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Generalization of an Early Intervention for Inhibited Preschoolers to the Classroom Setting

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Abstract

Considerable evidence has accumulated supporting transactional influences between early childhood behavioral inhibition (BI), parent-child and child-peer relationships, and the development of anxiety disorders in adolescence and adulthood. Drawing from this literature, the *Turtle Program* was designed to treat children high in BI by intervening at the level of both parents and peers. In this pilot study, we sought to determine whether benefits of participating in the *Turtle Program* extended to children's classrooms in the form of increased positive social interactions with peers. Forty inhibited children (42–60 months) and their parent(s) were randomized to either the *Turtle Program* ($n = 18$) or a waitlist control group (WLC; $n = 22$). The *Turtle Program* involved 8 weeks of concurrent parent and child treatment. Trained research assistants, blind to

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Author Contributions: MGB and CMD planned the current report, wrote and edited the manuscript, and cleaned/analyzed the data. KAO assisted with the initial study design, created and implemented recruitment procedures, delivered the intervention, and edited the manuscript. RJC assisted with the initial study design, consulted in adapting the Social Skills Facilitated Play program, and edited the manuscript. ACT and KHR are the principal investigators for the NIMH grant that funded this pilot work; they developed the original study protocols and intervention in consultation with RJC, assisted in planning the current report, and edited the manuscript. All authors contributed to reviewing and revising the final paper and approved the final version.

treatment condition, coded participants' social interactions with peers during free play at each child's preschool at the beginning and end of treatment. Teachers unaware of group assignment also provided reports of social behaviors at these time points. Reliable change index scores revealed that both *Turtle Program* and WLC participants experienced relatively high rates of reliable increases in observed peer play interactions from pre- to post-treatment (73.3% and 42.1% respectively). Additionally, *Turtle Program* participants experienced high rates of reliable increase in observed initiations to peers (73.3%) as well as a moderate degree of reliable decrease in teacher-reported displays of fear/anxiety (33.3%). These data provide preliminary, but promising, evidence that increases in children's social behaviors as a result of participation in the *Turtle Program* generalize to their preschool classrooms.

Keywords

behavioral inhibition; parent-child interaction therapy; preschool anxiety; social withdrawal; peer interactions

Behavioral inhibition (BI) is a temperamental trait characterized by the expression of fear and wariness in the presence of novel objects, situations, and individuals (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). Approximately 15 to 20 percent of toddlers can be classified as extremely behaviorally inhibited (Degnan & Fox, 2007; Rubin, Hastings, Stewart, Henderson, & Chen, 1997). Supporting the dispositional nature of BI, researchers have demonstrated that stable BI in early childhood is predicted by negative reactivity in infancy (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001), and BI has been linked to physiological indicators of elevated sympathetic nervous system activity and heightened amygdala reactivity at baseline and in response to stressors (Fox et al., 2005). Importantly, considerable evidence has revealed that toddler BI is a risk factor for the display of social reticence among unfamiliar peers in early, middle, and late childhood, as well as the development of anxiety disorders (particularly social anxiety) in adolescence and adulthood (Chronis-Tuscano et al., 2009; Clauss & Blackford, 2012; Hirshfeld-Becker et al., 2007; Muris, van Brakel, Arntz, & Schouten, 2011).

To date, a transactional model provides the most useful account of how temperament and interactions with significant others combine to link early BI, social reticence, and subsequent internalizing problems (Rubin, Coplan, & Bowker, 2009). This model assumes that children high on measures of BI enter the world as infants with a set of biological systems that predispose them to anxiously react to novel and uncertain settings (Fox et al., 2005). For a caregiver, the frequent displays of distress in novel situations can be alarming and may even elicit such maladaptive patterns of parenting behavior as over-control and restrictiveness (Hastings, Nuselovici, Rubin, & Cheah, 2010). These parenting behaviors have been thought to play a role in the stability of maladaptive social responses including social reticence and withdrawal. Although such behavior may seem entirely warranted by parents when confronted with their child's distress, frequently intervening may hamper the development of a child's own internal regulatory capacities for managing stressful situations (Hastings et al., 2010). For anxious parents, whose children are at increased risk for the development of anxiety (Eley et al., 2015), this tendency to step in may be particularly difficult to override.

Importantly, appropriately sensitive parenting, absent intrusive or over-controlling behaviors, has been shown to weaken the stability of BI across childhood (Degnan & Fox, 2007), and attenuate socio-emotional difficulties for young inhibited children (Coplan, Arbeau, & Armer, 2008).

As children enter preschool and subsequently transition to kindergarten, they are increasingly confronted with the social challenge of initiating and maintaining relationships with unfamiliar peers. Indeed, it is in the peer context that the costs of toddler BI seem most apparent as BI begins to manifest behaviorally as social reticence (Rubin et al., 2009). Especially problematic is that, for children high in BI, withdrawal and reticence can be negatively reinforcing in that they allow children to avoid sources of anxiety (i.e., novel settings and peers), while limiting opportunities to learn that feelings of anxiety may be unfounded or, at the very least, manageable. As displays of social withdrawal become increasingly ingrained, peers begin to recognize such behaviors as aberrant (Ladd, 2006) resulting in peer exclusion, rejection, and victimization, even in early childhood (Gazelle & Ladd, 2003; Nelson, Rubin, & Fox, 2005). Being rejected can ultimately lead to a maladaptive cascade that, if left unchecked, may result in reduced displays of socially competent behaviors, elevated social anxiety, increased loneliness, lower self-esteem, and higher levels of depression (Rubin et al., 2009). Despite the importance of BI to children's social functioning, few researchers have examined whether existing treatments for young children with elevated BI and/or anxiety generalize to relevant social contexts, which is the primary aim of the present pilot study.

Of course, not all inhibited children suffer social and emotional impairment with age (Gazelle & Rubin, 2010). Just as maladaptive trajectories are compounded by over-controlling parenting and low-quality peer relationships, positive experiences within these social contexts can prevent negative psychosocial outcomes and promote social and emotional well-being, particularly for children high in BI (Booth-LaForce & Oxford, 2008; Hastings et al., 2010; Oh et al., 2008; Rubin, Bowker, Barstead, & Coplan, 2018). The notion that parents and peers can serve equally as sources of adaptation or maladaptation across development is entirely consistent with Rubin et al.'s (2009) transactional model. In terms of intervention design, this duality implies that treatments should work to reduce features of parent and peer interactions that exacerbate BI and its correlates while simultaneously promoting adaptive parenting behaviors, emotion regulation, and prosocial behaviors that can help children high in BI move off maladaptive trajectories (Chronis-Tuscano, Danko, Rubin, Coplan, & Novick, 2018).

Existing Interventions

Despite the importance of both parent and peer relationships to the healthy development of children high in BI, the majority of intervention and prevention programs that have been developed to address BI and anxiety in young children tend to solely target parenting behaviors and the parent-child relationship. For example, Rapee and Jacobs (2002) developed *Cool Little Kids* (CLK) for parents of inhibited preschool-aged children, an intervention that focuses on changing parenting behaviors that worsen or maintain social withdrawal. Researchers compared CLK to a no-treatment control condition and found that

fewer children in CLK had an anxiety diagnosis at one-year and three-year follow-ups compared with the control group; however, there was no effect of CLK on child BI (Rapee et al., 2010). Several other intervention programs have been developed to treat anxiety in young children by providing therapy sessions for individual parent-child dyads and have reported promising results (cognitive-behavioral therapy, CBT, Hirshfeld-Becker et al., 2010; parent-child interaction therapy, PCIT, Pincus, 2005; Coaching Approach Behavior & Leading by Modeling, CALM, Puliafico, Comer, & Pincus, 2012). However, none of these studies examined whether treatment effects generalized to the school setting.

One intervention for inhibited children has been developed with the peer context solely in mind (*Social Skills Facilitated Play*, SSFP, Coplan et al., 2010). SSFP is a child group intervention that involves brief social skills training followed by free play in which facilitators encourage social approach behavior. An initial evaluation of SSFP found increased observer-rated social behaviors at preschool compared to a waitlist control (WLC) group, though teachers did not report similar changes (Coplan et al., 2010). More recently, investigators reported similar benefits of SSFP participation in observer-rated group play and prosocial behaviors during unstructured free play among Chinese youth (Li et al., 2016).

Though each of these interventions has shown promise, the transactional model (Rubin et al., 2009) suggests that intervening simultaneously at the level of parent-child and child-peer relationships could maximize treatment benefits for children high in BI. Beyond theoretical considerations, there are also practical benefits that may be realized when parent- and peer-level interventions are combined. When intervention programs are delivered in individualized settings with single parent-child dyads (CALM) or in settings with parent-only (CLK) or child-only groups (SSFP), the parent cannot be coached to utilize prescribed parenting skills to enhance social approach (and discourage avoidance) *within the peer context*. Combining parent and child treatment approaches may therefore provide a better basis for practicing and implementing skills that will more readily transfer to managing children's anxiety in typical social contexts (Chronis-Tuscano et al., 2018).

The *Turtle Program: A Multi-Component Program for Behaviorally Inhibited Young Children* was designed to harvest the theoretical and practical strengths of Rubin et al.'s (2009) transactional model, with a focus on examining the generalization of treatment effects to the daily lives of young children high in BI (Chronis-Tuscano et al., 2015). This eight-session intervention is a combined adaptation of PCIT and SSFP that targets overly intrusive parenting and child BI to reduce risk for later anxiety (Chronis-Tuscano, et al., 2018). This early intervention program is briefer than other individual and family treatments developed for anxiety disorders in young children (Hirshfeld-Becker et al., 2010), and concurrent parent and child groups allow for peer group and dyadic social anxiety exposures. A preliminary evaluation found that compared to a WLC group, the *Turtle Program* resulted in medium-to-large positive effects on parent-reported child anxiety and BI as well as observed maternal positive affect/sensitivity (Chronis-Tuscano et al., 2015).

Given that a purported mechanism linking early BI to adolescent and adult psychopathology is difficulty integrating with peers, we sought to extend the original evaluation of the *Turtle Program* by examining whether treatment effects generalize to the school context. Using a

multi-method approach, we expected that we would observe improvements in adaptive play behaviors (e.g., increased group play, and teacher-rated prosociality) and decreases in maladaptive play behaviors (e.g., social reticence and asocial behavior). The pilot nature of the present study is important to bear in mind throughout the presentation of our methodology and results. This limitation notwithstanding, we believe this study provides an important initial evaluation regarding the *Turtle Program*'s potential to effect adaptive change in real-world and developmentally-relevant social contexts.

Method

Participants

Participants were recruited from local preschools, daycares, pediatricians, and media advertisements in the Washington, DC metropolitan area. Eligible children were between 42 and 60 months of age whose parent-reported Behavioral Inhibition Questionnaire (Bishop, Spence, & McDonald, 2003) scores were ≥ 132 (i.e., 85th percentile and above; Coplan, Debow, Schneider, & Graham, 2009). Social Communication Questionnaire (SCQ; Berument, Rutter, Lord, Pickles, & Bailey, 1999) scores greater than 15 were utilized as an exclusion criterion to rule out suspected autism spectrum disorders. A total of 63 prospective families responded to advertisements, with 40 families (63%) block randomized to treatment or waitlist control conditions (Figure 1). Groups were randomized with the constraint that a minimum of two children of each gender were assigned to each group within each cohort. Families were ineligible after screening if their BIQ score was below the cutoff; no families were excluded based on SCQ scores. Eligible families decided not to participate in the study for a variety of reasons, including schedule conflicts, not being interested, and moving out of the area.

Randomized children were 56% female, 54% White, 20% Black/African-American, 10% Asian/Asian-American, and 15% other races. The vast majority of children in the present study lived in intact homes, with 93% of parents reporting they were married. Median annual household income for the present sample was \$125,000 with 20% of families reporting an annual income below \$100,000. Due to school participation, the data analyzed in the present study represent a subsample of the cases randomized. Demographic data for participants in the present analyses is included in Table 1. For more information about the complete randomized sample, see Chronis-Tuscano et al. (2015).

Procedures

Participants were randomly assigned (using the aforementioned gender constraints) to either the *Turtle Program* or a WLC group; both groups were evaluated at baseline and again after the treatment group completed the 8-week intervention. *Turtle Program* participants received eight weekly concurrent parent and child group sessions in a university setting. The WLC group did not participate in any intervention during this time and received a 6-week parent psychoeducation program following post-assessments. After obtaining informed consent from parents, schools and teachers were contacted to acquire permission for independent observers to view periods of classroom free play. Trained graduate and/or undergraduate

research assistants observed each child during these periods for 30 minutes on two separate occasions at baseline, and again following the 8-week intervention period.

Prior to being sent to schools for the present study, research assistants were required to demonstrate acceptable interrater reliability (κ 's > .80) with an experienced coder during previously recorded free play sessions in addition to live free play sessions at an onsite research preschool housed at the university. Coders were unaware of the child's treatment condition. Teachers completed their assessments of participant behaviors at baseline and post-treatment, and they too were unaware of group assignment. Of note, teacher data could not be collected for 6 participants (3 in Turtle and 3 WLC) for whom school observation data were available; this was due to a lack of teacher participation.

The Turtle Program: A Multicomponent Program for Behaviorally Inhibited Young Children

Parent component—The parent component of the *Turtle Program* is a group-based adaptation of PCIT (see Danko, O'Brien, Rubin, & Chronis-Tuscano, in press for a detailed description of the intervention). The parent group consists of three phases: Child-Directed Interaction (CDI), Bravery-Directed Interaction (BDI), and Parent-Directed Interaction (PDI). In the CDI phase, parents learned to follow their child's lead and refrain from being directive during a daily "Special Time." Parents were instructed on how to use selective attention to reinforce approach behaviors with positive attention and how to give less attention to anxious behaviors such as avoidance. During the BDI phase, parents developed a fear hierarchy specific to social situations for their child and learned how to implement exposure practices. During the PDI phase, parents learned to distinguish anxious from oppositional behaviors and were instructed on strategies to consistently and predictably manage disruptive child behaviors (see Table 2).

Parent group sessions included either psychoeducation ("Teach") or in-vivo coaching ("Coach") sessions. During Coach sessions, children were briefly removed from the child group, which ran concurrent to the parent component, so that their parents could receive coaching in their use of the skills. The parent(s) being coached was watched by other parents in the group via a television monitor from another room so that a therapist could facilitate vicarious learning and additional discussion of the skills. Coach sessions often involved applying parenting skills during in vivo social exposures with other peers, a unique feature of the *Turtle Program* not often possible in other therapeutic contexts.

Child component—The child component is an adaptation of Social Skills Facilitated Play (SSFP; Coplan et al., 2010), a social skills training intervention for behaviorally inhibited preschool-aged children. During each session, group leaders briefly reviewed skills including making introductions, eye contact, effective communication, facing fears, expressing emotions, and working together. Puppets and storytelling were utilized to engage children in the discussion. Following the didactic portion of each session, children participated in semi-structured free play and group activities, in which group leaders facilitated social interaction, used systematic modeling, and reinforced approach behaviors as well as appropriate social skills. Group activities consisted of developmentally-relevant social situations that children with high BI often find challenging, including "show and tell,"

a scavenger hunt, and a graduation party. Each week, parents received information about the session and their child's progress.

Measures

Observed behaviors—To assess children's social behaviors during free play in a classroom setting, we utilized a short form of the Play Observation Scale (POS; Rubin, 2008). The POS is a time-sampled coding system in which trained observers code social behaviors in 10-second epochs. Mutually exclusive behaviors are coded as follows: reticent (e.g., unoccupied and onlooking behaviors), solitary functional/dramatic (e.g., "driving" cars along a track while alone), solitary exploration/constructive (e.g., building with materials), parallel play (e.g., two children building, with the same materials, next to each other, but not interacting), and group play (e.g., interactive games, pretense or conversation). A second set of non-mutually inclusive codes included the extent to which children made social initiations to peers, received initiations from peers, made initiations to teachers, and received initiations from teachers during the observation period. Proportional scores for each behavior were utilized in analyses. Descriptive statistics for the proportional POS behaviors can be found in Table 3. These scores were based on an average observation window of 67.30 minutes per child at baseline and 64.33 minutes per child following the 8-week intervention period. Interrater reliability was calculated from 16% of observations and values fell within acceptable ranges, $\kappa = .84$ to $.95$.

Teacher-rated behaviors—Classroom teachers completed the Child Behavior Scale (CBS; Ladd & Profilet, 1996). The CBS includes four subscales relevant to the *Turtle Program*: children's prosocial behavior with peers (7 items, e.g., "kind towards peers"), asocial behavior with peers (6 items, e.g., "solitary child"), exclusion by peers (7 items, e.g., "not chosen as playmate"), and anxious-fearful behaviors (4 items, e.g., "is worried"). Teachers rated participants on each item using a three-point scale that included the following response options: 1 = *doesn't apply*, 2 = *applies sometimes*, and 3 = *certainly applies*. Summary scores for each subscale were created by averaging responses on the relevant items. Descriptive statistics and Cronbach's alpha for each CBS subscale are presented in Table 4.

Data Analyses

Our analyses focused primarily on the degree to which participation in the *Turtle Program* led to individual-level change in a relevant, real-world setting: children's preschool classrooms. To address this question, we chose to examine participants' change in observer- and teacher-rated classroom behavior using a reliable change index framework, allowing for an evaluation of meaningful individual response to therapy (Jacobson & Traux, 1991). For these analyses, we calculated reliable change using improved difference scores RC_{ID} (Hageman & Arrindell, 1993, 1999), an approach that adjusts reliable change scores for both the correlation between time points as well as the possibility of individual regression to the mean:

$$RC_{ID} = \frac{(x_2 - x_1)r_{DD} + (\bar{x}_2 - \bar{x}_1)(1 - r_{DD})}{\sqrt{r_{DD}}\sqrt{2S_E^2}}$$

For classification of reliable change, we chose critical values for negative and positive change that mapped onto the lower and upper boundaries of a 95% confidence interval (i.e., ± 1.96). Individuals who did not exhibit reliable change (positive or negative) fell between these two boundaries.

In addition to RC_{ID} rates we also calculated standardized effect sizes using Hedge's g as a means of describing overall change in observer- and teacher-rated behaviors for each group separately (i.e., *Turtle* vs. WLC). Hedge's g is a measure of standardized mean differences akin to Cohen's d , but is more appropriate for use with small samples (Grissom & Kim, 2005). Importantly, similar values are utilized to identify small, moderate, and large effects (approximately .30, .50, and .80 respectively). Finally, in certain instances, when moderate-to-large effects were detected, we performed paired samples t -tests to assess the presence of statistically significant mean change. These analyses are reported below the relevant tables.

Results

Turtle Program

According to behavioral observations (Table 5), *Turtle Program* participants experienced moderate-to-large and moderate increases in both their displays of group play and their initiations to peers, respectively. For both behaviors, nearly three quarters of the group demonstrated reliable increases, with none demonstrating reliable decreases. Additionally, children assigned to the *Turtle Program* showed a small decrease in displays of solitary constructive behavior, though no individual child experienced reliable change in either direction. Further inspection of our data revealed that although no one individual exhibited reliable change in solitary constructive behavior, all *Turtle Program* participants experienced some degree of negative change in the behavior. Finally, a small overall decrease in solitary functional-dramatic play emerged, with only a small percentage of participants demonstrating a reliable decrease in this form of solitary behavior from. Changes in all other observer-rated social behaviors were below the threshold of small effects.

According to teacher reports (Table 6), *Turtle Program* participants experienced a moderate decrease in their displays of anxious and fearful behaviors. One in three participants assigned to the *Turtle Program* demonstrated decreases in teacher-perceived fearful and anxious behaviors and none experienced reliable increases in the display of such behavior. Changes in all other teacher-rated social behaviors were below the threshold of small effects.

Waitlist Control Group

According to behavioral observations (Table 5), WLC participants demonstrated a moderate increase in group play behaviors from over the course of the 8-week intervention experienced by the *Turtle Program* participants. Nearly half of WLC participants demonstrated a reliable increase in their group play behaviors, with no participants reliably

decreasing in group play. Change in other observed behaviors was less robust for the WLC group. For instance, WLC participants experienced small overall decreases in displays of reticence and parallel play, with only a handful of participants demonstrating a reliable decrease in reticence and none in parallel play. WLC participants also experienced a small overall negative change in the number of peer initiations they received, again with only a small percentage of participants experiencing a reliable decrease in peer initiations received. Changes in all other observer-rated social behaviors were below the threshold of small effects.

According to teacher reports (Table 6), children in the WLC group experienced a moderate decrease in prosocial behaviors with one in four exhibiting reliable negative change. All other standardized effects sizes fell well below cutoffs indicative of small effects (i.e., .30), and there was no clear pattern of reliable positive or negative change for any of the other behavior categories.

Discussion

The present study extends a previous examination of the *Turtle Program* by providing preliminary evidence that its effects generalize to social behaviors in a classroom setting (Chronis-Tuscano et al., 2015). Although a large body of research has demonstrated that early childhood inhibition and anxiety are related to maladaptive behaviors in social contexts (Rubin et al., 2009; Rubin et al., 2018), few investigators to date have sought to demonstrate that interventions for BI and anxiety result in meaningful change in naturalistic settings such as classrooms, where many children are in the company of peers on a daily basis. Though preliminary, our data provide further evidence that children classified as high in BI benefit from participation in the *Turtle Program*, beyond reductions in anxiety symptomatology (Chronis-Tuscano et al., 2015). Specifically, we found that some beneficial effects extend to the preschool classrooms during periods of free play. These changes were based on reports from both independent observers as well as classroom teachers, and this multi-informant feature of the study design is a notable strength that is unique in this literature.

The goal of the *Turtle Program* is to redirect children classified as behaviorally inhibited off maladaptive trajectories. One set of transactional processes shown to contribute to the developmental cascade linking early BI to internalizing problems is difficulty engaging with peers (Rubin et al., 2009). Despite the preliminary nature of our data, the fact that the *Turtle Program*, which combines elements of parent psychoeducation, parent-child interaction therapy, and child-focused social skills training, resulted in desirable changes in classroom behaviors is certainly encouraging. Though the waitlist control group did appear to exhibit some positive change in classroom behaviors over time, the beneficial changes were generally larger and more robust for *Turtle Program* participants according to reliable change scores and standardized effect sizes. Furthermore, whereas the WLC group appeared to decline in terms of teacher-rated prosocial behaviors, children in the *Turtle Program* maintained initial levels over the course of the intervention.

Few previous interventions designed for highly anxious and inhibited children have examined the transfer of treatment effects to naturalistic peer settings such as schools.

Coplan et al.'s (2010) investigation of the SSFP program is an exception. They found that highly inhibited children who participated in SSFP showed greater reductions in reticent and wary behaviors during classroom free play as well as increases in prosocial behaviors, according to independent observers. In contrast to the present study, teachers in the Coplan et al. (2010) investigation did not report changes in classroom behaviors on the CBS. Though far from conclusive, the fact that teachers and observers in the present study detected desirable changes in classrooms may result from the more comprehensive features of the *Turtle Program* relative to SSFP alone. However, our enthusiasm regarding this pattern of results is tempered by the fact that no direct comparison has been made between the *Turtle Program* (which includes SSFP) and SSFP alone, as the present study was not designed to contrast these conditions. Caution in overselling the benefits of the *Turtle Program* based on the present investigation is further warranted given that WLC children also appeared to increase in their group play behaviors, a trend that may reflect a general "warming up" within classrooms that occurs provided sufficient exposure over time (Rubin & Krasnor, 1980).

Limitations and Future Directions

Though promising in highlighting the potential of the *Turtle Program*, it is important to bear in mind that our findings rest largely on evidence gathered from a small pilot study. Our sample, while somewhat diverse racially and ethnically, was not so in terms of socioeconomic status, with 80% of families reporting an annual household income equal to or greater than \$100,000. There is certainly need for replication of these effects in larger, more diverse, samples. Partnering with schools serving populations that vary in income and other socioeconomic indicators may be one practical strategy to ensure more economically diverse samples of impaired children are effectively represented in future investigations (Chronis-Tuscano et al., 2018). A secondary goal of any replication should be to compare the *Turtle Program* with other approaches that may only focus on one component of socialization (i.e., parents or peers) related to the stability of inhibited behaviors across development (e.g., CLK; Rapee et al., 2002, see Chronis-Tuscano et al., 2018 for a relevant discussion). Doing so may help address whether the increased resources required to manage and run simultaneous parent- and child-focused intervention groups are warranted as well as determine whether a multicomponent approach is more beneficial for some inhibited children compared with others. It is entirely possible that differential treatment effects would emerge as a result of participating in parent-focused, peer-focused, or multi-component interventions. Ultimately, the results of the present study, in conjunction with the previous reports of the *Turtle Program*, suggest that future research comparing and contrasting intervention approaches for the treatment of early childhood anxiety will be worthwhile to investigators and clinicians hoping to design effective treatments.

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Figure 1.
CONSORT diagram.

Table 1

Sample Characteristics by Group

	Turtle (<i>n</i> = 15)	WLC (<i>n</i> = 19)
Child Characteristics		
Percent female	47%	63%
Race ^a		
White	58%	63%
Black/African-American	7%	25%
Asian	14%	6%
Other	21%	6%
<i>M</i> _{age} (years)	4.08	4.41
<i>SD</i> _{age} (years)	0.73	0.81
Mother Characteristics		
Race ^b		
White	64%	73%
Black/African-American	0%	13%
Asian	21%	7%
Other	14%	7%
Education Level		
High School	7%	0%
Some College	7%	6%
Bachelor's Degree	13%	38%
Master's Degree	53%	25%
Doctorate	20%	31%
<i>M</i> _{age} (years)	39.73	34.40
<i>SD</i> _{age} (years)	3.88	4.08

^aOne parent did not report child race data on the relevant questionnaire. The percentages reflect cumulative percentages of valid data.

^bTwo parents did not include maternal race information on the relevant questionnaire. The percentages reflect cumulative percentages of valid data.

Table 2

Turtle Program Session Content

Session	Parent Group	Child Group	Coaching
1	Psychoeducation	Learning to introduce yourself	Coaching during separation and pick-up
2 – 3	CDI Phase	Making eye contact Relaxation (Balloon Breathing) Communicating to Keep Friends	Coaching during separation and pick-up Individual CDI coaching
4 – 6	BDI Phase	Facing your Fears Expressing Emotions Dealing with disappointment <u>Group activities:</u> Sharing about oneself game during snack time Show & Tell	Coaching during separation and pick-up Individual BDI coaching
7 – 8	PDI Phase	Working together <u>Group activities:</u> Scavenger Hunt Graduation Party	Coaching during separation and pick-up Coaching during graduation party

Note. CDI = Child Directed Interaction; BDI = Bravery Directed Interaction; PDI = Parent Directed Interaction. See Chronis-Tuscano et al., 2015, for more details.

Table 3

Proportionalized Means and Standard Deviations for Play Observation Categories

Variable	Turtle Program (<i>n</i> = 15)		WLC (<i>n</i> = 19)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Time 1				
Reticence	.32	.28	.26	.22
Functional/Dramatic	.08	.17	.08	.14
Constructive	.26	.21	.16	.16
Parallel Play	.21	.20	.24	.22
Group Play	.08	.08	.24	.22
Initiations to Peers	.02	.02	.06	.05
Initiations from Peers	.03	.03	.05	.04
Initiations to Teachers	.02	.02	.01	.02
Initiations from Teachers	.03	.03	.02	.02
Time 2				
Reticence	.28	.25	.19	.19
Functional/Dramatic	.05	.08	.06	.08
Constructive	.17	.18	.17	.20
Parallel Play	.20	.23	.18	.21
Group Play	.25	.26	.38	.31
Initiations to Peers	.04	.05	.05	.06
Initiations from Peers	.03	.03	.04	.04
Initiations to Teachers	.02	.02	.01	.02
Initiations from Teachers	.04	.04	.02	.03

Table 4

Means, Standard Deviations and Reliabilities for Teacher Rating Scales

Variable	Turtle Program (<i>n</i> = 15)		WLC (<i>n</i> = 19)		α
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Time 1					
Asocial	1.64	0.45	1.57	0.54	.91
Prosocial	2.14	0.55	2.38	0.41	.90
Anxiety/Fear	1.48	0.48	1.47	0.47	.74
Excluded by Peers	1.21	0.25	1.12	0.19	.71
Time 2					
Asocial	1.56	0.49	1.57	0.59	.91
Prosocial	2.13	0.43	2.22	0.59	.91
Anxiety/Fear	1.21	0.25	1.48	0.53	.79
Excluded by Peers	1.17	0.28	1.14	0.27	.84

Table 5

Reliable Change Scores and Effect Sizes for Turtle Program and Waitlist Control (WLC) Groups

Behavior	Turtle Program (<i>n</i> = 15)		WLC (<i>n</i> = 19)	
	<i>n</i> (%)	<i>g</i> CI ₉₅ [LB, UB]	<i>n</i> (%)	<i>g</i> CI ₉₅ [LB, UB]
Reticence		−0.18		−0.30
Positive Change	0 (0)	[−0.96, 0.59]	1 (5.3)	[−0.98, 0.38]
Negative Change	1 (6.7)		4 (21.1)	
No Change	14 (93.3)		14 (73.7)	
Functional/Dramatic		−0.24		−0.15
Positive Change	0 (0)	[−1.02, 0.54]	1 (5.3)	[−0.83, 0.52]
Negative Change	3 (20.0)		3 (15.8)	
No Change	12 (80.0)		15 (78.9)	
Constructive		−0.32		0.05
Positive Change	0 (0)	[−1.10, 0.46]	3 (15.8)	[−0.63, 0.73]
Negative Change	0 (0)		2 (10.5)	
No Change	15 (100)		14 (73.7)	
Parallel Play		−0.03,		−0.20
Positive Change	0 (0)	[−0.80, 0.75]	0 (0)	[−0.87, 0.48]
Negative Change	0 (0)		0 (0)	
No Change	15 (100)		19 (100)	
Group Play		0.66 ^a		0.53 ^c
Positive Change	11 (73.3)	[−0.15, 1.68]	8 (42.1)	[−0.16, 1.22]
Negative Change	0 (0)		0 (0)	
No Change	4 (26.7)		11 (57.9)	
Initiations to Peers		0.50 ^b		−0.08
Positive Change	11 (73.3)	[−0.29, 1.28]	2 (10.5)	[−0.75, 0.60]
Negative Change	0 (0)		2 (10.5)	
No Change	4 (26.7)		15 (78.9)	
Initiations from Peers		−0.16		−0.27
Positive Change	0 (0)	[−0.93, 0.62]	1 (5.3)	[−0.95, 0.41]
Negative Change	1 (6.7)		3 (15.8)	
No Change	14 (93.3)		15 (78.9)	
Initiations to Teacher		0.01		0.02
Positive Change	2 (13.3)	[−0.76, 0.79]	1 (5.3)	[−0.66, 0.70]
Negative Change	2 (13.3)		2 (10.5)	
No Change	11 (73.3)		16 (84.2)	
Initiation from Teacher		0.15		0.18
Positive Change	0 (0)	[−0.62, 0.93]	5 (26.3)	[−0.49, 0.86]
Negative Change	0 (0)		1 (5.3)	
No Change	15 (100)		13 (68.4)	

^a paired samples *t*-test: *t*(14) = 2.58, *p* = .022 (two-tailed)

^b paired samples *t*-test: $t(14) = 1.97, p = .069$ (two-tailed)

^c paired samples *t*-test: $t(18) = 2.37, p = .029$ (two-tailed)

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Table 6

Reliable Change and Effect Sizes for Changes in Teacher-Rated Child Behaviors for Turtle Program and Waitlist Control (WLC) Groups

Behavior	Turtle Program (<i>n</i> = 12)		WLC (<i>n</i> = 16)	
	<i>n</i> (%)	$\overset{g}{CI}_{95}[LB, UB]$	<i>n</i> (%)	$\overset{g}{CI}_{95}[LB, UB]$
Asocial		−0.33		0.20
Positive Change	0 (0)	[−1.22, 0.56]	3 (18.7)	[−0.55, 0.94]
Negative Change	1 (8.3)		2 (12.5)	
No Change	11 (91.7)		11 (68.8)	
Prosocial		−0.03		−0.44 ^b
Positive Change	1 (8.3)	[−0.92, 0.85]	0 (0.0)	[−1.20, 0.31]
Negative Change	1 (8.3)		4 (25.0)	
No Change	10 (83.3)		12 (75.0)	
Anxiety/Fear		−0.57 ^a		0.04
Positive Change	0 (0)	[−1.72, 0.13]	3 (18.7)	[−0.71, 0.78]
Negative Change	4 (33.3)		1 (6.3)	
No Change	8 (66.7)		12 (75.0)	
Excluded by Peers		−0.22		0.14
Positive Change	0 (0)	[−1.11, 0.66]	1 (5.9)	[−0.61, 0.88]
Negative Change	1 (8.3)		1 (11.8)	
No Change	11 (91.7)		14 (82.3)	

^a paired samples t-test: $t(11) = -2.05$, $p = .065$ (two-tailed)

^b paired samples t-test: $t(15) = -1.82$, $p = .089$ (two-tailed)