THE GIRLS LINK PROGRAM: AN EXAMINATION OF THE EFFICACY OF A
BRIEF PREVENTION PROGRAM FOR BEHAVIORALLY INHIBITED FEMALE
ADOLESCENTS

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List of Abbreviations

ADIS………………….Anxiety Disorder Interview Schedule
ANOVA………………Analysis of Variance
BI……………………Behavioral Inhibition
BIQ……………………Behavioral Inhibition Questionnaire
CBT………………….Cognitive Behavioral Therapy
CDI………………….Children’s Depression Inventory
CES-DC………………Center for Epidemiologic Studies Depression Scale for Children
GAD………………….Generalized Anxiety Disorder
ICPS………………….Interpersonal Cognitive Problem-Solving program
ISA-SPS………………Improving Social Awareness-Social Problem Solving Method
MANOVA……………Multivariate Analysis of Variance
MDD………………….Major Depressive Disorder
PATHS………………..Promoting Alternative THinking Strategies program
RCMAS………………Revised Children’s Manifest Anxiety Scale
SCAS………………….Spence Children’s Anxiety Scale
SP……………………Social Phobia
SPSS…………………..Statistical Package for the Social Sciences
SS-SPS………………..Social Decision-Making and Social Problem Solving Method
The Girls Link Program: An Examination of the Efficacy of a Brief Prevention Program for Behaviorally Inhibited Female Adolescents

Abstract

by

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Behavioral inhibition (BI) is a temperamental style that is characterized by shyness, social avoidance, social withdrawal, and reticence in unfamiliar situations and towards people (Kagan, Reznick, & Snidman, 1988). Children who are behaviorally inhibited tend to exhibit fear when meeting or interacting with unfamiliar individuals and they prefer to avoid or withdraw from social situations when possible (Essex, Klein, Slattery, Goldsmith, Kalin, 2010; Kagan et al., 1988). An inhibited temperament is one of the strongest predictors of anxiety disorders, depressive symptomology and poor peer relationships, all of which can have a negative impact on the emotional and social development of children and adolescents. Various prevention programs have targeted anxiety, depression and peer relationships, yet none have specifically done so by screening for BI and none have specifically targeted middle school females. The purpose of the current study was to examine the efficacy of a brief (5 session) cognitive behavioral skills group, relative to a peer support group, at reducing internalizing symptoms and increasing adolescent connectedness in middle-school-aged females who have elevated levels of BI. Results revealed that participants in both conditions demonstrated decreases in social anxiety and generalized anxiety symptoms in addition to increased peer self esteem, increased connectedness to parents and for those in the skills condition, increased CBT skill use. The effects of the study were small, but the overall
results are encouraging in that they support the efficacy of a brief, non-intensive prevention program for at-risk middle-school females. Results of the peer support group signify that participating in a non-competitive, supportive, adult-supervised group may be adequate in producing the positive benefits noted above for sub-clinically anxious middle-school females. Results of the cognitive behavioral skills group suggest that prevention programs need not be lengthy or time-intensive for participants to learn CBT skills and demonstrate meaningful changes in anxiety symptoms, self esteem, and connectedness to parents. Brief, CBT-based prevention programs such as the Girls Link program demonstrate utility as a first line intervention method for at-risk middle-school-aged females and use as a primer for those identified females who will require further intervention services.
Introduction

Behavioral inhibition (BI) is a temperamental characteristic that is comprised of a constellation of behaviors such as shyness, social avoidance, social withdrawal, and reticence in unfamiliar situations and towards people (Kagan, Reznick, & Snidman, 1988). Children who are behaviorally inhibited tend to exhibit fear when interacting with unfamiliar peers and adults and they prefer to avoid or withdraw from social situations when possible (Essex, Klein, Slattery, Goldsmith, Kalin, 2010; Kagan et al., 1988).

It is estimated that 15% of young children display behaviors consistent with behavioral inhibition (Kagan et al., 1988). BI is also one of the most enduring individual traits in the personality development literature (Fox et al., 2005) with stability from early childhood (age 2) through early adolescence (age 13).

BI has been described as an indicator of “anxiety proneness” and a “precursor to more formalized anxious and depressive symptomology” (Gladstone, Parker, Mitchell, Willhelm, Malhi, 2005, p. 103) and it is one of the “strongest predictors of anxiety disorders” and depressive symptomology currently identified (Rapee, 2002, p. 950). BI can be thought of as a “manifestation of a genetic vulnerability factor” that, when combined with stressful life events and negative environmental influences, puts one at risk for developing an anxiety disorder (Muris, Merckelbach, Schmidt, Gadet, Bogie, 2001, p. 1052) or a depressive disorder.

The causal mechanisms of behavioral inhibition are believed to be a strong heritability and a combination of early environmental experiences. For example, research has shown that toddlers with BI display physiological individual differences in their behavioral reactions to unfamiliar situations that are perceived as threats or challenges
(Kagan, Reznick, & Snidman, 1987). For instance, Kagan and colleagues found that when inhibited children are faced with unfamiliar or challenging events, they display a high, stable and less variable heart rate, significantly higher cortisol levels, significantly larger pupil dilations, and increases in muscle tension when compared to uninhibited children (Kagan et al., 1987, p. 1469). These types of physiological reactions are not demonstrated by most children when faced with similarly innocuous experiences (Kagan et al., 1987, p. 1469). These results suggest that the “hypothalamic-pituitary-adrenal axis of inhibited children is at a tonically higher level of activity, even in minimally stressful contexts” (Kagan et al., 1987, p. 1465) and the threshold for responsive reactions in the limbic and hypothalamic structures of the brain when faced with unfamiliarity is lower for inhibited than uninhibited children (Kagan et al., 1987, p. 1459). While these biological and heritable bases for behavior appear to be one component of understanding the expression of behavioral inhibition, early learned experiences and environmental influences also play a role in the expression of BI.

Parental styles and characteristics may influence the expression of inhibited behaviors. The parenting characteristics that have been most closely examined in relationship to BI include overprotectiveness, control, responsiveness, acceptance and warmth (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). For example, Rubin and colleagues found that if mothers demonstrated high levels of psychological control, intrusiveness and/or public scolding at age two, then toddler peer inhibition predicted social and preschool reticence at age four (Rubin, Burgess & Hastings, 2002, p. 492). For mothers who did not demonstrate psychological control or derision, there was no significant relationship between toddler peer inhibition and later social reticence. Rubin
and colleagues suggested that mothers who exhibit high levels of psychological control and intrusiveness undermine their child’s development of inner competence and independence by not allowing them the opportunity to practice and improve skills relevant to new and unfamiliar situations (Rubin et al., 2002, p. 493). Based on this finding, Wood and colleagues proposed that excessive parental responsiveness or control “in a situation that initially elicits anxious responses in a child”, reinforces the child’s anxiety and makes the child more sensitive to similar situations, thereby preventing the child from future exposure and/or habituation to anxiety (Wood, McLeod, Sigman, Hwang, & Chu, 2003, p. 147). Parents who behave in this manner are unintentionally rewarding the child’s anxious response and “interfering with trial-and-error learning of social approach behaviors, and habituation to the novel social context” (Wood et al., 2003, p. 147). A child who is genetically predisposed to behavioral inhibition, combined with parenting characteristics that reinforce inhibited behaviors and avoidance of challenging or unfamiliar situations, may exhibit behaviors consistent with anxiety, including avoidance of future unfamiliar situations, negative cognitions regarding mastery skills, and poor emotion regulation.

Children and adolescents who are high on BI tend to have high levels of social anxiety (e.g. Biederman et al., 2001; Essex et al., 2010; Gladstone et al., 2005; Hayward, Killen, Kraemer, Barr Taylor, 1998; Muris and Meesters, 2002; Schwartz, Snidman & Kagan, 1999), worry and depression (e.g. Muris et al., 2001; Muris, Merckelbach, Wessel, van de Ven, 1999). Biederman and colleagues found that children with BI have a higher occurrence of multiple anxiety disorders when compared to children with low or no BI, providing further support for the idea that BI may be a precursor to the
development of anxiety (Beiderman et al., 2001, p. 1673; Biederman et al., 1990). Of the anxiety disorders, BI is most highly associated with social anxiety disorder (Biederman et al., 2001; Essex et al., 2010). BI may contribute to the development of primary social anxiety with secondary depression (Muris et al., 2001). Thirty-four percent of individuals diagnosed with lifetime social phobia or social anxiety disorder also met criteria for a lifetime mood disorder (Kessler, Stang, Wittchen, Stein, & Walters, 1999).

Approximately 8% of children and adolescents suffer from an anxiety disorder (National Institute of Mental Health, 2012) with the median age of onset for anxiety being early adolescence (age 11; Kessler, Berglund, Demler, Jin & Walters, 2005). Adolescence is a particularly turbulent time in which multiple transitions take place and the social, emotional and cognitive adjustments amplify existing stressors (Flanagan, Erath & Bierman, 2008). For those who have predispositional vulnerabilities, the onset of adolescence is the potential catalyst(s) to the development of psychopathology. Early adolescence is therefore an ideal time to intervene because it is a critical stage of development when stressful life experiences and high levels of distress can lead to the onset of various anxious and depressive disorders (Craske & Zucker, 2002). By intervening at this critical time, researchers may be able to offset the development of significant symptomology and prevent early symptoms from progressing into diagnosable disorders (Craske & Zucker, 2002).

**Behavioral Inhibition and Interpersonal Relationships**

The strong interpersonal aspects of BI are thought to play a significant role in the development of anxious and depressive psychopathology. The shy, socially anxious and
socially withdrawn behaviors of inhibited individuals appear to impede or hinder the development of close relationships (Starr & Davila, 2008). Behaviorally inhibited individuals tend to have anticipatory fears and negative expectations of social situations (Hayward et al., 1998) leading them to avoid or withdraw from unfamiliar social events. Their avoidance of unfamiliar social situations restricts their opportunities and chances of becoming close to others and reduces their chances of gaining appropriate social skill experiences. Therefore, these children and adolescents tend to display poor social skills and anxiety-related behaviors, which previous research has found to elicit negative reactions from others (Alden & Taylor, 2004; Spence, Donovan & Brechman-Toussaint, 1999). Specifically, their poor social skills and high levels of social withdrawal may reduce social effectiveness, which then leads to increases in peer victimization, rejection and decreased social acceptance (Flanagan et al., 2008; Ollendick & Hirshfeld-Becker, 2002). These negative peer interactions become internalized, and their negative expectations and anticipatory social anxiety increase, therefore exacerbating and maintaining social avoidance and/or withdrawal behaviors (Flanagan et al., 2008; Fox et al., 2005). This lack of fulfilling relationships results in a lack of social support and by middle childhood, behaviorally inhibited children are more likely to report feelings of loneliness and low self esteem, in addition to the previously mentioned anxiety and depressive symptoms (cited in Fox et al., 2005, p. 238).

Given the critical role that peer relationships play in the emotional, social and psychological development and adjustment of adolescents (Sabatelli & Anderson, 1991), this negative pattern of social interactions is particularly concerning. According to Ingersoll (1989), adolescents' peer relationships are critical to the development of social
skills and a sense of “personal competence that is essential for later adult functioning” (as cited in La Greca & Lopez, 1998, p. 83). Furthermore, Ingersoll argued that peer relationships are important in “facilitating a sense of personal identity” and increasing adolescents’ independence from their family influences (as cited in La Greca & Lopez, 1998, p. 83). Subsequently, factors such as behavioral inhibition, anxiety, and/or depression that obstruct or hinder interpersonal functioning are an essential area for clinical attention and intervention efforts (La Greca & Lopez, 1998, p. 83).

For females specifically, their identity and sense of self are based on connectedness, affiliation and acceptance by their female peers (Crothers, Field, & Kolbert, 2005, p. 349). As young girls become adolescents, the importance of interpersonal female relationships becomes more central to their own identity and personal growth (Crothers et al., 2005). Unfortunately, females’ tendency for interpersonal aggression and competition also becomes apparent during adolescence (Crothers et al., 2005). Female adolescents recognize that they thrive on connectedness and interpersonal relationships with others and some female adolescents may use this strong desire for personal relationships as leverage and ammunition against their female peers (Crothers et al., 2005, p. 349). Relational aggression, one of the forms of bullying and social harassment, is often born out of the complicated interplay of this developmental stage (Crothers et al., 2005).

For female adolescents who are behaviorally inhibited, the complex demands of these social relationships combined with their tendency to be socially anxious, makes them especially easy targets for victimization, rejection and relational aggression. Not only are these behaviorally inhibited females particularly susceptible to relational
aggression and peer victimization, but the effects would be particularly impairing. In general, female adolescents have been shown to have elevated levels of distress and rumination following peer victimization compared to their male counterparts (Paquette & Underwood, 1999) and behaviorally inhibited females may be more likely to experience these symptoms. Moreover, relational aggression in female adolescents is further associated with avoidance of general and/or new social situations, increased fear of negative evaluation, decreased opportunities for developing positive relationships, and increases in internalizing symptoms (Storch & Masia-Warner, 2004).

Female adolescents have the trifecta of risk factors for the development of social phobia and depression. First, females tend to be more behaviorally inhibited than their male counterparts (Muris et al., 1999). Females display more anxious (Hankin & Abramson, 2001; Lewinsohn, Gotlib, Lewinsohn, Seeley & Allen, 1998) and depressive symptoms (Allgood-Merten, Lewinsohn, Hops, 1990) than their male counterparts. Lastly, female adolescents have greater concerns about feelings of social inadequacy (La Greca & Lopez, 1998), are more likely to experience relational aggression (Crick & Bigbee, 1998), and are more likely to be distressed by peer victimization (Paquette & Underwood, 1999). Please refer to Figure 1 on page 67 for an outline of how these many risk factors can exacerbate and aggravate the presence of one another, leading to a dangerous cycle of anxiety, depression, poor social functioning and poor self esteem.

Early identification and prevention are necessary to prevent the negative consequences that are associated with this constellation of risk factors (Erath, Flanagan, Bierman, 2007). Females who are in the transition point of middle school who screen high in behavioral inhibition are a critical population for early prevention/intervention
because learning cognitive behavioral skills and social problem solving skills may have
the following benefits: 1) may reduce current symptoms 2) may prevent risk factors and
early symptoms from developing into diagnosable anxiety and depressive disorders and
3) may promote general social and emotional competence and well-being. When efforts
are made to intervene early with those adolescents who display the common risk factors
of BI at a time in which the ecological risk factors are highest, we may be able to cease
the trajectory towards a range of negative outcomes that could develop if left unaided.

**Current Prevention & Intervention Literature**

There have been many prevention efforts aimed at reducing risk of
psychopathology and promoting social and emotional competence in children and
adolescents (see Greenberg, Domitrovich, & Bumbarger, 2001 for a full review). Several
of these programs have demonstrated efficacy in increasing cognitive behavioral skills,
social problem-solving and emotion regulation while decreasing inhibited behaviors and
psychopathology.

For example, Shure and Spivack (1982) were pioneers of Cognitive Behavioral
Therapy (CBT)-based universal prevention programs. Their program, “Interpersonal
Cognitive Problem-Solving” (ICPS) program, now called “I Can Problem Solve” (also
ICPS), was the first prevention program designed to decrease poor outcomes, specifically
aggression, frustration tolerance, social withdrawal and poor peer relations, in children by
teaching cognitive problem-solving and interpersonal skills. Participants were
kindergarten-aged children from low socio-economic status and the 12-week program
was delivered via trained teachers. The program used hypothetical dialogues and role-
playing techniques to teach basic interpersonal problem-solving. Results indicated that the program reduced impulsive and inhibited behaviors at post-intervention and improvements were maintained at 1 year follow-up (Shure & Spivack, 1982). This program has undergone numerous evaluations and has been tested in children ages 4-12 in numerous schools across the nation, all showing similar effects in improving cognitive problem-solving abilities and reducing impulsive and inhibited behaviors (Shure, 2001).

In 1995, Greenberg, Kusche, Cook, & Quamma created the PATHS (Promoting Alternative THInking Strategies) program to build social and emotional competence through skill building (Greenberg, Domitrovich, & Bumbarger, 2001). This elementary school based program taught emotional regulation strategies and social problem solving skills through specific lessons taught in the classrooms over the course of one year. It emphasized recognizing, understanding and regulating emotions and included parent components so that the children could generalize their new skills. Greenberg and colleagues have conducted several randomized controlled trials with a variety of elementary school aged children and have found “significant improvements in social problem solving and understanding of emotions at post-test” (Greenberg et al., 2001, p. 11). Improvements were maintained at 1 year follow up and additional gains were reported by 2-year follow up (Greenberg et al., 2001).

The Improving Social Awareness-Social Problem Solving (ISA-SPS) Method began as a two-year, intensive, elementary school-based primary prevention program administered to students prior to their transition to middle school. The program’s aim was to develop social competence through social decision-making, self control, and social awareness skills. The researchers hypothesized that if children were given appropriate
skills to cope under stress, it would ease the transition to middle school and result in positive social functioning. Results demonstrated that students who participated in the two-year program displayed higher levels of prosocial behavior and lower levels of antisocial, and/or socially disordered behavior during high school (six year follow-up) when compared to control students who had not received this program (Elias, Gara, Schuyler, Branden-Muller, & Sayette, 1991). The program now goes by Social Decision-Making and Social Problem Solving (SDS-SPS) and has been replicated nationwide through support from the U.S. Department of Education and the William T. Grant Foundation (Greenberg et al., 2001).

These aforementioned programs are considered to be universal prevention programs aimed at promoting social and emotional well-being and reducing risk of psychopathology. While these general skill-based programs have clearly shown benefits in terms of teaching cognitive problem solving skills and increasing social skills, these programs have only been tested with regular education children and not with a specific population of behaviorally inhibited youth who are at risk for internalizing disorders. Also, these programs are intense in nature, ranging from 12 weeks to 2 years of lessons, which may not be practical for a wide variety of children and families. Lastly, although these programs have shown reductions in particular subsets of symptoms (e.g. antisocial behavior), they have not shown direct reductions in psychopathology symptoms. Lastly, these programs were delivered by teachers who were trained in the specific curriculums of these programs, not by clinically trained mental health professions. These school-based programs serve as useful models of effective general prevention efforts, yet certain students who show a particular constellation of early risk factors (e.g. behavioral
inhibition) may require a more specific, streamlined prevention effort. Naturally, indicated prevention and intervention programs for internalizing disorders would aim to fill this need.

Indicated Preventative Interventions for Internalizing Disorders

There have been numerous prevention programs specifically aimed at reducing internalizing symptoms in groups of children and adolescents. One of the most comprehensive of these projects is the Queensland Early Intervention and Prevention of Anxiety Project (Dadds, Spence, Holland, Barrett, & Laurens, 1997; Dadds et al., 1999). In this program, 128 anxious children between the ages of 7 and 14 were enrolled in either a school-based cognitive behavioral intervention or a control group. The intervention consisted of 10 child-only group sessions based on Kendall’s Coping Cat and three separate parent-only sessions. During the child only sessions, each child developed and implemented their own plan for graduated exposure to fearful stimuli while also being taught cognitive, physiological and behavioral strategies for reducing anxiety during exposure exercises. Parent sessions addressed psychoeducation regarding anxiety, reinforcement skills to use with their children, and strategies for how to regulate parental anxiety. The control group received no intervention. Children who had been enrolled in the intervention group had lower rates of anxiety disorders at 6 month (Dadds et al., 1997) and 2 year follow up (Dadds et al., 1999) when compared to children in the control group. 54% of the anxious children who were in the control group progressed to a full diagnosis at 6 month follow up versus only 16% in the intervention group. These results indicate that early intervention can be successful in reducing anxiety
psychopathology and speaks to the need for early intervention to negate the progression of symptoms into diagnosable disorders.

In 1990, Gillham, Jaycox, Reivich, Seligman, & Silver, created the Penn Resiliency Program (also known as the Penn Prevention Program). Originally, the Penn Resiliency Program was conducted with 10-13 year-olds who were at risk of developing a depressive disorder based on pre-treatment levels of depressive symptoms and reports of parental conflict (Jaycox, Reivich, Gillham, & Seligman, 1994). At-risk children were randomly assigned to either a treatment group or a wait-list control condition. The treatment condition consisted of 12 weekly group meetings lasting 90 minutes in length. The first 5 sessions of the Penn Resiliency Program taught cognitive behavioral skills such as labeling thoughts and feelings, identifying negative automatic thoughts, and considering alternative explanations. Sessions 6-12 focused on social problem solving and included training in assertiveness, relaxation, de-catastrophizing, coping with family conflict, and ways to seek social support. At post-program, depressive symptoms were significantly reduced for children in the treatment condition compared to children in the control condition (Jaycox et al., 1994). Follow-up at 6 months post-treatment showed continued reductions in depressive symptoms. The Penn Resiliency Program has since been replicated worldwide with similarly positive results (Cardemil, Reivich, & Seligman, 2002; Gillham, Reivich, Jaycox, & Seligman, 1995).

One of these replications included piloting a parent component to treatment and an examination of anxiety symptoms, in addition to depressive symptoms. Gillham and colleagues (2006) conducted the Penn Resiliency Program with 44 high risk middle-school students who had elevated levels of anxiety and depressive symptoms at pre-
treatment. Parental involvement was seen to be especially important in this intervention since children tend to learn explanatory styles and coping strategies from their parents and caregivers (Gillham et al., 2006). Half of the participants were assigned to a treatment condition and half were assigned to a control condition. The intervention group consisted of 10 child sessions of the manualized school-based program that taught cognitive behavioral skills and social problem solving. The new parent portion consisted of 6 group sessions that were designed to teach parents the core skills of the Penn Resiliency Program and instructed parents in how to incorporate the skills in their parenting through modeling and supporting the child’s use of skills. Children in the treatment condition reported lower levels of depressive symptoms at post treatment, 6 month follow up and 12 month follow up, when compared to the control condition. The intervention was also significant in reducing anxiety symptoms at 6 and 12 month follow up for children in the treatment condition (Gillham et al., 2006).

Another study of particular interest is a recent pilot study conducted by Chaplin and colleagues in 2006. Chaplin et al. (2006) examined whether the Penn Resiliency Program was more effective for females in all-girls groups versus co-ed groups. Participants were 11- to 14-year-olds with no restrictions for participation. Females were randomly assigned to either an all-girls group, a co-ed group, or a control condition. Males were assigned to either the co-ed group or control condition. All participants completed questionnaires on depressive symptoms, hopelessness, and explanatory style pre and post intervention. Groups were conducted using the manualized Penn Resiliency Program and groups met for 90 minutes once a week. In contrast to the previous programs, which were led by doctoral level psychologists and the developers of the
program, this pilot study utilized trained teachers, guidance counselors or research assistants as group leaders. Results showed that females in the all-girls groups attended more sessions than girls in the co-ed groups (Chaplin et al., 2006). Depressive symptoms were reduced at post-treatment for both genders in the co-ed group. There was no effect of gender in the co-ed groups and there was no effect of depressive symptoms between co-ed versus girls groups. However, results indicated that girls groups were better than co-ed groups in reducing girls’ hopelessness (Chaplin et al., 2006). These findings suggest possible additional benefits for all-female groups.

In addition to those outlined above, multiple group-based prevention or early intervention programs consisting of cognitive behavioral strategies have been found to reduce levels of anxiety in groups of children and adolescents with a variety of anxious symptoms (e.g. Garcia-Lopez et al., 2006; Ginsburg & Drake, 2002; Hayward et al., 2000; Herbert, Rheingold, & Goldstein, 2002; Kiselica, Baker, Thomas, & Reedy, 1994; Kley, Heinrichs, Bender, Tuschen-Caffier, 2012; Masia-Warner et al., 2005; Misfud & Rapee, 2005; Roberts, Kane, Thomson, Bishop, & Hart, 2003). There have also been several group-based prevention programs that have shown success in reducing depressive symptomology (e.g. Clarke et al., 1995; Clarke, Rohde, Lewinsohn, Hops, & Seeley, 1999; Clarke et al., 2001; Garber et al., 2009). These programs have shown great success in reducing internalizing symptoms but one wonders if a more brief prevention program could hold similar success in teaching general cognitive behavioral skills and social problem solving techniques. If internalizing symptoms could decrease after a shorter, less intense intervention, the benefits would be substantial. The prevention program could be administered more frequently, allowing more children and adolescents an opportunity for
enrollment. It would also be less costly, allowing it to be generalized to a wider variety of schools and community centers. Given the prevalence, chronicity and general cost of internalizing disorders to individuals and our society, successful early prevention and/or intervention efforts could potentially minimize the burden to individuals, families and society.

There are several common techniques that have been integral in these effective prevention and intervention programs, mainly those that are consistent with cognitive-behavioral therapy and social problem solving approaches. Cognitive behavioral strategies have shown efficacy in reducing children’s anxiety and depressive symptoms and improving their general functioning (e.g. Garcia-Lopez et al., 2006; Hayward et al., 2000; Clarke et al., 1995; Gillham et al., 1995). Cognitive behavioral strategies are therefore a natural choice for inclusion in a prevention program. One common cognitive behavioral technique that is utilized in several of the indicated prevention programs is cognitive restructuring (e.g. Dadds et al., 1997; Dadds et al., 1999; Gillham et al., 2006; Herbert et al., 2002; Kley et al., 2012). For cognitive restructuring, participants are first taught to identify negative automatic thoughts and cognitive distortions and then taught to “challenge the logical errors of their thinking” (Herbert et al., 2002, p. 3). To challenge the logic of their cognitions, children are taught to look for evidence that negates them, consider alternative explanations, define worst case scenarios, consider the most likely and realistic outcomes, and/or replace negative cognitions with helpful other thoughts (e.g. Dadds et al., 1997; Dadds et al., 1999; Gillham et al., 2006). A second common technique that is used in effective prevention and intervention programs has been exposure to fearful stimuli or situations (e.g. Dadds et al., 1997; Dadds et al., 1999;
Hayward et al., 2000; Kley et al., 2012). Social exposure is already built into the format of a group program, allowing opportunities for individuals to gain social exposure simply by attending sessions. To teach social exposure, the rationale behind exposure is explained and participants confront feared social situations through “simulated exposure exercises” and activities conducted in session (Herbert et al., 2002, p. 3). The cognitive behavioral strategies outlined above would work to address the cognitions and behaviors consistent with the behaviorally inhibited temperament, making it an ideal fit for inclusion in a prevention program for BI individuals. In addition, many effective prevention and intervention programs teach social problem solving skills including education regarding verbal and nonverbal cues, lessons on perspective taking, modeling of specific behaviors and conversational skills, role-playing and practicing skills in session, and teaching ways to seek social support (e.g. Gillham et al., 2006; Herbert, Guadino, Rheingold, Myers, Dalrymple & Nolan, 2005). Lastly, parent handouts which are designed to teach parents the cognitive and behavioral skills outlined above, are also often utilized in programs to allow parents an opportunity to adapt their behaviors and to help promote the child’s use of the skills in the home setting.

Given the proven efficacy of these aforementioned skills, a prevention program that is based on these skills and targets behaviorally inhibited females would be ideal in reducing the impact that behavioral inhibition and adjustment to middle school could have on internalizing symptoms. The purpose of the proposed research is to examine the efficacy of a brief (5 session) cognitive behavioral skills group, relative to a peer support group, at reducing internalizing symptoms and increasing adolescent connectedness in behaviorally inhibited female adolescents.
Hypotheses

Five separate hypotheses were proposed for this study. It was hypothesized that the following would change from pre to post program:

1. Adolescent participants in both conditions will report increases in adolescent connectedness to parents and peers based on the Hemingway Measure of Adolescent Connectedness.

2. Relative to the peer support condition, the cognitive behavioral skills condition will report decreases in anxiety symptoms (social anxiety, separation anxiety and generalized anxiety) based on the Spence Children’s Anxiety Scale.

3. Relative to the peer support condition, the cognitive behavioral skills condition will report increases in self esteem related to peers based on the HARE Self Esteem Scale.

4. Relative to the peer support condition, the cognitive behavioral skills condition will report decreases in depression symptoms based on the Center for Epidemiologic Studies Depression Scale for Children.

5. Relative to the peer support condition, the cognitive behavioral skills condition will report increases in their use of cognitive behavioral skills based on the Girls Link Questionnaire.

Method

Participants

Participants were 42 females aged 10-14 (mean age = 12.58, SD = 1.21) and their parents. 35 mothers and 5 fathers participated by completing questionnaires. All females were enrolled in middle school (rising 6th grade to rising 9th grade). Grade ranges of
participants in groups never ranged more than three years, meaning that groups either had rising 6th, 7th and 8th grade participants or rising 7th, 8th and 9th grade participants. This was done to ensure that age and grade ranges were reasonably comparable.

Children were included if they met at least 4 of 12 criteria for behavioral inhibition based on the Behavioral Inhibition Questionnaire (Bishop, Spence, & McDonald, 2003) during a parent phone screen. Details of enrollment are outlined below.

**Procedure**

*Recruitment and Phone Screen Assessment*

Participants were recruited through various community media, including flyers posted at community centers, libraries, and schools and a media release. Brochures and verbal referrals were utilized by local school districts.

Enrollment in the study was based on elevated levels of behavioral inhibition. Interested parents of potential participants completed an initial 20-minute phone screen with the co-investigator, during which program description, random assignment, and research requirements for enrollment were discussed.

If parents agreed to initial program requirements, eligibility was determined based on 12 questions derived from the Behavioral Inhibition Questionnaire (Bishop, Spence, & McDonald, 2003). Questions on the Behavioral Inhibition Questionnaire asked about shy, socially avoidant or socially withdrawn behaviors that the child was currently experiencing. The twelve questions included in the phone screen were chosen to represent the six contexts/factors that behavioral inhibition tends to appear in based on research by Bishop and colleagues for the Behavioral Inhibition Questionnaire (2003).
These six contexts include: unfamiliar situations, performance situations, separation form caregiver situations, unfamiliar peer situations, unfamiliar adult situations, and physical challenges. Not only did the twelve questions chosen reflect the six contexts/factors of the Behavioral Inhibition Questionnaire, but the researchers also chose questions that were most relevant to the age population of the current study (ages 10-14) since the original Behavioral Inhibition Questionnaire was normed with a younger population (ages 3-5 years).

Parents must have endorsed at least 4 of the 12 questions, or 1/3 of the total questions, to be considered for enrollment. The number 4 was chosen as the cut-off score as the researchers’ goal was to be inclusionary rather than exclusionary. Furthermore, there was no specific precedence for a cut-off score since the phone screen items were a derivative of the questionnaire and did not include all items.

Of note, the mean BI score on the phone screen for all participants was 9.10 (SD = 1.97) with a minimum score of 6 (given by 1 participant) and a maximum score of 12 (given by 4 participants). These numbers indicate that although the screening cut-off criteria was low (4 questions must have been endorsed), all participants endorsed at least half of the questions and the majority of participants endorsed most items.

In addition, the initial phone screen also asked parents scripted questions to determine rule out criteria. Exclusion criteria included: self harm, suicidal ideation, homicidal ideation, psychotic symptoms, diagnosis of intellectual disability, developmental disability, Autism-Spectrum Disorder and/or Conduct Disorder. Participants were also ineligible if they were participating in concurrent therapy and/or had recently begun a new psychotropic medication within the past 4 weeks. Children who
were ineligible to participate in this study were referred to more appropriate services, including the Case Western Reserve University Psychology Clinic and the University Hospitals Pediatric Psychology Department.

Prior to program enrollment, researchers collaborated with the Cuyahoga County Library administrators to secure use of private rooms in three local libraries that were determined to be ideally located for easy access to a wide range of participating families in Cleveland, OH. Groups were scheduled for weekday evenings. Parents chose their daughter’s group based on location without knowing which condition each location would receive.

**Individual Welcome Meeting**

Those who were eligible to participate in the program following the phone screen were invited for an individual welcome meeting, during which the child participant and parent/guardian had an opportunity to meet the group leader and review consent and assent forms in person. Individual welcome meetings took place in private rooms at the host libraries of the program. During the individual welcome meeting, randomization was discussed with child and parent participating families. All families were aware that they were enrolling for either of the two group conditions (skills group or peer support group) and would be blind to group condition until first group meeting. By consenting to participate, parents were agreeing to keep their child enrolled in whichever condition their location had been assigned. Parents would not be able to switch groups after first group meeting. If the child and parent participant both consented to participate, they then separately completed pencil-and-paper pre questionnaire packets.
The questionnaires asked child participants to rate how they experience and manage symptoms of anxiety, depression, peer relationships, social situations, and a rating of their current self esteem. Participants’ parents completed the Behavioral Inhibition Questionnaire (as mentioned above) and a demographic form at this time. Each questionnaire took approximately 2-3 minutes to complete and the questionnaires together took approximately 5 minutes for parents to complete and 20 minutes for child participants to complete.

*ADIS Interview* (Silverman & Albano, 1996; *this applies to participants in both conditions*)

Child participants individually completed three sections of the ADIS interview with the group leader and/or graduate student members of the research team, all of whom had been trained to reliability on ADIS administration. The subsections of the ADIS that were administered to participants inquired about Social Phobia symptoms, Generalized Anxiety Disorder symptoms and Major Depressive Disorder symptoms. ADIS interviews took approximately 20-30 minutes to complete and were only completed once at pre-program.

*Random Assignment*

This study utilized random assignment of groups, rather than individual random assignment. The reason that randomization was done by groups rather than on the individual level was due to the widely varying locations of the group. Researchers could not assign families to a location, as families were participating in the group location nearest to their home. Instead, groups were randomized to one of the two conditions when that location’s group was considered full. When researchers had at least 4 eligible
and interested families from one geographic location, that group was randomized to either the prevention condition or active control condition. For example, the group that filled first was assigned to the skills group condition, the second group to fill was assigned to the peer support group condition, the third group to fill was assigned to the skills group condition and so forth to ensure an equal number of participants and groups of each condition.

The first condition was a prevention condition in which female participants were taught cognitive behavioral skills and social problem solving skills during the 5 week program. The second condition was a peer support group (active control condition) in which the participants did interactive group activities that encouraged peer support, but this 5 week program did not include any skills training.

At post-program, there were three groups with a total of 24 participants who completed the cognitive behavioral skills group condition. There were two groups with a total of 18 participants who completed the peer support group condition.

*Group Session Format*

Both the cognitive behavioral skills group and the peer support group met for 5 weekly sessions. Groups consisted of approximately 4-10 female middle-school-aged participants, in addition to the group leader and 1 or 2 group assistants. Parents/guardians were not included in any group sessions. Sessions lasted 1 hour each. Group sessions took place in private rooms at the designated host libraries in Cuyahoga County. All groups were led by a doctoral level clinical psychology student. Sessions for both conditions were videotaped and a subset (20%) of tapes were coded by an independent rater for program adherence.
Cognitive-Behavioral Skills Group (active prevention condition)

Children in the skills group condition received a scripted, 5-session program that incorporated cognitive behavioral skills and social problem solving skills. Techniques included the following: 1) teaching relationship between thoughts, feelings, and behaviors, 2) identifying and restructuring cognitive distortions, 3) learning the concept of habituation and exposure to feared stimuli, 4) recognizing nonverbal cues of self and others, and 5) learning relaxation strategies. The skills group condition also emphasized commonalities between group members to increase peer support throughout group sessions.

To teach the relationship between thoughts, feelings and behaviors, diagrams of an anxiety triad were utilized. Using scenario examples from group leaders and those generated from the female participants, participants were able to identify the body feelings (physiological anxiety responses), negative thoughts, and behaviors (e.g. avoidance) that maintain the anxiety cycle.

Cognitive restructuring techniques were taught to participants through group activities in which participants practiced identifying negative automatic thoughts. Handouts were utilized to help participants recognize common cognitive distortions and to challenge the logic of their distorted thinking. Homework was assigned to assist the participants in learning to identify and challenge their negative automatic thoughts.

To teach exposure techniques, rationale was explained and psychoeducational handouts illustrating the natural habituation process and reduction of anxiety were provided. Fear thermometers were introduced and participants learned to rate their level of anxiety and/or fear. Each participant completed their own fear ladder, which consisted
of participants’ identifying steps they can take to reach their individual goal of facing a personally anxiety-provoking event. Each participant completed one step of their fear ladder as exposure homework.

Nonverbal cues were taught to participants using a slideshow of pictures in which participants were asked to evaluate the nonverbal cues and the corresponding approachability of the models in the pictures. Social problem solving skills were taught through discussion-based conversations regarding alternative strategies for approaching social situations and role-plays were incorporated to practice said skills. Corresponding homework was assigned in which participants were asked to practice positive nonverbal cues at home and school.

Lastly, relaxation strategies including deep breathing and progressive muscle relaxation were introduced and practiced in session. The five sessions also incorporated peer support through group discussions that demonstrated that the participants are all experiencing similar feelings and situations. Peer support was also emphasized through the weekly validation activity, in which each group session is ended with anonymous compliments written to their peers.

The skills group incorporated catchphrases for sessions that acted as self-talk strategies that the participants could use in remembering the skills taught during groups and may help them to utilize their skills during real-life situations. Coping self-talk and self-talk mantras have been successfully used in other prevention and intervention programs, such as Kendall’s Coping Cat workbook (Kendall, 1990). Please refer to Table 1 on page 63 for an outline of the sessions for the Cognitive Behavioral Skills Group.
Given the empirical support for parental involvement in cognitive behavioral treatments (e.g. Gillham et al., 2006), the skills group also included parent handouts which were distributed to parents at the end of each session. These parent handouts corresponded with the skill being taught in that day’s session and were designed so that parents can adjust their cognitions and behaviors, and to help their daughters practice and implement the skills at home.

*Peer Support Group (active control condition)*

Children in the peer support group received a scripted, 5 session program that incorporated interactive group activities, team building activities and group craft activities designed to encourage friendship building and offer peer support. Interactive group activities and team building activities included: creating personal collages, pairs of teams creating a tower from index cards, a variation of BINGO in which the girls discovered interesting facts about their peers, and an activity that asked them reflect on their personal attributes. Group craft activities in the peer support group included: making friendship bracelets, painting suncatchers, making jewelry necklaces and creating fortune teller paper crafts. Similar to the skills group, a weekly validation activity took place at the end of each session. Children in the peer support group did not receive any instruction in skills or strategies.

*Videos of Sessions*

Sessions for both conditions were videotaped to ensure that the group leader followed protocol. Independent raters from the research team watched a subset (20%) of the sessions and indicated whether group leaders conducted the activities and/or skills
that were scheduled for that particular session using a coding adherence form that was created for this study. Videos were 100% compliant with program protocol.

*Group Leader Training*

Group leaders were two doctoral-level psychology students. Group leaders were trained by completing mock trial sessions with lab members. These mock sessions were the method of identifying anything that was problematic that may come up during sessions. Trial sessions were successful and there were no changes made to program protocol following group leader training.

*Measures*

*The Anxiety Disorders Interview Schedule for DSM-IV – Child Version (ADIS-IV-Child Version; Silverman and Albano, 1996)* is a clinical diagnostic interview used to assess the presence or absence of anxiety disorders and screens for substance use disorders, mood disorders, somatoform disorders, psychotic disorders, and medical history. The ADIS-IV assesses severity of present disorders using a nine-point Likert scale (0 = absent to 8 = very severe/severely disturbing and disabling). A score of 4 or higher indicates that an individual has met criteria for a diagnosis. The present study only administered three sections of the ADIS-IV-Child Version: Social Phobia, Generalized Anxiety Disorder, and Major Depressive Disorder. Also, the Clinician’s Ratings and Diagnosis were completed. The entire diagnostic interview requires approximately 90 minutes, but the abridged three sections only required approximately 20-30 minutes to administer. The ADIS-IV-C was conducted at pre-program by doctoral-level graduate students who were trained to reliability prior to administering the interviews to participants. Data shows that the psychometrics of the ADIS-IV-C are the best available
for assessing child anxiety disorders (Ginsburg & Drake, 2002; Silverman, Saavedra, & Pina, 2001). The ADIS-IV-C allows for excellent inter-rater reliability (Silverman et al., 2001) and is also “sensitive to treatment effects in studies of youths with anxiety disorders” (Ginsburg & Drake, 2002, p. 769).

The Behavioral Inhibition Questionnaire (Bishop, Spence, & McDonald, 2003) is a 30 item parent rating scale for a child’s temperamental characteristics such as shyness, fearfulness, and withdrawal. Each of the items is scored on a 6 point Likert Scale from 1 (“hardly ever”) to 7 (“almost always”). The reliability and validity of the BIQ was recently evaluated in older age groups of 8–11-year-olds and 12–15-year-olds. The results indicated that the internal consistency of the BIQ scales was satisfactory (.67 - .95 in 8–11-year-olds, and .73 - .95 in 12–15-year-olds; Broeren & Muris, 2010). The BIQ has also been positively associated with a broad range of anxiety symptoms (most significantly social anxiety), supporting its relationship with anxiety (Broeren & Muris, 2010). Questions from the BIQ were used in the initial parent phone screen.

Hare Self Esteem Scale (Hare, 1975) is a 30-item self-report questionnaire designed to measure a child’s self esteem regarding home, peers and school. Each of the items is scored on a 4-point Likert scale from 1 (“strongly disagree”) to 4 (“strongly agree”). Every other item is reverse-scored and the sum of the 30 items comprises a total self esteem score. There are also three 10-item subscale scores, corresponding to the home, peers and school constructs. The Hare Self Esteem Scale is correlated with Coopersmith’s (1967) Self Esteem Inventory at .83 and with Rosenberg’s Self-Esteem Scale at .74 (Shoemaker, 1980). Internal consistency for this scale is unknown but the test-retest reliability for the total self-esteem score is good (r=0.74; Shoemaker, 1980;
Winters, Myers, & Proud, 2002). Shoemaker (1980) also found empirical evidence for the three self-esteem subscales and the overall total self-esteem score, supporting the HARE Self-Esteem Scale as a valid measurement of overall self-esteem and area-specific self-esteem. The HARE Self-Esteem Scale was administered to child participants in the pre and post program questionnaire packets. For the purposes of this study, only one subscale was utilized: self esteem related to peers.

Center for Epidemiologic Studies Depression Scale for Children (CES-DC; Weissman, Orvaschel, & Padian, 1980; original by Radloff, 1977) is a 20-item self-report questionnaire that assesses nine domains of depression symptoms including sadness, loss of interest, appetite, sleep, thinking/concentration, guilt/worthlessness, tired/fatigue, movement/agitation and suicidal ideation. Each item is scored on a 4-point Likert Scale from 0 (“not at all”) to 3 (“A lot”). The total CES-DC score is calculated by summing responses to all 20 questions. The possible CES-DC scores range from 0 to 60, with higher scores indicating higher symptomology and a score of 16 being the cut-off for elevated depression symptoms warranting further examination. According to Faulstitch and colleagues, the internal consistency as measured by the coefficient alpha was good for adolescents (r=.86), the test-retest reliability for the adolescent sample was also good (r=.69, p<.0005), and concurrent validity with Children’s Depression Inventory (CDI) scores of adolescents was adequate (r=.61, p <.0005; Faulstitch, Carey, Ruggerio, Enyart, & Gresham, 1986). Weissman et al. (1980) found the CES-DC to be significantly correlated with the Child Depression Inventory, the Child Behavior Checklist and the Conners Parent Questionnaire (Weissman et al., 1980). Data from Faulstitch et al. and Weissman et al. provide evidence for the reliability and validity of the CES-DC for use
with an adolescent sample. The CES-DC was administered in its entirety to participants in the pre and post program questionnaire packets.

_The Hemingway Measure of Adolescent Connectedness – Adolescent short version (Karcher, 2003)_ is a 57 item self-report questionnaire that measures adolescent connectedness to self, others and society. These three domains are broken down into subscales that measure more specific domains including, but not limited to, connectedness to 1) parents, 2) friends, 3) school, 4) neighborhood, 5) siblings, 6) peers, 7) teachers, 8) self in the present, 9) self in the future, and 10) reading. (McWhirter & McWhirter, 2008). Each of the items is scored on a 5-point Likert scale ranging from 1 (“not at all true”) to 5 (“very true”). The Hemingway Measure of Adolescent Connectedness –Adolescent version shows strong internal consistency (alpha values of .82 and .72 for parents and peers subscales; >.60 for all nine subscales) and concurrent validity in U.S. (Karcher, 2003) and Taiwanese (Karcher & Lee, 2002) samples and strong construct validity and concurrent validity in Chilean adolescents (McWhirter & McWhirter, 2008). This measure also demonstrated satisfactory inter-item and test-retest reliability and convergent validity across samples (Karcher, 2001). For the purposes of this study, only two subscales were utilized: connectedness to parents and peers. The Hemingway Measure of Adolescent Connectedness was administered to participants in the pre and post program questionnaire packets.

_The SPENCE Children’s Anxiety Scale (SCAS; Spence, S.H., 1997)_ assesses anxiety symptoms on six subscales including separation anxiety, social anxiety, obsessive-compulsive problems, panic/agoraphobia, physical anxiety fears and generalized anxiety. The child self-report version includes 44 items, of which only 38 are
included in the scoring. Each item is scored on a 4 point Likert Scale from 0 (“Never”) to 3 (“Always”). Total scores and subscale scores are calculated by summing together relevant items with higher scores reflecting higher anxiety symptoms. The SCAS child version has shown high internal consistency (alpha value of 0.92 for total scale and > .60 for all subscales), acceptable test-retest reliability (r=.60 at 6 month follow-up), and good construct validity, with total scores correlating strongly with the Revised Children’s Manifest Anxiety Scale (RCMAS) total scores (r= 0.71, p<.001) and correlating moderately with the CDI (r=.48, p<.001; Spence, 1998). The measure also differentiated significantly between those children with and without anxiety disorders (Nauta et al., 2004). For the purposes of this study, only three subscales of the SCAS were utilized: social anxiety, generalized anxiety, and separation anxiety. The cut-off-score for the social anxiety subscale is 11 for 8-11 year-olds and 10 for 12-15 year-olds, respectively. The cut-off score for the generalized anxiety subscale is a 10 for 8-11 year-olds and a 9 for 12-15 year-olds. The cut-off score for the separation anxiety subscale is a 9 for 8-11 year-olds and a 6 for 12-15 year-olds. Scores above these cut-offs indicate elevated symptoms warranting further examination and possible diagnosis. These three subscales include symptoms most likely to change based on skills taught in the Girls Link program. The Spence Children’s Anxiety Scale was administered to participants in the pre and post program questionnaire packets.

*The Girls Link Questionnaire (Pucci & Przeworski, 2012)* consists of 6 items that ask child participants to rate how often in the past week they have utilized cognitive behavioral skills on a 5 point scale ranging from 0 (“not at all”) to 4 (“four or more times per week”). The 6 utility items correspond to skills taught during the Girls Link program
including thought identification, feeling identification, cognitive restructuring use, exposure use, recognition of body language cues, and recognition of positive attributes. It is hypothesized that the use of cognitive and behavioral skills will increase from pre to post program for participants in the skills group condition. A factor analysis revealed that the 6 items were positively correlated and loaded onto 1 main factor. A reliability analysis revealed acceptable reliability with a cronbach’s alpha of 0.71.

Data Analysis Plan

Statistics were computed using SPSS 21.0. Frequencies were computed for categorical variables and means and standard deviations were calculated for pre-post variables. To determine whether groups differed in demographic variables and pre-program psychopathology measures, chi-square tests were used for categorical demographic variables and ANOVA’s were used for examining between group effects of age and pre-program psychopathology symptoms. Significance levels for all descriptive statistics were set at $p<.05$.

Missing data for pre and post questionnaires was minimal (less than 5%) with no specific pattern to the occasional missing scores. Missing data was addressed by replacing the missing data point with that individual’s mean score from the subscale in question. If more than 1 item was missing for a total score or subscale score, we did not include this individual’s data in the analyses.

In order to examine the effects and potential interactions of the between subjects factor of condition (skills group condition versus peer support group condition) and the within subjects factor of time (pre & post) on the dependent variables outlined in our hypotheses, two-way mixed design ANOVA’s and MANOVAs were utilized. A two-way
mixed design MANOVA was utilized to test potential effects and interactions of condition and time on the dependent variables of adolescent connectedness to parents and peers as outlined in hypothesis 1. A separate two-way mixed design MANOVA was conducted to examine the potential effects and interactions of condition and time on the dependent variables of self-reported separation anxiety, generalized anxiety, and social anxiety symptoms as outlined in hypothesis 2. Three separate two-way mixed design ANOVA’s were utilized to test effects and interactions of condition and time on the dependent variables of self-esteem, depression, and CBT skill use as outlined in hypotheses 3-5.

Assumptions of two-way mixed design ANOVA’s and MANOVA’s were examined. First, boxplots and studentized residuals were utilized to test for outliers. Residuals $\geq +3$ (standard deviations) would be classified as outliers. Outliers were minimal, but were removed from the analysis when they occurred. Refer to results below for details. Second, the assumption of multivariate normality was checked by testing the assumptions of univariate normality for each dependent variable utilizing Shapiro-Wilk’s tests and studentized residuals. The data was approximately normally distributed. Third, the assumption of homogeneity of variances matrices was checked using a Levene’s Test of Equality of Error Variances. Fourth, homogeneity of covariances was tested using the Box’s test of equality of covariance matrices. Lastly, sphericity was assessed using Mauchly’s Test of Sphericity.

**Results**

Sixty-eight parents completed the phone screen. Of these sixty-eight parents, 2 did not meet behavioral inhibition criteria, 10 were excluded based on rule out criteria
(Autism Spectrum Diagnosis, suicidality, concurrent therapy, new medication) and 10 were unable to participate due to conflict with location, time and/or scheduling conflicts. 46 participants completed the enrollment phase of the program.

**Preliminary Analyses of Drop-Outs versus Treatment Completers**

Program attendance was good, with an average attendance of 4.3 (range 3-5 sessions attended) for child participants. Attrition was low with only 2 participants dropping out mid-program, both dropping out following the first session (1 participant from each condition). There were 2 additional participants who had completed the enrollment phase but dropped out of the program prior to groups starting. Post-program data was not collected for any drop-out participants. Researchers did not carry over pre-program data for these drop-out participants; they are excluded from the post-program statistical analyses.

Analyses of descriptive statistics examined potential differences in pre-treatment demographic variables between drop out participants versus participants who successfully completed the program. Analyses revealed no significant pre-treatment differences in ethnicity, age, or parent income. Differences in pre-treatment psychopathology symptoms were also examined. Analyses of self-reported descriptive statistics revealed no significant differences of pre treatment self-esteem, depression symptoms, CBT skill use, total anxiety symptoms, and/or social anxiety symptoms. Additionally, there were no differences in the presence of a diagnosis (Generalized Anxiety Disorder, Social Phobia or Major Depressive Disorder) based on the ADIS interview.
Preliminary Analyses of Treatment Completers

Preliminary analyses on data of treatment completers also examined potential differences in pre-treatment variables between participants in the skills group condition versus those in the peer support group condition. Chi-square tests of child ethnicity, parent income, parent education and parent relationship status revealed no significant differences between conditions. Overall, the participants’ parents were a well-educated, mostly employed group of individuals with the majority (n=34) of parents having completed at least a 4-year bachelor’s degree. The majority of child participants also lived in single family homes with two married parents (n=34).

Separate chi-square tests (fisher-exact tests) revealed no significant differences between the presence of a pre-program diagnosis between conditions ($p=.656$). Over half of the total sample (n=26) met criteria for at least one diagnosis based on the pre-program ADIS interview. 13 participants (31.0%) met criteria for only one diagnosis, while 12 participants (28.6%) met criteria for two diagnoses. Of the 26 participants who met criteria for a diagnosis, 19 participants (45.2%) met criteria for Generalized Anxiety Disorder based on the ADIS interview at pre-program. 19 participants (45.2%) met criteria for Social Phobia. 2 participants (4.8%) met criteria for Major Depressive Disorder in remission. Separate chi-square tests were conducted to examine differences between specific diagnoses (Generalized Anxiety Disorder, Social Phobia & Major Depressive Disorder) and conditions. No significant differences were found. Please refer to Table 2 on page 64 for frequencies and percentages of ethnicity, diagnosis and parent demographics by condition.

A Univariate Analysis of Variance (ANOVA) revealed no significant differences
of age between conditions ($p=.317$). Separate ANOVA’s revealed no significant differences of pre-program psychopathology between conditions on the following variables: self esteem, adolescent connectedness, anxiety symptoms, depression symptoms, CBT skill use and parent reported behavioral inhibition. Participants in this sample reported pre-program social anxiety, generalized anxiety and separation anxiety mean scores below the cut-off scores for the SCAS, indicating the majority of participants reported symptoms that did not qualify as elevated. The pre-program mean total depression scores on the CES-DC for participants in this sample were also under the cut-off score of 16, indicating that the majority of participants did not meet elevated depression symptoms according to this scale. Please refer to Table 3 on page 65 for age and psychopathology scores by condition.

To ensure that the population was truly behaviorally inhibited, researchers had also administered the complete Behavioral Inhibition Questionnaire to parents during the initial in-person individual welcome meeting. The mean score for participants on the Behavioral Inhibition Questionnaire was 143.17 (S.D=23.0; no pre-treatment differences between conditions). The mean scores for the Behavioral Inhibition Questionnaire when it was examined in non-clinical populations of comparably aged children were 82.96 for 8-11-year-olds and 87.67 for 12-15-year-olds (Broeren & Muris, 2010). The mean score of 143.17 endorsed by our participants is higher than the comparable mean scores for this questionnaire, confirming that our sample endorsed elevated levels of behavioral inhibition.
Testing Hypotheses - Self Report Measures (Completer-Only Analyses)

*Hypothesis 1 - Hemingway Measure of Adolescent Connectedness*

A two-way mixed design MANOVA test was computed to assess the impact of condition and time on participants’ scores of adolescent connectedness to parents and peers. There were no outliers in the data and the residuals were normally distributed, as assessed by box plots and studentized residuals. There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance \((p > .05)\). Box’s test of equality of covariance matrices indicated homogeneity of covariances \((p = .426)\). The assumption of sphericity was also met.

Results of the Mixed-Design MANOVA examining connectedness to parents and peers indicated a main effect of time for connectedness to parents \(F(1,39)=12.91, p=.001, \text{partial } \eta^2 = .249\), with both conditions reporting increased connectedness from pre to post program. There was no significant main effect of time for connectedness to peers, \(F(1,39)=.143, p=.707, \text{partial } \eta^2 = .004\), no main effect of condition for parents, \(F(1,39)=.626, p=.434, \text{partial } \eta^2 = .016\), no main effect of condition for peers, \(F(1,39)=1.61, p=.211, \text{partial } \eta^2 = .040\), no condition X time interaction for parents, \(F(1,39)= 1.077, p=.306, \text{partial } \eta^2 = .027\), and no condition X time interaction for peers \(F(1,39)=3.226, p=.080, \text{partial } \eta^2 = .076\). Please refer to Table 4 for mean pre to post adolescent connectedness scores by condition.

*Hypothesis 2 – The Spence Children’s Anxiety Scale*

A two-way mixed design MANOVA was conducted to assess the effect of time and condition on self-reported social anxiety, generalized anxiety and separation anxiety. Residuals of the data were normally distributed. There was homogeneity of variances, as
assessed by Levene's test of homogeneity of variance ($p > .05$). There was homogeneity of covariances, as assessed by Box's test of equality of covariance matrices ($p = .572$). Mauchly's Test of Sphericity indicated that the assumption of sphericity was met.

Results of the Mixed Design MANOVA indicated a main effect of time for social anxiety symptoms, $F(1,40)=6.73$, $p=.013$, partial $\eta^2 = .144$, and generalized anxiety symptoms, $F(1,40)=4.17$, $p=.048$, partial $\eta^2 = .094$, with both types of symptoms decreasing from pre-intervention to post-intervention. There was no main effect of time for separation anxiety symptoms, $F(1,40)=.160$, $p=.691$, partial $\eta^2 = .004$, and no main effect of condition for social anxiety symptoms, $F(1,40)=.523$, $p=.474$, partial $\eta^2 = .013$, generalized anxiety symptoms, $F(1,40)=.150$, $p=.701$, partial $\eta^2 = .004$, or separation anxiety symptoms, $F(1,40)=.527$, $p=.472$, partial $\eta^2 = .013$. There was also no significant condition X time interaction on social anxiety, $F(1,40)=.624$, $p=.434$, partial $\eta^2 = .015$, generalized anxiety, $F(1,40)=1.747$, $p=.194$, partial $\eta^2 = .042$, or separation anxiety symptoms, $F(1,40)=.736$, $p=.396$, partial $\eta^2 = .018$. Please refer to Table 4 on page 66 for mean pre to post anxiety symptom subscale scores by condition.

**Hypothesis 3 - HARE Self Esteem Scale**

A two-way mixed design ANOVA was conducted to assess the effect of time and condition on self esteem related to peers. Residuals of the data were normally distributed. There was one outlier in the data, which was removed from the analysis due to extreme elevation of reported self esteem. There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance ($p > .05$). There was homogeneity of covariances, as assessed by Box's test of equality of covariance matrices ($p = .441$). Mauchly's Test of Sphericity indicated that the assumption of sphericity had been met.
Results of the Mixed Design ANOVA indicated that there was a significant main effect of time, $F(1,39)=15.88$, $p=.000$, partial $\eta^2 = .289$, indicating significant increases in self esteem from pre to post program for participants in both conditions. There was no main effect of condition, $F(1,39)=.047$, $p=.829$, partial $\eta^2 = .001$ and no condition X time interaction for self esteem symptoms, $F(1,39)=.030$, $p=.863$, partial $\eta^2 = .001$. Please refer to Table 4 for mean pre to post self esteem scores by condition.

**Hypothesis 4 - Center for Epidemiologic Studies Depression Scale for Children (CES-DC)**

A two-way mixed design ANOVA was conducted to assess the effect of condition and time on depression symptoms. There were two outliers in the data, which were removed from the analysis due to extreme scores. Due to abnormalities in the distribution of the data, square root transformations were conducted to correct normality of data. Following the square root transformation, the CES-DC total scores at pre and post were normally distributed, as assessed by Shapiro-Wilk’s test ($p > .05$). Assumptions of Mauchly’s test of sphericity were met ($p = .1$). There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance ($p > .05$). There was homogeneity of covariances, as assessed by Box's test of equality of covariance matrices ($p = .285$).

Results of the ANOVA indicated there was a significant main effect of condition, with participants in the control condition reporting overall higher depression scores than participants in the skills condition, $F(1,38)=5.847$, $p=.021$, partial $\eta^2 = .133$. There was no main effect of time, $F(1,38) =.735$, $p=.397$, partial $\eta^2 = .019$ and no condition X time interaction on depression symptoms, $F(1,38)=3.792$, $p=.059$, partial $\eta^2 = .091$. Please refer to Table 4 for mean pre to post depression symptom scores by condition.
Hypothesis 5 – Girls Link Questionnaire of CBT skill use

A two-way mixed design ANOVA was conducted to assess the effect of time and condition on self reported CBT skill use. There were no outliers in the data. The Girls Link questionnaire variable was normally distributed, as assessed by the Shapiro-Wilk’s test \( (p > .05) \). Assumptions of Mauchly’s test of sphericity was met \( (p = .1) \). There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance \( (p > .05) \). There was homogeneity of covariances, as assessed by Box's test of equality of covariance matrices \( (p = .862) \).

Results of the mixed design ANOVA indicated a significant condition X time interaction on CBT skill use, \( F(1,39)=5.53, p=.024 \), partial \( \eta^2 = .124 \), with participants in the skills group reporting increases in CBT skill use over time, while participants in the peer support group did not report significant changes in their use of CBT skills. There was no significant main effect of time, \( F(1, 39)=.562, p=.458 \), partial \( \eta^2 = .014 \) and no significant main effect of condition, \( F(1, 39)=3.48, p=.070 \), partial \( \eta^2 = .082 \). Please refer to Table 4 for mean pre to post Girls Link Questionnaire scores by condition.

Post Hoc Analyses

Researchers conducted post hoc analyses to examine if differences existed between participants who qualified for an anxiety diagnosis based on the pre-program ADIS interview versus participants who did not. A two-way mixed design MANOVA was conducted to assess the effect of time (participation in either condition) and diagnosis (anxiety diagnosis on ADIS versus no diagnosis) on SCAS anxiety symptom mean scores. There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance \( (p > .05) \). There was homogeneity of covariances, as assessed
by Box's test of equality of covariance matrices ($p = .501$). Mauchly's Test of Sphericity indicated that the assumption of sphericity was met.

Results of the MANOVA revealed a main effect of diagnosis, $F (6, 76)=2.62$, $p=.023$, partial $\eta^2 = .171$, indicating significantly higher overall mean subscale scores for the diagnosed participants. There was no main effect of time, $F(3,37)=.319$, $p=.812$, partial $\eta^2 = .025$ and no time X diagnosis interaction, $F(6,76)=.618$, $p=.715$, partial $\eta^2 = .047$.

**Discussion**

This study evaluated the efficacy of a brief intervention in reducing anxiety and depression and related symptoms in adolescent females. Results provided some support for the efficacy of the CBT program as well as the peer support condition.

**Connectedness to Parents and Peers**

Consistent with our hypothesis, connectedness to parents increased from pre to post program for children in both conditions. However, participants did not experience an increase in connectedness to peers.

The skills group included content designed to connect the girls with their parents via parent handouts and lessons on seeking support, which the peer support group did not include. Since increases occurred equally across conditions, the resulting data supports the idea that perhaps parents who take the time to enroll their child in a prevention program and drive them to each session are demonstrating a level of concern and care which may be sufficient to increase feelings of connectedness. Alternatively, it could be
that parents talked to their daughters during the travel to and from the sessions, which led to increases in their connectedness.

Increased connectedness to parents is an important finding as it represents continued attachment and reciprocal bonding with the primary caregivers in our participants’ lives (Karcher, Holcomb, & Zambrano, 2008), serving as a protective factor for adolescents. Low attachment and connectedness to parents is associated with a variety of negative factors including inattention issues, depression, conduct problems and a higher frequency of negative life events (Raja, McGee, & Stanton, 1992). Positive perceptions of attachments to parents are significantly more powerful than that of peers in predicting certain aspects of adolescent well-being, with positive parental relationships being related to higher self concepts, ego identities (Greenberg, Siegel & Leitch, 1983) and life satisfaction (Armsden & Greenberg, 1987). Greenberg and colleagues also found that positively perceived attachment to parents had a moderating effect on self esteem during times of high life stress, whereas attachment to peers did not (1983). Advice and counsel from parents during adolescence has also been shown to be preferable to that of peers “in important situations involving values and future decision-making” (Greenberg et al., 1983, p. 375). The increased connectedness to parents resulting from this program is an adaptive quality which may have a clinically meaningful impact and long-term benefit on the overall well-being, self concept, and life satisfaction of participants.

It was surprising that connectedness to peers did not increase as a result of the program, which was designed to increase social interactions with peers. It is possible that the groups were too structured to allow participants to engage freely and connect with
one another or that connecting to peers may be difficult under constant adult supervision within a contained environment.

It is also possible that since the adolescent connectedness questionnaire, specifically the connectedness to peers scale, did not ask questions regarding their immediate peer interactions and instead focused on their experience of peer interactions as a whole (including past and present), the measure may not have reflected changes in current connectedness. Additionally, the items on the connectedness to peers scale focused largely on school-based situations, relationships with classmates and for the overall absence of conflict. These constructs may not have been as relevant to participants in our prevention group program. If the researchers of this study had assessed for whether participants spent more time with peers, whether their comfort level around peers increased, and/or whether their interactions with peers changed for the positive, different results may have emerged.

Alternatively, adolescents with elevated behavioral inhibition, may require more exposure than 5 sessions in order to feel connected to their peers. The shy, anxious and withdrawn behaviors of inhibited children have been demonstrated to impede or hinder the development of close relationships (Starr & Davila, 2008), therefore, adolescents in both the skills condition and the peer support condition may have continued to behave in a withdrawn manner even during group sessions.

**Social anxiety, Generalized anxiety and Separation anxiety symptoms**

Contrary to our hypothesis, social anxiety and generalized anxiety symptoms decreased from pre to post intervention for participants in both conditions to a similar
It is possible that the statistically significant changes that occurred for participants in both conditions could be due to the structure of the groups and the group environment. Behaviorally inhibited females in this age range may be particularly fearful of relational aggression from female peers and/or their status within a group (typically based on competition, performance or appearance). The literature has already established that behaviorally inhibited individuals have anticipatory fears, pessimistic expectations of social situations (Hayward et al., 1998) and poor social skills, all of which may elicit negative reactions, peer victimization and decreased acceptance from peers (Alden & Taylor, 2004; Flanagan et al., 2008; Ollendick & Hirshfeld-Becker, 2002; Spence, Donovan & Brechman-Toussaint, 1999). Furthermore, we know that competition, conflict and popularity are often interconnected for middle-school females (Merten, 1997). By participating in an all-female supportive group in which there was no competition, performance-based aspect for comparisons, or negative feedback, this may have challenged their pre-conceived fears about groups of girls and provided them with a positive, all-female group experience, sufficient to produce minor reductions in generalized and social anxiety symptoms.

While the reductions in anxiety symptoms are statistically significant and are not occurring by chance alone, they may not hold much clinically meaning. Mean scores on the SCAS were already within the normative range at pre-program for participants in both conditions, indicating that drastic reductions in mean scores were unlikely to occur for participants in either condition.

The fact that the mean SCAS scores were below the elevated threshold at pre-program may be surprising given the number of participants who met criteria for a
diagnosis on the ADIS interview. Researchers re-examined the mean pre-program SCAS scores based on diagnosis and found that participants who qualified for a GAD or Social Phobia diagnosis based on the ADIS interview had higher mean scores (8.7 on social anxiety scale; 7.3 on general anxiety scale, 4.2 for separation anxiety scale) at pre-program than those who did not qualify for diagnoses (5.2 on social anxiety scale; 5.6 on general anxiety scale; 2.8 on separation anxiety scale). Furthermore, the anxiety subscale scores for the diagnosed participants were close to the clinical thresholds of the SCAS, which is more consistent with the ADIS interviews and researcher expectations based on phone screen inhibition scores. However, since approximately half of the sample did not meet criteria for a diagnosis and had symptoms that were far below the elevated SCAS threshold, this drove down the mean SCAS scores for the entire sample.

Researchers also re-ran the anxiety MANOVA to examine if differences existed between participants who qualified for diagnoses based on the ADIS versus those who did not. With condition collapsed, results showed a statistically significant difference in symptoms at pre and post program for participants who met criteria for diagnoses based on the ADIS versus participants who did not \((p = .023)\), with the diagnosed participants reporting higher overall scores.

Separation anxiety symptoms did not change over time for participants in either condition. One explanation for this is that even for participants who qualified for GAD or Social Phobia diagnoses, their mean separation anxiety scores on the SCAS were far below the separation anxiety subscale cut-off score. Additionally, the separation anxiety subscale scores were lower than all other subscale scores in general. For example, participants who did not qualify for a GAD or Social Phobia diagnosis still had mean
scores on the social anxiety and general anxiety subscales that were higher than separation anxiety scores for the diagnosed participants. This data suggests that participants in this sample did not struggle with separation anxiety symptoms and did not have any need for change. Furthermore, separation anxiety symptoms may not be as relevant for individuals at this age range.

Self Esteem

Contrary to what was hypothesized, participants in both conditions reported increased peer self esteem from pre to post program. Participation in either condition required the girls to share ideas, conversations and personal interests and/or experiences with their female peers. Furthermore, both conditions included activities that utilized teamwork, group work, games and activities with peers, which have been identified in previous research as a means to promote positive self-worth and increased self-esteem in adolescence (O’Dea & Abraham, 2000). Given that these experiences were met with positive feedback from their female peers and group leaders, this may have led to increases in self esteem for both conditions.

While the increases in peer self esteem were statistically significant, they were small changes (25.38 to 27.48 for skills condition; 25.89 to 27.72 for peer support condition), which likely do not indicate a meaningful change. Research from Granleese and Joseph (1994) found that perceptions of global self worth and self esteem were more stable than originally expected (.61) over a 3 year period of time for a similarly aged sample of children. Given the stability of self esteem, five weeks may not be a sufficient amount of time to expect to see clinically meaningful changes of this construct.
The fact that peer self esteem revealed a statistically significant increase during such a brief 5 week period of time is an important outcome. Follow-up analyses may have revealed continued increases in self esteem if the trajectory found during the program had continued. It is possible that the Girls Link program and the resulting increases in self esteem may facilitate changes in coping styles for participants, helping them to utilize more active and problem-focused solutions. Increased self esteem resulting from this program may also have a bidirectional effect for participants in that it may help participants to react more positively and actively within their environment, and peers may respond more positively to them due to this shift in perception and behavior.

**Depression**

Depression symptoms did not change significantly over time for participants in either condition indicating that the program had no effect on depression symptomology. This result is somewhat surprising given that several of the components in the program would hypothetically work to reduce depression symptoms. In the skills group for example, participants learned cognitive restructuring techniques, an empirically supported tool for combating depression (e.g. Clarke et al., 1995; Clarke et al., 1999; Clarke et al., 2001; Garber et al., 2009). In addition, participating in a group program is a form of behavioral activation for participants in either condition, another tool often used to reduce depression symptoms.

The lack of change may be due to several factors. First, the presenting problem for the participants in this program was anxiety, rather than depression. Severe depression symptoms including suicidal ideation, current or previous self harm, and negative self
threatening statements were all screened out during the initial parent phone interview and no participant met criteria for current Major Depressive Disorder based on the pre-program ADIS interview. Furthermore, the mean CES-DC depression scores at pre-program of participants in both conditions were within the normative range, making significant reductions less likely to occur.

Another contributing factor could be that the primary focus of the program was on reducing anxiety symptoms, with depression symptoms as a secondary goal. Although several aspects of the program, including cognitive restructuring and relaxation, are utilized in CBT treatment for depression, other aspects of the CBT skills condition were specific to anxiety including psychoeducation regarding habituation and avoidance, as well as exposure activities. Further, the examples in group sessions and the content of cognitive restructuring was often focused on anxious experiences and thoughts, rather than depression, which could partly account for the lack of change. Lastly, it is possible that more time was required either during sessions or through individual practice to generalize the CBT techniques to depression since the techniques were largely being taught within the context of anxiety.

**CBT Skill use**

The last goal of the study was to examine whether a brief prevention program aimed at teaching and implementing CBT skills would increase participants’ reports of overall CBT skill use. Consistent with the hypothesis, results demonstrated a significant interaction of time and condition, with participants in the skills group reporting
significant increases in CBT skill use over time, while participants in the peer support
group reported no significant change in their use of CBT skills.

This is a novel finding because it demonstrates that time-limited programs can be
effective in teaching CBT skills to female adolescents. Previous research has largely
focused on prevention or early intervention programs that require participation in 8 or
more sessions to teach CBT skills (e.g. Barrett, Lock & Farrell, 2005; Barrett & Turner,
2001; Dadds et al., 1997; Dadds et al., 1999; Lock & Barrett, 2003; Misfud & Rapee,
2005). Additionally, many CBT programs tend to be randomized controlled treatment
programs, which are time-intensive for children and/or families and often require an
established diagnosis for participation (e.g. Garcia-Lopez et al., 2006; Ginsburg & Drake,
2002; Hayward et al., 2000). There are many sub-clinical children who may not qualify
for participation in these randomized controlled treatment programs and some who
simply could not participate due to the time commitment. Furthermore, for those who do
qualify and initiate intervention, drop out rates tend to be problematic due to the intensity
and length of the program. Results of this study demonstrate that CBT skills can be
taught and some changes can occur in as few as 5 sessions. If researchers had completed
a follow-up assessment weeks or months after the intervention, we may have found that
the participants in the skills condition may have continued to utilize the CBT skills and
techniques learned through this program and their symptoms may have continued to
decrease. The current findings indicate that participants in the skills condition learned the
CBT techniques but may not have had enough time using them to clinically decrease
symptoms.
This is a meaningful finding as it suggests that a prevention program need not be lengthy or intensive in order for participants to reap some benefits. Skill-based CBT programs such as this can be administered more frequently than long-term programs, allowing more children and adolescents an opportunity to learn skills that can be useful for everyday situations. Furthermore, results of this study indicate that participants who qualify for diagnoses, as well as children who are sub-clinical, can all learn and apply these CBT skills.

Limitations

This study was limited by a small sample size and a very specific sample of all-female, behaviorally inhibited middle-school-aged participants. Results cannot be generalized to males and/or any other age group. Data from this study is based on child self-reports, where more rigorous diagnostic procedures and parent data could have produced stronger support for these findings. Furthermore, researchers of this study did not administer the ADIS at post-program to examine whether there were changes in clinical diagnoses. There was no long-term follow-up aspect of the study so lasting impact/effects of this program are unknown. The program was contained within a brief, structured, adult-supervised, non-competitive group environment and results cannot be generalized to activities that are long-term in scope or competitive in nature as these may have vastly differing effects. Though minimal, missing data was substituted with individual participants’ mean subscale scores, which is less ideal than having completed data.
Clinical Implications & Future Directions

The overall results of this study are encouraging in that they support the utility of a brief, non-intensive prevention program for at-risk middle-school females. Participants in both conditions demonstrated decreases in social anxiety and generalized anxiety symptoms in addition to increased peer self esteem, increased connectedness to parents and for those in the skills condition, increased CBT skill use.

It is possible that brief, non-intensive skill-based programs such as the Girls Link program can be used as a stand alone prevention method for teaching CBT skills to at-risk middle-school-aged females. Additionally, a brief skill-based program could be used as early intervention for children who qualify for diagnoses and have not yet received treatment. By learning and applying CBT skills, some children may find that their anxiety symptoms have reduced to the point of no longer requiring further intervention. Others may continue to need additional intervention, but the CBT skills taught in this program could be a useful primer for follow-up individual or group therapy. Brief skill-based programs could be especially useful in school, community, or mental health settings as a first line intervention for teaching CBT skills to identified children/adolescents. Those that continue to have elevated symptoms following prevention could be filtered into a referral program for more intensive services. Additionally, results support the idea that there are positive benefits from skill-based programs including increased self esteem and connectedness to parents, which could potentially be beneficial for many females at this age range, regardless of clinical anxiety symptoms.

Results from the peer support group signify that participating in a non-competitive, supportive, adult-supervised group or club may be adequate in producing
positive benefits including increased peer self esteem, increased connectedness to parents and decreased anxiety symptoms for sub-clinical anxiety. Previous research has shown that involvement in social activities helps to foster socialization with peers and individual personality development and that social participation in activities is highly correlated with self esteem (Dumont & Provost, 1999). By participating in the Girls Link program, participants in the peer support condition demonstrated results consistent with these positive effects.

For children who already meet criteria for Generalized Anxiety Disorder or Social Phobia diagnoses, enrolling them in adult-supervised, non-competitive group activities could potentially be used in conjunction with therapy to help children apply and generalize therapy skills to real-life settings. Additionally, there was no evidence that anxiety symptoms increased for female participants in either condition by participating in such a group. This indicated that if the group activity is directed by a responsible and emotionally sensitive adult supervisor and contained within a supportive, non-competitive environment, exposure to peers may be beneficial for behaviorally inhibited female middle-aged girls. Examples of similar programs may include Girl Scout groups or non performance-based school clubs.

Future research is needed to clarify whether these results are specific to only children with BI or whether this type of program could be beneficial for non-behaviorally inhibited children as well. Given that the study sample was all-female, future research is also needed to examine whether a similar program would have the same effects with an all-male sample and/or co-ed sample of middle-school-aged children. Since behavioral inhibition is a temperamental trait evident across different age groups, studies should
examine whether brief skill-based CBT programs would have positive effects at other age ranges, including elementary school and high school. Furthermore, results of the peer support condition cannot be generalized to competitive sports or activities in which performance is scored or rated, as they may have a different impact on anxiety symptoms. Future studies should examine how long-term involvement in group activities impacts anxiety symptoms, with both non-competitive and competitive environments.

One important component of the Girls Link program environment was that none of the participants were enrolled in school together and the program did not take place in a school or mental health setting. This was purposely done by researchers for three reasons, 1) to mitigate any possible stigma associated with program enrollment from non-participating peers, 2) to ensure confidentiality and openness for participants and 3) because most middle-school-aged children feel comfort and familiarity with library environments. It would be interesting for future research to examine whether this program could have similar effects if replicated at regional libraries in a wider scope and/or whether other intervention programs would have stronger effects in a non-threatening environment (e.g. community settings) not associated with the stigma of school and/or mental health environments.

The researchers of this study also noticed a great desire for this type of program from parents of individuals with intellectual disabilities and/or Autism-spectrum disorders. Research criteria excluded these populations from participation in this program yet further studies should adapt this type of program for use with these populations.

Lastly, larger sample sizes would have allowed researchers to examine the effects of condition across diagnosed and undiagnosed individuals. It is possible that within a
larger sample size, the CBT skills condition may have shown statistically larger effect sizes and more clinically meaningful reductions in anxiety for clinically anxious participants. Researchers may also have found decreases in anxiety and depression symptoms over time if follow-up assessments had been utilized. Larger sample sizes, diagnostic interviews at post-program, and follow-up assessments would be a useful addition to any researcher looking to replicate the Girls Link program.
### Table 1. Outline of Sessions for Cognitive Behavioral Skills Group

<table>
<thead>
<tr>
<th>Sessions:</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Technique</td>
<td>Introductions/ Rltshp between thoughts, feelings, behaviors</td>
<td>Cog. Restructuring</td>
<td>Exposure</td>
<td>Social Problem-Solving</td>
<td>Peer Support/Wrap up pizza party</td>
</tr>
<tr>
<td>Catchphrase</td>
<td>None</td>
<td>“Change how you feel by changing how you think”</td>
<td>“Face your Fears”</td>
<td>“Know what signs you’re sending”</td>
<td>None</td>
</tr>
<tr>
<td>Strategy for teaching technique</td>
<td>Intro Activity Psychoeducation &amp; normalization re: anxiety triad Identify pshysio feelings, neg thoughts &amp; bhvs of anxiety cycle</td>
<td>Identify negative thoughts &amp; cog. distortions Handout of challenging errors in thinking</td>
<td>Psychoed re: habituation Fear thermometers Create personal fear hierarchies</td>
<td>nonverbal cues of self/others problem-solving strategies relaxation strategies</td>
<td>Craft combining all skills Pizza party Post questionnaires</td>
</tr>
<tr>
<td></td>
<td>CBT Skills Condition (%)</td>
<td>Peer Support Condition (%)</td>
<td></td>
<td></td>
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<tr>
<td>--------------------------</td>
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<tr>
<td><strong>Child Ethnicity</strong></td>
<td></td>
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<tr>
<td>White</td>
<td>20 (47.6%)</td>
<td>10 (23.8%)</td>
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<tr>
<td>Black</td>
<td>1 (2.4%)</td>
<td>6 (14.3%)</td>
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<tr>
<td>Asian</td>
<td>0 (0%)</td>
<td>1 (2.4%)</td>
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<tr>
<td>Latino/Hispanic</td>
<td>1 (2.4%)</td>
<td>0 (0%)</td>
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<td>Multi-racial</td>
<td>2 (4.8%)</td>
<td>1 (2.4%)</td>
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<td><strong>Child Diagnosis</strong></td>
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<td>ADIS Social Phobia</td>
<td>12 (28.6%)</td>
<td>7 (16.7%)</td>
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<td>ADIS GAD</td>
<td>11 (26.2%)</td>
<td>8 (19.0%)</td>
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<tr>
<td>ADIS MDD (remission)</td>
<td>0 (0%)</td>
<td>2 (4.8%)</td>
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<td><strong>Household Income</strong></td>
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<td>&lt;$50,000</td>
<td>3 (7.3%)</td>
<td>5 (12.2%)</td>
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<td>$50,000-$100,000</td>
<td>6 (14.6%)</td>
<td>5 (12.2%)</td>
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<td>$100,000-$150,000</td>
<td>7 (17.1%)</td>
<td>2 (4.9%)</td>
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<tr>
<td>$150,000-$200,000</td>
<td>2 (4.9%)</td>
<td>2 (4.9%)</td>
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<tr>
<td>&gt; $200,000</td>
<td>6 (14.6%)</td>
<td>3 (7.3%)</td>
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<td><strong>Parent Education</strong></td>
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<td>High School Graduate</td>
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<td>1 (2.4%)</td>
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<td>Some College</td>
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<tr>
<td>Bachelor’s Degree</td>
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<td>5 (11.9%)</td>
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<td>Higher Ed. Degree</td>
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<td>9 (21.4%)</td>
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<td><strong>Parent Marital Status</strong></td>
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<td>Married</td>
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<td>16 (38.1%)</td>
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<td>Not Married</td>
<td>6 (14.3%)</td>
<td>2 (4.8%)</td>
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### Table 3. Age and Psychopathology Characteristics by Condition

<table>
<thead>
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<th>Variable</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>Condition</th>
<th>Mean</th>
<th>s.d.</th>
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<td>Age</td>
<td>1</td>
<td>1.028</td>
<td>0.317</td>
<td>CBT Skills</td>
<td>12.37</td>
<td>1.05</td>
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<td>Peer Support</td>
<td>12.76</td>
<td>1.32</td>
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<td>HARE Self Esteem score</td>
<td>1</td>
<td>0.002</td>
<td>0.966</td>
<td>CBT Skills</td>
<td>25.95</td>
<td>4.69</td>
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<td>Peer Support</td>
<td>25.89</td>
<td>5.79</td>
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<td>HEM - Parent</td>
<td>1</td>
<td>0.160</td>
<td>0.693</td>
<td>CBT Skills</td>
<td>24.13</td>
<td>2.72</td>
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<td>Peer Support</td>
<td>24.63</td>
<td>2.97</td>
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<td>HEM - Peer</td>
<td>1</td>
<td>0.293</td>
<td>0.594</td>
<td>CBT Skills</td>
<td>21.93</td>
<td>4.25</td>
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<td>Peer Support</td>
<td>20.75</td>
<td>6.23</td>
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<td>SCAS Social Anxiety</td>
<td>1</td>
<td>0.201</td>
<td>0.656</td>
<td>CBT Skills</td>
<td>7.04</td>
<td>4.13</td>
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<td>Peer Support</td>
<td>7.61</td>
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<td>SCAS General Anxiety</td>
<td>1</td>
<td>0.697</td>
<td>0.409</td>
<td>CBT Skills</td>
<td>6.25</td>
<td>3.22</td>
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<td>Peer Support</td>
<td>7.22</td>
<td>4.33</td>
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<td>SCAS Separation Anxiety</td>
<td>1</td>
<td>0.071</td>
<td>0.792</td>
<td>CBT Skills</td>
<td>3.67</td>
<td>2.44</td>
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<td>Peer Support</td>
<td>3.89</td>
<td>2.96</td>
</tr>
<tr>
<td>GLQ total score</td>
<td>1</td>
<td>1.172</td>
<td>0.286</td>
<td>CBT Skills</td>
<td>11.25</td>
<td>5.49</td>
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<td></td>
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<td></td>
<td></td>
<td>Peer Support</td>
<td>9.47</td>
<td>4.72</td>
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<td>Peer Support</td>
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<td>10.37</td>
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<tr>
<td>BIQ</td>
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<td>0.653</td>
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<td>Peer Support</td>
<td>141.13</td>
<td>16.60</td>
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</table>

Note: HEM = Hemingway Measure of Adolescent Connectedness; SCAS = Spence Children’s Anxiety Scale; GLQ = Girls Link Questionnaire; CESDC = Center for Epidemiologic Studies Depression Scale for Children; BIQ = Behavioral Inhibition Questionnaire; ADIS = Anxiety Disorder Interview Schedule
<table>
<thead>
<tr>
<th>Measure</th>
<th>CBT Skills Group (n=24)</th>
<th>Peer Support Group (n=18)</th>
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</thead>
<tbody>
<tr>
<td>HEM - Connectedness Parent</td>
<td>24.04 (2.74)</td>
<td>23.72 (3.74)</td>
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<tr>
<td>HEM - Connectedness Peer</td>
<td>21.83 (4.71)</td>
<td>20.72 (6.14)</td>
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<tr>
<td>SCAS - Social Anxiety</td>
<td>7.04 (4.13)</td>
<td>7.61 (3.99)</td>
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<td>SCAS - General Anxiety</td>
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<td>7.22 (4.33)</td>
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<td>SCAS - Sep. Anxiety</td>
<td>3.67 (2.44)</td>
<td>3.89 (2.97)</td>
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<td>HARE - Peer self esteem</td>
<td>25.48 (4.15)</td>
<td>25.89 (5.79)</td>
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<td>CESDC - Depression</td>
<td>10.17 (9.02)</td>
<td>15.28 (10.37)</td>
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<tr>
<td>GLQ - CBT Skill use</td>
<td>11.25 (5.49)</td>
<td>9.47 (4.72)</td>
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</tbody>
</table>

Note: HEM = Hemingway Measure of Adolescent Connectedness; SCAS = Spence Children’s Anxiety Scale; HARE = Hare Self Esteem Scale; CESDC = Center for Epidemiologic Studies Depression Scale for Children; GLQ = Girls Link Questionnaire
Figure 1. Theoretical Vulnerability Model for Behaviorally Inhibited Females

Genetic Vulnerability Factors:
- Female sex
- Behavioral inhibition

Interpersonal Behaviors:
- Poor social skills
- Social anxiety
- Social withdrawal
- Social avoidance
- Shyness

Personal consequences:
- Loneliness
- Low self esteem
- Anxiety symptoms
- Depression symptoms

Interpersonal Consequences:
- Decreased prosocial interactions
- Increased chances of peer victimization
- Increased chances of peer rejection
- Fewer positive peer relationships
- Lack of social support
References


Child Psychology, 35, 405-416.


