur. Hinde argues that these different “levels” of the social enterprise interact in meaningful ways. *Individual characteristics* including temperament, sociability, reputation within the peer group, and self-perceptions of social skills impact the way that the socially withdrawn child enters a social interaction or relationship. Moving outside of the individual level, dispositionally-based social withdrawal impacts both the quantity and quality of interactions in dyadic relationships. In turn these interactions determine, in part, the quality and quantity of relationships that a socially withdrawn child is able to form and maintain. Children who are characterized as being socially withdrawn tend to interact with the peer group in different ways than their more sociable peers. Generally, socially withdrawn children tend to move away from the group in interactions, which may lead to increased levels of peer victimization.

The impact of social withdrawal on peer relations and interactions, as suggested by Hinde’s theory, has been studied throughout the lifespan. By preschool, children who are labeled as socially withdrawn, as observed in a naturalistic setting, or behaviorally inhibited, as studied in the lab setting, may face challenges in forming positive peer relationships. Nelson, Rubin, and Fox (2005) examined the relation between observed behavioral inhibition, peer acceptance, and self-perceptions in children ages 4 to 7 years old. This study revealed that both reticence and solitary-passive withdrawal were negatively related to *observed* peer acceptance at both ages 4 and 7. These findings were stronger for boys than for girls. Specifically, reticent behavior in boys was negatively associated with both observed and perceived peer acceptance at both ages 4 and 7 years,

as well as with self-perceptions of physical and cognitive competence (Nelson et al., 2005). Similarly, reticent preschoolers direct fewer social interactions to peers than their non-withdrawn peers (Chen, DeSouza, Chen, & Wang, 2006; Rubin & Krasnor, 1986). Reticent and solitary-passive behaviors heavily impact the ways that socially withdrawn preschoolers interact with their peers and the ways that their more sociable peers perceive them.

While researchers have studied the relations between peer acceptance and rejection and preschool social withdrawal, much less is known about the *friendships* of these children. Most of what is known about the friendships of socially withdrawn children derives from samples of older children and adolescents. In fifth-grade children, socially withdrawn young adolescents struggle with creating and maintaining positive peer relationships (Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). Because these children typically withdraw from and avoid their peers, they are often found on the periphery of the group (Rubin et al., 2018). With increasing age, withdrawn behavior becomes progressively viewed as abnormal to their peers and predicts increases in levels of both peer victimization and rejection (Molina, Coplan, & Younger, 2003). This leads to a negative cycle wherein withdrawn children become victimized and so they move further away from the group to avoid bullying; by increasing their solitary behavior, they increase their vulnerability to victimization (Kochenderfer-Ladd, 2003).

Despite increased levels of peer victimization and rejection, socially withdrawn children are just as likely as their nonwithdrawn peers to have a mutual best friendship. However, in following the principle of homophily (Hinde, 1987), withdrawn children are

more likely to have friends who are also withdrawn and victimized by their peers.

Additionally, some researchers have found that relationships between socially withdrawn friends are of a lower quality than those of their peers (Rubin et al., 2006; Schneider & Tessier, 2007).

Socially withdrawn children also appear to understand best friendships in much different ways than typical children. Withdrawn children think about friendships in relatively immature ways (Schneider & Tessier, 2007). In a sample of 10 to 12-year-old children, withdrawn children were more likely to focus on their own needs and tangible benefits without regard to the needs of their friends. In particular, they focused on receiving help and support from their friends, which reflects the fact that socially withdrawn children need greater help in social settings than other children. Moreover, withdrawn children attributed their friendships to factors that required no assertiveness on their part, such as developing friendships based on living near each other for a long period of time. They also had significantly less intimacy in their relationships when compared to typical peers. While a comparative typical sample of children increased the maturity of their friendships with age, there was a lack of progression in friendship quality among the withdrawn participants (Schneider & Tessier, 2007). This reveals that when some anxiously withdrawn children are forming friendships, they could be of a lower quality and lower maturity level than those of nonwithdrawn children.

These lower quality friendships developing between pairs of shy children may be detrimental to the well-being of both children. Having a socially anxious friend has been found to increase levels of social withdrawal. In fifth grade, anxiously withdrawn children with similarly withdrawn friends were more likely to demonstrate increases in

social withdrawal across the transition from elementary-to-middle school (Oh et al., 2008). The increase in withdrawal may be accounted for, at least partially, by co-rumination. Children with internalizing disorders, such as anxiety, engage in higher levels of co-rumination. That is, they tend to discuss the same problem repeatedly, speculating about problems, and focusing on negative feelings (Rose, 2002). Pairs of friends who engage frequently in gossip are more likely to be anxiously withdrawn and have higher levels of friendship conflict (Menzer et al., 2012). Focusing on shared negativity may influence anxiety levels in pairs of socially withdrawn friends and cause the dyad to withdraw farther from the group.

However, the positive friendships of socially withdrawn children may serve as a much-needed protective factor against some negative outcomes. Children and adolescents who have highly supportive friendships are less likely to be socially withdrawn and, importantly, demonstrate a larger decline in social withdrawal over time (Oh et al., 2008). Furthermore, friendship can protect against peer victimization. Children who lack a mutual best friend are more likely to be victimized by their peers; in turn, victimization predicts internalizing and externalizing difficulties (Hodges, Boivin, Vitaro, & Bukowski, 1999).

In addition to buffering against increases in social withdrawal and peer victimization, friendships also contribute to more optimal emotional development in socially withdrawn children. Having a high-quality mutual friendship decreases feelings of loneliness and increases levels of self-esteem in withdrawn children and adolescents (Fordham & Stevenson-Hinde, 1999; Markovic & Bowker, 2017). For initially anxious children, having negative friendships with similarly socially withdrawn friends can lead

to poor outcomes such as increased levels of social withdrawal. However, positive and supportive friendships can be very beneficial for socially withdrawn children and lead to decreased social withdrawal and peer victimization.

Current Study

The purpose of the current study was to investigate the involvement in friendships of behaviorally inhibited, anxiously withdrawn preschool-aged children. The children partook in small groups of initially unfamiliar peers over an 8-week period. During this period, the children participated in an intervention program designed to decrease social anxiety and socially reticent behavior when among peers.

This study addressed several gaps in the literature on friendship among socially reticent and withdrawn preschoolers. First, there have been very few studies of friendship *involvement* in samples comprising socially reticent preschoolers (ages 3.5-5 years). Although previous work has focused on the friendships of socially withdrawn children attending elementary-, middle- and high school, very little is known about if, and how, friendships develop between preschool aged socially withdrawn children. Second, the current study filled the extant gap in *observational studies* of how socially anxious/reticent preschoolers interact with initially unfamiliar peers. Furthermore, in this study, I examined how and whether the children form friendships when they are in the company of *similarly shy/reticent age-mates*. The observational methodology allowed an examination of the types of behaviors and the frequency of social initiations that occur between withdrawn preschoolers.

The first aim of the current study was to compare the in-school social behaviors of withdrawn preschoolers who made a friend with their similarly withdrawn peers to the withdrawn preschoolers who did not make a friend over an 8-week period during which they had participated in an intervention designed to increase social interaction and decrease social anxiety, shyness, and social reticence (Chronis-Tuscano et al., 2015). In

the present study, and similar to previous studies of friendship in the preschool years (e.g. Howes, 1988, Dunn & Cutting, 1999; Howes & Phillipsen, 1992), friendship was defined by establishing whether a child spends significantly more time with, and engages in more successful social initiations with *a particular peer* than would be expected by chance alone. *It was hypothesized that the children who made friends with their peers during the intervention period would also be observed to become more group oriented and less reticent in the preschool setting from pre- to post-intervention.* That is, the children who made friends during the intervention were predicted to show increased quantities of group play and decreased quantities of reticent behavior during their post-intervention preschool free play observations when compared to the children who did not make a friend.

The second aim of the study was to compare teacher perceptions of social adjustment between the children who created a friendship during the 8-week intervention period to the children who did not make a friend. It was hypothesized that the children who developed a friendship over the intervention period, as assessed by time spent together and successful social initiations, would be recognized as better adjusted by their preschool teachers on the Child Behavior Scale (CBS; Ladd & Profilet, 1996) from pre- to post-intervention. The children who made a friend would be rated by their teachers as less asocial and anxious-fearful, as well as more prosocial, as compared to the children who did not make a friend during the intervention.

These hypotheses, based on the Robert Hinde model (1987), suggest that improvements at the dyadic relationships level can promote positive effects at the group interaction level. Through the intervention period, the children are learning skills that increase individual feelings of self-efficacy in social situations. This impacts the way that

socially withdrawn children develop relationships with their peers. The children who are able to successfully utilize their learned skills and new feelings of social self-efficacy to develop a dyadic friendship will have more success in the group setting of their preschool classrooms.

Methods

Participants

The participants were drawn from an initial sample of 75 preschool-aged children who participated in an NIMH-funded 8-week intervention program for behaviorally inhibited children and their parents (Chronis-Tuscano & Rubin, PIs- Multicomponent Early Intervention for Socially Inhibited Preschool Children). Each eligible, participating child had a parent-reported *Behavioral Inhibition Questionnaire* (Bishop et al., 2003) score at or above the 85th percentile, and had not been diagnosed with an Autism Spectrum Disorder or with selective mutism. Fifteen of the 75 eligible children were excluded from analyses for missing more than 2 treatment sessions, or because their cohort comprised fewer than 3 children during over half of the treatment sessions. The final sample included 60 children aged 3.5 to 5.25 years old (35 girls, Mage = 52.57 months, SD = 5.82 months). The sample consisted of 58% White, 20% mixed race, 15% Asian, and 7% African-American children. Forty-two percent of the children came from families with a yearly household income of less than \$150,000.

Procedures

Participating families received 8-weekly parent and child group sessions in a university laboratory setting. During the weekly child intervention sessions, 10-to-20 minute free play sessions were video recorded before the training sessions took place.

In addition to the laboratory observations of free play, children were also observed, during free play, in their preschools. The children' schools and teachers were contacted after obtaining consent from parents. Trained research assistants observed each child during classroom free play periods for 30 minutes on two separate occasions at

baseline (prior to the intervention), and again after the 8-week intervention period.

Teachers completed assessments of participant behavior at baseline and post-treatment.

Measures

Observational measure of children's friendships A modified version of the Play Observation Scale (POS; Rubin, 2008) was used as an *observational measure of friendship* between children. Eight weekly free play sessions lasting approximately 10 minutes long were video recorded for 12 cohorts of children. Each cohort comprised between 5 and 7 children. The sessions were separated into three time points; beginning, middle, and end of the intervention. The beginning period included Weeks 1 and 2, during which children learned eye contact and how to introduce themselves to others. The middle period included Weeks 3, 4, and 5, during which children learned about communicating with friends, expressing feelings, and bravery in fearful situations. The final period included Weeks 6, 7, and 8, during which the children learned more advanced social skills including what to do when someone doesn't want to play with you and how to work together cooperatively with peers.

The video recordings were coded by trained graduate and undergraduate research assistants for (a) total time spent in social play and parallel play, and (b) social initiations made from the target child to each child in the group. *Social play* included engaging in an activity with another child in which there is a common goal, or having a conversation with another child. *Parallel play* included engaging in a similar activity when physically within arm's length, but not directly with, other children. *Social initiations* were coded as successful or unsuccessful based on previous work by Stoneman, Brody, and McKinnon (1984). A *successful* social initiation comprised positive verbal and nonverbal responses

to initiations. Negative verbal or nonverbal responses, no response, and inappropriate, uncomplimentary, or aggressive responses were considered to be *unsuccessful initiations*. Each of the 60 children in the sample were coded in between 6 and 8 weekly sessions, creating 471 total cases. Intercoder reliability was calculated from 99 cases (21.02% of the sample) with an average κ of .911.

Adapted from previous research by Howes (1988), a friendship was defined as *spending at least 30% of the total free play period in social or parallel play with the same peer, as well as having success during at least half of all social initiations*.

Friendships were calculated during the beginning, middle, and/or end periods of the intervention. For example, to qualify as having a friend during the middle period of the intervention in Cohort 2, during which the observation period in Week 3 was 10 minutes and 29 seconds, Week 4 was 11 minutes and 27 seconds, and Week 5 was 10 minutes and 14 seconds, the child would have had to spend at least 30% of the total time over the 3 week period (i.e. 9 minutes and 25 seconds) with the same child in social or parallel play.

Children were dichotomized into the following groups: (1) *No Friendship*- The child never made a friend during the entire intervention period, or made a friend in the beginning or middle periods of the intervention, but did not maintain the friendship through the end of the sessions (Weeks 6, 7, and 8); (2) *Friendship Creation*- The child made a friend during the beginning or middle periods of the intervention and maintained the friendship with the same peer through the end, or the child made a friend during the final unit of the intervention period.

Teachers' Report of Children's Social Competence. The Child Behavior Scale (CBS; Ladd & Profilet, 1996) is a 35-item measure of teacher's perceptions of children's

social adjustment in the classroom (e.g. Helps other children, Argues with peers).

Teachers rated children on a 3-point scale from 1 (doesn't apply) to 3 (certainly applies).

The scale consists of 5 subscales: Aggressive with Peers, Prosocial with Peers, Asocial with Peers, Excluded by Peers, Anxious-Fearful, and Hyperactive-Distractible. The subscales show good internal consistency with subscales ranging from $\alpha = .78$ to $\alpha = .92$. Given the focus of the study, only the prosocial, asocial, and anxious-fearful factors were used.

Observed classroom behavior The brief version of the *Play Observation Scale* (POS; Rubin, 2008) was used to assess children's observed social behavior in a classroom free play setting. The POS is a time sampled coding system where mutually exclusive social behaviors are coded in 10-second intervals. The behaviors coded included reticent (e.g. unoccupied or onlooking), solitary functional/dramatic (e.g. riding a bike or pretending with a doll house), solitary constructive/exploration (e.g. building with blocks or examining a toy), parallel play (e.g. playing independently while near other children playing with similar objects), group play (e.g. playing dress up with peers or talking to others), and interaction with teacher. Approximately 30 minutes of data were collected on two separate occasions both pre and post intervention. Intercoder reliability was calculated from 25.10% of observations. Average percent agreement was 88.70% and average interrater reliability was $\kappa = .81$.

Data Analysis Plan

The first specific aim of the study was to compare the in-preschool social behavior of the withdrawn children who made a friend during the intervention to the children who did not make a friend during the intervention period. To achieve this, two

mixed between-within subjects analyses of variance (ANOVA) were run. The mixed model ANOVA was chosen as it can be utilized to compare mean differences between groups over time. The first model compared the two groups of children on group play behavior in their preschool classrooms over the intervention period. The second model compared the groups on reticent behavior over time.

The second aim of the study was to compare the children who created a friendship during the intervention to the children who did not make a friend on *teacher perceptions* of social adjustment over time. Three mixed model analyses of variance (ANOVA) were run to examine this aim. The first ANOVA compared the children who made a friend to the children who did not make a friend on the *asocial subscale* of the Child Behavior Scale (CBS; Ladd & Profilet, 1996) across the 8-week intervention period. The second model compared the groups using the *anxious-fearful* subscale of the CBS over time. The final model compared the groups on the *prosocial* subscale over the intervention period.

Results

Descriptive Statistics

Of the 60 children comprising the sample, 43.33% met the criteria for having a friend, while 56.66% did not. Twenty-six children spent more than 30% of the intervention period with the same child and had success during at least half of all initiations. Of the children who made a friend, 16 children made a friend only during the last portion of the intervention (weeks 6, 7, and 8). Seven children created a friendship during the middle portion of the intervention (weeks 3, 4, and 5) and maintained the friendship through the end portion. Three children developed a friendship from the beginning portion of the intervention (weeks 1 and 2) and maintained the friendship to the end of the intervention.

Thirty-four children did not develop a friendship over the intervention period. Of the children who were categorized as not making a friend, 25 children never spent more than 30% of the intervention period with the same child, and/or failed in over half of their initiations. Nine children made a friend during the beginning or middle portions of the intervention but did not maintain that friendship through the last period.

During the beginning period of the intervention (weeks one and two) there were 12 cases of friendship development. The children who made a friend spent, on average, 36.24% of the free play period together. Twenty-two percent of the time was spent in group play and 13.51% in parallel play with their friend.

During the middle period (weeks three, four, and five), there were 28 instances of friendship. The children who made a friend spent an average of 42.68% of their time in social play, with 34.33% in group play and 8.35% in parallel play.

Thirty-four children had a friendship during the final period of the intervention (weeks six, seven, and eight). During this period, the children with friends spent an average of 45.06% of their time together, with 33.47% of time spent in group play and 11.59% in parallel play.

A series of *t*-tests and chi-squared tests were conducted to compare the children who made a friend to the children who did not make a friend on participant gender, age, and weekly time spent in their preschool classroom. Forty-four percent of male participants developed a friendship over the intervention period and 43.9% of females created a friendship. A Chi-square test for independence (with Yates Continuity Correction) was conducted to explore the relation between gender and friendship categorization. The test indicated no significant association between gender and friendship categorization, $\chi^2(1, n=60) = .00, p = 1.00, \phi = -.01$.

An independent-samples *t*-test was conducted to compare the ages of the children who made a friend and who did not make a friend. There was no significant difference in age of children who made a friend ($M = 59.92$ months, $SD = 5.82$ months) and children who did not make a friend ($M = 52.29$ months, $SD = 5.89$ months; $t(58) = -.41, p = .68$, two-tailed).

An additional independent- samples *t*-test was conducted to compare the amount of time spent in school weekly between the children who developed a friendship and the children who did not. There was no significant difference in age of children who made a friend ($M = 28.50, SD = 12.74$) and children who did not make a friend ($M = 31.44, SD = 13.27$; $t(54) = .82, p = .41$, two-tailed). Thus, gender, age, and weekly time spent in school do not appear to impact friendship formation in the current sample of children.

Means and standard deviations for each variable of interest are presented for males, females, and the total sample for each of the variables of interest (see Tables 1-4).

Transformations

Several of the dependent variables were not normally distributed. To correct for positive skew, a log transformation was performed on the *observed reticent behavior* variable (skewness = -0.31, and kurtosis = -0.44 for transformed variable). Additionally, an inverse transformation was performed on the *asocial behavior* variable (skewness = -0.06, and kurtosis = -1.47 for transformed variable) and on the *anxious-fearful* variable (skewness = -0.29 and kurtosis = -1.11 for transformed variable). Transformed data were used in all analyses.

Findings for Observed Play Behaviors

Two mixed between-within subjects analyses of variance (ANOVA) were conducted to assess the impact of forming a friendship on participants observed play behaviors in the preschool classroom over an 8-week intervention period (pre-intervention and post-intervention). Separate tests were conducted for group play and reticent behavior. For *group play* behavior, there was no significant interaction between friendship formation and time, Wilks' Lambda = .99, $F(1, 50) = .50$, $p = .48$, $\eta^2 = .01$. There was a significant main effect of time, Wilks' Lambda = .88, $F(1, 50) = 6.96$, $p = .01$, $\eta^2 = .12$., with *both* groups showing an increase in group play over time. The main effect comparing the two groups was not significant, $F(1, 50) = .371$, $p = .55$, $\eta^2 = .01$, suggesting no differences in the group play behaviors of children with friends and children without friends.

For *reticent* behavior, there was no significant interaction between friendship formation and time, Wilks' Lambda = 1.00, $F(1, 50) = .19$, $p = .66$, $\eta^2 = .00$. There was a significant main effect of time, Wilks' Lambda = .87, $F(1, 50) = 7.43$, $p = .01$, $\eta^2 = .13$, with *both* groups showing a decrease in reticent behavior over time. There was a significant main effect comparing the two groups, $F(1, 50) = 4.70$, $p = .04$, $\eta^2 = .08$. This finding suggested differences in the reticent behaviors of children with friends and children without friends overall. The children who made a friend during the intervention were more likely to display less reticent behavior *prior to* the intervention ($M = -.86$, $SD = .31$), than the children who did not make a friend ($M = -.72$, $SD = .32$). Although both groups decreased their reticent behavior after the last intervention session, the children who made a friend still displayed less reticent behavior ($M = -.99$, $SD = .32$) than the children who did not make a friend ($M = -.81$, $SD = .26$) (See Figure 1).

Findings for Teacher Reported Behaviors

Three mixed between-within subjects analyses of variance (ANOVA) were conducted to assess the impact of forming a friendship on teacher's perception of children's social competence over the intervention period. Analyses of variance were conducted for the anxious-fearful, asocial, and prosocial subscales of the *Child Behavior Scale* (CBS; Ladd & Profilet, 1996). For the *asocial* subscale, there was no significant time by group effect (Wilks' Lambda = .98, $F(1, 43) = 1.15$, $p = .29$, $\eta^2 = .03$). Likewise, there were no main effects of time (Wilks' Lambda = .94, $F(1, 43) = 2.64$, $p = .11$, $\eta^2 = .06$) or main effect of friendship formation on teacher reported asocial behavior ($F(1, 43) = .03$, $p = .87$, $\eta^2 = .00$). However, the asocial subscale failed to meet the assumption of homogeneity; consequently, results should be interpreted cautiously.

For teacher reported *anxious-fearful* behavior, there was no significant interaction effect between time and group, Wilks' Lambda = 1.00, $F(1, 33) = .15$, $p = .70$, $\eta^2 = .00$. There was no main effect of time (Wilks' Lambda = .96, $F(1, 33) = 1.41$, $p = .24$, $\eta^2 = .04$) or friendship formation ($F(1, 33) = 1.00$, $p = .33$, $\eta^2 = .03$) on anxious-fearful behavior.

Lastly, a mixed-methods ANOVA was run to test the impact of having a friend on teacher reported *prosocial* behavior in the preschool classroom. There was no significant interaction between friendship formation and time, Wilks' Lambda = .95, $F(1, 43) = 2.41$, $p = .13$, $\eta^2 = .05$. There was also no significant main effect for time, Wilks' Lambda = 1.00, $F(1, 43) = .09$, $p = .77$, $\eta^2 = .00$. There was a significant main effect comparing the two groups, $F(1, 43) = 4.39$, $p = .04$, $\eta^2 = .09$. The analysis suggested that there were differences in the prosocial behavior of the children who made a friend and the children who did not make a friend. Both pre- and post- intervention, the children who made a friend displayed more prosocial behavior (pre-intervention: $M = 2.37$, $SD = .54$, post intervention: $M = 2.38$, $SD = .54$) than the children who did not make a friend (pre-intervention: $M = 2.24$, $SD = .46$, post intervention: $M = 2.14$, $SD = .51$) (See Figure 2).

Discussion

The current study was designed to examine the in-preschool observed and teacher reported social behaviors of inhibited children who made a friend and children who did not make a friend over an 8-week intervention period designed to reduce social inhibition. In the current sample of socially withdrawn preschoolers, 43.33% of children were classified as making a friend. Beginning as strangers, 26 of the 60 children reported by their parents to be highly behaviorally inhibited formed a meaningful bond with their inhibited peers over a brief, eight-week period. This is promising when compared to an observational study of previously unacquainted *typically developing* children where 53.85% of children were categorized as “hitting it off” based upon a criterion of success in initiations, conversations, activities, and conflict resolution (Gottman & Graziano, 1983). Perhaps the supportive and instructive environment of the intervention classroom allowed these children to achieve what they may have been unable to do in their traditional preschool classrooms. These results are very encouraging for a sample of preschoolers who were initially identified as highly inhibited and who were initially unacquainted. This study adds to the growing literature showing that socially withdrawn/inhibited children are capable of developing meaningful friendships (Rubin et al., 2018).

As the intervention progressed, the number of children who developed friendships increased. Twelve children made a friend during the beginning period of the intervention, 28 children had a friend during the middle period, and 34 children had a friend during the final period. As children became more comfortable in the intervention setting and learned new social skills, more children were able to form a friendship. There was no evidence of

age, gender, or weekly time spent in school impacting whether a child formed a friendship during the intervention

The first aim of the study was to examine the in-preschool naturalistic play behaviors of inhibited children who made a friend and those who did not make a friend. Contrary to hypotheses, the children who made a friend did not differ from the children who did not make a friend from pre- to post-intervention in their *group* play. All children, regardless of friendship categorization, increased their group play from pre-to-post intervention. Likewise, all children decreased their reticent behavior from pre-to- post intervention. This suggests that the intervention was successful in its aim to increase social interaction as well as to decrease reticent behavior of all participating behaviorally inhibited children.

Significantly, the children who made a friend in a group of previously unacquainted and similarly inhibited peers displayed less *reticent* behavior, in their preschools, than those who did not make a friend, not only by the end of the intervention, but also from the very start of the treatment program. In short, all children successfully reduced their observed reticent behavior in their preschool classrooms during periods of free play. However, the children who made a friend continued to display less reticent behavior when compared to the children who did not make a friend. In order to develop a friendship during the intervention free play sessions, the friended children had to display less unoccupied or onlooking behaviors than their peers who did not develop a friendship. It appears that the friended children are mirroring this reduced reticent behavior in their preschool classrooms.

The second aim of the study was to compare the children who made a friend and the children who did not make a friend on their teachers' perceptions of social competence over the 8-week intervention period. Inconsistent with hypotheses, there were no differences between the groups on teacher reported asocial or anxious-fearful behavior.

As hypothesized, teachers viewed the children who made a friend as more *prosocial* than the children who did not make a friend, regardless of time point. Although neither group showed a significant increase in prosocial behavior over time, the children who made a friend started out and ended up more prosocial than the children who did not make a friend. Prosocial skills have long been implicated in the development and maintenance of friendships (e.g. Rubin, Bukowski, & Bowker, 2015), so it is expected that the children who made a friend would show more prosocial behavior than their peers.

Taken together, the children who made a friend came into the intervention displaying less reticent behavior and more prosocial behaviors. Perhaps because of these advantages, this group of socially withdrawn children was able to draw on existing resources to allow them to develop a friendship over only an 8-week period. This is consistent with the holistic perspective set forth by Gazelle (2008) looking at anxious solitude in the context of other individual characteristics. Peers respond differently to anxiously withdrawn children who have different interpersonal and social characteristics. Anxiously withdrawn children characterized as agreeable face low peer rejection, victimization, and exclusion; withdrawn children who also have externalizing problems face much higher rates of peer difficulty. The current research suggests prosociality as an additional positive characteristic that may buffer against peer adversity.

This may have implications for future intervention research. Given the importance of having a friend for social, emotional, and academic well-being (Bagwell & Bukowski, 2018), it is important that children gain the skills necessary to form friendships at a young age. The current study suggests prosociality (helping, sharing, and caring behaviors) as an important skill in the formation of friendships. Interventions aimed at helping socially withdrawn children may benefit from an added focus on increasing prosocial behaviors such as helping those in need, showing kindness to others, and comforting others.

There are several notable limitations to this study that should be addressed in future studies. First, the sample size of the current study was relatively small. The sample of only 60 participants may have impacted the ability to detect significant results. Future research using a larger sample size may have sufficient power to find significant results that were undetectable in the current sample. Second, this study was novel in its attempt to classify observed friendships of socially withdrawn preschoolers. The criterion used to categorize children as having a friend, at least 30% of time spent together and success during at least 50% of social initiations, originates from research on typically developing children. It is possible that the friendships of preschoolers who are behaviorally inhibited look different compared to typically developing children, and the criteria used in the present study to identify friendship may need to be altered. Future research may benefit from using an altered criterion or using a combination of an observational criterion and parent report of who they believe the child is friends with to determine friendship.

Despite limitations, this study makes a unique contribution to the literature by being the first of its kind to take an observational look at friendship formation in socially withdrawn/behaviorally inhibited preschoolers. The current study has revealed that many

socially withdrawn preschoolers are capable of forming a meaningful bond with their socially withdrawn peers in a relatively brief time frame. These children displayed notable differences from their peers, including decreased levels of reticent behavior and increased levels of prosocial behavior both before and after the intervention period. By focusing on the early friendships of young socially withdrawn children, research like the current study can help curb the risks that socially withdrawn children face for later internalizing disorders and peer difficulties.

Table 1: Pre-intervention subscale data

		Pre-intervention				
		Pre POS Reticent Proportion	Pre POS Group Proportion	Pre CBS Prosocial	Pre CBS Asocial	Pre CBS Anxious
No Friend	N	32	32	30	29	25
	Mean	0.25	0.33	2.24	1.74	1.51
	SD	0.18	0.20	0.46	0.59	0.51
Friend	N	23	23	20	21	19
	Mean	0.18	0.28	2.37	1.51	1.33
	SD	0.16	0.19	0.54	0.38	0.35
Total	N	55	55	50	50	44
	Mean	0.22	0.31	2.29	1.64	1.43
	SD	0.18	0.20	0.49	0.52	0.45

Table 2: Pre-intervention subsale data by gender

			Pre-intervention by Gender				
			Pre POS Reticent Proportion	Pre POS Group Proportion	Pre CBS Prosocial	Pre CBS Asocial	Pre CBS Anxious
No Friend	Male	N	13	13	13	12	10
		Mean	0.29	0.33	2.15	1.40	1.58
		SD	0.23	0.21	0.30	0.41	0.50
	Female	N	19	19	17	17	15
		Mean	0.22	0.33	2.30	1.97	1.47
		SD	0.15	0.20	0.55	0.59	0.52
	Total	N	32	32	30	29	25
		Mean	0.25	0.33	2.24	1.74	1.51
		SD	0.18	0.20	0.46	0.59	0.51
Friend	Male	N	10	10	8	9	8
		Mean	0.24	0.29	2.46	1.50	1.31
		SD	0.23	0.23	0.41	0.42	0.42
	Female	N	13	13	12	12	11
		Mean	0.13	0.27	2.31	1.51	1.34
		SD	0.07	0.18	0.63	0.37	0.32
	Total	N	23	23	20	21	19
		Mean	0.18	0.28	2.37	1.51	1.33
		SD	0.16	0.19	0.54	0.38	0.35
Total	Male	N	23	23	21	21	18
		Mean	0.27	0.31	2.27	1.44	1.46
		SD	0.22	0.21	0.37	0.41	0.47
	Female	N	32	32	29	29	26
		Mean	0.19	0.31	2.30	1.78	1.41
		SD	0.13	0.19	0.57	0.55	0.45
	Total	N	55	55	50	50	44
		Mean	0.22	0.31	2.29	1.64	1.43
		SD	0.18	0.20	0.49	0.52	0.45

Table 3: Post-intervention subscale data

		Post-intervention				
		Post POS Reticent Proportion	Post POS Group Proportion	Post CBS Prosocial	Post CBS Asocial	Post CBS Anxious
No Friend	N	31	31	30	30	22
	Mean	0.18	0.39	2.14	1.52	1.39
	SD	0.11	0.21	0.51	0.55	0.39
Friend	N	22	22	20	21	20
	Mean	0.13	0.38	2.38	1.50	1.31
	SD	0.09	0.17	0.54	0.46	0.37
Total	N	53	53	50	51	42
	Mean	0.16	0.39	2.24	1.51	1.35
	SD	0.10	0.19	0.53	0.51	0.38

Table 4: Post-intervention subscale data by gender

			Post-intervention by Gender				
			Post POS Reticent Proportion	Post POS Group Proportion	Post CBS Prosocial	Post CBS Asocial	Post CBS Anxious
No Friend	Male	N	12	12	13	13	11
		Mean	0.21	0.44	1.99	1.51	1.50
		SD	0.14	0.19	0.45	0.52	0.42
	Female	N	19	19	17	17	11
		Mean	0.16	0.35	2.26	1.52	1.27
		SD	0.08	0.22	0.54	0.59	0.34
	Total	N	31	31	30	30	22
		Mean	0.18	0.39	2.14	1.52	1.39
		SD	0.11	0.21	0.51	0.55	0.39
Friend	Male	N	10	10	8	9	9
		Mean	0.14	0.43	2.35	1.50	1.36
		SD	0.10	0.12	0.58	0.51	0.49
	Female	N	12	12	12	12	11
		Mean	0.12	0.35	2.39	1.50	1.27
		SD	0.07	0.20	0.54	0.43	0.26
	Total	N	22	22	20	21	20
		Mean	0.13	0.38	2.38	1.50	1.31
		SD	0.09	0.17	0.54	0.46	0.37
Total	Male	N	22	22	21	22	20
		Mean	0.18	0.44	2.13	1.51	1.44
		SD	0.13	0.16	0.52	0.51	0.44
	Female	N	31	31	29	29	22
		Mean	0.15	0.35	2.32	1.51	1.27
		SD	0.08	0.21	0.53	0.52	0.30
	Total	N	53	53	50	51	42
		Mean	0.16	0.39	2.24	1.51	1.35
		SD	0.10	0.19	0.53	0.51	0.38

Figure 1: Estimated means of reticent behavior by group from pre- to post-intervention

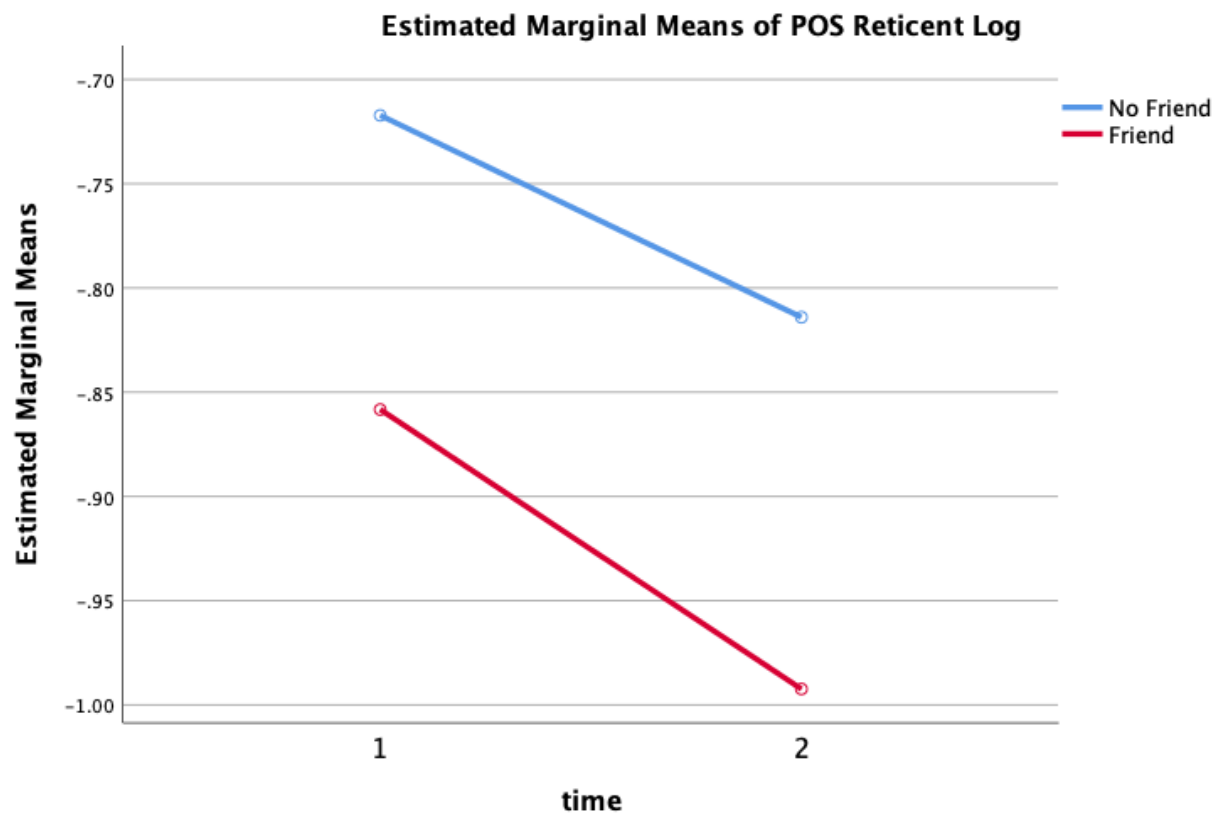
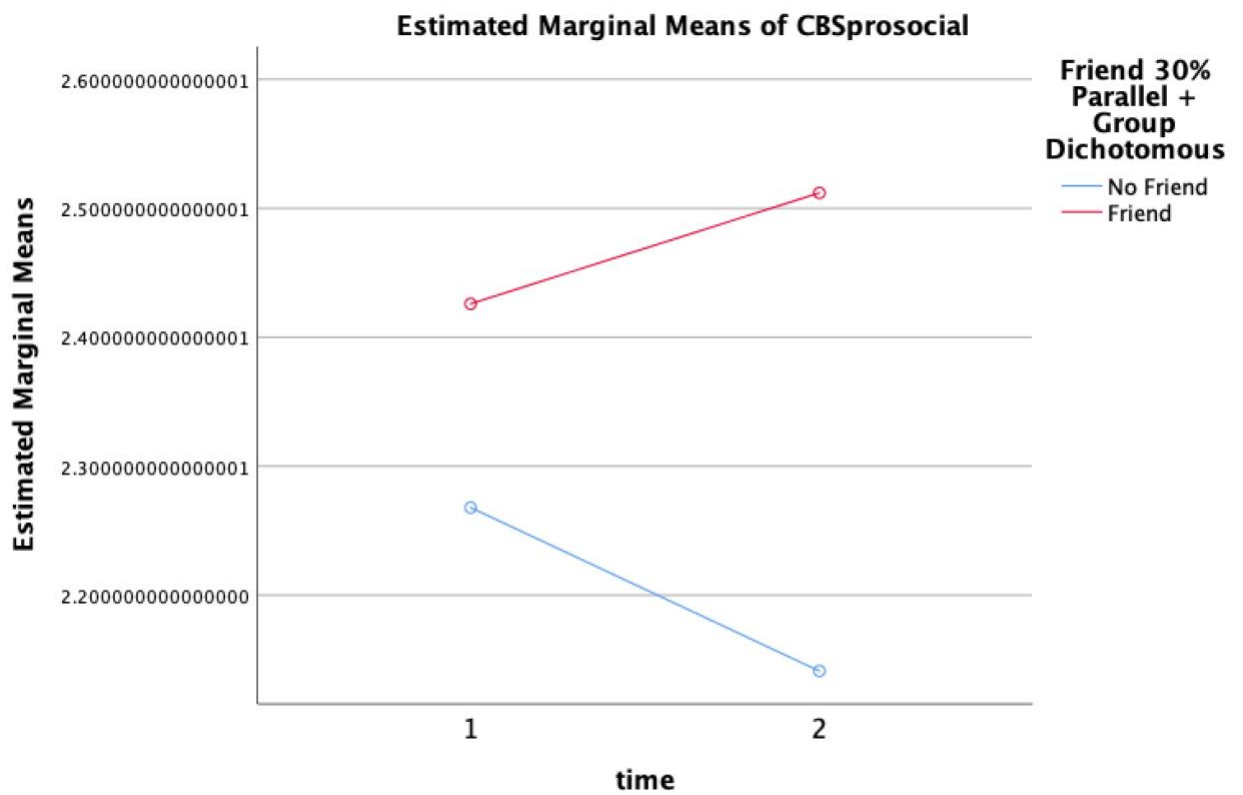


Figure 2: Estimated means of prosocial behavior by group from pre- to post-intervention



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