

A PILOT FEASIBILITY STUDY OF AN INTENSIVE SUMMER DAY CAMP  
INTERVENTION FOR CHILDREN WITH SELECTIVE MUTISM

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## ABSTRACT

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Behavioral therapy (e.g., contingency management, shaping, hierarchical exposure) is currently the most evidence-based approach to treating Selective Mutism (SM). However, access, cost, scheduling, and implementation competency are barriers to traditional behavioral therapy. Disruptive innovations are novel delivery formats designed to address the barriers of traditional therapy to improve treatment access and cost-efficiency. Brief, or intensive, interventions are a disruptive innovation to traditional therapy because they have fewer sessions during a short-term time period, and literature suggests they are as effective for treating anxiety disorders as typical treatment. However, no literature exists for exploring intensive interventions as a SM treatment. This study assessed the feasibility of an intensive summer day camp intervention for SM by exploring the acceptability, integrity, and effectiveness (i.e., single-case replicated AB design) of a summer camp consisting of a 5-day behavioral therapy for 25 children with SM. Caregiver-rated Treatment Evaluation Questionnaire- Parent (TEQ-P) and family interviews suggest families perceive intensive summer day camp as an acceptable intervention approach to treat SM but are less likely to endorse satisfaction with effectiveness (TEQ-P) by the end of camp. Additionally, results reveal that counselors and parents implement SM behavioral therapy during camp with impressive integrity (>90%) after receiving training about SM behavioral therapy from a SM expert clinician. ITSSIM effect size calculations of counselor-rated DBRs revealed reductions in anxiety during camp for 18 (72%) campers, though non-significant caregiver-rated changes on the SCARED were observed. ITSSIM effect size

calculations did not reveal significant changes in speaking behaviors at posttreatment for most campers; however, RCI calculations indicate significant caregiver-rated improvements in speaking behaviors at three-month follow-up for nine out of 14 (64.29%) campers. This pilot feasibility study is the first to investigate intensive summer day camp as a treatment approach for SM and implications for future research are discussed.

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## CHAPTER 1

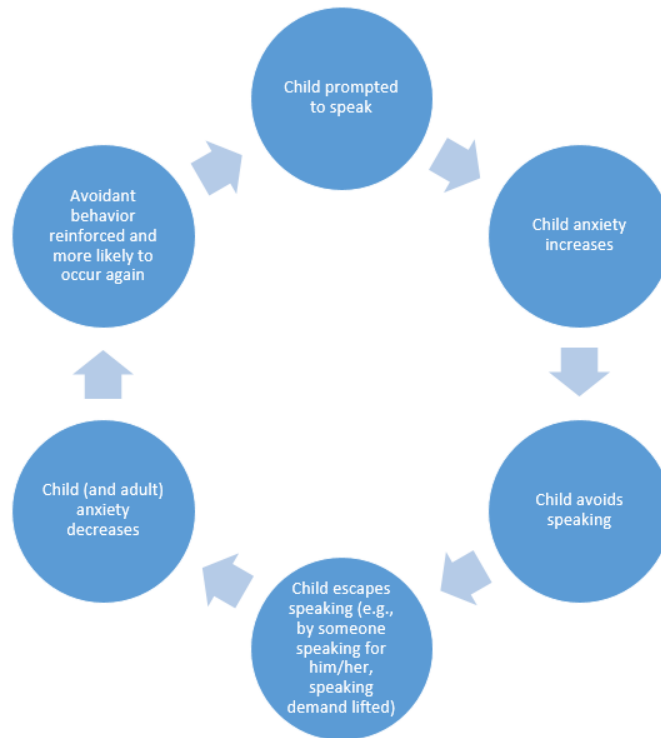
### INTRODUCTION

Selective mutism (SM) is a rare anxiety disorder characterized by the consistent inability to speak in settings where the expectation is to initiate speech or engage in reciprocal communication (American Psychiatric Association [APA], 2013). The prevalence of SM is estimated to be less than 2%, with an onset age of before five. Children with SM may speak comfortably in certain situations, particularly at home, and persistently fail to speak in other social settings (e.g., school, community). The disorder is not a result of lack of knowledge associated with the language or better explained by co-occurring diagnoses (e.g., communication disorder, autism spectrum disorder, schizophrenia).

SM is classified in the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5; APA, 2013) as an anxiety disorder, which aligns with scholars' consensus of close etiology links between SM and social anxiety disorder (SAD), specifically. Beyond etiology, behavior inhibition to escape stress inducing situations is a common coping strategy for individuals with anxiety (Muris & Ollendick, 2015). As with other anxiety disorders, SM often leads to dysfunction in a child's life and warrants treatment (Ford, Sladeczek, Carlson, & Kratochwill, 1998). As noted by Kotrba (2015), children with SM engage in a pattern of avoidance to decrease feelings of anxiety in environments where speech is expected (Figure 1). The maladaptive cycle starts with a prompt for response, feelings of anxiety, avoidance of speech (e.g., parent speaks for child), and then decreased anxiety. Escaping aversive physiological and psychological effects of anxiety by withholding speech negatively reinforces the behavior and thus, the child is likely to avoid speaking in the future. Lack of speech results in social isolation and academic and social dysfunction, which means the behavioral avoidance cycle needs to be disrupted through exposure-based treatment.

Figure 1.

***Behavioral conceptualization of selective mutism avoidance cycle.*** Adapted from *Selective Mutism: An Assessment and Intervention Guide for Therapists, Educators, and Parents* by A. Kotrba, 2015, p. 16.



Given the conceptualization that withholding speech fulfills a behavioral function for children with SM, behavioral therapy is a commonly recommended treatment for the disorder (Cohan, Chavira, & Stein, 2006). Typical behavioral therapy for children with SM includes contingency management and shaping strategies, which include direct instruction and positive reinforcement for target behaviors (Cohan et al., 2006). Stimulus fading, role-playing, and hierarchal exposure are common supplements to typical therapy as it builds on the child's success with exposure to speaking in an increasing number of environments (Cohan et al., 2006). The goal of behavioral treatment is for the child to experience decreased symptoms of SM (i.e., speech in several environments) as they increase skills and confidence with progressively more difficult exposure tasks.

In Zakszeski and DuPaul's (2017) recent analysis of peer-reviewed journal articles about SM treatment between 2005 and 2015, behavioral therapy appeared to be the most popular and effective therapy for SM. Behavioral therapy, in conjunction with another therapy (e.g., psychodynamic, systems), was implemented in 21 out of 23 articles reviewed and was the exclusive therapy used in seven of those articles. Six out of seven studies included only one or two participants. In the other study (i.e., Vecchio & Kearney, 2009), three participants were not included in the total sample size (9) because they dropped out after three sessions. Participants from the seven studies were between three and 13 years old and included 12 females and five males who were European American, African American, Asian American, Hispanic/Latina, and biracial. Therapy was implemented in a variety of settings, including school, clinic, and the community. All seven studies found improvements in SM symptoms, including increased responses, initiations of speech, verbalizations, and improved teacher and parent rating scale scores following a range of one to seven months of behavioral therapy.

While behavioral therapy appears to be a common and effective intervention for children with SM, there are limitations to its implementation in a traditional therapy format. Accessibility is a limitation to traditional behavioral therapy. Experts in treating SM are scarce, due in part to the rarity of the disorder (Kotrba, 2015). Also, families living in rural areas are at an even greater disadvantage due to less access to mental health services in general. Second, families may encounter barriers seeking treatment due to costly 11 to 18 weekly sessions (Donovan, Cobham, Waters, & Occhipinti, 2015). Weekly treatment can cost between \$100- \$200 per hour, not including weekly travel costs (e.g., gas, bus, train, tolls). Third, scheduling challenges over the traditional therapy duration of three to six months may result in lost momentum with treatment effects. Fourth, even if a family can access treatment, the expectation of school

personnel to implement the clinician-designed intervention may imply gaps in competency and execution of intervention plan (Vecchio & Kearney, 2009).

Rotheram-Borus and colleagues (2012) suggest disruptive innovations may circumvent these barriers (i.e., access, cost, scheduling, implementation competency) through novel forms of delivery of evidence-based interventions (EBIs). Disruptive innovations synthesize common, robust EBI elements and aim to serve more people for lesser cost by meeting “the essential needs of the majority of consumers in more efficient and accessible ways” (Rotheram-Borus, Swendeman, & Chorpita, 2012, p. 467). As a disruptive innovation, Rotheram-Borus and colleagues (2012) suggest brief interventions as a novel delivery format. Though the authors define brief interventions as only one or two sessions, their rationale for brief interventions as a disruptive innovation addresses limitations of traditional therapy. Brief interventions are designed as a novel delivery format to reach more people through efficient treatment which includes less sessions than traditional therapy. Brief interventions consist of fewer sessions than traditional therapy, which is a less expensive alternative to typical EBIs (Rotheram-Borus, et al., 2012). The time and financial commitments associated with brief interventions may overcome scheduling and cost limitations associated with traditional behavioral therapy. Research suggests brief interventions commonly result in short-term change but that additional intervention over the long-term is usually needed to sustain change. At the very least, the authors suggest brief interventions “may function as a tool to screen and link to more intensive EBIs” (Rotheram-Borus, Swendeman, & Chorpita, 2012, p. 469). Brief interventions as a screener to imply future, individualized treatment aligns with previous recommendations to treat multiple children at a time who present with a variety of symptoms associated with SM (Carlson, Mitchell, & Segool, 2008).

Brief, Intensive, and Concentrated (BIC) interventions are an adaptation of brief interventions described above, as they share a foundational rationale to address the limitations of traditional therapy through short-term intervention (Table 1) but often have more than one or two sessions. A recent meta-analysis by Ost and Ollendick (2017) defined “brief” as interventions with notably less sessions than traditional therapy, “concentrated” as interventions with more than one session per week in short time period, and “intensive” as interventions that were both brief and concentrated. The meta-analysis by Ost and Ollendick (2017) provides initial support for BIC cognitive behavioral treatments (CBT) for anxiety disorders in children. A total of 23 randomized clinical controlled trials (RCTs) were reviewed, including 13 studies about specific phobias, three studies about obsessive-compulsive disorder (OCD), three studies about posttraumatic stress disorder (PTSD), and one study each about panic disorder, separation anxiety disorder, SAD, and mixed anxiety disorder. The format of therapy was individual for 20 studies and group for three studies. Results suggest strong acceptability of BICs, as evidenced by the 6% decline rate for family participation in the RCTs and 2% dropout rate once intervention had begun. Intervention integrity was not reported in this meta-analysis. Results showed a very large effect size ( $g = 1.47$ ) when BICs were compared to waitlist controls, a large effect size ( $g = 0.97$ ) when BICs were compared to placebo conditions, and no difference ( $g = 0.01$ ) when BICs were compared to traditional (i.e., once per week for 11 to 18 weeks) CBT. This meta-analysis provides promising results to suggest BIC interventions have the same results of traditional CBT, while addressing its barriers. Given the scope of this paper and Ost and Ollendick’s (2017) definition of “intensive” intervention to include “brief” and “concentrated” approaches, this study’s intervention approach is referred to as “intensive” hereafter.

Table 1.  
*SM Traditional Therapy Versus BIC Interventions*

<b>Therapy Component</b>	<b>Traditional Therapy</b>	<b>BIC Interventions</b>
Accessibility	Within driving distance to maintain weekly sessions	Designed to reach more people through efficient and intense therapy
Cost	\$100-\$200/hour	Fewer sessions indicate less per session costs and traveling costs
Scheduling	11-18 weekly session	Less likelihood of scheduling conflicts because shorter treatment duration
Implementation competency	Highly trained professional	Access services from expert briefly to generalize at-school and/or at-home

While there is well-developed evidence to support the implementation of RCTs for intensive interventions for anxiety disorders such as specific phobias, there is less information available about intensive interventions for SM and closely related disorders (e.g., SAD). Specifically, the seven behavioral therapy-exclusive articles included in Zakszeski and DuPaul's (2017) study do not fit the criteria of BICs because treatment duration extended one to four months. Literature about SM treatment approaches are dominated by case studies (Zakszeski & DuPaul, 2017) and lacks exploration of intensive interventions as a treatment approach to SM or closely related disorders (e.g., SAD). According to Bowen and colleagues (2009), a feasibility study, or a "study that can help investigators prepare for full-scale research leading to intervention" (p.453) can be warranted when "there are few previously published studies or existing data using a specific intervention technique" (p. 453). While Bowen and colleagues (2009) define eight areas of focus for feasibility studies, acceptability, implementation (i.e., integrity), and limited-efficacy testing (i.e., effectiveness) are most aligned with the outcomes discussed in the current literature exploring BIC interventions for anxiety disorders.



“Acceptability” is defined as satisfaction or the extent to which the intervention is suitable and satisfying to the consumer, “implementation” is defined as integrity or the extent to which the intervention was executed as planned, and “limited efficacy” is defined as the exploration of whether the intended effects of the intervention occurred and the consideration of intervention effectiveness in a future study with more controlled conditions (e.g., RCT).

Despite unique definitions by Bowen and colleagues (2009), acceptability, integrity, and effectiveness are fundamentally linked as three variables. An original factor analysis of the *Treatment Evaluation Inventory* (TEI) by Kelley and colleagues (1989) revealed acceptability and effectiveness load on the same factor for the TEI, which measures parent intervention acceptability. Meanwhile, previous literature shows a positive correlation link between acceptability and integrity, which suggests consumers are more likely to implement intervention with integrity when they consider it highly acceptable (Witt, Martens, & Elliott, 1984). These findings suggest adequate acceptability and integrity are present before effectiveness, or treatment outcomes, can be measured. Thus, there is a distinct connection between the variables that make it essential to account for all three when assessing an intervention.

Treatment acceptability is infrequently reported in the literature exploring intensive intervention approaches for individuals with anxiety disorders. Three studies of varying sample sizes ( $n = 3$ ,  $n = 23$ ,  $n = 40$ ), participant ages (7-18) and anxiety disorders (social phobia, SAD, OCD) are compared. First, Donovan and colleagues’ (2015) study included 40 children (ages 7-12) with social phobia, divided into treatment and control waitlist groups. Treatment participants received four 3-hour sessions, including psychoeducation content and behavioral exposures, over the span of three weekends (15 days) in groups of four to six children. It was mentioned anecdotally that the intervention was highly acceptable to parents and children, as well as

revealed through an average score of 3.83 (higher than “quite a bit satisfied”) on an eight-item 5-point Likert scale for acceptability. Second, three adolescents (ages 13-18) received ten 1-hour CBT sessions with the therapist and their parent over five days in a study by Whiteside and colleagues (2008). Whiteside and colleagues (2008) note three out of three participants agreed the treatment was rigorous but useful. Though parent and child anecdotes of acceptability are promising, information from more reliable measures are needed to understand which components of intensive intervention lend to its acceptability. Third, Gallagher and colleagues’ (2003) study included 23 children (ages 8-11) with social phobia randomly divided into a treatment and waitlist control group. Treatment participants received three 3-hour sessions, including psychoeducation content and behavioral exposures, over the span of three weeks in groups of five to seven children. Gallagher and colleagues (2003) made no mention of treatment acceptability.

The integrity of intensive intervention implementation is also infrequently and not well documented in the literature when it is used as a novel delivery format for anxiety disorders. Donovan and colleagues (2015) and Whiteside and colleagues (2008) did not explore intervention integrity. Gallagher and colleagues (2003) videotaped all sessions for adherence to treatment protocol and noted adherence was reviewed and addressed after the first session to improve integrity. However, their review of treatment adherence was vague, and rate of adherence was not reported.

The outcomes of these studies provide initial support for intensive interventions as effective interventions for anxiety disorders like SM. Donovan and colleagues (2015) found that by posttreatment, 52.4% of treatment participants did not meet diagnostic criteria for social phobia, compared to 15.8% of controls. By 6-month follow-up, 76.9% of treatment participants

did not meet diagnostic criteria for social phobia. At posttreatment and 6-month follow-up, treatment participants reported a greater improvement in anxiety symptoms, internalizing problems, depression, social skills, social competence, and parental social anxiety symptoms than control participants. Whiteside and colleagues (2008) found that OCD symptoms decreased and functioning increased for all three participants, while two participants experienced a 40% decrease in symptoms. Gallagher and colleagues' (2003) found that at posttreatment, diagnostic interviews, parent reports, and child reports indicated treatment group participants showed significantly improved social phobia related symptoms compared to controls.

Sheridan (2014) proposes a ten-step intervention research trajectory, which is a progressive model for the development and testing of intervention approaches. Following the identification of an issue (i.e., SM diagnosis) and strategies (i.e., behavioral therapy through intensive intervention) to address the issue, the strategies should be tested for feasibility in a pilot study (Sheridan, 2014). The testing of behavioral therapy as an intervention for SM has been well documented in the SM literature with positive outcomes (Cohan et al., 2006; Oerbeck, Overgaard, Stein, Pripp, & Kristensen, 2015; Zakszeski & DuPaul, 2017). However, none of the SM treatment studies examined the use of behavioral intervention in an intensive format. Thus, according to Sheridan's (2014) research trajectory, it is appropriate to implement a pilot study to assess the feasibility of an intensive intervention for children with SM. Specifically, Albano (2009) proposes piloting an intensive intervention in non-traditional settings like summer camps. She notes, "The potential for an intensive therapeutic experience, coupled with the innovation of a camp setting that includes fun, reinforcing activities...fit well within a day camp, short-term treatment model" (p. 360).

Santucci and colleagues (2009) conducted a feasibility study to explore intensive summer camp intervention for children with separation anxiety disorder. Specifically, they explored the feasibility of intensive CBT for five girls (ages 8-11) with separation anxiety disorder during a seven-day summer camp. The authors' case-series design included baseline, pretreatment, posttreatment, and three-month follow-up assessment measures. Parents indicated high rates of acceptability and were "very satisfied" with their daughters' progress. Intervention integrity was not reported for this study. All participants experienced significant decreases in separation anxiety disorder symptoms at posttreatment, and none of the participants met diagnostic criteria at three-month follow-up.

### **Current Study**

The present study aimed to parallel Santucci and colleagues' (2009) separation anxiety disorder study by piloting an intensive summer day camp intervention for children with SM. This study contributes to the literature in two ways. It extends prior research on SM and it builds in additional methodological rigor by doing (a) family interviews to explore the acceptability of time, resources, and accessibility of this 5-day camp, (b) integrity checklists and integrity observations, (c) daily tracking of child-level anxiety levels and speaking behaviors including video recording, and (d) replication across participants. These study components increased the rigor of intensive intervention studies described so far (Table 2).

This study examined the acceptability, integrity, and effectiveness of intensive intervention implemented in a 5- consecutive day summer camp for 25 children with SM. Twenty-five children include all of the campers and exceeds the recommended sample size criterion for non-randomized AB single-case design that replication occurs across three or more subjects (Logan, Hickman, Harria, & Heriza, 2008). There were between seven to nine campers

in each of the three camp age groups that are inherent to the design of the camp, and the aim was to demonstrate replicated effects across participants and three age groups. This study explored the acceptability and integrity of the intervention, as literature regarding those areas is scarce in the SM literature (Zakszeski & DuPaul, 2017) and intensive intervention literature (e.g., Santucci et al., 2009). Additionally, this study investigated changes in child-level speaking behaviors (responses, initiations) and related symptoms on a daily basis, immediately after the completion of intervention, and at three-month follow-up. Additionally, the effects of age, SM severity, and previous treatment versus no treatment were explored at pretreatment, posttreatment, and three-month follow-up. Study findings aim to assist in the assessment of feasibility of intensive interventions for children with SM. As such, treatment approaches for SM may become more easily accessible than traditional behavior therapy.

Table 2.

*Current Study Versus Intensive Intervention Studies for Similar Disorders*

<b>Study</b>	<b>Acceptability</b>	<b>Integrity</b>	<b>Effectiveness</b>
Current Study	<i>Treatment Evaluation Questionnaire-Parent Form</i> (TEQ-P) and family interviews	Observations, Implementation integrity checklists and interrater reliability checks	Pretreatment, daily progress, posttreatment, three- month follow-up ( $n = 25$ )
Santucci et al. (2009)	Written feedback and 5-point Likert scale	N/A	Baseline, pretreatment, posttreatment, three-month follow-up ( $n = 5$ )
Gallagher et al. (2003)	N/A	Videotaped sessions for treatment adherence	Pretreatment, Posttreatment, 3-week follow-up ( $n = 23$ )
Whiteside et al. (2008)	No mention of measure but noted 3/3 participants indicated intervention was rigorous but useful	N/A	Pretreatment, Posttreatment, follow-up ( $n = 3$ )
Donovan et al. (2015)	Author-developed eight-item measure with 5-point Likert for children and parents	N/A	Pretreatment, posttreatment, 6-month follow-up ( $n = 40$ )

## CHAPTER 2

### LITERATURE REVIEW

In order to identify the need of the proposed study and its research questions, hypotheses, and study design, a thorough literature review was conducted of (a) SM diagnostic criteria, associated characteristics, subtypes, and etiology; (b) SM treatment and mechanisms of change; (c) the utility of disruptive innovations and novelty delivery formats; (d) intensive interventions for anxiety; (e) the relevance of a pilot study design to investigate intensive summer day camp intervention as a treatment approach for SM; (f) and data analysis strategies for a replicated AB single-case design.

#### **Selective Mutism**

**Diagnostic criteria.** SM is a rare childhood anxiety disorder that interferes with a child's daily functioning (APA, 2013). According to the DSM-5 (APA, 2013), SM is categorized by two primary symptoms (see Table 3 for all diagnostic criteria). First, children with SM experience consistent failure to speak in speech-expected situations due to excessive anxiety. Though children may engage in spontaneous, developmentally appropriate speech in "selective" situations like the home, they fail to communicate in social situations (e.g., school, community). Second, the consistent failure to speak interferes with the child's academic, social, and occupational functioning. For example, a child's academic functioning may be impaired by their refusal to read to the teacher during a reading assessment.

The DSM-5 also includes three exclusionary criteria to be considered before a diagnosis of SM is given. First, the child's refusal to speak must last longer than one month, not including the first month of school, as accounting for transition acclimation time is necessary for young children. Second, the child's consistent failure to speak must not be a result of lack of

knowledge associated with the language (e.g., English as a second language). Third, the child's failure to speak cannot be better explained by another communication disorder.

Table 3.

*Diagnostic Criteria for Selective Mutism in the DSM-5*

- 
- |    |  |
|----|--|
| A. | Consistent failure to speak in specific social situations in which there is an expectation for speaking (e.g., at school) despite speaking in other situations.  |
| B. | The disturbance interferes with educational or occupational achievement or with social communication.  |
| C. | The duration of the disturbance is at least 1 month (not limited to the first month of school).  |
| D. | The failure to speak is not attributable to a lack of knowledge of, or comfort with, the spoken language required in the social situation.   |
| E. | The disturbance is not better explained by a communication disorder (e.g., childhood-onset fluency disorder) and does not occur exclusively during the course of autism spectrum disorder, schizophrenia, or another psychotic disorder. |
- 

(Adapted from APA, 2013; p. 195)

**Associated characteristics.** Children with SM may experience a variety of associated characteristics. Most commonly, these characteristics include social problems with themes of shyness, fear of social interactions, and subsequent social isolation (APA, 2013). A factor analysis by Diliberto and Kearney (2015) provides consistent, yet more specific evidence of associated social problems, as they found the anxiety profile of children with SM was associated with preference to be alone, withdrawal from others, nervousness, inconsistent eating habits, sudden mood changes, and fearfulness.

Studies exploring the academic achievement of children with SM have produced mixed results. A notable educational impairment associated with SM is the difficulty associated with assessment administration (APA, 2013). Past studies have reported children with SM perform significantly lower academically than children without SM (Bergman, Piacentini, McCracken,



2002; Kristensen & Oerbeck, 2006), while other studies have found no differences (Cunningham, McHolm, Boyle, & Patel, 2004). Special attention has been given to exploring the language abilities between children with SM and without. Manassis and colleagues (2007) found children with SM had significantly worse receptive vocabulary skills than children in the community, however, results revealed children with SM had receptive vocabulary skills consistent with their age levels nonetheless. A subsequent study by Nowakowski and colleagues (2009) found similar results. Despite having significantly worse receptive language and math abilities than controls, the children with SM still performed at age norms. Controls were performing with abilities above age norms. No differences were found between groups for reading and spelling. There is additional evidence that suggests children with SM have average cognitive abilities when there are no speech demands (Remschmidt et al., 2001). Though SM interferes with the verbal demands often associated with academic assessment, the synthesis of these studies suggest children with SM have average intelligence and academic skills.

Children with SM may also experience associated characteristics such as oppositional behavior. Oppositional behavior factors were derived from a factor analysis by Diliberto and Kearney (2015), which revealed children with SM may experience arguing, temper tantrums, whining, stubbornness, and demands for attention. Though the refusal to speak stems from severe anxiety, the authors note the possibility of others to interpret the refusal to meet a speech demand as oppositional, noncompliant behavior. Conversely, parent and teacher reports collected and analyzed in a study by Cunningham, McHolm, and Boyle (2006) showed no evidence of an increase in oppositional behavior in children with SM. Cunningham and colleagues' (2006) results are consistent with past studies (e.g., Bergman et al., 2002; Dummit, Klein, Tancer, Asche, Martin, & Fairbanks, 1997) that rationalize the social inhibition associated

with SM diagnosis puts children with SM at a lesser risk for engaging in problematic externalizing behaviors.

**Subtypes.** Given the inconclusiveness of the rate of occurrence and severity of the associated characteristics described above, there has been an interest to explore if severity of SM diagnosis is correlated with the presentation of associated characteristics. In the last decade, three distinct studies have explored this interest by investigating the possibility of SM subtypes. Cohan and colleagues' (2008) use of latent profile analysis of parent-report measures of social anxiety, behavior problems, and communication delays in children ( $n = 130$ ) with SM revealed three subtypes of SM: anxious-mildly oppositional, anxious-communication delayed, and exclusively anxious. Significant differences in associated characteristics, specifically severity of SM symptoms, expressive and receptive language abilities, and externalizing behaviors were found between groups (Cohan, Chavira, Shipon-Blum, Hitchcock, Roesch, & Stein, 2008).

Diliberto and Kearney (2015) also explored subgroups of SM. Factor analysis of 57 parent-completed Child Behavior Checklists (CBCL; Achenbach & Rescorla, 2001) revealed a significant two-factor model of anxiety and oppositional behavior SM subgroup profiles. Both profiles were associated with aggression and social problems. In general, though, negative associations existed between the profiles. The anxiety profile was inversely associated with oppositional behavior while the oppositional profile was inversely associated with social anxiety symptoms. Diliberto and Kearney (2015) did not consider communication delays in their analyses.

Mulligan, Hale, and Shipon-Blum (2015) conducted a recent study examining possible subtypes of SM. Parents of 186 children with SM completed the Selective Mutism Comprehensive Diagnostic Questionnaire (SM-CDQ; Shipon-Blum, 2004), which includes

Executive, Oppositional, Labile, Anxiety, Flexible, Sensory, Esteem, and Academic subscales as a part of the Mutism Behavior Rating (MBR) at the end of the questionnaire. Descriptive variables and characteristics of mutism variables were also included in the study. Cluster analysis of the MBR subscales yielded a five-factor model for the sample, which implies five subtypes of SM: Global Mutism, Emotional/Behavioral Mutism, Anxiety/Language Mutism, Low Functioning Mutism, and Sensory Pathology Mutism (Mulligan et al., 2015).

The motivation to explore subtypes of SM stems from the belief that better understanding of symptom severity and associated characteristics will result in more individualized and effective treatment (Mulligan et al., 2015). While current literature does not contain a clear and standardized process to identify subtypes of SM, initial findings suggest subtypes may exist. Though the three studies described above utilized different assessments, analyses, and subsequent results, they all identified distinct groups of SM within their sample. As the literature develops and SM subtypes are clarified, children with SM may be more readily able to access appropriate and individualized treatment.

**Prevalence and prognosis.** SM is a rare disorder most often manifested during childhood. The DSM-5 reports about .3% to 1% of children are diagnosed with SM, depending the sample's setting and age range (APA, 2013). A school-based sample composed of 2,256 kindergarten, first grade, and second grade students revealed a 0.71% SM prevalence rate (Bergman et al., 2002). The identified students presented with frequency of speech, social anxiety, and other internalizing symptoms, as reported by teachers (Bergman et al., 2002). A sample of immigrant and native families yielded 2.2% and 0.76% prevalence rates, respectively (Elizur & Perednik, 2003). Further, immigrant children with SM had higher social anxiety and social competence and lower neurodevelopmental delay disorder scores than native children with

SM (Elizur & Perednik, 2003). Also, research suggests SM is more frequently diagnosed in girls than boys by a ratio of about 1.5:1 to 2:1 (Kristensen, 2000; Viana, Beidel, & Rabian, 2009).

The onset age of SM is believed to range from 2.7 to 4.1 years, though it may go undiagnosed until the child is introduced to a formal educational setting in preschool or kindergarten (Mulligan et al., 2015; Viana et al., 2009). Lags in diagnosis may also be the result of the mutism not existing at home and the undistruptive behavior of the children going unnoticed at school (Viana et al., 2009). The persistence of SM symptoms into adolescence and adulthood may have detrimental implications for occupational functioning. Given the onset of SM during a child's crucial developmental period, early identification, thorough assessment, and individualized treatment may imply less time for the development of functional impairment (Viana et al., 2009). Long-term effects of SM are not well studied, though limited research suggests young adults diagnosed with SM during childhood report less independence and social skills than controls (Steinhausen, Wachter, Laimböck, & Metzke, 2006)

**Anxiety link.** In 2013, SM was reclassified from “disorders experienced in childhood” to an anxiety disorder in the DSM-5 (APA, 2013). This reclassification aligns with current literature suggesting anxiety is the predominate symptom of SM (Zakszeski & DuPaul, 2015). For example, Steinhausen and Juzi (1996) found over half of their sample with SM had comorbid anxiety symptoms. Additionally, there is evidence of etiological similarities between SM and anxiety. As such, treatment approaches for both disorders are similar (Zakszeski & DuPaul, 2015).

***Etiological link between SM and social anxiety.*** The etiology of SM is best understood through a developmental psychopathology perspective, which posits the etiology of SM is the interplay of multiple factors, including genetic factors, neurological factors, the environment,

and temperament (Muris & Ollendick, 2015; Viana et al., 2009). Research shows overlap in these factors' etiological pathways for SAD and SM (Muris & Ollendick, 2015). Multiple studies suggest a genetic contribution for SM, as parents of children with SM report experiencing consistent symptoms of anxiety, shyness, avoidance, and preference to be alone (Kristensen & Torgersen, 2001). Notably, Black and Uhde (1992) found parents of children with SM had significantly high rates of anxiety-based disorders such as social anxiety. While receptive speech challenges compared to peers may be a neurological risk factor for SM, children with SM usually have normal range receptive speech skills (APA, 2013).

SAD and SM have similar environmental risk factors, too. Exposure to shy and anxious parents that are more inclined to isolate the family and not engage in social interaction, may influence children to behave similarly (Viana et al., 2009). Additionally, parents of children with SM, especially mothers, have been reported to be more overprotective than parents of children with other anxiety disorders (APA, 2013). Children with parents in a problematic marriage or who have experienced trauma also may be at risk for SM (Viana et al., 2009).

There appears to be etiological similarities between SM and SAD. A recent study by Muris, Hendriks, and Bot (2016) measured 57 non-clinical children's levels of SM, social anxiety symptoms, and non-social anxiety symptoms. Their results show a positive association between parent report of levels of SM and SAD symptoms. Additionally, children who spoke less words displayed higher behavioral inhibition. While there was not enough evidence to suggest a direct link between behavioral inhibition and SM, it is possible behavioral inhibition is generally related to anxiety disorder including SM and SAD.

Further evidence to suggest similarities between the disorders are the high rates of social anxiety comorbid in children with SM (APA, 2013; Ford et al., 1998; Muris et al., 2016; Viana et

al., 2009). In fact, the DSM-5 states, “children with SM are almost always given an additional diagnosis of another anxiety disorder—most commonly, social anxiety disorder” (APA, 2013, p. 196). Beyond etiology, behavior inhibition to avoid stress inducing situations is a common coping strategy for individuals with anxiety (Muris & Ollendick, 2015).

### **Treatment of SM**

The systematic review and evaluation of treatments for SM is challenging given its low prevalence and associated literature consisting mostly of case studies (Zakszeski & DuPaul, 2017). Treatment approaches are often categorized as one or more of the following: psychosocial, pharmacotherapy, family therapy, psychodynamic, or systems (Pionek Stone, Kratochwill, Sladeczek, & Serlin, 2002; Zakszeski & DuPaul, 2017). Each therapy approach is described, and its corresponding literature is reported.

**Psychosocial intervention.** Historically, treatment for SM has been informed by effective treatment for SAD, given the comorbidity of the disorders and lack of research about effective treatments for SM (Sharp, Sherman, & Gross, 2007). Effective treatment is defined as achieving the goal of treatment, which is “to help children speak in situations where they previously did not speak” (Muris & Ollendick, 2015, p. 162). According to the consensus of previous literature, this goal is achieved by psychosocial intervention (e.g., behavioral therapy and CBT), a common approach to addressing SAD symptoms, as well (Muris & Ollendick, 2015; Pionek Stone et al., 2002; Zakszeski & DuPaul, 2017). Furthermore, psychosocial interventions are the most effective and popular in decreasing SM symptoms in children (Muris & Ollendick, 2015; Pionek Stone et al., 2002; Zakszeski & DuPaul, 2017).

**Behavioral therapy.** In a meta-analysis of 114 treatment studies for SM by Pionek Stone and colleagues (2002), behavioral interventions were found the most effective treatment

approach when compared to psychodynamic, family systems, and biological approaches to therapy. Consistently in the literature, behavioral intervention has been acknowledged as the most commonly accepted form of therapy for children with SM (Zakszeski & DuPaul, 2017). In a recent study by Zakszeski and DuPaul (2017), behavioral therapy was the sole treatment approach or one of two treatment approaches in 21 out of 23 studies published between 2005 and 2015.

Behavioral therapy begins with the assessment of antecedents and consequences associated with the prompting and maintenance of mutism behavior (Pionek Stone et al., 2002). Once the function of the behavior is identified (e.g., escaping anxiety, gain attention), behavioral intervention is designed to interfere with the behavioral cycle of reinforcing mutism behavior (Pionek Stone et al., 2002; Zakszeski & DuPaul, 2017). Popular behavioral intervention strategies include contingency management, goal setting, hierarchal exposure, modeling, priming, prompting, role-playing, shaping, social skills training, and stimulus fading (Zakszeski & DuPaul, 2017). The aim of these strategies altogether is to remove positive reinforcement for not speaking.

***Integrated behavioral therapy.*** Integrated behavioral therapy (IBT) is a more recent therapy approach to SM that includes the child, parents, and teacher (Muris & Ollendick, 2015). The manualized intervention includes 20 sessions to be implemented over the course of 24 weeks (Muris & Ollendick, 2015). Goals for treatment are identified during the beginning stages of treatment and then hierarchy exposure to facilitate reaching those goals are determined (Muris & Ollendick, 2015). Bergman and colleagues (2013) conducted a recent study to examine the effectiveness of IBT with children with SM (IBTSM). According to diagnostic status, treatment response ratings, parents and teacher ratings of SM symptoms and social anxiety, and a

behavioral speech task, the authors found children who received treatment made significant gains and maintained them at three-month follow-up. Specifically, (a) 67% of participants did not meet diagnostic criteria for SM at three-month follow-up; (b) parents and teachers reported increased functioning speaking behaviors for participants; (c) participants increased number of words spoken compared to baseline; (d) and parents reported a significant decrease of social anxiety (Bergman, Gonzalez, Piacantini, & Keller, 2013). These results are important because they provide promising evidence that IBTSM is an effective and acceptable intervention for children, parents, and teachers.

***Cognitive behavioral therapy.*** CBT is a common form of treatment for anxiety disorders (Viana et al., 2009). Its use has been generalized for children with SM, in which it is designed to challenge them to reframe cognitions to modify mutism behavior (Pionek Stone et al., 2002). Literature suggests CBT has a positive impact on children with SM, though the developmental appropriateness of the intervention is questionable for young children (Viana et al., 2009). Cognitive overload for young children is a potential factor as to why CBT has not been proven as effective for young children with SM compared to older individuals with other anxiety disorders (Viana et al., 2009).

***Pharmacotherapy.*** Pharmacotherapy appears to be a promising adjunctive approach to treatment for children with SM who fail to improve following psychosocial treatment approaches (Pionek Stone et al., 2002). Selective serotonin reuptake inhibitors (SSRIs) successfully used to treat other anxiety disorders have been generalized to SM samples, most commonly fluoxetine (Barterian, Sanchez, Magen, Siroky, Mash, & Carlson, 2018; Carlson et al., 2008). In one study, children with SM who took fluoxetine experienced significant mutism improvements compared to controls, however, they remained highly symptomatic at the end of treatment (Black & Uhde,



1994). Soon after, a similar study occurred by the end of which 76% of children experienced improved symptoms and 19% reported behavioral disinhibition; however, lack of control group limits the generalizability of the study (Dummit, Klein, Tancer, Asche, & Martin, 1997). In a study by Beidel and colleagues (2007), children with social phobia who took fluoxetine experienced reduced arousal in social situations but did not experience increased social skills. Most recently, Barterian and colleagues (2018) conducted a nonconcurrent, randomized, multiple-baseline, single-case design with a blind placebo control procedure across five children (ages 5-14) with SM to assess the utility of fluoxetine. Parents of the participants found fluoxetine treatment highly acceptable, as evidenced by responses on the *Treatment Evaluation Questionnaire, Parent Version* (TEQ-P; Kelley et al., 1989). Additionally, parents reported strong medication adherence (i.e., treatment integrity) on daily reports used to track medication time. All five children experienced decreased symptoms of social anxiety and increased responsive speech and spontaneous speech. However, all five children met SM criteria at the end of the study. Pharmacotherapy as a supplement to behavioral therapy makes logical sense because medication may lower biological feelings of anxiety, which may ease the use of social skills learned in behavioral therapy.

**Family/Systems therapy.** The family therapy treatment approach for children with SM emphasizes the larger system within the child exists and the family's participation in therapy (Pionek Stone et al., 2002). Family therapy intervenes at a familial level given the conceptualization that the family influences the child's mutism behavior (Pionek Stone et al., 2002). Thus, the goal of family therapy for children with SM is for the family to modify their communication patterns in the best interest of the child. Family therapy evolved to a systems approach, taking into consideration all child's systems like school and peers (Bronfenbrenner,

1986; Zakszeski & DuPaul, 2017). Intervention strategies for systems therapy include psychoeducation to parents, teachers, and peers, as well as consultation, adult-skills training, and multidisciplinary team communication across settings (Zakszeski & DuPaul, 2017). The systems approach acknowledges the role a child's environment plays on their development and importance of school-home collaboration for consistency in addressing the child's needs (Zakszeski & DuPaul, 2017).

**Psychodynamic therapy.** Psychodynamic therapy for children with SM relies on non-verbal therapy techniques such as play and art (Pionek Stone et al., 2002). Psychodynamic therapists rely on these non-verbal strategies to elicit the unconscious cause for the child's mutism (Pionek Stone et al., 2002; Zakszeski & DuPaul, 2017). The child's wish to punish their parents or need to keep a family secret are themes as to why children refuse to talk (Pionek Stone et al., 2002). This therapy has become less popular over years as behavioral therapy has gained momentum and shown evidence of effectiveness.

### **Behavioral Conceptualization of SM**

As described above and repeated in the literature, behavioral therapy is the most common and effective intervention for children with SM. Thus, to understand the foundation of behavioral therapy, it is important to conceptualize SM within a behavioral framework. Kotrba (2015) notes, "SM is understood as a pattern of avoidance of anxiety-provoking situations, accidentally strengthened through negative reinforcement" (p. 16). The pattern of avoidance or "avoidance cycle" Kotrba is referring to includes a prompt for speech, followed by an increase in physiological symptoms of anxiety (e.g., sweating, increased heart rate), and a later decrease in anxiety when the child escapes responding. The immediate relief of anxiety the child feels by avoiding speech reinforces non-speaking behavior, and the child is more inclined to engage in

the behavior again. Common treatment for SM adopts this behavioral conceptualization of SM and aims to disrupt the avoidance cycle in a way that is developmentally and environmentally appropriate.

### **Mechanisms of Change**

**Interrupting the avoidance circle.** There are a wide variety of behavioral strategies used to disrupt the avoidance cycle shown above. Contingency management, shaping, stimulus fading, social skills training, and hierarchical exposure are common techniques individualized to the child engaging in behavioral therapy for SM (Busse & Downey, 2011; Kotrba, 2015; Zakszeski & DuPaul, 2017). Contingency management and shaping are the use of a positive reward system for appropriate behaviors (Zakszeski & DuPaul, 2017). The reward system is usually predetermined with the child, and examples include verbal praise and offering a child stickers or screen time for speaking (Cohan et al., 2006). Many studies (e.g., Beare, Torgerson, & Creviston, 2008; Conn & Coyne, 2014; Mayworm, Dowdy, Knights, & Rebelez, 2015) included in the most recent synthesis of SM treatment literature (Zakszeski & DuPaul, 2017) found positive changes in their case study or sample when utilizing contingency management and shaping strategies. A level of preparedness to execute skills for a reward is established through modeling, priming (i.e., letting child know you will call on them), and role-playing, while a guided practice may be initiated by prompting (e.g., calling on a child to speak; Zakszeski & DuPaul, 2017).

Stimulus fading is a common strategy that builds from momentum made from shaping and contingency management (Cohan et al., 2006). Continued reinforcement through contingency management motivates a child with SM to engage in anxiety-provoking behaviors (e.g., answering a novel adult). With consistent success and skill development through these

multiple exposures, fearful environments become more comfortable (Zakszeski & DuPaul, 2017). Fearful conditions becoming more comfortable is known as stimulus fading, which allows for the incremental increase of exposure to people or distance from people when speaking (Cohan et al., 2006). Stimulus fading has been a successful strategy in increasing the number of people spoken to in multiple settings (Beare et al., 2008; Conn & Coyne, 2014; Mayworm et al., 2015).

The behavioral strategies discussed so far lend themselves to two more behavioral strategies: goal setting and hierarchal exposure (Zakszeski & DuPaul, 2017). Determination of short-term and long-term goals allow for the development of a gradient of fearful situations, known as hierarchal exposure (Zakszeski & DuPaul, 2017). Skill development through practice and decreased anxiety from stimulus fading promote exposure to more challenging speaking tasks. A recent study found exposure-based therapy to be a more effective behavioral therapy approach than contingency management alone, though both strategies were found helpful (Vecchio & Kearney, 2009). Hierarchal exposure is the strategy by which progress is maintained during behavioral therapy (Zakszeski & DuPaul, 2017).

Social skills training is another common behavioral strategy used to enact change in children with SM. It is especially important given the social dysfunction associated with SM and critical period at which onset occurs (APA, 2013). Social skills training provides direct instruction to children with SM about skills to use during interpersonal interactions, especially with teachers and peers (Zakszeski & DuPaul, 2017). The goal of social skills training is to reduce anxiety and increase social competence (Cohan et al. 2006). Social skills training has been used effectively in conjunction with contingency management to motivate children to practice frightening social skills for rewards until they are no longer anxiety-provoking

(O'Reilly, McNally, Sigafos, Lancioni, Green, Edrisinha, et al., 2008). These behavioral strategies are important mechanisms of change for children with SM because they disrupt the avoidance cycle, transcend contexts, are cost-effective, and may be implemented by any trained personnel (e.g., parents, teachers, paraprofessionals).

**Parent involvement.** Parents of children with SM are a critical part of the intervention team. Parents have multiple responsibilities corresponding to intervention, including advocating for their child in the school setting and record keeping from meetings and psychologist's recommendations, for example (Kotrba, 2015). Additionally, parents will update other intervention team members, including the teacher and psychologist, about child's progress (Kotrba, 2015). These responsibilities are assumed by the parents in part because of the young onset age of SM and related symptoms, but more importantly because of their access to day-to-day responses to child behavior across settings (Kotrba, 2015). Parent initiation of opportunities for the child to practice in the community or with friends and family is their most critical responsibility. As such, parent training about SM etiology, conceptualization, and treatment strategies are crucial to the integrity of the intervention. Embedded in this psychoeducation, parents understand how their behavior can or cannot contribute to the pervasiveness of SM symptoms. For example, parents who speak for their child to alleviate their feelings of anxiety recognize this good-intentioned reaction is prohibiting the child from making progress and replace it with a behavioral therapy strategy. In a study by Vecchio and Kearney (2009), parent led contingency management interventions for children with SM were found helpful in improving SM symptoms.

**School involvement.** School involvement is recommended for SM treatment because it keeps treatment approaches consistent across contexts and helps address severe SM symptoms in

the school context (APA, 2013; Kotrba, 2015). A variety of behavioral interventions have been conducted and reviewed in recent literature (e.g., Beare et al., 2008; Conn & Coyle, 2014; Howe & Barnett, 2013; Kern, Starosta, Cook, Bambara, & Gresham, 2007; Mayworm et al., 2015). These studies included common behavioral strategies, such as contingency management, modeling, role-playing, hierarchical exposure, and shaping. Most recent school-based intervention studies are dominated by case studies and lack generalizability.

The lack of generalizable school-based interventions for children with SM is a problem given it is an important context where mutism behaviors are often reinforced. Research acknowledges behavioral strategies should be utilized in the classroom to establish speech, but that there is a gap in determining how to include children with SM in the classroom (Omdal, 2008). Children with SM are vulnerable to dysfunction in school, including refusal to engage in assessment and lack of peer relationships. Additionally, mutism behaviors can be reinforced in school if teachers accept the mutism and peers answer for the child (Omdal, 2008).

Oerbeck and colleagues (2014) addressed the lack of internal validity from past studies by exploring school-based intervention through RCT. Their study was an extension on a previous study that suggested the use of behavioral strategies for SM intervention in the school was impactful for preschool children aged three to five (Oerbeck et al., 2012). Parent report showed increased speaking behaviors by the end of treatment, and teachers reported a maintenance in outcomes at 1-year posttreatment. In their more recent study, Oerbeck and colleagues (2014) included students ages three to nine and a waitlist control group. They implemented the same behavioral intervention and their results showed younger children (aged 6.5 and younger) made significantly greater speaking gains than the older children in the treatment group. Group differences persisted 1-year posttreatment, as 78% of younger children

no longer met SM criteria, compared to 33% of older children (Oerbeck et al., 2015). Greater gains in younger children emphasizes the importance of early intervention and supports the involvement of schools for SM intervention.

### **Intensive Interventions**

There is considerable evidence to imply behavioral interventions are impactful strategies for improving SM symptoms in children. A majority of the research documenting such effectiveness comes from “traditional” behavioral intervention: treatments that occur for an average of 16 weeks at a clinic and led by a highly trained clinician. These studies have two distinct commonalities, which are their inclusion of evidence-based behavioral strategies (e.g., shaping, hierarchical exposure, stimulus fading) and implementation by a trained individual or individuals. Unfortunately, though, accessing such treatment is difficult for many families (Whiteside & Jacobsen, 2010) and SM experts are rare (Kotrba, 2015). Additionally, ongoing treatment is difficult to schedule and expensive for both families and clinics (Rotheram-Borus et al., 2012).

To improve access to evidence-based intervention, Rotheram-Borus and colleagues (2012) suggest the implementation of brief interventions as a disruptive innovation. Disruptive innovations are novel delivery formats designed to reduce the research-to-practice gap and expand the reach and accessibility of mental health services (Rotheram-Borus et al., 2012). Recent patterns of research uncover the use of brief, or intensive, interventions that include the same evidence-based components of traditional therapy in a more efficient and cost-effective manner (Ost & Ollendick, 2017). Specifically, intensive interventions reduce the number of sessions (“brief”) and duration of treatment (“concentrated”; Ost & Ollendick, 2017). As with traditional therapy, the person implementing intervention is trained and/or supervised (Ost &

Ollendick, 2017). Current literature documents promising results for the use of intensive interventions as treatment for anxiety disorders through individual and group formats alike (Donovan et al., 2015; Whiteside et al., 2008).

Exploration of the acceptability, integrity, and effectiveness of intensive interventions as SM treatment has yet to be documented in literature. However, research about intensive interventions as a treatment approach for similar disorders (e.g., social phobia, OCD) provide promising results for its potential use. Santucci and colleagues (2009) implemented CBT for five girls (ages 8-11) with separation anxiety disorder over a 7-day summer camp. Treatment included education about managing separation anxiety disorder symptoms and exposure to practicing social skills as is inherent in the design of a summer camp. Santucci and colleagues (2009) used parent report through written feedback and Likert scales (1-5) to measure the acceptability of their treatment and approach. Parents indicated they were “very satisfied” by their daughter’s progress and one parent wrote the summer camp was “far more productive” (Santucci et al., 2009, p. 328) compared to traditional therapy. No further information about the written response or Likert scale questions was provided. Donovan and colleagues’ (2015) study included 40 children (ages 7-12) with social phobia, divided into treatment and control waitlist groups. Treatment participants received four 3-hour sessions, including psychoeducation content and behavioral exposures, over the span of three weekends (15 days) in groups of four to six children. Parents and children reported high levels of intervention acceptability in Donovan and colleagues’ (2015) study. Whiteside, Brown, and Abramowitz (2008) and Whiteside and Jacobsen (2010) utilized intensive CBT as OCD treatment for families who do not have regular access to mental health services (i.e., due to geographic restrictions), which aligns with the thought of intensive interventions as disruptive innovation to make treatment more readily



accessible. Whiteside and colleagues (2008) note three out of three participants agreed the treatment was rigorous but useful. No mention of treatment acceptability was reported by Whiteside and Jacobsen (2010). Gallagher and colleagues' (2003) study included 23 children (ages 8-11) randomly divided into a treatment and waitlist control group. All participants had social phobia and treatment participants received three 3-hour sessions, including psychoeducation content and behavioral exposures, over the span of three weeks in groups of five to seven children. Gallagher and colleagues (2003) did not report treatment acceptability. Though parent and child anecdotes of acceptability are promising, information from more reliable measures are needed to understand which components of intervention lend to its acceptability.

The integrity, or treatment adherence, of these studies is less documented in the literature. Gallagher and colleagues (2003) did mention, however, that they videotaped all sessions for adherence to treatment protocol. Adherence was reviewed and addressed after the first session to improve adherence, however, there was no mention of rates or percentages of overall treatment adherence. Santucci and colleagues (2009), Donovan and colleagues (2015), Whiteside and colleagues (2008), and Whiteside and Jacobsen (2010) did not report treatment integrity.

Intensive interventions have been effective in improving anxiety-related symptoms for children through individual and group therapy formats. Santucci and colleagues (2009), Donovan and colleagues (2015), and Gallagher and colleagues (2003) utilized intensive interventions for children in groups of four to seven. All five participants in Santucci and colleagues' (2009) study did not meet diagnostic criteria for separation anxiety disorder two months posttreatment and parent and child reports indicate decreased avoidant behaviors and better symptomology posttreatment. At posttreatment in Gallagher and colleagues' (2003) study,

diagnostic interviews, parent reports, and child reports indicated treatment group participants showed significantly improved social phobia related symptoms compared to controls. By posttreatment in Donovan and colleagues' (2015) study, 52.4% of treatment participants did not meet diagnostic criteria for social phobia, compared to 15.8% of controls. By six-month follow-up, 76.9% of treatment participants did not meet diagnostic criteria for social phobia. At posttreatment and six-month follow-up, treatment participants reported a greater improvement in anxiety symptoms, internalizing problems, depression, social skills, social competence, and parental social anxiety symptoms than control participants. In general, intensive group-based therapy formats for anxiety disorders similar to SM appear to be effective. All reports summarized utilize behavioral strategies shown useful for addressing SM, too.

Effective results have also been documented for intensive intervention for anxiety disorders implemented at the individual level. In the Whiteside and colleagues (2008) study, three adolescents (ages 13-18) received ten 1-hour sessions with the therapist and their parent over five days. Initial sessions were focused on psychoeducation related to OCD, while sessions three to nine were exposure-based therapies. OCD symptoms decreased and functioning increased for all three participants, while two participants experienced a 40% decrease in symptoms. Whiteside and Jacobsen (2010) included 15 adolescents (ages 10-18) in their study, which used exposure and response prevention therapy over five days. Similar to Whiteside and colleagues (2008), Whiteside and Jacobsen (2010) included a parent training component to treatment as a means to facilitate long-term practicing after intervention. Parent and child report indicate significant symptom improvement from pretreatment to posttreatment and from posttreatment to five-month follow-up. These studies shed light on the potential effectiveness for intensive behavioral intervention for children and adolescents.

## **Pilot Study to Assess Feasibility**

**Rationale for pilot study.** Given the success of behavioral therapy for children with SM and the effectiveness of intensive intervention using behavioral strategies for children with similar anxiety disorders, piloting intensive behavioral intervention for children with SM to assess its feasibility is the next step on the research trajectory, as outlined by Sheridan (2014). According to Sheridan (2014), “Such careful and systematic scrutiny of the functional nature of an intervention’s effects allows for clarity and precision not only in the specificity of theory of change, but also- importantly- for design and implementation efforts” (Sheridan, 2014, p. 302). Careful scrutiny examining within-subject change will provide initial understanding of acceptability, integrity, and effectiveness of intensive intervention for children with SM.

**Designing a feasibility study.** There is a gap in literature between the need for pilot studies to determine if interventions should be further evaluated for efficacy and standards by which these pilot studies should be aligned (Bowen et al., 2009). Bowen and colleagues (2009) attempt to address this gap by proposing a set of guidelines for designing pilot studies that aim to assess the feasibility of a proposed treatment, idea, or program. First, a justified rationale for a feasibility study should be proposed, which includes no or limited published studies using a specific intervention technique (i.e., intensive intervention for children with SM). Next, an area of focus should be identified for the feasibility study. The possible areas of focus, or purpose, of the feasibility study include: acceptability, demand, implementation, practicality, adaptation, integration, expansion, and limited-efficacy testing. The chosen areas of focus indicate the study design approach. In order to adequately assess the extent to which a new intervention is successfully implemented to intended participants (i.e., effective results with a novel delivery format), it is critical to measure the following areas of focus: acceptability, implementation, and

limited-efficacy testing. These three areas provide information about the intervention's satisfaction, integrity, and effectiveness, respectfully. Bowen and colleagues (2009) propose a pre-post design is the best design option to provide initial results for the implementation of a novel intervention approach.

**Uncontrolled pre-post designs.** Uncontrolled pre-post designs measure effectiveness from pretreatment to posttreatment. They are superior to observational studies but are vulnerable to threats of internal validity, nonetheless (Grimshaw, Campbell, Eccles, & Steen, 2000). A challenge of uncontrolled pre-post designs, beside the lack of control, is attributing participant change to intervention (Grimshaw et al., 2000). In feasibility studies examining intervention approaches for hard-to-reach populations (e.g., children with SM), control groups may not always be readily accessible. It is possible, though, to adjust the uncontrolled pre-post design to include more rigor than a typical feasibility study. For example, adding a follow-up data collection point adds another layer of information gathered as a part of a pilot study. Replication is an additional layer that can be added to pre-post designs and is explained below.

**Replicated AB single-case design.** AB single-case designs are the simplest, non-randomized single-case design composed of a baseline phase (A) and intervention phase (B). The dependent variable (e.g., child-level speaking behaviors) is measured prior to intervention during the baseline phase (A) and measured during the intervention phase (B; Engel & Papa, 2017). It is recommended at least five data points are collected during each phase. AB single-case designs are vulnerable to threats of internal validity, specifically history, maturation, experience, learning, and practice effects, which negatively impact their ability to establish causality (Lobo, Moeyaert, Baraldi Cunha, & Babik, 2018). However, AB single-case design can be used to provide an association between intervention and outcome change if some threats

to internal validity are controlled for (Engel & Papa, 2017). The use of replicated AB single-case design is one way to control for some threats of internal validity. First, replicated AB single-case design of intensive summer day camp minimizes the threat of history to internal validity because it captures daily baseline and intervention data over a 5-day span. Second, though experience, learning, and practice effects are threats to internal validity given the lack of a control group, replicated AB single-case design may reveal more detailed information about when changes occurred compared to standard AB single-case designs. Replicated AB single-case designs are analyzed using visual analyses and effect size calculations described below.

### **Analysis of single-case research.**

**Visual analysis.** Visual analysis is the traditional analysis for single-case design, which involves the visual examination of graphed data to determine whether a relationship exists between the independent variable and outcome measure (Busse, McGill, & Kennedy, 2014; Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2013). The magnitude of the relationship is assessed initially with visual analysis (Kratochwill et al., 2013). There are four steps to visual analysis, including (a) determining a stable baseline pattern, (b) examining within phase data, (c) comparing data between phases, and (d) determining three effect demonstrations at different time points (Kratochwill et al., 2013). A total of six outcome measure features are examined within and between phases, including three outcome measure features for within phases and three outcome measure features between phases (Lobo et al., 2017). The three outcome measure features investigated within phases are (a) level, (b) trend, and (c) variability. Level is the mean of the outcome measure, trend is the slope of the line of best-fit, and variability is the standard deviation, or scatter, of outcome measure data points from the line of best-fit (Kratochwill et al., 2013). The three outcome measure features investigated between phases are (d) immediacy of effect, (e) overlap, and (f) consistency of data points.

Immediacy of effect is the comparison of the last three data points in one phase to the first three data points in the next, overlap is the proportion of data points that overlap with data points from the previous phase, and consistency of data points is the comparison of similar phases (Kratochwill et al., 2013). Low proportions of data point overlap indicate greater effects and high consistency of data points indicate greater likelihood of a casual effect between the independent variable and outcome measure (Busse et al., 2014; Kratochwill et al., 2013). According to the single-case intervention research design standards, the “emphasis on visual analysis does not preclude the use of an appropriate statistical test” (Kratochwill et al., 2013, p. 31). While visual analysis is an important, and consistent, first step of single-case design study analysis, it should be extended with empirical analyses.

***Effect size calculations.*** Effect size calculations are a common statistical test for single-case design studies because they help quantify the strength of treatment effects, however, there is not an agreed upon approach to calculating effect size for single-case design studies (Kratochwill et al., 2013). Additionally, the assumptions for common effect size calculations (e.g., improvement rate difference, standard mean difference) are not well aligned for replicated AB design. Recently, though, Tarlow and Brossart (2018) introduced Interrupted Time-Series Simulation (ITSSIM), which is a simulation method to calculate individual subject level effect sizes for AB designs. The ITSSIM software calculates effect size based on distributions and predictions of phase A and B data, instead of comparisons. This methodology is useful for studies in the clinical setting, especially, because it compensates for instances when intervention is not conducive to establishing baseline.

ITSSIM is a computer software program that utilizes a three-stage process to calculate effect sizes for single-case AB design: (a) parameter estimation, (b) time-series simulation, and

(c) effect size calculation (Tarlow & Brossart, 2018). In the first stage, Theil-Sen robust regression is used to model trend and level changes because it accounts for small samples and brief time-series. Additionally, error variance and unbiased  $r_I$  are calculated during the first stage. Random sample simulation parameters and simulation of phase B time-series are produced during the second phase to represent response patterns and make predictions about level, trend, variability, and autocorrelation, respectively. In the third phase, effect size calculations are reported as  $d$ ,  $D$ ,  $r$ , or  $R^2$ .

ITSSIM computer software is free to download from <http://ktarlow.com/stats> (Tarlow, 2018a) and reports statistics from phases one, two, and three as software output (Tarlow & Brossart, 2018). In a field study by Tarlow and Brossart (2018), ITSSIM produced comparable results to multilevel modeling methods of calculating effect sizes. Additionally, ITSSIM is aligned with the current push for accessible single-case study analysis software as “its design was intended to place comprehensive computer-intensive simulation methods into the hands of any single-case investigator” (Tarlow & Brossart, 2018, p. 12).

***Reliability change index.*** Reliability change index (RCI) is a common method for single-case design studies that measures the difference between pretreatment and posttreatment scores on an outcome measure (Busse et al., 2014). RCI is a relatively simple analysis to conduct, as it is most commonly the score of the pretreatment subtracted from the score of the posttreatment and divided by the standard error of measurement (SEM) of the outcome measure (Busse et al., 2014). It is essential, then, that there are psychometric properties of the outcome measure published or available in the technical manual to access the SEM. The rationale for conducting RCI is its accessibility to practitioners to show clinical change that is stronger empirically than clinical judgment (Busse et al., 2014). RCI values that exceed  $\pm 1.80$  are

statistically significant and their values of strength may be interpreted like an effect size (Busse et al., 2014).

## **Research Questions and Hypotheses**

The purpose of the current study was to explore the acceptability, integrity, and effectiveness of behavioral intensive intervention as a treatment approach for children with SM, using an uncontrolled pre-post-follow-up replicated AB single-case design across 25 cases. The study was conducted at Confident Kids Camp (CKC), which is a 5- consecutive day intensive summer day camp for children with SM. As inherent in the structure of CKC, children received individual behavioral therapy from an assigned, trained counselor throughout the week. Additionally, the 25 campers were separated into three classrooms: a younger class (ages 4-5), middle class (ages 6-8), and older class (ages 9-11), to ensure psychoeducation and behavioral exposure activities are developmentally appropriate. Specific research questions and hypotheses are described below and in Table 4.

### ***Question 1: Was intensive summer day camp intervention an acceptable SM treatment approach for caregivers of participants?***

It was hypothesized high rates of caregiver acceptability would be reported at posttreatment, as indicated by (a) caregiver responses on the *Treatment Evaluation Questionnaire-Parent Form* (TEQ-P; Kelley et al., 1989) and (b) family interviews. Overall scores of 110 or higher on the TEQ-P were considered high levels of acceptability (Kratochwill et al., 2013). Santucci and colleagues (2009) reported high levels of child and parent treatment acceptability following their intensive 7-day treatment for separation anxiety disorder, as measured by 5-point Likert scale and written responses. Similarly, three out of three participants in Whiteside and colleagues' (2008) study reported the 5-day treatment was rigorous but useful.



The benefits of treatment were hypothesized to outweigh the short treatment time and effort costs, which may indicate higher rates of caregiver reported acceptability. During family interviews, it was hypothesized families would report high acceptability of this intensive summer day camp, based on the rationale for brief interventions as a disruptive innovation to circumvent the barriers to traditional therapy and positive acceptability outcomes in a recent meta-analysis of BIC interventions for anxiety disorders (Ost & Ollendick, 2017; Rotheram-Borus, et al., 2012). Interview results were reviewed and analyzed for general acceptability themes related to (a) the three TEQ-P subscales, (b) identified item factor loading in the TEI (Kelley et al., 1989), and (c) identified barriers intensive intervention aims to circumvent.

***Question 2: Was intensive summer day camp intervention implemented as intended by camp counselors trained in SM behavioral treatment?***

Intensive intervention integrity was not well documented in the current literature. Gallagher and colleagues (2003) noted reviewing videotaped sessions for treatment adherence and addressing discrepancies in subsequent sessions, however, they did not report therapist implementation integrity rates. The hypothesis for this research question was that intensive intervention could be implemented by counselors trained in SM behavioral treatment at the minimum rate for adequate treatment adherence, which is 80% or higher (Perepletchikova & Kazdin, 2005), as measured by integrity checklists. This hypothesis was supported by four protective treatment characteristics of this study (Perepletchikova & Kazdin, 2005). First, treatments with less treatment agents per one client are more likely to have higher treatment adherence. For the current study, each participant was assigned only one counselor for the entire camp. Second, the risk for low treatment integrity increases with more sessions. Given the brief intervention approach for this study, treatment was only implemented over five days. Third,

competence of treatment agents may influence treatment adherence. Counselors in this study (a) received training prior to treatment implementation, (b) had similar educational backgrounds to treatment agents from other intensive intervention studies that produced effective results (e.g., Santucci & Ehrenreich-May, 2013), and (c) received in-vivo feedback from classroom teachers if their implementation did not adhere to treatment protocol. Fourth, treatment integrity is aided by the prescription of the treatment protocol. Though the current study did not utilize a manualized treatment approach, it consisted of a very detailed agenda for each day to facilitate high rates of integrity. The first author provided training to all counselors and teachers about how to complete the integrity checklists prior to the start of camp (i.e., zoom video before camp).

Secondary analyses were conducted to measure the inter-rater reliability of integrity checklists completed by the counselors. Teachers and camp directors conducted integrity checklists daily. The inter-rater percent agreement between counselor and teacher/camp director integrity checks were hypothesized to be at least 81%, as determined “almost perfect” by Landis and Koch (1977).

***Question 3: Was intensive summer day camp intervention implemented as intended by caregivers who received parent training in SM behavioral treatment?***

Like Research Question 2, it was hypothesized that the community-based exposure could be implemented as intended by a caregiver who received brief training in SM behavioral treatment at the minimum rate for adequate treatment adherence, which is 80% or higher (Perepletchikova & Kazdin, 2005). Similar to protective factors of maintaining treatment adherence described above, parents received training for community-based exposure, received in-vivo feedback from their child’s counselor, and the activity was considered only one treatment session. Additionally, this hypothesis was supported by previous intensive interventions that

included a parent training component and effective results were maintained at follow-up (e.g., Whiteside & Jacobsen, 2010; Whiteside et al., 2008). Maintenance of positive treatment effects at follow-up would indicate parents effectively implemented behavioral strategies learned while their child was participating in intensive intervention. Thus, parent behavior change was measured at follow-up by parents completing integrity checklists of exposure activities during the three months after camp. Similarly, it was hypothesized they will implement community-based exposures with at least 80% integrity in the time between posttreatment and follow-up (Perepletchikova & Kazdin, 2005).

***Question 4: Was intensive summer day camp intervention effective in improving child levels of anxiety across pretreatment, treatment, posttreatment, and three-month follow-up for participants?***

Santucci and Ehrenreich-May (2013) found noticeable reductions in anxiety symptoms for their participants receiving a one-week summer-camp intervention for separation anxiety disorder. Participants in the treatment group ( $n = 14$ ) experienced significant decreases in caregiver-report anxiety symptoms from pretreatment to posttreatment. Additionally, they found decreases were maintained and further improved from posttreatment to six-week follow-up. This study hypothesized each child would experience similar decreases from baseline scores to posttreatment and three-month follow-up, especially given the similarity in design (i.e., intensive summer camp). Further, this study hypothesized decreases in anxiety would be apparent before the end of camp. This hypothesis was supported by Santucci and Ehrenreich-May (2013) finding 43% of the treatment and delayed treatment groups ( $n = 28$ ) did not meet diagnostic criteria for separation anxiety disorder immediately following the week-long camp. Also, Donovan and colleagues (2015) found 52.4% of the treatment group ( $n = 21$ ) did not meet diagnostic criteria

for social phobia immediately following the four 3-hour sessions over three consecutive weekends. These findings signal decreases in anxiety occurring throughout the intensive intervention.

***Question 5: Was intensive summer day camp intervention effective in improving caregiver-reported speaking behaviors across settings (i.e., SMQ ratings) from pretreatment to posttreatment to three-month follow-up for participants?***

One goal of this study was to provide initial evidence that intensive intervention was an effective treatment approach for children with SM, which would mean it improved the primary symptom of SM (i.e., speech avoidance). It was hypothesized that participants will demonstrate significant improvements in caregiver-reported speaking behavior across contexts from pretreatment to posttreatment to three-month follow-up. Though there was no current intensive intervention literature with an SM exclusive sample, studies exploring SM behavioral intervention showed promising results. Vecchio and Kearney (2009) conducted a study with behavioral intervention strategies for nine children with SM, during which they tracked number of words spoken in the community and school setting daily. Eight of nine children experienced positive outcomes at the end of the alternating treatment design. Additionally, Sharkey and colleagues (2008) found significant improvements, with large effect sizes, in caregiver rated speaking behaviors from pretreatment to posttreatment for five children who received behavioral intervention for SM through a group format over eight weeks. The general trend for child-level speaking behavior across all studies was positive, which aligns with the behavioral conceptual model that a decrease in anxiety was correlated with an increase in child-level speaking behaviors.

***Question 6: Was intensive summer day camp intervention effective in improving child-level responsive and spontaneous speaking behaviors, as recorded by daily frequency counts through video recording?***

It was hypothesized participants would experience an immediate reduction in anxiety through behavioral strategies such as modeling, shaping, and practicing before exposure activities, which would be exhibited through an increase of child-level responsive and spontaneous speaking behaviors throughout the 5-day summer camp intervention. O'Reilly and colleagues (2008) conducted a study including two sisters with SM who received individualized behavioral therapy to increase responsive speech skills at school. Through utilization of teaching, modeling, and practicing, both girls showed immediate increases in rate of responsive speech after the first intervention session and through the end of treatment. Kern and colleagues (2007) conducted a single- case design study in which one participant showed increased spontaneous speech as soon as the second school-based intervention session.

Table 4.

*Research Questions, Hypotheses, and Measures*

<b>Research Question</b>	<b>Hypothesis</b>	<b>Measures/Variables</b>
Question 1: Was intensive summer day camp intervention an acceptable SM treatment approach for caregivers of participants?	It was hypothesized high rates (score 110+) of caregiver acceptability would be reported at posttreatment, as indicated by their responses on the <i>Treatment Evaluation Questionnaire-Parent Form</i> (TEQ-P). It was hypothesized families would report high acceptability for the time, resources, and accessibility of this intensive summer day camp.	<p><i>Post:</i> Treatment Evaluation Questionnaire-Parent Form (Acceptability, Effectiveness, Time Required subscales)</p> <p><i>Post:</i> Family interviews measuring TEQ-P subscales (i.e., Acceptability, Effectiveness, Time Required), related items (i.e., willing to use, like, common sense, suitable, improvement, reaction), and traditional therapy barriers (i.e., accessibility, cost, scheduling, implementation competency)</p>
Question 2: Was intensive summer day camp intervention implemented as intended by camp counselors trained in SM behavioral treatment?	It was hypothesized that intensive intervention could be implemented by counselors trained in SM behavioral treatment at a rate of 80% or higher and that inter-rater reliability of treatment adherence should be at least 81%.	<p><i>Daily:</i> Counselor completed integrity checklists derived from camp schedule to examine if implementation was “not observed,” “implemented inappropriately,” “implemented somewhat appropriately,” or “implemented appropriately”</p> <p><i>Daily:</i> Teacher and camp director overlapping integrity checklists for counselors</p>

Table 4 (cont'd)

<p>Question 3: Was intensive summer day camp intervention implemented as intended by caregivers who received parent training in SM behavioral treatment?</p>	<p>It was hypothesized that an exposure activity could be implemented by caregivers trained in SM behavioral treatment at a rate of 80% or higher and that inter-rater reliability of treatment adherence should be at least 81%. It was hypothesized caregivers can facilitate exposure activities for their children after camp with an integrity rate of 80% or higher.</p>	<p><i>One-time</i> caregiver- and counselor-completed integrity checklist for community-based exposure activity to examine if implementation was “not observed,” “implemented inappropriately,” “implemented somewhat appropriately,” or “implemented appropriately”</p> <p><i>One-time</i> overlap of integrity checklists to assess inter-rater agreement with corresponding counselor</p> <p><i>Posttreatment to three-month follow-up:</i> Caregiver completed integrity checklists for each exposure activity to assess parent behavior change</p>
<p>Question 4: Was intensive summer day camp intervention effective in improving child levels of anxiety across pretreatment, treatment, posttreatment, and three-month follow-up for participants?</p>	<p>Participants would demonstrate significant decreases in anxiety levels, as compared to baseline, after participating in the summer 5-day camp intervention.</p>	<p><i>Daily:</i> Daily Behavior Report of anxiety-related behaviors during 5 exposure-based activities (per day).</p> <p><i>Pre/Post/three-month follow-up:</i> Screen for Child Anxiety Related Disorder (SCARED)</p>

Table 4 (cont'd)

Question 5: Was intensive summer day camp intervention effective in improving caregiver-reported speaking behaviors across settings (i.e., SMQ ratings) from pretreatment to posttreatment to three-month follow-up for participants?	Participants would demonstrate significant improvements in caregiver-reported speaking behavior across contexts from pretreatment to posttreatment to three-month follow-up.	<i>Pre/Post/three-month follow-up:</i> Selective Mutism Questionnaire – Total Score
Question 6: Was intensive summer day camp intervention effective in improving child-level responsive and spontaneous speaking behaviors, as recorded by daily frequency counts through video recording?	It was hypothesized participants would experience immediate improvement for child-level responsive and spontaneous speaking behaviors, and that improvements would grow through the end of the summer 5- day camp intervention.	<i>Daily:</i> Frequency counts of child-level responsive and spontaneous speaking behaviors during baseline and 5 exposure-based activities (per day), as confirmed by video recording.

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## CHAPTER 3

### METHODS

#### Participants

This study was deemed non-human subjects research given that (a) its data collection procedures were camp-wide and part of typical camp proceedings, (b) all camper caregivers consented to data collection and videotaping for the purposes of research and camp improvement efforts, and (c) all data were blinded before extraction and analyzing.

Twenty-five campers participated in CKC 2019, including 22 families, given three sets of siblings. Fourteen campers traveled from nine different states (Michigan, Ohio, Indiana, Wisconsin, Iowa, Minnesota, California, Hawaii, Arkansas) and Canada. Twenty campers (80%) were female and five campers (20%) were male. Twenty-two (88%) campers were white. Campers were separated between three grade-based classrooms. The younger class included pre-kindergarten to kindergarten aged campers (ages 4-5;  $n = 7$ ), the middle class included first through third grade aged campers (ages 6-8;  $n = 9$ ), and the older class included fourth through sixth grade aged campers (ages 8-11;  $n = 9$ ). Ages of campers ranged from four to eleven ( $M = 7$  years, 11 months) at the start of camp.

Given the long span of time during which intakes could be completed (i.e., 5 months), the first day of camp rating scales were used as “pretreatment” scores. No significant differences were found between SMQ scores at intake to the first day of camp. Three (12%) camper’s caregivers scored their speaking behaviors as severe (SMQ Total score  $< 13$ ) at pretreatment. The average score among the 25 campers on the SMQ was 21.64 ( $SD = 7.92$ , *Range*: 3 - 39). Significant differences ( $p < .01$ ) were found between caregiver-rated SCARED measures from intake to the first day of camp, indicating significantly higher scores of anxiety on the first day of

camp. However, each camper's highest scored SCARED subscale remained the same from intake to the first day camp. Twenty (80%) camper's caregivers endorsed social anxiety as the highest subtype of anxiety on the intake SCARED measure, while five camper's caregivers endorsed Generalized Anxiety as the highest subtype. The most recent SMQ and SCARED were used as "pretreatment" scores for RCI calculations, while the intake session SCARED was used to identify DBR items. Twenty-one (84%) campers had previously received treatment for SM, while four campers had not.

**Inclusion and exclusion criteria.** Eligible campers were between the ages of four and 12 and had a primary diagnosis of SM, as confirmed before their enrollment in camp by the lead CKC clinician and with parent report on the *Selective Mutism Questionnaire* (SMQ) and *Screen for Child Anxiety Related Disorders, Parent about Child Version* (SCARED). Children completed the *Screen for Child Anxiety Related Disorders, Child Version* (SCARED) self-report before camp if they were eight years old or older. Children could present with a range of SM severity, though children were not eligible for participation in camp if they could not establish speech with their assigned counselor during the lead-in session prior to the start of camp.

Given the primary purpose of the feasibility study being exploration of hypotheses to move the SM intensive intervention literature to more rigorous designs, exclusion criteria were limited. Children exposed to previous treatment participated in camp. Zero children with comorbid diagnoses of neurodevelopmental disorders (e.g., intellectual disability, communication disorder, autism spectrum disorder), major mood disorders, or psychotic disorders enrolled in camp. Ultimately, all children enrolled in camp participated and their data were extracted for this study.

## Measures

**Treatment acceptability.** The rationale for measuring family treatment acceptability was threefold, specifically, acceptability assessed treatment alignment with ethical and legal guidelines, correlated with treatment implementation integrity, and evaluated consumer preferences (Kelley et al., 1989). Acceptability lent itself to assessing feasibility, which was the overarching goal of this pilot study design. In sum, acceptability determined whether the caregivers and campers considered the intervention “fair, reasonable, and appropriate given the problem(s) to which its applied” (Kelley et al., 1989, p. 236). For this study, treatment acceptability was measured two ways, including a rating scale and family interview at posttreatment.

***Treatment Evaluation Questionnaire- Parent Form.*** All caregivers completed the *Treatment Evaluation Questionnaire- Parent Form* (TEQ-P; Kelley et al., 1989; Appendix A) at posttreatment to rate their level of acceptability of the treatment. The TEQ-P was organized by three subscales, including Acceptability, Effectiveness, and Time Required. Caregivers rated their experiences of acceptability and intervention quality on a Likert Scale from 0 (strongly disagree) to 6 (strongly agree), and higher scores indicated higher levels of acceptability. Scores could range from 21 to 126. Overall scores were averaged for all caregivers. Kratochwill and colleagues (2003) suggested an overall score of 110 indicated high levels of caregiver acceptability, as this score was the sum of high level scores determined from each subscale. Specifically, subscale scores at or above 55, 36, and 9 for the Acceptability, Effectiveness, and Time Required subscales, respectively, indicated high levels of acceptability (Kratochwill, Elliott, Loitz, Sladeczek, & Carlson, 2003). The TEI (Kazdin, 1980) items, from which the TEQ-P was adapted, had high internal consistency ( $\alpha = .97$ ).

**Family interviews.** Family interviews of acceptability were conducted on the last day of the intensive summer day camp intervention. The interview questions were derived to align with (a) the three TEQ-P subscales, (b) identified item factor loading in the TEI (Kelley et al., 1989), and (c) identified barriers of traditional treatment that intensive intervention aims to circumvent. Interview questions probed at the acceptability of the intensive summer day camp intervention and, when applicable, explored whether it addressed the barriers associated with traditional therapy (e.g., “How did the cost of CKC compare to previous treatment?”). An overview of interview topics are presented below in Table 5 and Appendix B. Interviews were coded for themes. While there was no reliability or validity information available for the interview, the questions were strategically derived from (a) TEQ-P which has high internal consistency ( $\alpha = .97$ ) and barriers identified in research (e.g., Rotheram-Borus et al., 2012).

Table 5.

*Acceptability Interview Question Organization*

<b>Subscale</b>	<b>TEI item</b>	<b>Barriers</b>
Acceptability	Acceptability Willing to use Like Common Sense Suitable	Accessibility
Effectiveness	Effective  Improvement Reaction	Implementation Competency
Time Required		Cost Scheduling

**Treatment integrity.** Treatment implementation integrity as a part of a feasibility study “concerns the extent, likelihood, and manner in which an intervention can be fully implemented as planned and proposed” (Bowen et al., 2009, p. 453). The current pilot study examined novel delivery format of behavioral therapy through intensive intervention. Thus, tracking treatment

integrity was a critical component of this study. Researchers, teachers, professionals (non-teachers), or a combination of people were found most common to track intervention integrity in a review of 152 intervention studies conducted in a school-based setting (McIntyre, Gresham, Digennaro, & Reed, 2007). Given the similarity of class-based structure of this study, the camp director (i.e., CKC clinician), teachers, and counselors (i.e., professionals) were all responsible for collecting intervention integrity data throughout the 5-day intervention.

***Counselor implementation integrity.*** Integrity checklists were developed based on the 2019 CKC curriculum. Integrity checklists were created for each day and class. A sample integrity checklist can be found in Appendix C. Each item on the integrity checklist was rated on a 4-point scale of implementation, with a range from 0 (Not observed), 1 (Implemented inappropriately), 2 (Implemented somewhat appropriately), to 3 (Implemented appropriately). Counselors completed the integrity rating scale every day immediately after camp for their implementation efforts with their assigned camper. Items were coded dichotomously as Yes or No, with scores from 0 to 1 being coded as No and scores from 2 to 3 being coded as Yes.

Classroom teachers and the camp director completed daily integrity checklists for 14 counselors and their results were generalized for counselors' implementation integrity. The 14 counselors were chosen because their campers were covered by an insurance provider that required one-hour observation from a licensed professional. Counselors were observed for one hour each day and the teacher or camp director rated their implementation integrity during that hour on the same 4-point scale described above (Appendix D). Items were coded dichotomously as Yes or No, with scores from 0 to 1 being coded as No and scores from 2 to 3 being coded as Yes.

Measuring inter-rater reliability addressed the lack of reliability and validity information available about this integrity check tool. Counselor integrity checklists completed by the teacher or camp director were used to determine treatment integrity percentages, which were calculated by dividing the sum number of Yes scores by the overall opportunities for Yes scores. Percentage scores were averaged at the end of treatment and described average treatment integrity rates. Higher scores of intervention implementation integrity correlated to higher indication the intervention was implemented as planned. Inter-rater agreement was calculated using percentages of agreement between teacher and counselor integrity checklists. Landis and Koch (1977) describe the strength of inter-rater agreement for categorical data as “almost perfect” with a kappa statistic of .81.

***Caregiver implementation integrity.*** Caregivers were key players in maintaining participant practice after intensive intervention was completed. An integrity checklist was developed (Appendix E) to measure caregiver implementation integrity of intensive summer day camp intervention techniques during the community-based exposure camp activity. The caregiver integrity checklist used an identical scale to the counselor integrity checklist. The counselor completed the integrity checklist for their assigned camper’s caregiver(s) immediately following the exposure activity. When more than one parent was present during the exposure activity, the counselor completed only one checklist for their integrity, with higher score behaviors overriding lower score caregiver behaviors. Similarly, caregivers completed one of the same integrity checklists to rate their implementation efforts. Caregiver integrity checklists were used to determine treatment integrity percentages, which were calculated by dividing the sum number of Yes scores by the overall opportunities for Yes scores. Percentage scores from caregiver integrity checklists were averaged at the end of treatment to describe average treatment

integrity rates. Higher scores of intervention implementation integrity correlated to higher indication the intervention was implemented as planned. Inter-rater agreement was calculated using percentages of agreement between counselor and caregiver integrity checklists, and the goal of inter-rater reliability was a kappa statistic of .81.

Additionally, caregivers completed a very similar, but more generalizable, integrity checklist (Appendix F) throughout the 3-month period between posttreatment and follow-up to measure caregiver behavior change. For each planned exposure activity during that time, caregivers completed the integrity checklist to determine their implementation integrity with facilitating exposures for their child. Caregiver integrity checklists were used to determine treatment integrity percentages, which were calculated by dividing the sum number of Yes scores by the overall opportunities for Yes scores. It was hypothesized caregivers would implement exposure activities with at least 80% adherence over time.

**Treatment effectiveness.** Effectiveness “may be conducted in a convenience sample, with intermediate rather than final outcomes, with shorter follow-up periods” (Bowen et al., 2009, p. 453) in a feasibility study. Effectiveness, ultimately, determined whether the intended intervention mechanisms of change occurred and resulted in positive, predicted outcomes (Bowen et al., 2009). These changes are often measured through effect size estimation and maintenance of changes (Bowen et al., 2009). For this study, effectiveness was measured in two distinct ways. First, daily progress monitoring of child-level speaking behaviors and counselor-rated anxiety levels. Second, rating scales of camper anxiety levels and speaking behaviors at pretreatment, posttreatment, and three-month follow-up.

**Anxiety levels.** *The Screen for Child Anxiety Related Disorder, Parent about Child Version* (SCARED, Birmaher, Brent, Chiappetta, Bridge, Monga, & Baugher, 1999; Appendix

G) and a Daily Behavior Report (DBR) were used to measure camper anxiety levels, as reductions in anxiety are the hypothesized mechanism of change for increased speaking behaviors. *The Screen for Child Anxiety Related Disorder, Parent about Child Version* (SCARED, Birmaher et al., 1999) was completed by caregivers at pretreatment, posttreatment, and three-month follow-up. *The Screen for Child Anxiety Related Disorders, Child Version* (SCARED, Appendix H) was completed by participants ages eight or older at pretreatment, posttreatment, and three-month follow-up.

Both SCARED measures are a brief broadband 41-item measure. Caregivers rated the frequency of their child's anxious behaviors on a Likert Scale from 0 (not true or hardly ever true), 1 (somewhat true or sometimes true), or 2 (very true or often true), with higher scores indicating more frequent anxiety symptoms. At pretreatment and three-month follow-up, caregivers completed the survey based on their child's behavior for the past three months. At posttreatment, caregivers were asked to complete the survey based on their child's behavior over the past week, in order to assess for anxiety level changes during camp. The child measure is identical to the parent measure for children (i.e., Likert scale and time frame) with the adjustment of framing questions in the first-person. The SCARED is organized by five subscales, including Panic Disorder/Significant Somatic Symptoms, Generalized Anxiety Disorder, Separation Anxiety, Social Anxiety, and Significant School Avoidance. Scores range from 0 to 82, with scores over 25 indicating further examination for the presence of an Anxiety Disorder. Birmaher and colleagues (1999) report a reliability of  $\alpha = .90$  for the SCARED parent and child report, indicating high internal consistency for all items.

A DBR was individually formed for each camper and included the three highest scored items from the highest scored SCARED subscale, as indicated by parent report at intake (sample



DBR in Appendix I). In the case three items could not be readily identified (e.g., tied score between 4 items), items with the highest factor loading were chosen. DBRs are an evidenced-based tool to track child behavior and include operationalized definitions of target behaviors and specific criteria for the child meeting behavioral goals (Pyle & Fabiano, 2017). Aligned with the promotion of including a heterogeneous sample for this study, DBRs reflected the foundational anxiety symptoms of each participant, as it is believed reducing these anxieties would be the mechanism of change to increase his/her speech.

Counselors rated the frequency of their camper's anxious behaviors for five exposure activities each day on the identical SCARED Likert Scale from 0 (not true or hardly ever true), 1 (somewhat true or sometimes true), or 2 (very true or often true), with higher scores indicating more frequent anxiety symptoms. Scores were averaged for each camper after each day. Recent meta-analytic (Hale, Crocetti, Raaijmakers, & Meeus, 2011) results show high coefficient alphas for each of the five SCARED subscales, which include Panic Disorder/Significant Somatic Symptoms ( $\alpha = .84$ ), Generalized Anxiety Disorder ( $\alpha = .81$ ), Separation Anxiety ( $\alpha = .72$ ), Social Anxiety ( $\alpha = .78$ ), and Significant School Avoidance ( $\alpha = .62$ ). Additionally, Riley-Tillman, Chafouleas, and Briesch (2007) found significant correlation (.81) between mean teacher DBR ratings compared to systematic observations, which suggest DBRs are a reliable supplement to more established measures of behavior (i.e., SCARED).

***Speaking behaviors.*** Caregivers completed the *Selective Mutism Questionnaire* (SMQ; Bergman, Keller, Piacentini, & Bergman, 2008; Appendix J) at pretreatment, posttreatment, and three-month follow-up. The SMQ is a 17-item measure and provides a clinical profile of the child's SM by assessing their speech inhibition across settings, specifically at school, at home/family, and in social situations outside of school. Caregivers rated the frequency of their

child's speaking behaviors on a Likert Scale from 0 (never), 1 (seldom), 2 (often), to 3 (always), with lower scores indicating lower frequency speaking behaviors. Scores could range from 0 to 51, with a mean score of 12.99 ( $SD = 7.23$ ) for children with a primary diagnosis of SM (Bergman et al., 2008). While cutoff scores for the SMQ are unavailable, the mean score of approximately 13 is often referenced to determine SM severity. The internal consistency of SMQ factors ( $\alpha$  between .654 and .913) and total scores ( $\alpha = .783$ ) ranged from moderate to high (Letamendi, Chavira, Hitchcock, Roesch, Shipon-Blum, & Stein, 2008). The convergent and incremental validity were also strong (Letamendi et al., 2008).

***Observed speaking behaviors.*** As a part of single-case design, it was critical to track the target behavior of change (i.e., speech avoidance) to adequately assess whether the mechanism of change occurred simultaneously to behavior change. Video recordings of camper speaking behaviors during five daily exposure activities were coded to track changes across baseline and treatment phases for all 25 campers. During five consistent exposure activities each day (i.e., PRIDE, morning meeting, novel exposure, prize store, and closing assembly), rate of camper responsive and spontaneous speech was coded by quantifying the total number of responsive and spontaneous words spoken and dividing those numbers by total number of minutes for each camper. Responsive and spontaneous speech rates were aggregated, separately, for each day due to different speech demands for each exposure but similarity of exposures from day to day. Given there was not reliability or validity information for this tracking mechanism, audio-recording and video-recording of each exposure was used to maintain objectivity.

## **Procedures**

**Project personnel and training.** Project personnel included (a) the project coordinator, (b) lead CKC clinician (camp director), (c) classroom teachers, and (d) camp counselors. The

project coordinator is the first author and was responsible for the conceptualization of the study, organizing data collection tools, and the extraction and analyzing of data.

The camp director is the lead CKC clinician and a licensed clinical psychologist with an expertise in behavioral treatment of SM. The lead CKC clinician was responsible for coordinating and running CKC. Specifically, these responsibilities included camp enrollment, distributing pretreatment, posttreatment, and three-month follow-up measures, coordinating the CKC curriculum, providing training to teachers and counselors before treatment, providing parent training during CKC, and providing leadership guidance and supervision during the camp.

The classroom teachers included three clinicians with experience treating SM at the mid-Michigan clinic run by the lead CKC clinician. One teacher was a licensed psychologist and the other two teachers obtained a Temporary Limited License (i.e., psychology intern and practicum student). All classroom teachers were identified and trained by the lead CKC clinician and had participated as a CKC teacher or counselor during a previous summer. Classroom teachers' main responsibilities included leadership of their class campers and counselors. They led class activities (e.g., circle time, psychoeducation), scaffolded counselor implementation, and role-played as novel adults or school-based classroom teachers for exposure practices.

Camp counselors were graduate students in a psychology related field or school-based employees in a related field (e.g., teacher, school psychologist, social worker, speech language pathologist). Camp counselors applied to participate in CKC, and the lead CKC clinician reviewed and accepted their applications before training. All counselors were invited to attend a one-day training in June 2019 led by the lead CKC clinician, but the training was only mandatory for new counselors. Training consists of an explanation of SM, behavioral treatment

approaches to break the avoidance cycle, overview of CKC camp, and role-playing to practice exposure activities with campers.

Finally, three graduate-level research assistants and two school psychologists assisted with conducting family interviews. Each assistant received training from the project coordinator on the interview prior to the beginning of camp. Two graduate-level research assistants conducted visual analyses of the single-case AB study data. Specifically, research assistants coded changes in DBR, responsive speech, and spontaneous speech for each camper using visual analyses. All graphs were coded by each research assistant, and disagreements were determined by the primary investigator. Research assistants received training from the project coordinator about the visual analyses. The *What Works Clearinghouse* Single-case Research Technical Documentation Manual (Kratochwill et al., 2010) was used as the training material.

### **Treatment phases.**

***Pretreatment.*** Acceptability was determined at pretreatment as child enrollment in camp. During June and July before CKC in August, campers and their caregivers met the camper's assigned counselor during a "lead-in" session. The purpose of the lead-in session was to establish speech between the camper and counselor before the start of camp. The lead CKC clinician or a CKC teacher led the lead-in session by greeting the camper and caregiver at the beginning of session, establishing speech with the camper in a playroom, fading the counselor into the playroom, transferring speech to the counselor, and then leaving the playroom. Then, the counselor and camper played for about an hour, while the lead CKC clinician or teacher occasionally checked in to ensure speech was being maintained. At the end of the lead-in session, the counselor met the camper's caregiver(s).

All counselors, teachers, and the lead CKC clinician were trained on the use of the integrity checklists through a zoom video recorded by the project coordinator. The lead CKC clinician distributed the zoom video to counselors and teachers via email and required they watch it before camp. Caregivers were trained on the community-based integrity checklist during parent training on the day before the community-based exposure activity.

Camp enrollment (between January 2019 to May 2019) consisted of a completed intake packet which included caregiver SMQ and SCARED rating scales. The SMQ and SCARED obtained the child's pretreatment SM symptoms and anxiety levels. If the child was eight years old or older, they completed the SCARED self-report during this time. An SMQ and SCARED were also completed by caregivers on the morning of the first day of camp to account for (a) the possible effects the lead-in session had on camper behavior when CKC started and (b) the duration of time between intake and the start of camp. The rating scales were completed by parents on Monday morning before parent training started. Also during this time, families signed up for Friday interview times and were reminded of the how and why the data were being collected throughout camp. Campers eight years and older completed the SCARED-Child Version on Monday, as well. There were no missing data at pretreatment.

***Baseline (A).*** During camp, baseline was established on the first morning before intervention was implemented. The first twenty minutes of all five days were reserved for children free play when counselors used PRIDE skills to build rapport with their camper (Kotrba, 2015). PRIDE stands for praise, reflect, imitate, describe, and enthusiasm, and all techniques were beneficial to establish rapport and subsequent speech (Kotrba, 2015). During this time on the first day, video tapings were coded for number of responsive and spontaneous words spoken

in each four-minute increment (total of five baseline data points). Each total number of words for each four-minute increment was divided by four to equal each camper's rate of speech.

***Intervention (B).*** The curriculum for CKC was designed by the lead CKC clinician and each day included similar activities and goals. A full curriculum is available in Appendix K and an overview is available in Table 6 below. While their children were at camp, caregivers attended a daily two-hour parent training session led by the lead CKC clinician. During this time, caregivers were provided psychoeducation about SM, trained on the communication ladder, discussed appropriate educational supports for children with SM, and were encouraged to connect with other caregivers with children with SM.

Counselors and teachers implemented intervention from 9:20am until 3:00pm. Behavioral therapy was utilized throughout the day, especially contingency management, as counselors gave stickers or “brave bucks” (i.e., fake money) to campers every time they spoke. Campers turned in their sticker sheets and brave bucks for a prize at the end of every day.

Counselors implemented a hierarchy for eliciting communication from their camper during intervention. They regressed from open-ended questions, to forced choice questions, to yes/no questions, and to verbal sounds to elicit speech from their camper. Also, teachers provided in-vivo support to ensure counselors implemented the communication ladder appropriately and intervened if the camper was having an especially hard time speaking. Additionally, counselors planned for each exposure activity through goal-setting and practicing.

First, each day had a psychoeducation component that was developmentally appropriate. The younger class read books about feeling worried while middle and older classes learned relaxation techniques. Second, each day had components of exposure to prepare campers for the upcoming school year. For example, practicing interrupting a teacher, eating lunch with peers,

circle time, volunteering for class jobs, and recess with peers. Third, each day had either a fieldtrip or big activity that required goal-setting and practice beforehand. These activities included art class, therapy dogs, visiting the animal conservancy, obstacle course, scavenger hunt at Home Depot or Target with caregivers, and ordering snacks. These activities had similar goals to elicit speech from campers that challenged their current skills (i.e., hierarchal exposure). Behavioral strategies such as modeling, role-playing, and contingency management for practicing were utilized from goal-setting to exposure. Other exposure-based activities such as Person Bingo and giving/receiving compliments were included in the days, as well.

Table 6.  
*Confident Kids Camp Daily Activities*

<b>Time of Day</b>	<b>Activities</b>
Morning Activities	-Free play -Circle time or relaxation
Mid-morning	-Psychoeducation about why we practice -Exposure activity (e.g., police officer, princess visit, show and tell) -Set goals for afternoon exposure -Snack and recess Lunch
Mid-afternoon	-Field-trip activity (e.g., creature conservancy, art project) -Recess -Classroom-based practice for interrupting, giving compliments, Person Bingo
Afternoon	-Prize store

***Daily progress monitoring.*** Video recordings were coded for rate of responsive and spontaneous words spoken during five daily exposure activities. Each day, PRIDE, morning meeting, prize store, and closing assembly were recorded. The fifth recorded exposure was different each day (i.e., art class, animal conservancy practice, therapy dogs, obstacle course, show & tell). All recorded exposure activities, as with the rest of camp, elicit camper speech. Given different expectations of speech during each activity, but consistency in activities from

day to day, responsive and spontaneous speech were aggregated for the day, separately. At the end of every day, the counselor completed the camper's DBR, which scored camper anxiety related to each videotaped activity. The five activities were consistent for all campers each day.

Each day, the counselors met as a group after camp to write notes, problem solve, and plan with the lead CKC clinician, teachers, and other counselors. During this time, counselors completed their camper's DBR for the day's activities and their self-rated integrity checklist (camp data collection timeline in Table 7). On Thursday, only, the counselor also completed an integrity checklist for the camper's caregiver during the community-based exposure activity. During each daily debrief, teachers and the lead CKC clinician placed their counselor integrity checklists in the appropriate camper file. There were no missing data during daily data collection measures.

***Posttreatment.*** During the parent training meeting on Friday morning (i.e., last day of camp), caregivers completed the TEQ-P, SMQ, and SCARED to provide data to inform intervention acceptability and effectiveness. Children aged eight and older completed the SCARED child report as a part of afternoon class time. Additionally, family interviews were conducted between 10:00am and 1:00pm on Friday to gather information about caregiver perceptions about the resource, time, and accessibility of this summer intensive treatment. There were no missing data at posttreatment, except that two families did not complete family interviews. The TEQ-P was used to measure acceptability for those two families.

***Three-month follow-up.*** At three-month follow-up (November 1), the lead CKC clinician prompted caregivers to complete the three-month follow-up data collection measures via email. The email included a link for caregivers and campers to complete an electronic SMQ and SCARED via Qualtrics. The email message also included instructions about how/where to



email or mail caregiver completed integrity checklists from between posttreatment and three-month follow-up. Three reminder emails were sent to caregivers during November, which included reminders about the \$20 Amazon giftcode incentive for completion of rating scales and integrity checklists. Two caregiver integrity checklists were returned, fourteen caregiver-rated SMQ and SCARED rating scales were completed, and one child-rated SCARED was completed at three-month follow-up. Three-month follow-up data analyses were run with data collected via the survey link, and missing data were not corrected for.

Table 7.  
*Data Collection During Confident Kids Camp*

<b>Day</b>	<b>Data Collected</b>
Monday	SMQ SCARED- Parent and Child Versions 5 Videotaped Exposures Counselor-rated DBRs Counselor-rated Integrity Sheets Teacher/Lead CKC Clinician-rated Counselor Integrity Sheets
Tuesday	5 Videotaped Exposures Counselor-rated DBRs Counselor-rated Integrity Sheets Teacher/Lead CKC-rated Counselor Integrity Sheets
Wednesday	5 Videotaped Exposures Counselor-rated DBRs Counselor-rated Integrity Sheets Teacher/Lead CKC-rated Counselor Integrity Sheets
Thursday	5 Videotaped Exposures Counselor-rated DBRs Counselor-rated Integrity Sheets Teacher/Lead CKC-rated Counselor Integrity Sheets Caregiver-rated Integrity Sheets from Community-based Exposure Counselor-rated Caregiver Integrity Sheets from Community-based Exposure
Friday	SMQ SCARED- Parent and Child Versions TEQ-P Family Interview 5 Videotaped Exposures Counselor-rated DBRs Counselor-rated Integrity Sheets Teacher/Lead CKC Clinician-rated Counselor Integrity Sheets

## **Data Analyses**

**Question 1.** Analysis of treatment acceptability was conducted with TEQ-P scores for each camper's caregiver at posttreatment. Given the brevity of treatment and historically high levels of acceptability evidenced by other studies, it was expected caregivers would provide high scores of acceptability on the TEQ-P and its three subscales. Overall scores of 110 or higher were considered high levels of acceptability (Kratochwill et al., 2003). Additionally, the posttreatment family interviews were coded for themes related to acceptability of the intensive summer day camp.

**Question 2.** Treatment adherence was analyzed by calculating percentages of daily activities implemented by the counselors throughout CKC. Counselors scored their integrity on a 4-item Likert scale and responses were coded as Yes/No. Daily percentages for implementation adherence were calculated by number of activities implemented divided by number of possible activities. Counselors' rates of implementation adherence were calculated by averaging the percentages for all five days. The goal for counselors was to average an 80% or higher implementation adherence rate.

Inter-rater reliability for implementation integrity was analyzed by teachers' and the lead CKC clinician's supplemental integrity checks of counselors. The percentage of overlap between the counselor's self-reported integrity and teachers' or lead CKC clinician's were used to determine percent agreement. The goal for percent agreement between integrity checks was 81%, as determined "almost perfect" by Landis and Koch (1977).

**Question 3.** Question 3 was analyzed identical to Question 2. Question 3 only included one integrity checklist completed separately by the caregiver and counselor during the community-based exposure activity. Additionally, Question 3 included all caregiver completed

integrity checklists during posttreatment and three-month follow-up. It was hypothesized that an exposure activity could be implemented by caregivers trained in SM behavioral treatment at a rate of 80% or higher and that inter-rater reliability of treatment adherence would be at least 81%.

**Questions 4, 5, and 6.** Questions 4, 5, and 6 were analyzed using visual analyses and effect size calculations. Visual analyses were conducted for daily counselor scores of child anxiety using the DBR (Question 4) and child-level speaking behaviors (Question 6). Research assistants used a visual analyses guide (Appendix L) to conduct the visual analyses for each camper. The visual analyses guide was meant to aid the research assistants in analyses and was used as a comparison tool of agreement between the research assistants. The visual analyses guide included evaluation of level, trend, variability, immediacy of effect, and consistency of patterns across cases, but did not include evaluation of non-overlapping data because of the expected subsequent utilization of effect size calculations. Ultimately, the visual analyses of these characteristics revealed if a consistent treatment pattern existed for all campers.

Effect sizes of daily child anxiety level change (Question 4) and daily child-level speaking behavior change (Question 6) were calculated using ITSSIM computer software. The ITSSIM software calculated parameter estimations, the null effect and experimental effect models, “after standardizing the Theil-Sen residuals (i.e., dividing residuals by their within-phase standard deviation)” (Tarlow & Brossart, 2018, p. 595). Then, time-series simulation was randomly created for 100,000 coefficients, with majority (~67%) of the coefficients falling within one standard error from the parameter estimations (Tarlow & Brossart, 2018). A possible range of mean scores were produced during the simulation process in ITSSIM (Tarlow & Brossart, 2018). Finally, effect sizes were produced with larger effect sizes indicating less

overlap between predicted A and B phase points (Tarlow & Brossart, 2018). Separate analyses were conducted for responsive speaking behaviors and spontaneous speaking behaviors. Additionally, aggregate mean effect sizes were used to explore outcome differences between CKC classroom (i.e., children age).

The SCARED (Question 4) and SMQ (Question 5) were analyzed using RCI for each participant from pretreatment to posttreatment and from posttreatment to three-month follow-up. RCI was calculated by subtracting the two scores of interest and dividing them by the outcome measure's (i.e., SMQ and SCARED) standard error of measurement (SEM). Please see Table 8 for more details on determining the SEM of the SMQ and SCARED. RCIs were interpreted as effect sizes and guidelines for interpreting RCI strength is described in Table 9 and reviewed by Busse and colleagues (2014). RCI calculations were hypothesized to indicate clinically significant increases in speaking behaviors across contexts (SMQ scores) and clinically significant decreases in anxiety (SCARED scores) for all 25 campers. Additionally, aggregate mean effect sizes were used to explore outcome differences between CKC classroom (i.e., children age), SM severity, determined by SMQ scores (cutoff = 13) at pretreatment, and campers with previous treatment versus no previous treatment.

Table 8.  
*Computing RCIs for SMQ and SCARED*

	SMQ	SCARED
<i>SD</i>	7.23 (Bergman et al., 2008)	17.3 (Birmaher et al., 1999)
Cronbach's alpha ( <i>r</i> )	.97 (Bergman et al., 2008)	.90 (Birmaher et al., 1999)
$SEM = SD \sqrt{1 - r}$	$1.25 = 7.23 \sqrt{.03}$	$5.47 = 17.3 \sqrt{.1}$
RCI for Pretreatment to Posttreatment	$(\text{PostSMQ} - \text{PreSMQ}) \div 1.25$	$(\text{Post SCARED} - \text{PreSCARED}) \div 5.47$
RCI for Posttreatment to three-month follow-up	$(\text{FollowSMQ} - \text{PostSMQ}) \div 1.25$	$(\text{FollowSCARED} - \text{PostSCARED}) \div 5.47$

Busse et al., 2014

Table 9.

*Guidelines for Strength of RCI*

RCI	Strength
$\geq 1.8$	Strong, positive change (i.e., behavior significantly improved)
0.7 to 1.7	Moderate positive change
-0.6 to 0.6	No behavioral change
-0.7 to -1.7	Moderate negative change
$\leq -1.8$	Strong, negative change (i.e., behavior significantly worsened)

Busse et al., 2014

## CHAPTER 4

### RESULTS

#### Research Question 1

*Was intensive summer day camp intervention an acceptable SM treatment approach for caregivers of participants?*

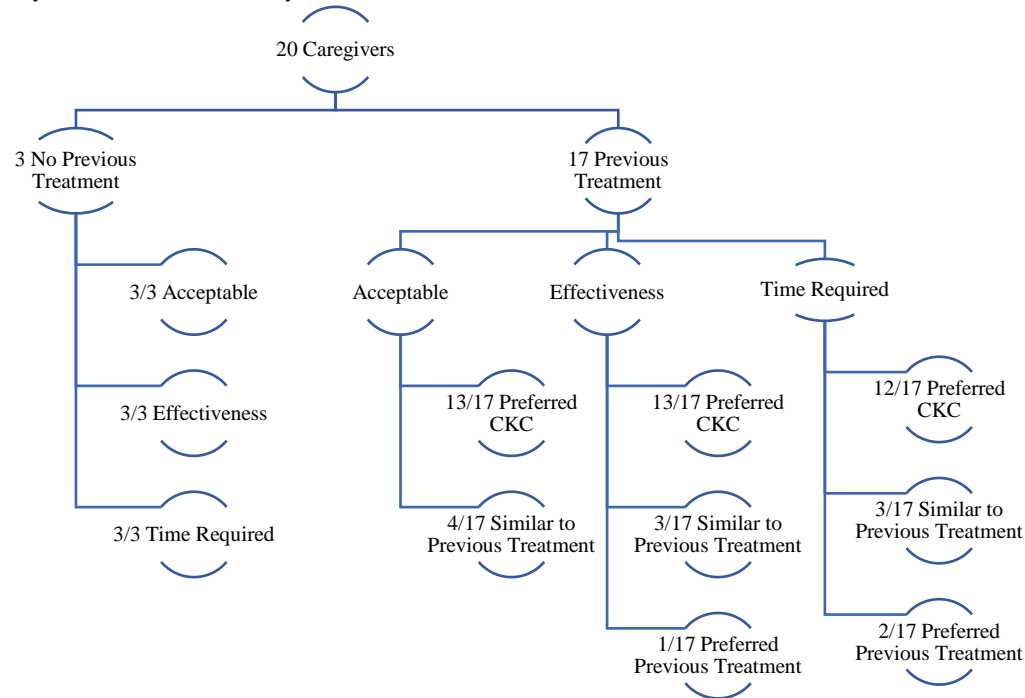
**TEQ-P.** Overall acceptability of the intensive summer day camp was not replicated across caregivers, as reported on the TEQ-P (Table 10). Six (24%) caregivers rated adequate overall acceptability of the intensive summer day camp, and the average score ( $M = 98.2$ ,  $SD = 11.95$ ) did not reach the threshold score (110) for acceptability. However, majority of caregivers ( $n = 17$ ; 68%) endorsed adequate scores of acceptability for the intensive summer day camp's treatment quality, and the average subscale score ( $M = 59.10$ ,  $SD = 5.40$ ) exceeded the threshold score (55) of acceptability. Similarly, TEQ-P results revealed majority of caregivers ( $n = 16$ ; 64%) endorsed adequate scores of satisfaction with the time required for the intensive summer day camp intervention, and the average subscale score ( $M = 9.48$ ,  $SD = 2.20$ ) exceeded the threshold score (9) of acceptability. Low caregiver scores on the effectiveness subscale negatively affected overall acceptability ratings. Specifically, six (24%) caregivers scored adequate levels of acceptability about treatment effectiveness, and the average subscale score ( $M = 29.6$ ,  $SD = 6.73$ ) did not reach the threshold score (36) for acceptability. Caregivers completed a TEQ-P for each camper, and no significant differences in total or subscale scores were found between (a) classes, (b) SM severity, or (c) previous treatment versus no treatment.

Table 10.  
*TEQ-P Results*

Class	Overall Acceptability	Treatment Quality	Time Required	Effectiveness
Younger	96.00 (15.66)	60.57 (7.72)	9.00 (3.05)	26.43 (8.52)
Middle	99.89 (12.56)	59.56 (4.69)	10.00 (2.00)	30.33 (4.12)
Older	98.22 (8.89)	57.55 (4.77)	9.33 (1.73)	31.33 (4.12)
Total	98.2 (11.95)	59.10 (5.40)	9.48 (2.20)	29.6 (6.73)

**Family Interviews.** Results from family interviews were summarized by acceptability, time required, and effectiveness subscales (Figure 2). Family interviews were conducted with 20 out of 22 families. Two families were unable to participate in family interviews on the last day of camp due to scheduling difficulties. Both families not interviewed endorsed total scores on the TEQ-P that exceeded the threshold of acceptability (113 and 115), as well as on each subscale. Seventeen caregivers reported their child(ren) had received previous treatment for SM, including three caregivers who reported two or more previous treatment approaches (e.g., weekly therapy and previous years' CKC) for their child(ren). Three caregivers reported their child(ren) had not previously received treatment for SM. Previous treatment included weekly to monthly clinic-based behavioral therapy ( $n = 12$ ), weekly clinic-based play therapy ( $n = 1$ ), clinic-based intensive behavioral therapy ( $n = 4$ ), previous years' CKC ( $n = 3$ ), and a different SM summer camp intervention ( $n = 1$ ). Duration of previous treatment ranged from one week to two years. Within each domain, family interview themes were reported for each identified item factor loading in the TEI (Kelley et al., 1989), as well as corresponding barriers associated with traditional therapy (Table 11).

Figure 2.  
Family interview summary



**Acceptability.** Thirteen out of 17 (76.47%) caregivers believed intensive summer day camp was a more acceptable SM treatment than their previous treatment. Twenty (100%) caregivers reported willingness to use strategies learned during the parent training, and 19 (95%) caregivers liked the intensive summer day camp intervention and believed the strategies taught during parent training made common sense. The one outlier preferred previous treatment because they believed CKC was more anxiety-provoking for their child than individual treatment. Seventeen (85%) caregivers reported the strategies were suitable to them, while two (10%) caregivers reported the strategies were suitable for improving speech but not anxiety, and one (5%) caregiver reported the practices of their previous therapist were more suitable. Coded themes from family interviews reveal that (a) high levels of parent satisfaction with the lead CKC clinician’s parent training sessions and (b) practice implementing skills in a community-



based exposure with their child's counselor's support contributed to their acceptability of intensive summer day camp intervention.

Accessibility is a common barrier to acceptability that is often associated with traditional treatment. Thirteen (65%) caregivers reported believing the intensive summer day camp was an accessible treatment for SM. All three caregivers whose child(ren) had no previous SM treatment believed the intensive summer day camp was an accessible form of treatment for SM, and six out of 17 (35.29%) caregivers believed it was more accessible than previous treatment. Four out of 17 (23.59%) caregivers believed the intensive summer day camp was equally accessible compared to previous treatment, and seven out of 17 (41.17%) caregivers preferred the accessibility of previous treatment. Two distinct themes, proximity to treatment and insurance coverage, emerged when family interviews were coded for factors contributing to accessibility. Specifically, seven caregivers from out-of-state endorsed accessibility, while five caregivers from out-of-state preferred the accessibility of previous treatment due to close proximity. Also, 14 caregivers endorsed partial insurance coverage.

**Time Required.** CKC included five consecutive days of treatment, and families from out-of-state reported about one week of required time to accommodate travel to and from camp. CKC's time requirement was about six hours per day for campers and two hours per day for caregivers (parent training). Common barriers to the time required component for traditional therapy are scheduling and cost. Eighteen (90%) caregivers reported satisfaction with the scheduling for the intensive summer day camp. All three caregivers whose child(ren) had no previous SM treatment believed scheduling for the intensive summer day camp was acceptable, and 12 out of 17 (70.59%) caregivers believed the scheduling was more acceptable than previous treatment. Three out of 17 (17.65%) caregivers believed the scheduling for the intensive summer

day camp was similarly acceptable compared to their previous treatment, and two out of 17 (11.76%) caregivers preferred the scheduling of previous treatment. Work schedule flexibility, time to prepare, time of year (i.e., summer), and duration of treatment were common themes that influenced caregiver satisfaction with the scheduling of the intensive summer day camp.

Fifteen (75%) families reported the cost of the intensive summer day camp was acceptable, including all three families who had no previous treatment and twelve out of 17 (70.59%) families who had previous treatment. Five out of 17 (29.41%) families preferred the cost of their child(ren)'s previous treatment, and three out of 17 (17.65%) families reported cost acceptability was similar to previous treatment. The average out-of-pocket cost of the intensive summer day camp per camper was about \$2,747, as reported by caregivers. Camp costs \$2,700 per camper, but some families reported partial insurance coverage. The average cost includes all families' out-of-pocket camp costs, travel, rental cars, lodging, food, and other miscellaneous costs (e.g., gas, dog kennel). Cost effectiveness was the most referenced factor when caregivers reported cost satisfaction, specifically they reported (a) similar hourly rates to traditional therapy, (b) believing their money went further at CKC compared to traditional therapy, or (c) reporting camp was less expensive than the year(s) of treatment paid for with less changes observed. Insurance coverage was the second most referenced theme for cost satisfaction.

**Effectiveness.** Eighteen (90%) caregivers reported via interview that their child reacted positively to the intensive summer day camp, whereas two caregivers reported that intensive summer day camp was harder for their child than traditional therapy. Nineteen (95%) caregivers reported camp was effective due to perceived improvements in their child(ren)'s speaking behaviors. Two of these caregivers reported that camp was effective in increasing their child(ren)'s speech, but believed their anxiety increased, too. One (5%) caregiver believed it

was too early to tell if camp was effective. Common themes influencing caregiver reports about effectiveness were behavioral treatment approach and school-like treatment environment. Specifically, parents preferred the behavioral approach to other types of therapies (e.g., play). Also, parents commented on how the intensive summer day camp was more applicable than individual treatment because it helped their child practice speaking in a school-like environment.

Implementation competency is a barrier to the effectiveness of SM treatment in a traditional format because there are not many SM experts. Eighteen (90%) caregivers reported believing their child(ren)'s counselor was competent, while two (10%) caregivers preferred their child(ren)'s more frequent or past therapist. Caregivers were impressed with the counselors, most notably because they observed counselors implementing the content taught to parents during parent training.

Table 11.  
*Family Interview Themes of Acceptability*

<b>Subscale/ TEI item</b>	<b>Themes for Satisfaction</b>	<b>Barriers</b>	<b>Themes for Circumventing Barriers</b>
<b>Acceptability</b> Willing to use Like Common Sense Suitable	+Parent Training +Practice with In- vivo Feedback	Accessibility	+Proximity +Insurance Coverage
<b>Time Required</b>		Scheduling Cost	+Work schedule flexibility +Time to prepare +Time of year (i.e., summer) +Duration of treatment +Cost Effectiveness +Insurance Coverage
<b>Effectiveness</b> Improvement Reaction	+Behavioral Treatment Approach +School-like Treatment Environment	Implementation Competency	+Observation of Behavioral Therapy Skills

## Research Question 2

*Was intensive summer day camp intervention implemented as intended by camp counselors trained in SM behavioral treatment?*

Yes, all counselors ( $n = 25$ ; 100%) self-reported daily implementation integrity ratings over 80%, with an average self-adherence rating of 97%. Similarly, counselors' average daily ratings for adherence of the intensive summer day camp was 97% (range: 83%-100%), with 22 out of 25 counselors rating their implementation integrity over 95% throughout the week. These ratings far exceeded the 80% adherence threshold recommended by Perepletchikova & Kazdin (2005). Similarly, interrater agreement was 93% across daily one-hour observations of 14 counselors, which exceeded the average 81% agreement rate recommended by Landis and Koch (1977). No significant differences in counselor-rated integrity scores were found between (a) classes, (b) SM severity, or (c) previous treatment versus no treatment camper's counselors.

## Research Question 3

*Was intensive summer day camp intervention implemented as intended by caregivers who received parent training in SM behavioral treatment?*

Yes, caregivers self-reported an average 96% (range: 60%-100%) adherence during the intensive summer day camp community-based exposure activity, which exceeded the recommended 80% adherence (Perepletchikova & Kazdin, 2005). During the community-based exposure, caregivers completed an integrity checklist for each camper, so caregivers with two campers completed two integrity checklists. Twenty-four out of 25 (96%) caregiver-completed integrity checklists were rated at or above 80% for the community-based exposure activity, while all 25 (100%) counselors rated their camper's caregiver's adherence at or above 80% for the community-based exposure activity on the same scale. Inter-rater reliability between caregivers

and counselors was 91%. No significant differences in caregiver-rated integrity scores were found between (a) classes, (b) SM severity, or (c) previous treatment versus no treatment camper' caregivers.

At three-month follow-up, two out of 25 (8%) caregivers returned self-completed implementation checklists from community-based exposures completed after camp (campers 2 and 10). One caregiver (camper 10) completed one integrity checklist with 100% adherence, while the other caregiver (camper 2) completed 24 checklists with an average adherence of 96.88%.

#### **Research Question 4**

*Was intensive summer day camp intervention effective in improving child levels of anxiety across pretreatment, treatment, posttreatment, and three-month follow-up for participants?*

**Daily measures.** Visual analysis for camper anxiety levels, using the counselor-rated DBRs (Figure 3), revealed evidence of treatment effect for 14 (56%) campers (4, 5, 7, 9, 10, 11, 13, 15, 16, 19, 22, 23, 24, 25). Treatment effects were investigated for individual campers using ITSSIM standardized mean difference,  $d$ . Small, medium, and large effect sizes were defined at 0.2, 0.5, and 0.8, respectively (Cohen, 1988). ITSSIM analysis estimated 18 (72%) campers (1:  $d = -3.75$ ; 4:  $d = -7.07$ ; 5:  $d = -3.33$ ; 6:  $d = -3.55$ ; 7:  $d = -6.67$ ; 9:  $d = -2.85$ ; 10:  $d = -11.63$ ; 11:  $d = -4.82$ ; 13:  $d = 2.85$ ; 15:  $d = -4.99$ ; 16:  $d = -6.74$ ; 18:  $d = -1.74$ ; 19:  $d = -2.57$ ; 20:  $d = -2.29$ ; 22:  $d = -5.28$ ; 23:  $d = -3.18$ ; 24:  $d = -2.49$ ; 25:  $d = -4.30$ ) experienced a significant ( $p < .05$ ) decrease in counselor-rated anxiety with a large effect size throughout the intensive summer day camp. Specifically, 60% of campers with a highest scored GAD (3/5) SCARED subscale and 75% of campers with a highest scored Social Anxiety (15/20) SCARED subscale experienced a

significant decrease in counselor-rated anxiety. Aggregated effect sizes for each class reveal improvements in counselor-rated anxiety on the DBR with large effect sizes (younger:  $d = -3.48$ ; middle:  $d = -2.84$ ; older:  $d = -2.04$ ). However, six (30%) campers (2:  $d = 0$ ; 8:  $d = 5.56$ ; 12:  $d = 1.76$ ; 14:  $d = 1.05$ ; 17:  $d = 0.30$ ; 21:  $d = 3.22$ ) experienced a significant ( $p < .05$ ) increase in counselor-rated anxiety with small to large effect sizes throughout the intensive summer day camp. One (5%) camper (3:  $d = .01$ ) did not experience significant counselor-rated anxiety change throughout the intensive summer day camp. DBR data are presented by camper in Table 12.

Table 12.  
*DBR Effect Sizes by Camper*

Camper	$d$
1	-3.75
2	0.00
3	0.01
4	-7.07
5	-3.34
6	-3.55
7	-6.67
8	5.56
9	-2.85
10	-11.64
11	-4.82
12	1.76
13	-2.85
14	1.05
15	-4.99
16	-6.74
17	0.30
18	-1.74
19	-2.57
20	-2.29
21	3.22
22	-5.28
23	-3.18
24	-2.49
25	-4.30

Figure 3.  
Camper DBRs

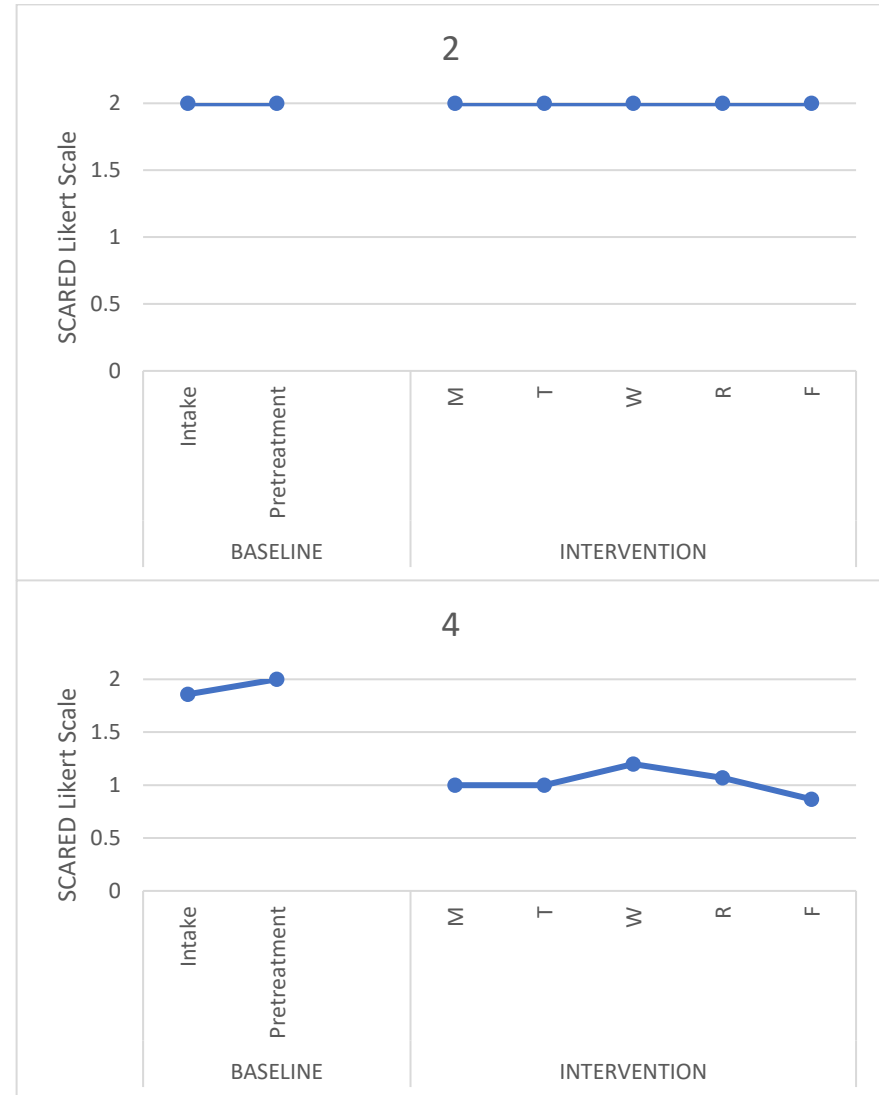
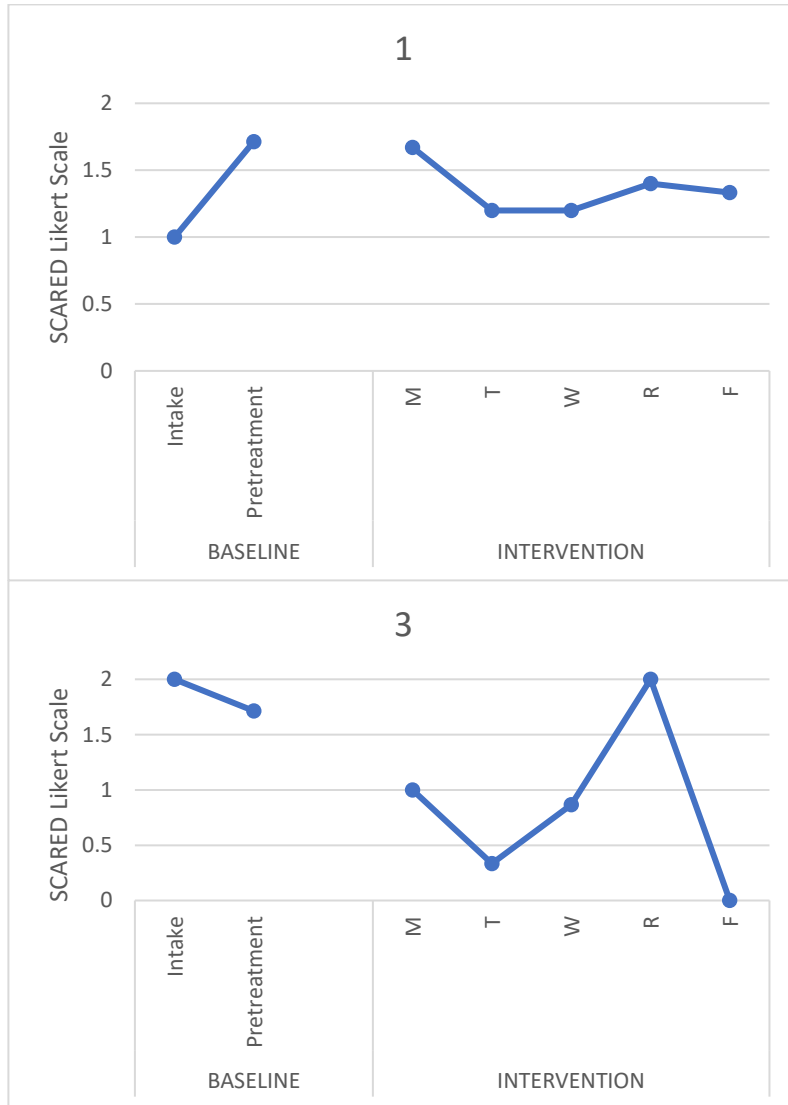


Figure 3 (cont'd)

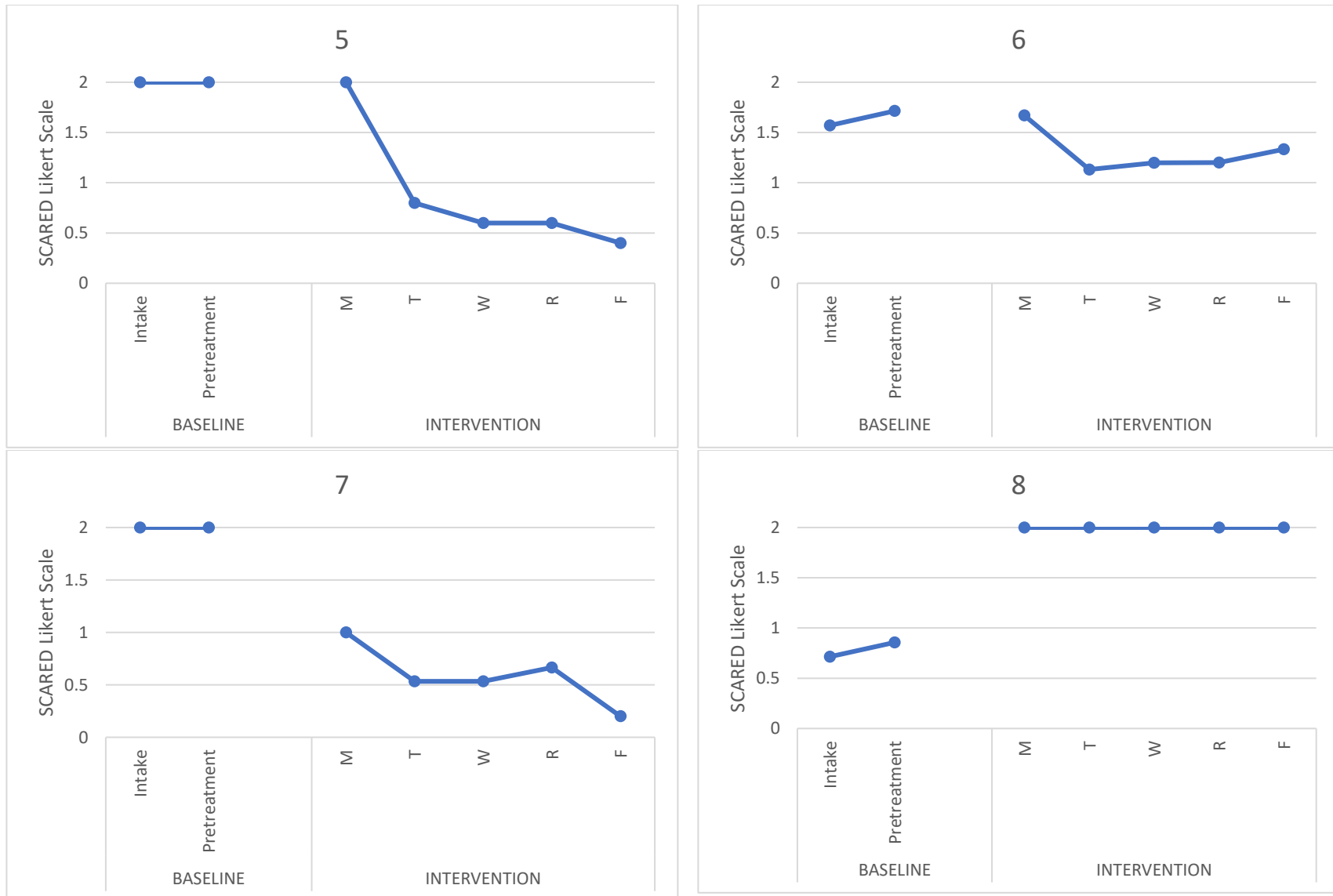




Figure 3 (cont'd)

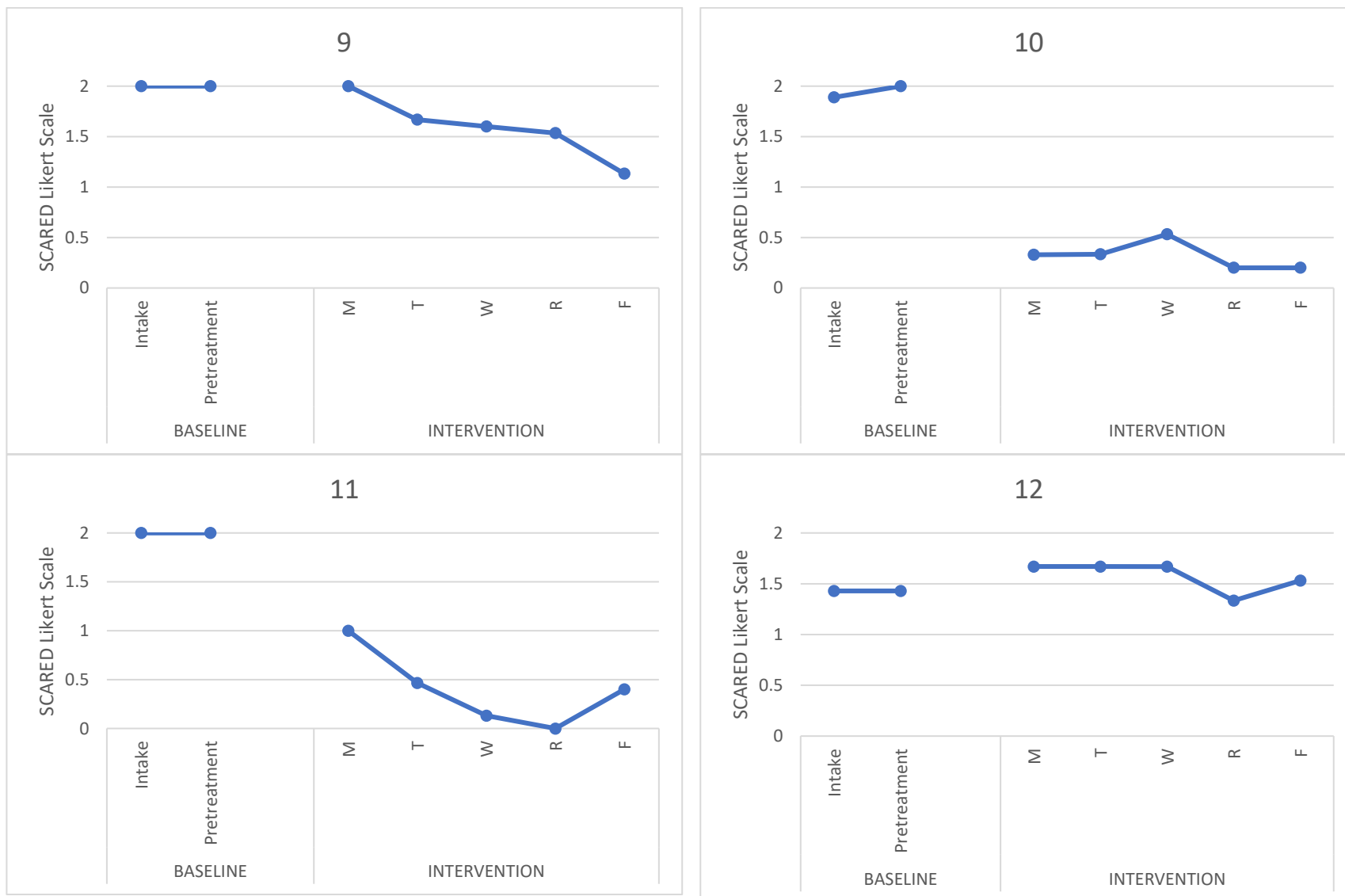


Figure 3 (cont'd)

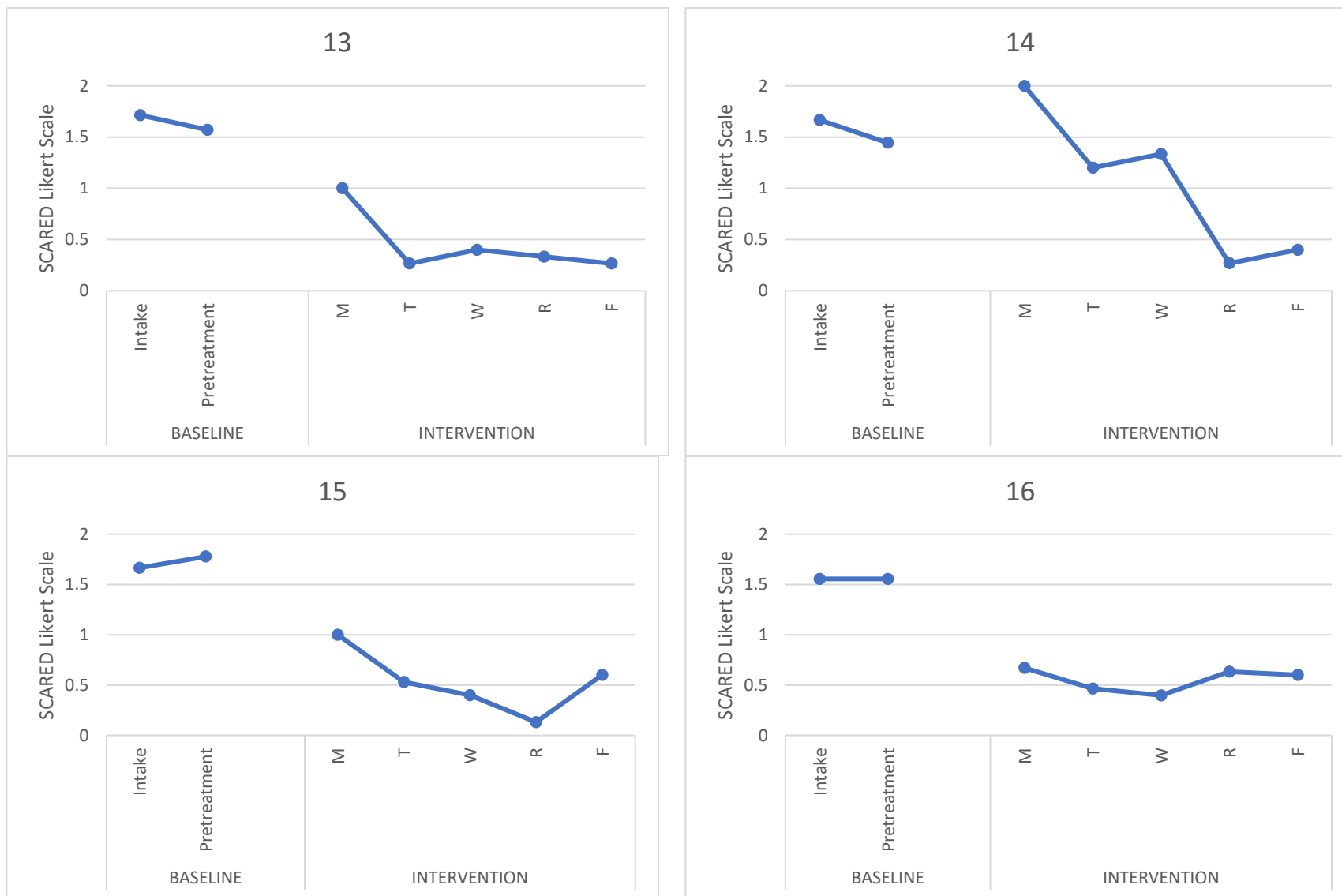


Figure 3 (cont'd)

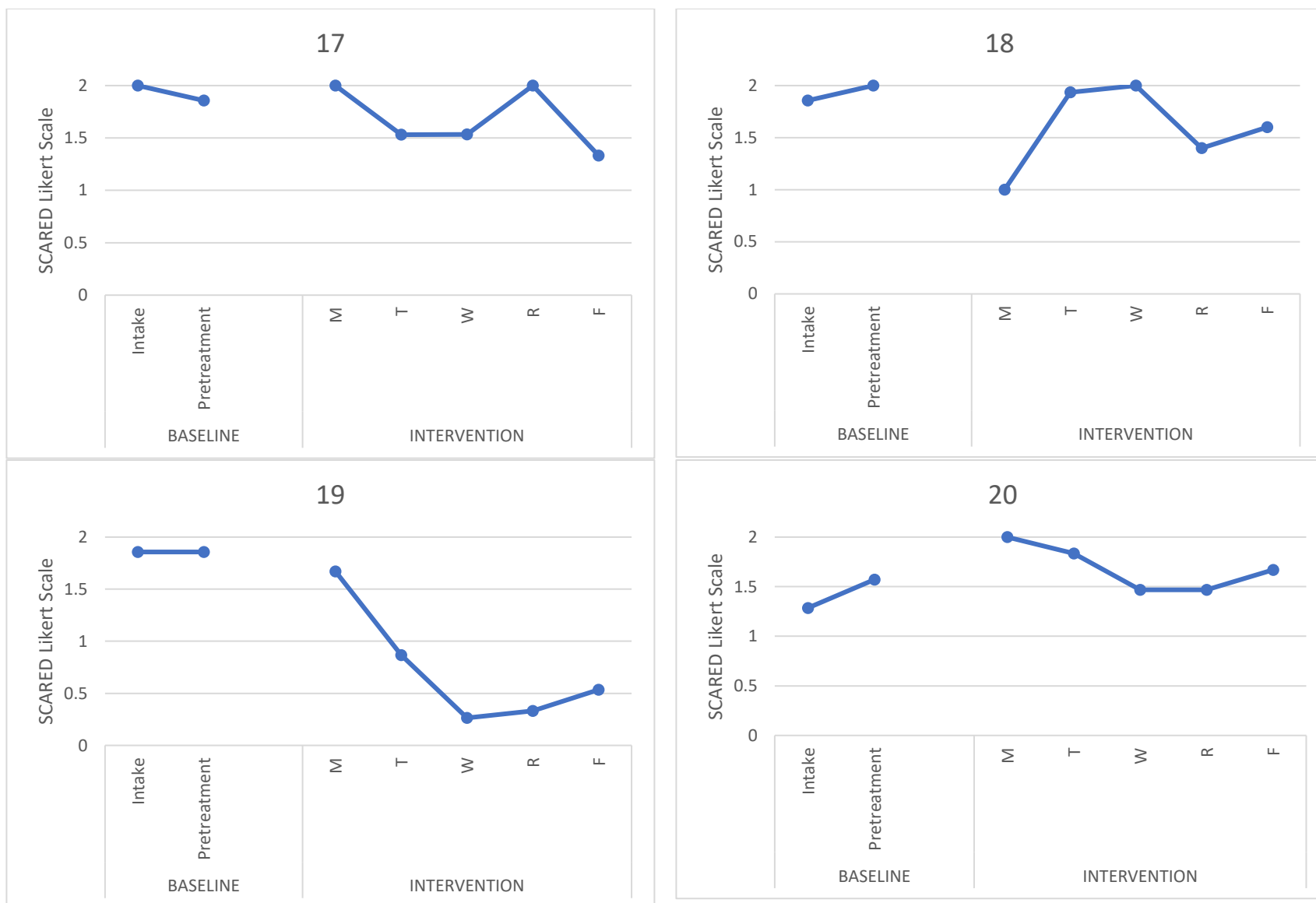


Figure 3 (cont'd)

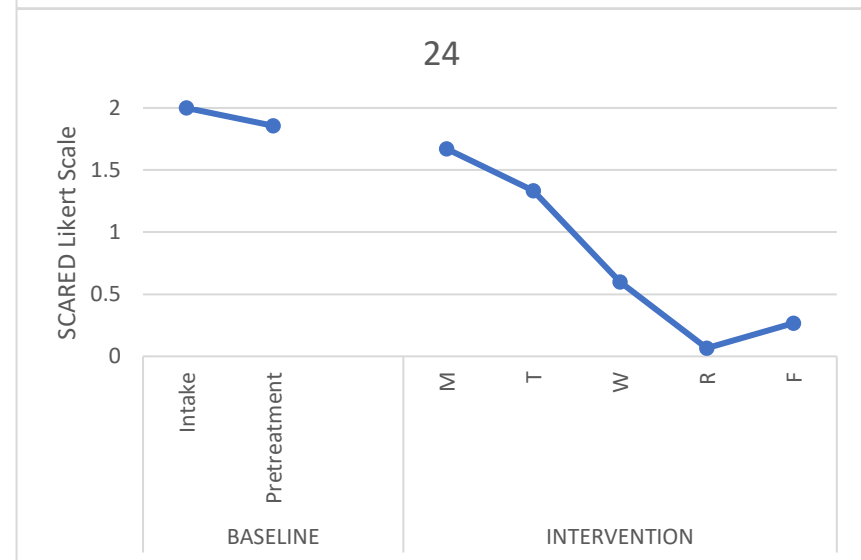
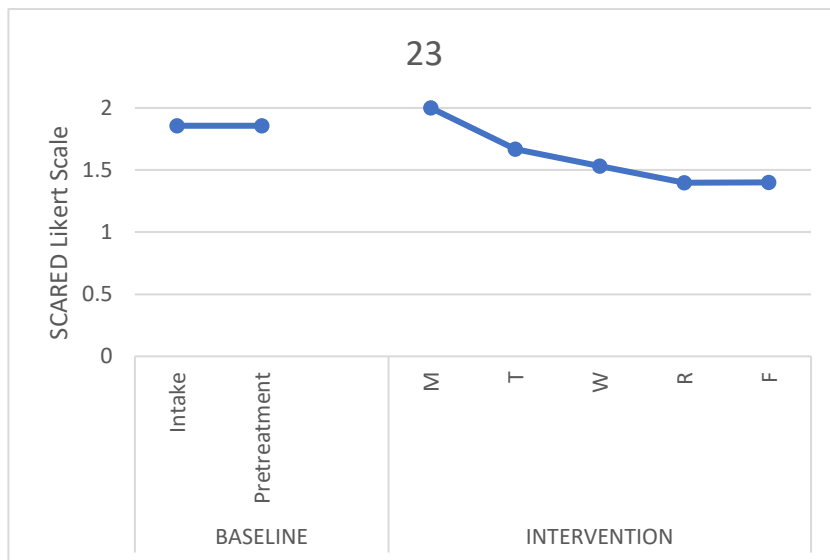
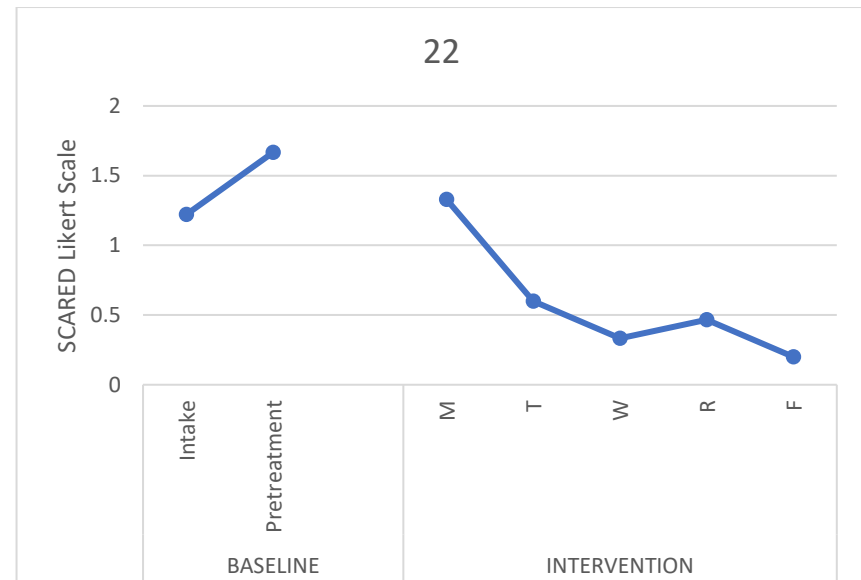
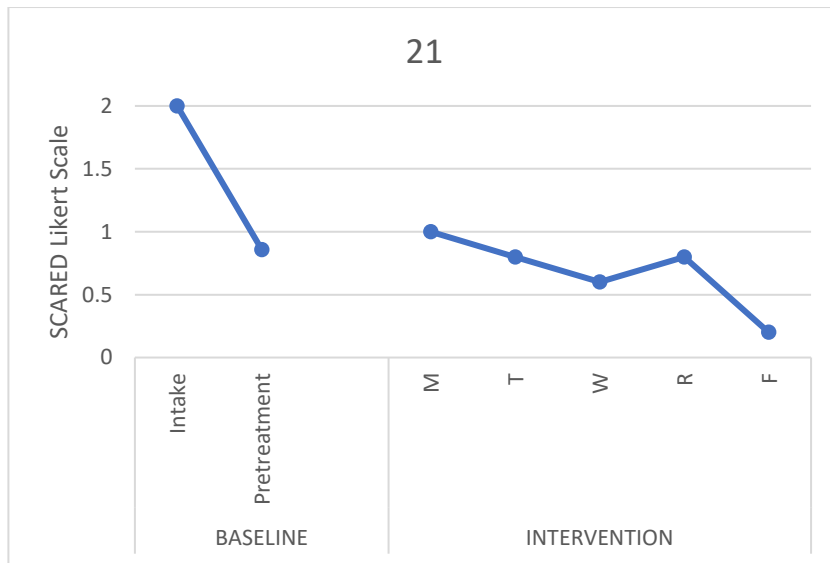
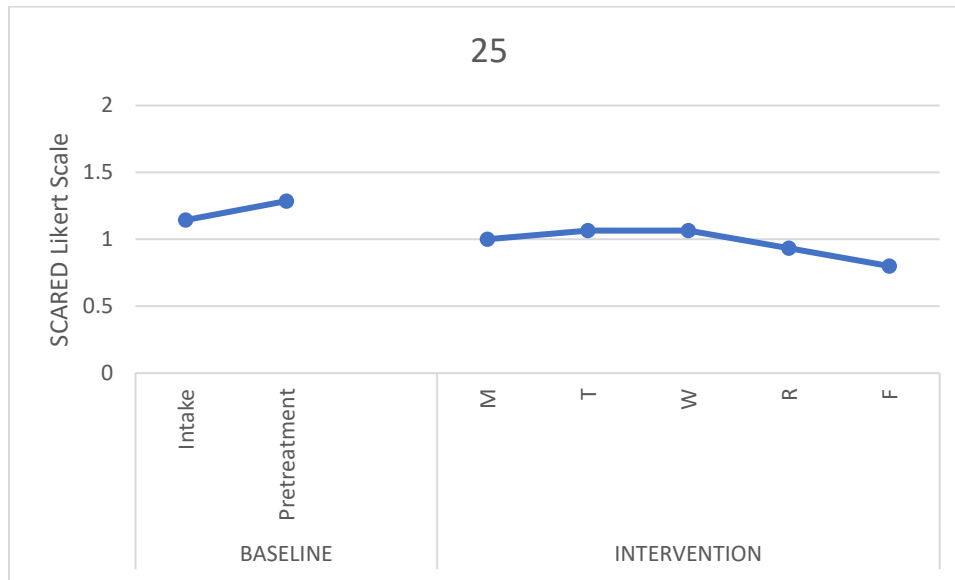


Figure 3 (cont'd)



**SCARED.** No significant differences in caregiver-rated anxiety scores were found at pretreatment or three-month follow-up between (a) classes, (b) SM severity, or (c) previous treatment versus no treatment; however, scores were significantly different at posttreatment for campers (c) who had previous treatment for SM versus those who had not. Campers who had received previous treatment for SM had significantly higher anxiety scores ( $M = 32.4$ ) at posttreatment compared to campers who had not had previous treatment for SM ( $M = 18.4$ ;  $p < .05$ ).

Seven (28%) campers experienced significant decreases in anxiety from pretreatment to posttreatment or posttreatment to three-month follow-up, according to the caregiver-rated SCARED. Three (12%) campers (Camper 10:  $RCI = -5.67$ , Camper 22:  $RCI = -7.31$ , Camper 24:  $RCI = -4.20$ ) experienced a significant reduction in overall anxiety from pretreatment to posttreatment, according to caregiver-completed SCARED. Two of these campers (Camper 10: Social Anxiety,  $RCI = -1.85$ ; Camper 24: Social Anxiety,  $RCI = -2.38$ ) demonstrated a significant reduction in their highest scored subscale of anxiety from pretreatment to posttreatment. Four out of 14 (28.57%) campers (Camper 2:  $RCI = -4.75$ , Camper 4:  $RCI = -2.19$ , Camper 15:  $RCI = -4.94$ , Camper 23:  $RCI = -1.83$ ) experienced a significant reduction in overall anxiety from posttreatment to three-month follow-up. Zero campers demonstrated a significant reduction in their highest scored subscale of anxiety from posttreatment to three-month follow-up. Effect size calculations reveal non-significant changes for campers' anxiety from pretreatment to posttreatment ( $RCI = -0.88$ ) and from posttreatment to three-month follow-up ( $RCI = -0.08$ ).

One camper endorsed significantly lower scores of anxiety from pretreatment to posttreatment on the child-report SCARED. Only one camper completed the self-report

SCARED at three-month follow-up, so their data were not reported. A summary of anxiety change data are reported in Table 13 below.

Table 13.

<i>Aggregated Anxiety Data</i>							
Daily DBR: Range 0-2							
Class	Baseline	Monday	Tuesday	Wednesday	Thursday	Friday	<i>d</i>
Younger	1.83	1.27	1.00	1.09	1.28	0.88	-3.48
Middle	1.63	1.08	0.95	0.94	0.71	0.79	-2.84
Older	1.66	1.46	1.29	1.04	0.98	0.89	-2.04
Total	1.71	1.27	1.08	1.02	.99	0.85	-2.73
Parent SCARED: M (SD)							
Class	Intake	Pre	Post	RCI	3-month Follow-up	RCI	
Younger	24.42 (7.98)	31.57 (13.33)	31.43 (15.09)	-0.03	24 (12.62)	-1.36	
Middle	35.44 (15.95)	37.11 (15.74)	32.89 (14.56)	-0.77	31 (15.95)	-0.35	
Older	27.44 (10.73)	33.89 (13.94)	24.89 (10.39)	-1.65	31.4 (11.41)	1.19	
Total	29.48 (12.70)	34.40 (14.04)	29.60 (13.30)	-0.88	29.14 (12.91)	-0.08	
Child SCARED: M (SD)							
	Intake	Pre	Post	RCI	3-month Follow-up	RCI	
Total	28.73 (16.76)	25.91 (13.39)	23.10 (12.87)	-0.51	Not Reported		

## Research Question 5

*Was intensive summer day camp intervention effective in improving caregiver-reported speaking behaviors across settings (i.e., SMQ ratings) from pretreatment to posttreatment to three-month follow-up for participants?*

No significant differences in caregiver-rated speaking behavior scores were found between (a) classes or (c) previous treatment versus no treatment at pretreatment, posttreatment, or three-month follow-up. Differences in (b) severity scores were observed at pretreatment only given severity was determined by pretreatment SMQ scores.

Seventeen (68%) campers experienced significant improvements in caregiver-rated speaking behaviors from pretreatment to posttreatment or posttreatment to three-month follow-up. Nine (36%) campers (Camper 1:  $RCI = 7.2$ , Camper 5:  $RCI = 24$ , Camper 7:  $RCI = 8$ ; Camper 10:  $RCI = 4.8$ , Camper 11:  $RCI = 3.2$ , Camper 20:  $RCI = 2.4$ ; Camper 21:  $RCI = 4$ , Camper 22:  $RCI = 23.2$ , Camper 25:  $RCI = 6.4$ ) experienced a significant improvement in caregiver-rated speaking behaviors from pretreatment to posttreatment. Aggregated class effect size calculations revealed that the older class experienced significant improvements in caregiver-rated speaking behaviors from pretreatment to posttreatment ( $RCI = 3.11$ ). Nine out of 14 (64.29%) campers (Camper 2:  $RCI = 18.4$ , Camper 4:  $RCI = 11.2$ , Camper 5:  $RCI = 8$ , Camper 6:  $RCI = 8$ ; Camper 9:  $RCI = 4.8$ , Camper 13:  $RCI = 13.6$ , Camper 15:  $RCI = 12.8$ , Camper 23:  $RCI = 5.6$ ; Camper 24:  $RCI = 12.8$ ) experienced a significant improvement in caregiver-rated speaking behaviors from posttreatment to three-month follow-up. Aggregated class effect size calculations revealed significant improvements in caregiver-rated camper speaking behaviors for the younger ( $RCI = 8.10$ ) and middle ( $RCI = 7.17$ ) class from posttreatment to three-month follow-up, and for total campers ( $RCI = 4.50$ ).

### **Research Question 6**

*Was intensive summer day camp intervention effective in improving child-level responsive and spontaneous speaking behaviors, as recorded by daily frequency counts through audio recording?*

Visual analysis for camper responsive speaking behavior, using video recorded counts (Figure 4), revealed evidence of treatment effect for 9 (36%) campers (1, 2, 5, 8, 9, 16, 19, 20, 23). Treatment effects were investigated for individual campers using ITSSIM standardized mean difference,  $d$ . ITSSIM analysis estimated three (12%) campers (8:  $d = 6.11$ ; 12:  $d = 1.40$ ;



22:  $d = 0.42$ ) experienced a significant ( $p < .05$ ) increase in responsive speech with a medium to large effect size. Aggregated class data suggest small to medium effect size ( $d = 0.17$  to  $0.58$ ) change for responsive speech.

Visual analysis for camper spontaneous speaking behavior, using video recorded counts (Figure 4), revealed evidence of treatment effect for 8 (32%) campers (5, 14, 15, 16, 19, 21, 22, 25). Treatment effects were investigated for individual campers using ITSSIM standardized mean difference,  $d$ . ITSSIM analysis estimated four (16%) campers (5:  $d = 4.11$ ; 14:  $d = 0.19$ , 15:  $d = 0.15$ ; 20:  $d = 0.21$ ) experienced a significant ( $p < .05$ ) increase in spontaneous speech with a small to large effect size. Aggregated class data suggest small to medium effect size ( $d = 0.13$  to  $0.51$ ) change for spontaneous speech. A summary of speaking behavior change data are reported in Table 14 below.

Table 14.

*Aggregated Speaking Behavior Data as Measured by Parent SMQ Ratings*

Selective Mutism Questionnaire (SMQ): M (SD)							
Class	Intake	Pre	Post	RCI	3-month Follow-up	RCI	
Younger	16.14 (7.80)	22.43 (9.22)	24.14 (8.36)	1.37	34.25 (5.44)	8.10*	
Middle	18.78 (7.46)	21 (9.22)	21.44 (10.86)	.35	30.4 (10.09)	7.17*	
Older	19.89 (5.33)	21.67 (6.20)	25.56 (9.59)	3.11*	26 (5.87)	0.35	
Total	18.44 (6.75)	21.64 (7.92)	23.68 (9.52)	1.63	29.93 (7.78)	4.50*	
Daily Speaking Behaviors: Words per Minute							
Class	Baseline	Monday	Tuesday	Wednesd ay	Thursday	Friday	<i>d</i>
Responsive Speech							
Younger	2.78	2.13	2.99	3.04	3.63	3.75	0.19
Middle	1.43	1.71	2.67	3.08	2.57	4.07	0.58
Older	1.33	0.94	2.67	2.96	1.74	2.00	0.17
Total	1.85	1.59	2.78	3.03	2.65	3.27	0.32
Spontaneous Speech							
Younger	0.36	0.19	0.56	0.67	0.98	1.59	0.13
Middle	0.32	0.34	0.10	0.51	2.03	2.23	0.51
Older	0.59	0.18	0.37	1.36	3.78	4.27	0.44
Total	0.42	0.24	0.34	0.93	2.26	2.70	0.29

\*= significant improvements observed ( $RCI > 1.8$ )

Figure 4.  
*Responsive and spontaneous speaking behavior change*

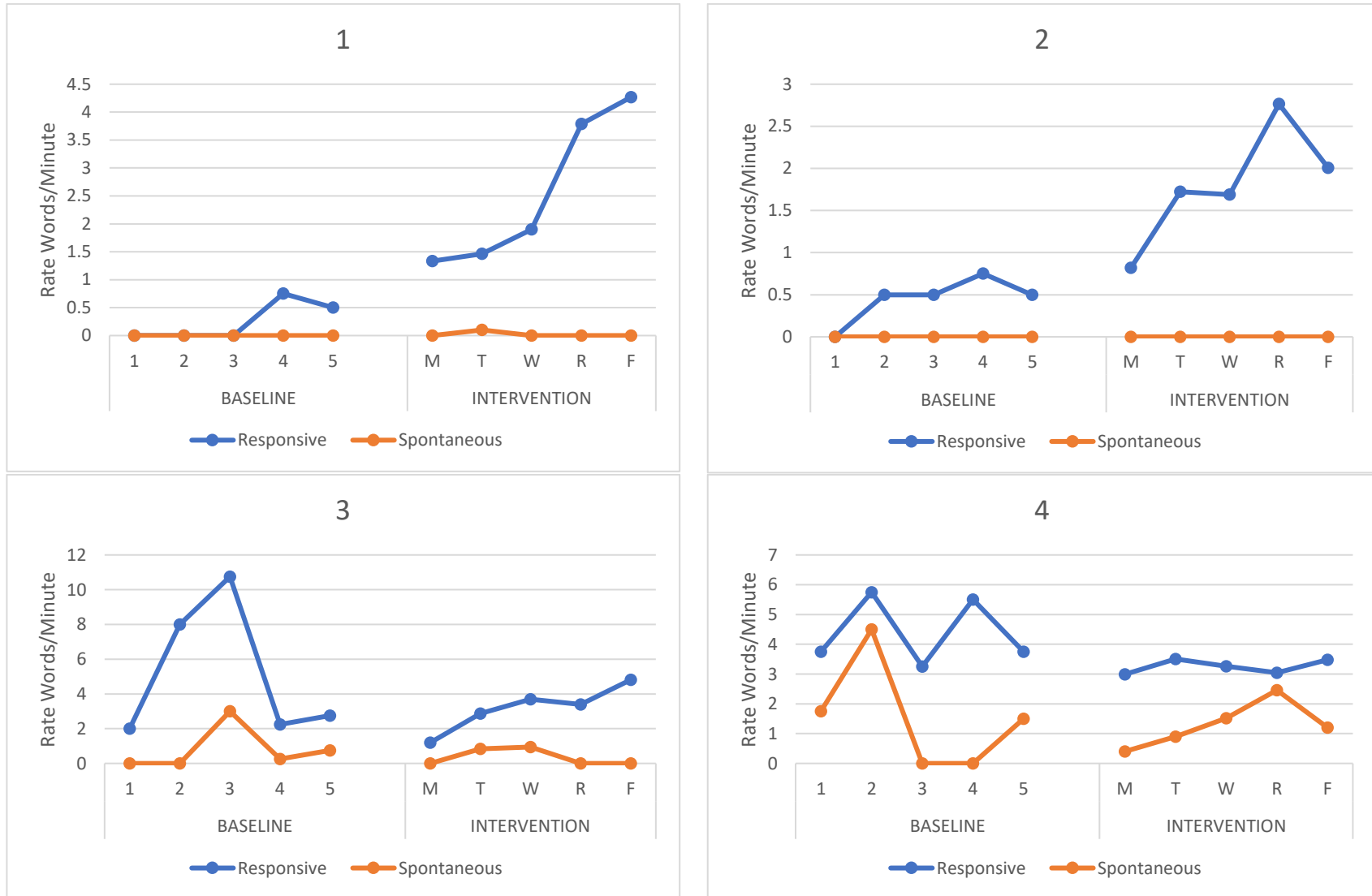


Figure 4 (cont'd)

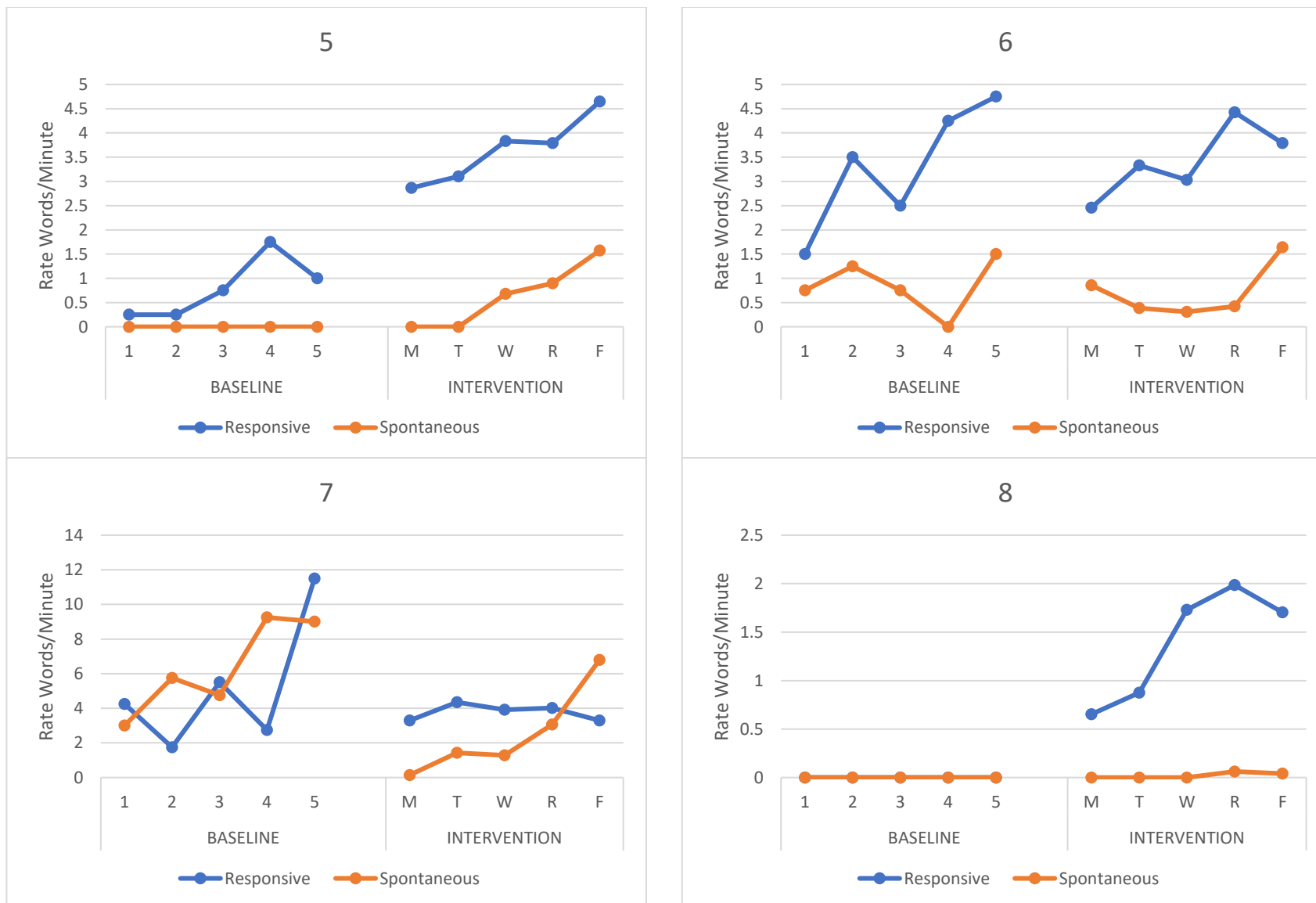


Figure 4 (cont'd)

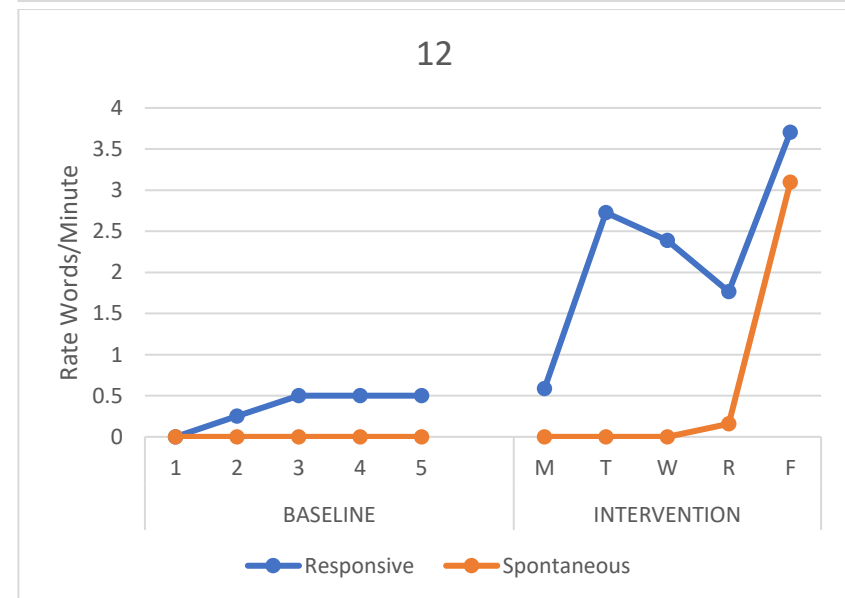
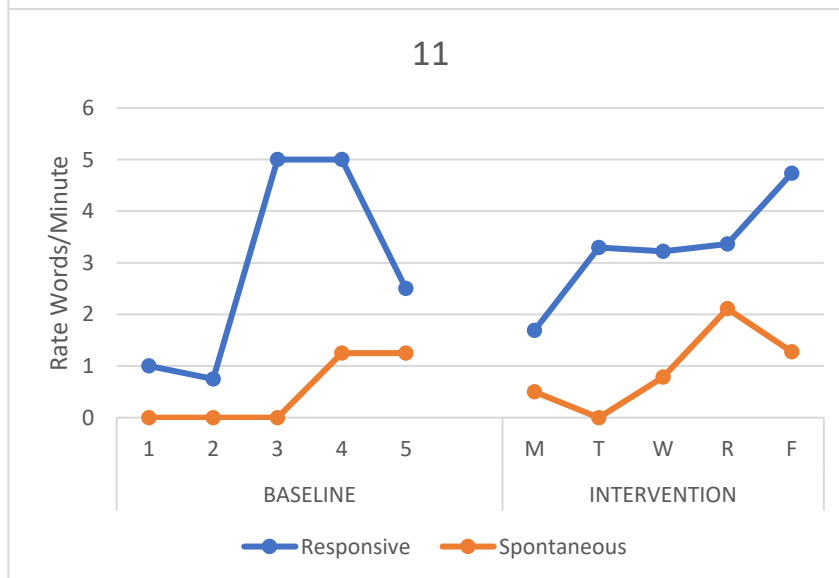
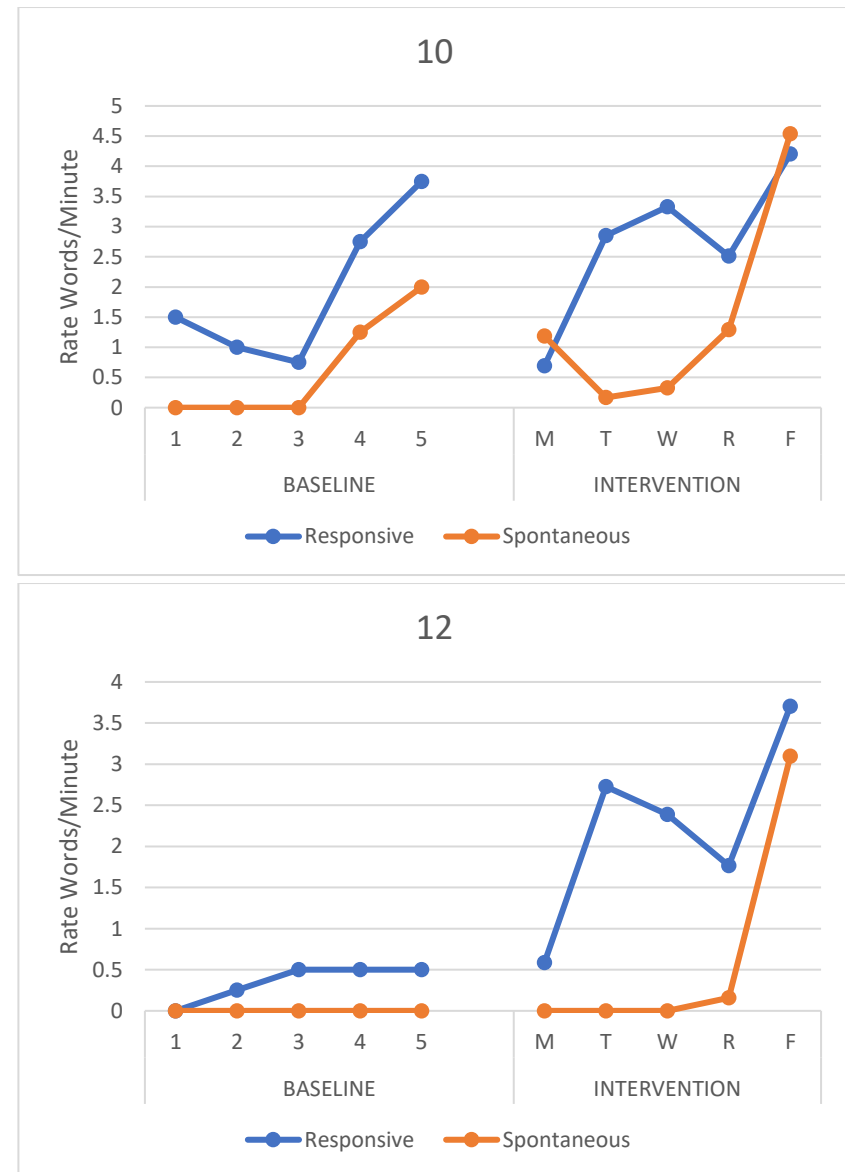
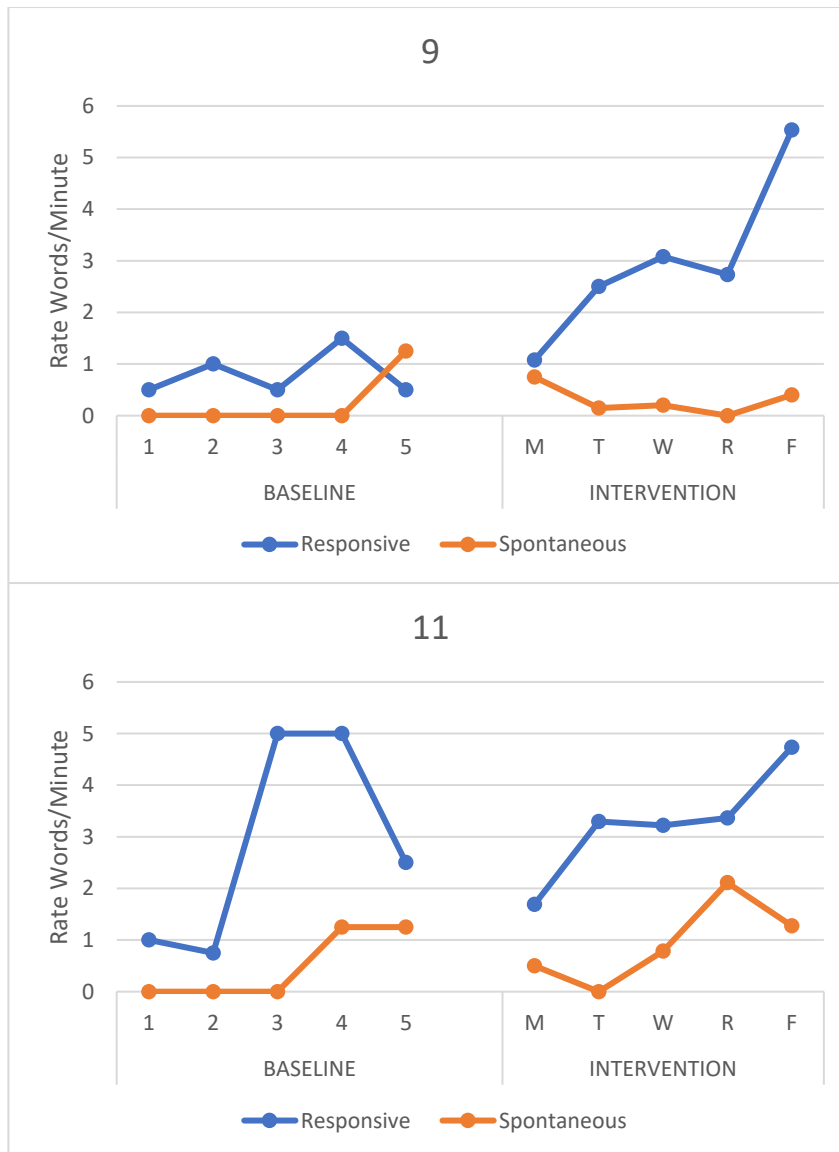


Figure 4 (cont'd)

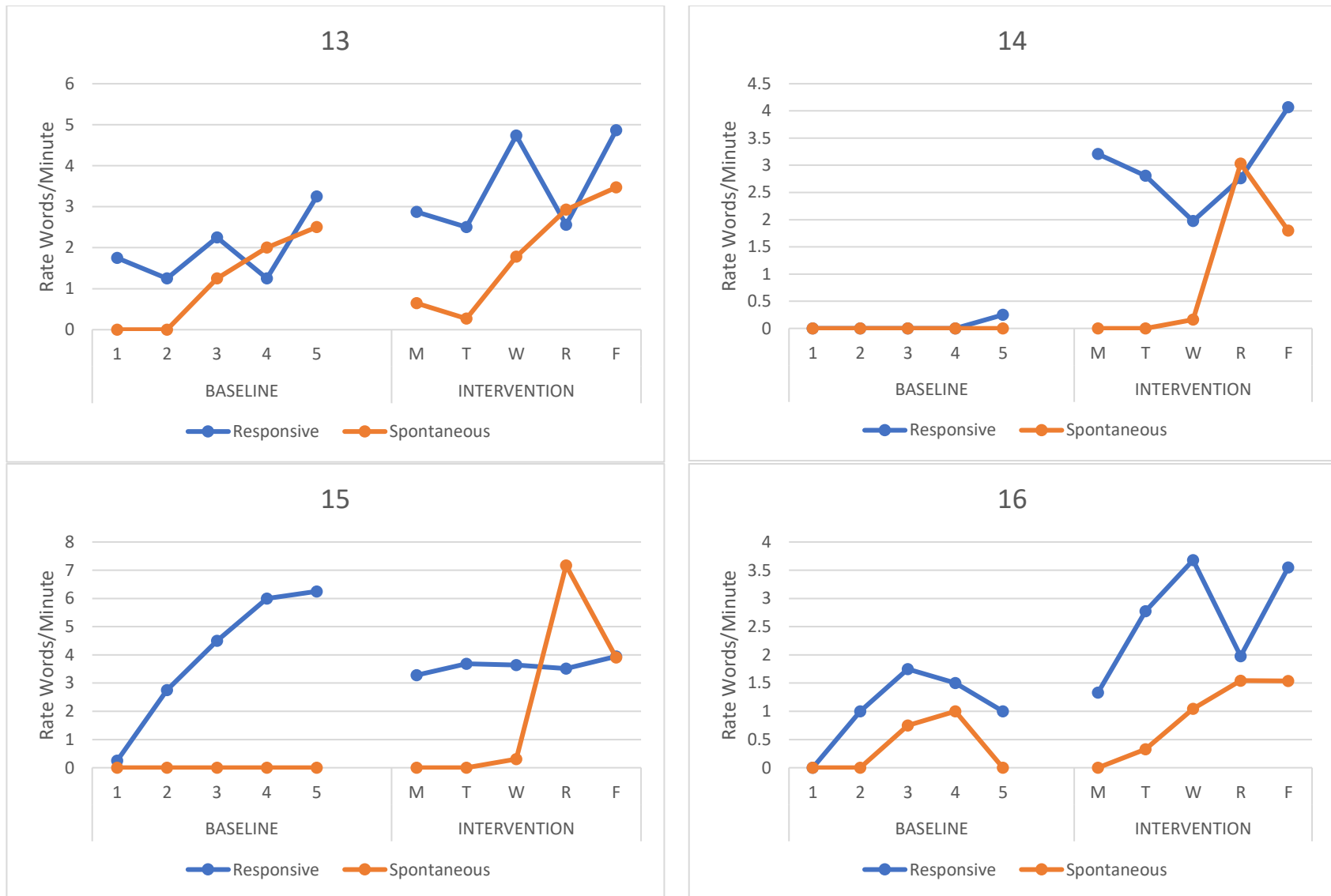


Figure 4 (cont'd)

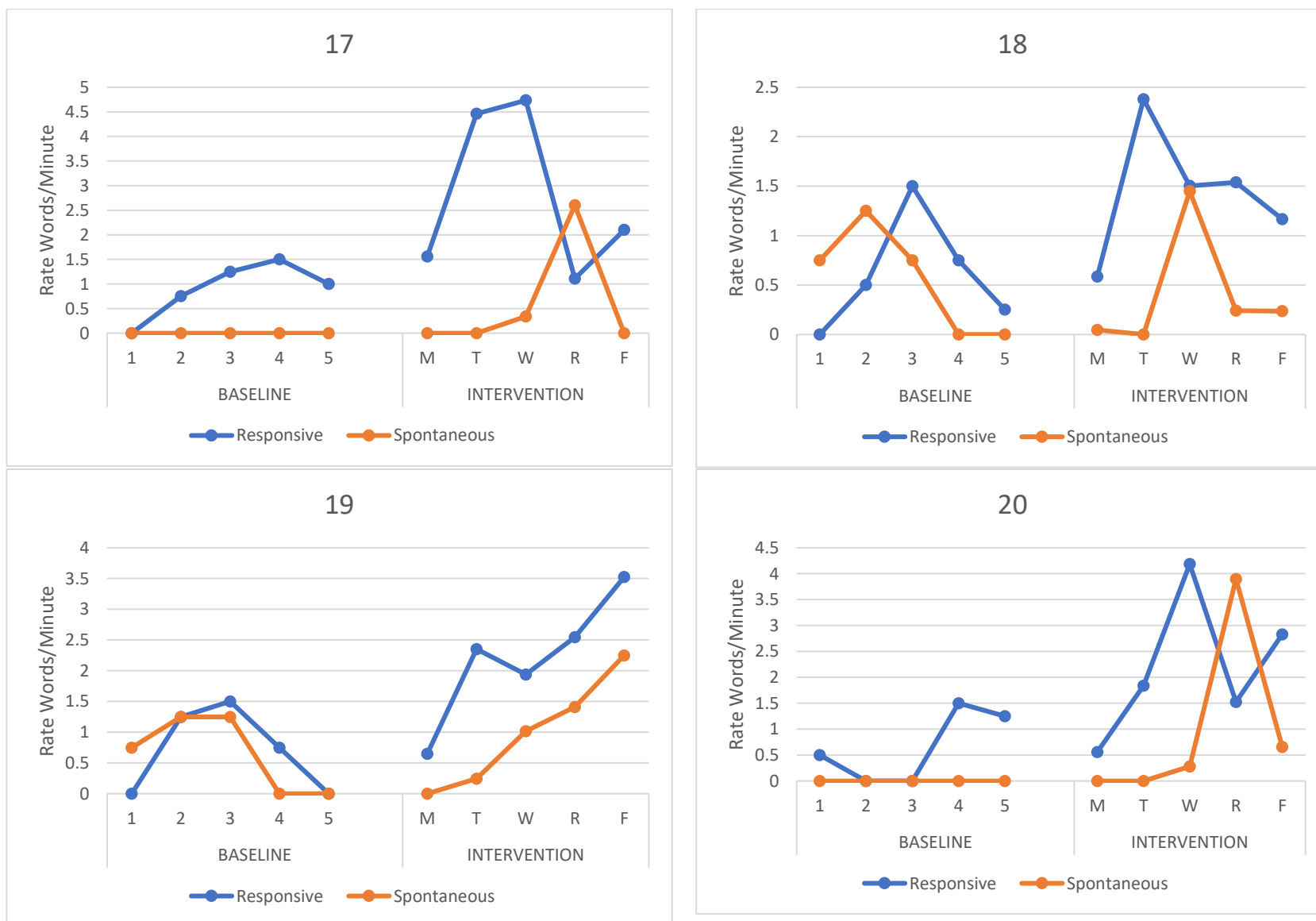


Figure 4 (cont'd)

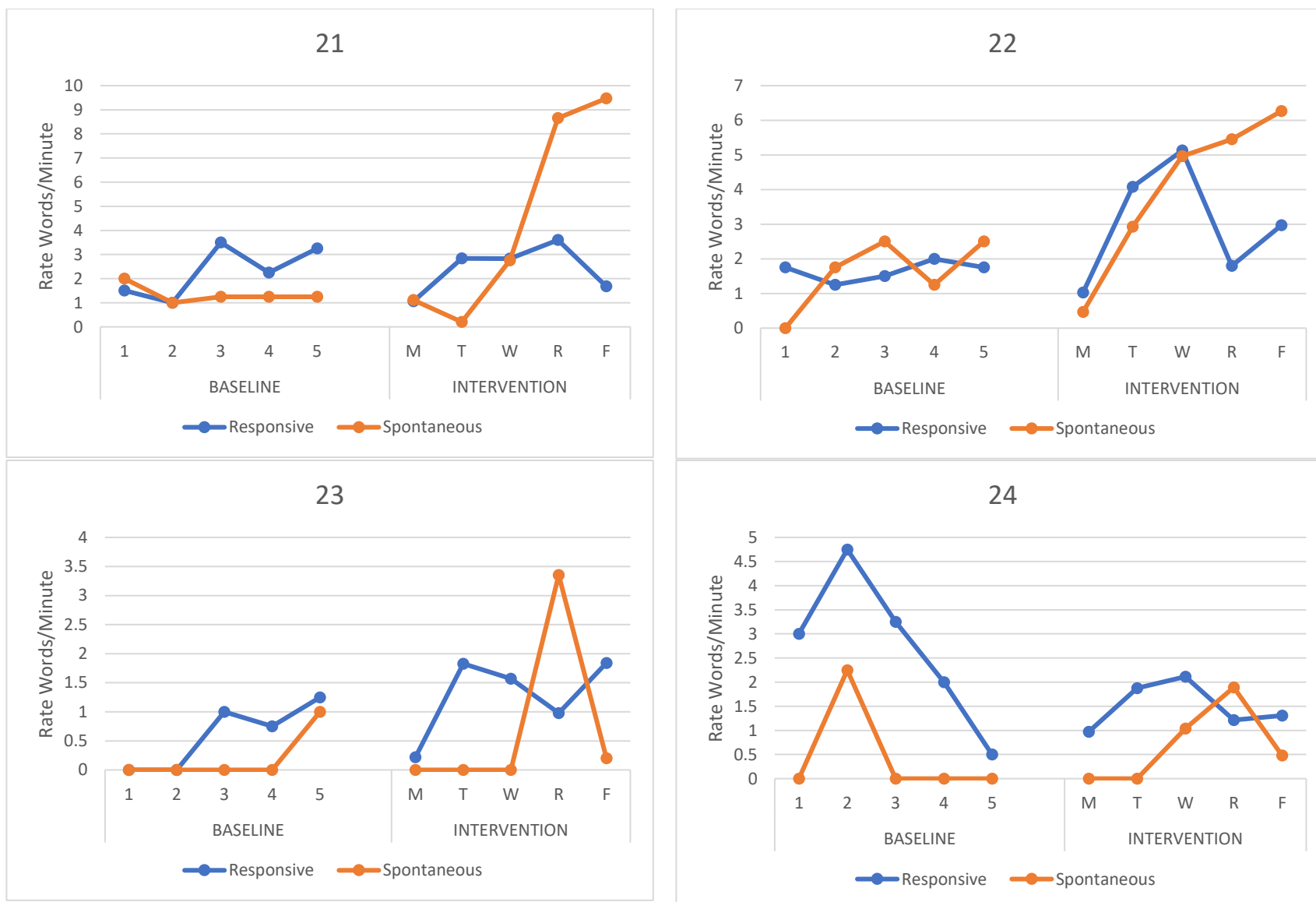
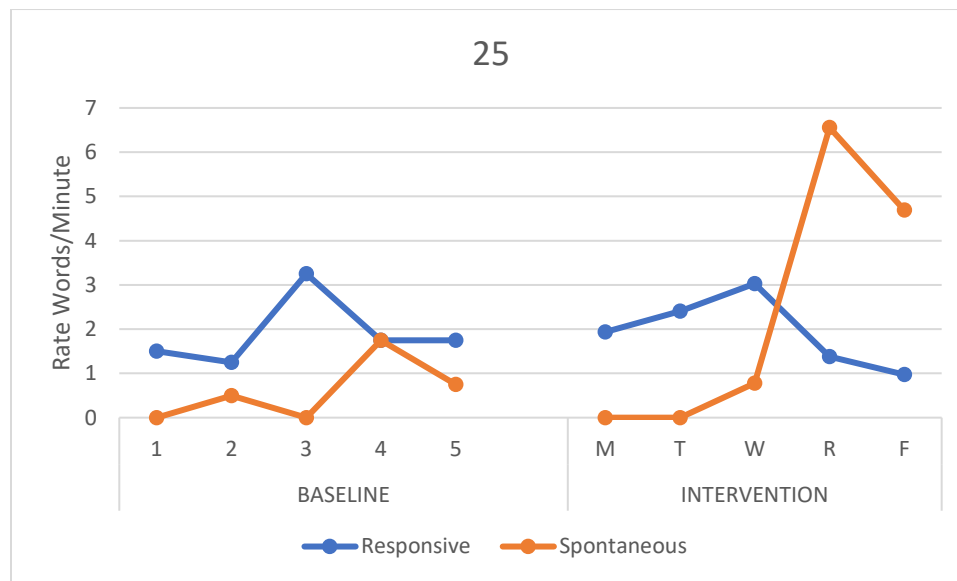


Figure 4 (cont'd)





## Replicated Effects

As a replicated single-case AB design, it is important to assess whether changes were replicated across campers. First, replicated effects were not observed for overall acceptability on the TEQ-P due to unsatisfactory scores on the effectiveness subscale, however, majority of caregivers endorsed adequate scores of acceptability on the quality of treatment and time required subscales. Seventeen (85%) caregivers expressed overall acceptability with the intensive summer day camp during family interviews, and most (90% - 95%) caregivers expressed satisfaction with effectiveness, quality of treatment, and time required for the intensive summer day camp.

Second, replicated effects were observed for counselor-rated implementation integrity, as each counselor's average self-ratings met or exceeded 80% adherence ( $M = 97\%$ ). Similarly, 24 out of 25 (96%) caregiver-completed implementation integrity checklists during the community-based exposure scored at or higher than 80% adherence.

Third, replicated effects were not observed on the two primary dependent variables (i.e., anxiety, speaking). However, the majority of campers (72%) experienced significant decreases in his/her highest scored subscale of anxiety (e.g., Social) throughout CKC, according to counselor-rated DBRs. Moreover, aggregated class data of caregiver-rated SCAREDS revealed non-significant improvements in overall anxiety for each class from pretreatment to posttreatment and for the younger and middle classes from posttreatment to three-month follow-up. Replicated effects across all participants with respect to improving responsive and spontaneous speaking behavior, were not observed. Only 12% improved responsive speaking and 16% improved spontaneous speaking from the start to end of camp. However, caregivers endorsed significant

speaking behavior improvements on the SMQ for the older class at posttreatment and for the younger and middle classes at three-month follow-up.

## CHAPTER 5

### DISCUSSION

#### **Purpose of Study**

The current study contributes to current literature by investigating the acceptability, integrity, and effectiveness of a 5-consecutive day intensive summer day camp for children with SM (i.e., CKC) through a replicated single-case AB design. This study extends on prior research about SM by exploring behavioral therapy implemented within an intensive format. While literature is well-established to suggest behavioral therapy is the most effective treatment for SM, it has not been evaluated in an intensive intervention format before. However, there is research available about intensive interventions for similar disorders (e.g., social phobia, OCD) to suggest initial effectiveness findings. This study builds in additional methodological rigor to previous studies about intensive intervention by thoroughly investigating the acceptability and integrity of intensive intervention.

#### **Treatment Acceptability**

Caregivers inconsistently reported the intensive summer day camp as an acceptable treatment approach for SM. Specifically, only 24% of caregivers endorsed satisfactory scores (110 or higher; Kratochwill et al., 2013) for the intensive summer day camp's overall acceptability on the TEQ-P. This overall score was impacted by inadequate scores of camp effectiveness on the TEQ-P, as only 24% of caregivers endorsed acceptable scores (36 or higher; Kratochwill et al., 2013); however, majority of caregivers endorsed satisfactory scores for the time required (64%) and quality of treatment (68%) of the intensive summer day camp on the TEQ-P. Conversely, family interviews revealed high levels of caregiver-reported satisfaction with the intensive summer day camp, with percent satisfaction ranging from 90% to 100% for overall acceptability, effectiveness, time required, and quality of treatment. These data differ

from previous SM literature that utilized the TEQ-P to measure acceptability after a 16-session Condensed IBTSM intervention, in which high rates of overall acceptability (110 or higher; Kratochwill et al., 2013) and effectiveness (36 or higher; Kratochwill et al., 2013) acceptability were revealed for all five caregivers (Siroky, 2019). While both studies implemented behavioral therapy strategies for children with SM, this study's differences from Siroky's (2019) study were the intensive summer day camp intervention format and timing of the rating scale completion (i.e., after five days versus after 19 weeks).

Acceptability results from this study differ from previous intensive intervention literature for similar disorders, in which high levels of caregiver satisfaction were endorsed consistently. Santucci and colleagues (2009) reported that 100% of caregivers ( $n = 5$ ) were "very satisfied" with their child's progress during the week-long intensive intervention for separation anxiety disorder. Similarly, Whiteside and colleagues (2008) anecdotally reported 100% of caregivers ( $n = 3$ ) indicated the intensive intervention was rigorous, yet useful for their child with OCD. Donovan and colleagues (2015) utilized an eight-item 5-point Likert scale to measure acceptability for their intensive intervention for children with social phobia, and the average score was 3.83 ( $n = 40$ ), indicating above "quite a bit satisfied" caregiver acceptability.

There are important potential explanations for why differences in acceptability exist between this study and past intensive intervention literature for similar disorders. First, it is possible caregivers from this study were less likely to endorse acceptable rates of effectiveness on the TEQ-P at posttreatment because they had not yet observed change in their child's speech at school, which is both a naturalistic exposure and the primary environment where SM is reinforced (Kotrba, 2015). This is an explanation unique to SM that may influence why differences in acceptability existed between this study and previous intensive intervention

literature. This explanation is supported by evidence from this study that counselors were more likely than caregivers to recognize the breakdown in the SM avoidance cycle (i.e., effectiveness changes) by the last day of camp, as they endorsed significant improvements in anxiety throughout camp for majority of campers (72%). Caregivers from this study endorsed significant improvements in speaking behaviors (i.e., effectiveness) for majority of campers (68%), but not until three-month follow-up. Second, this study differed from previous intensive intervention literature because it was the first to use a reliable survey to assess satisfaction with intensive intervention effectiveness. There are nine items on the TEQ-P that measure effectiveness, which is more than the overall acceptability measure used in the most comparable study (Donovan et al., 2015; eight total items). It is possible acceptability surveys and interviews from other studies assessed more for time required and quality of treatment than effectiveness, and that their results reflect this.

Despite differences in acceptability scores between this study and previous literature, there were many overlaps that add to the intensive intervention literature. First, Santucci and colleagues (2009) reported parent feedback from their intensive intervention included suggestions to (a) add parent involvement in treatment and (b) include parent sessions in treatment. These two ideas, parent scaffolding of behavioral strategies (e.g., community-based exposure) and parent training, were the two distinct themes positively contributing to caregiver acceptability in this study's family interviews. These identical reports align with the use of BICs as disruptive innovations, as their purpose is to treat the disorder, while relaying all necessary behavioral skills to caregivers, during a condensed treatment approach (Ost & Ollendick, 2017). Second, 75% of caregivers in this study reported cost acceptability, despite an average per camper out-of-pocket cost over \$2,700 and inadequate effectiveness scores on the TEQ-P.

Donovan and colleagues (2015) and Santucci and colleagues (2009) reported their participants' caregivers obtained high socioeconomic status (SES) with an annual income exceeding \$100,000. It is possible intensive interventions are most accessible to higher income families, given travel and therapy costs to access experts for less prevalent disorders (e.g., SM). Given the purpose of BIC interventions to increase access to services, it will be important for future intensive intervention research to consider dissemination to different SES populations. These data provoke critical discussion about whether intensive interventions are a disruptive innovation to behavioral therapy in its traditional format. While the intensive format is disruptive, these cost data suggest intensive intervention may not address cost barriers to treatment as originally hypothesized. Third, as expected, 90% of caregivers reported satisfaction with this study's scheduling and counselor implementation competency. These data align with Ost and Ollendick's (2017) report of BICs as disruptive innovations to circumvent traditional behavior therapy barriers, such as scheduling conflict for weekly therapy and lack of access to expert clinicians.

### **Treatment Integrity**

As anticipated, all camp counselors self-reported excellent daily implementation integrity ratings ( $M = 97\%$ ), exceeding the 80% adherence threshold recommended by Perepletchikova & Kazdin (2005). This finding aligns with previous IBTSM research that behavioral therapy for SM can be implemented with high rates of integrity (e.g., Bergman et al., 2013,  $M = 99\%$ ) and is an addition to the intensive intervention literature for similar disorders. Gallagher and colleagues (2003) videotaped all sessions of intensive intervention for social phobia, assessed for treatment adherence, and noted adherence was reviewed and addressed after the first session to improve integrity. However, their review of treatment adherence was vague, and the rate of adherence

was not reported. Reporting treatment adherence is novel to the intensive intervention literature for similar disorders. As hypothesized, counselor integrity was protected by consistency in counselor-camper match throughout treatment, brevity of treatment, counselor competency, and detailed treatment protocols (Perepletchikova & Kazdin, 2005). Interrater agreement between counselor self-ratings and a licensed clinician was 93% across daily one-hour observations of 14 counselors, which exceeded the average 81% agreement rate recommended by Landis and Koch (1977). This is promising data for intensive interventions as disruptive innovations aim to address the barrier of implementation competency associated with low prevalence disorders. Specifically, novice counselors in related professional fields (e.g, psychology graduate students, social workers) displayed superb treatment adherence of behavioral therapy following a one-day training from a SM expert clinician.

Similarly, caregivers' average self-rated implementation integrity during the intensive summer day camp, during which they led a community-based exposure activity for their child, was 96%, which exceeded the 80% standard (Perepletchikova & Kazdin, 2005). No previous study has reported caregiver implementation integrity for intensive interventions. All counselors scored their camper's caregiver's implementation at or above 80% integrity during the community-based exposure, and the rate of interrater agreement (91%) was higher than the recommended threshold of 81% (Landis & Koch, 1977). As hypothesized, it is likely caregiver integrity was protected by similar factors described above for counselors. High levels of caregiver treatment adherence is important for the intensive intervention literature for SM. Ultimately, these adherence rates imply caregivers obtained excellent behavioral therapy skills for SM as a result of daily two-hour parent trainings from a SM expert clinician. High rates of caregiver adherence suggest caregivers perceived the behavioral treatment approach as highly

acceptable (Witt et al., 1984), which is impressive given the heterogeneous sample for this study, which included caregivers whose children had no previous treatment for SM, previous behavioral treatment, and previous play therapy.

These acceptability and integrity data provide initial support for intensive interventions as disruptive innovations to address the barrier of access to expert clinicians for a low prevalence disorder like SM. Specifically, they provide initial support for the component of BIC interventions to access an expert briefly and then generalize skills learned to home, school, and public (Ost & Ollendick, 2017). It was surprising, then, that only two (8%) caregivers showed evidence of tracking implementation integrity between intensive summer day camp and three-month follow-up, especially in light of the ability to receive effectiveness data from the majority of families at three-month follow-up (reported below). It is likely the integrity rating sheets were burdensome to track and subsequently turn in via email scanning/mail. Though there is information to be desired about caregiver implementation between posttreatment and three-month follow-up, it can be hypothesized caregivers continued to implement behavioral therapy strategies successfully. This hypothesis is supported by the link between implementation integrity and intervention effectiveness discussed further below.

### **Anxiety Symptoms**

This was the first intensive intervention study for an anxiety disorder to assess within-intervention subtype anxiety changes, and the results are promising. Counselors indicated that 18 campers (72%) experienced a significant decrease in their highest subtype of anxiety during camp. These results included 60% of campers (3) with a highest subtype of GAD and 75% of campers with a highest subtype of Social Anxiety (15). The younger, middle, and older camp classes experienced anxiety change on counselor-rated DBRs with large effect sizes ( $d = -3.48$ ; -



2.84; -2.04). In contrast to significant counselor-rated changes in anxiety for those participating in the intensive summer camp, only three campers' (12%) caregivers endorsed significant decreases in anxious symptoms from pretreatment to posttreatment, with 11 (44%) total campers with scores under 25 (i.e., severity indicator) on the posttreatment caregiver-rated SCARED. These data differ from a previous intensive intervention study by Santucci and colleagues (2009) that found all five participants experienced significant decreased in separation anxiety disorder symptoms at posttreatment.

These outcome data pertaining to anxiety symptoms are important, as they align with the behavioral conceptualization of the communication hierarchy associated with SM. Specifically, counselors increase exposure to speech (e.g., forced choice questions vs open-ended question) at an appropriate pace to promote speech, and the pace of this treatment hierarchy was individualized to each camper. Counselor DBR data suggest some change was occurring for most children's highest rated anxiety during camp, which aligns with the behavioral mechanism of change theory that lower rates of anxiety promote success with exposure to speech in incrementally difficult situations. This process is identical to the goal of behavioral treatment for SM, which is to decrease symptoms of SM as children become more confident with increasingly difficult exposures. Results from this study suggest counselors, or providers of the intensive intervention, are in a better position to identify those symptoms changes during treatment than caregivers who were not present throughout the day.

### **Speaking Behaviors**

Nine (36%) campers experienced significant improvements in caregiver-rated speaking behaviors from pretreatment to posttreatment, as reported on the SMQ. This increased to 64.29% campers at follow-up (9 out of 14), suggesting a lag effect of speech behavior. These

data are consistent with the behavioral mechanism of change theory that anxiety was reduced prior to seeing changes in speech. Specifically, speech was established in a safe environment (i.e., camp) with repetitive exposures before it was generalized to school/community with improvements noticeable to caregivers.

Study results also support the importance of looking at treatment outcomes, developmentally. For example, aggregated class effect size calculations revealed that the older class experienced significant improvements in caregiver-rated speaking behaviors from pretreatment to posttreatment ( $RCI = 3.11$ ). Yet, those changes appeared to max out for the older group, as speaking behavior was maintained at three-month follow-up. Aggregated class effect size calculations revealed significant improvements in caregiver-rated camper speaking behaviors for the younger ( $RCI = 8.10$ ) and middle ( $RCI = 7.17$ ) class from posttreatment to three-month follow-up, and for total campers ( $RCI = 4.50$ ).

While SMQ scores were not significantly different between the younger, middle, and older classes at three-month follow-up, it is notable that the younger and middle classes improved significantly between posttreatment and three-month follow-up. It is possible the older class experienced a ceiling effect at posttreatment. Regardless, this finding is an important contribution to the literature about the importance of early intervention for SM. Specifically, eight out of nine (89%) campers in the younger and middle classes experienced significantly improved caregiver-rated speaking behaviors from posttreatment to three-month follow-up. Similar developmental differences in treatment gains were found by Oerbeck and colleagues (2015) at one-year follow-up after six months of behavioral treatment for SM ( $n = 24$ ). Based on teacher ratings, 78% of three to five year olds did not meet diagnostic criteria for SM, compared to 33% of six to nine year olds. Oerbeck and colleagues' (2015) results reveal another layer of

treatment gains by development. While the present study did not assess for diagnostic criteria, speaking behaviors are the most related SM diagnostic symptom, and this study provides more evidence to support breaking the speech avoidance cycle (Kotrba, 2015) early results in better outcomes for children (Oerbeck et al., 2015).

This was the first study to track daily child speaking behaviors and code words per minute during a 5-consecutive day intensive summer day camp for SM. This study found that three (12%) campers improved responsive speech throughout camp and that four (16%) campers improved spontaneous speech over camp. This methodology of measuring speech raises the bar from previous SM literature. O'Reilly and colleagues (2008) and Kern and colleagues (2007) both measured improvements in children with SM rate of response to teacher at school during the course of behavioral intervention. Both articles reported increases in response rate to over 50% of prompted opportunities by halfway through treatment. Campers do not escape responses during camp (i.e., response rate of ~100%), and are thus inundated with learning opportunities that speaking cannot be avoided. It makes sense, then, that campers were likely to generalize this learning to different contexts (i.e., school and public) after camp was over via parent SMQ ratings at three-month follow-up. As a result, evidence from this study demonstrated caregiver-rated camper speaking behaviors improved more between posttreatment and three-month follow-up than pretreatment to posttreatment. Verifying those changes within the school context will be essential in future research.

### **Limitations**

The present study is limited by: (a) reliability and validity of baseline measures, (b) lack of comparison group, (c) nested data, and (d) three-month follow-up response rate.

**Reliability and validity of baseline measures.** It is possible baseline measures lacked reliability and validity. First, consistency in baseline anxiety levels could not be established due to significant differences in caregiver-rated SCARED scores from intake to pretreatment. This suggests the possibility that the lead-in session may have affected anxiety before camp started or that the onset of camp (e.g., with travel) was anxiety-provoking. It is also possible a different parent completed the rating scales at intake and pretreatment, and that the scores were reflective of a different responder. Second, due to intensive summer day camp structure, there was not ample time/opportunity to establish a baseline of speech behavior before intervention; however, ITSSIM software was chosen specifically for analysis because it addresses this clinical practice limitation.

There are specific limitations associated with the DBR, in particular. First, the DBR was a truncated scale from zero to two, which could have affected how changes were detected, most notably resulting in large effect sizes. Furthermore, this may be an explanation for differences found between ITSSIM output and visual analyses. Additionally, interpretation of ITSSIM output effect sizes as “small,” “medium,” and “large” may be a limitation of this study, as Tarlow and Brossart (2018) recommend alternative interpretations should consider (a) effect sizes based against pre-determined benchmarks of significance that match design and (b) effect sizes compared to other interventions. Given this is the first intensive intervention for SM and there was no comparison group/treatment as usual group, it was decided to interpret effect sizes using benchmarks from Cohen (1988) and significant *p*-values. It is possible more appropriate benchmarks for effect size interpretation will be established as intensive summer day camp intervention research continues.

**Lack of comparison group.** Without a comparison group, it is impossible to know if camper changes over time were due to intervention or not. Maturation is a possible explanation for changes overtime, and is a threat to the internal validity of this study without a comparison group. Unfortunately, camp directors do not collect data from their waitlist group or clinic patients simultaneous to camp in order to maintain rapport. Without a comparison group, however, it is difficult to identify weaknesses in the design of the experimental group. For example, it is possible this sample represents a sub-population of the SM population that can afford to participate in the intensive summer day camp for approximately \$2,700. Additionally, it is possible this intensive summer day camp attracts a higher functioning SM child/family, especially given the requirement that all campers must establish speech with their counselor during a lead-in session in order to participate in camp.

**Nested data.** It is possible results were confounded by nested data. Specifically, the intensive summer day camp operated as three separate classrooms with a corresponding teacher. Although all teachers were trained by the lead CKC clinician and implemented behavioral therapy strategies, it is possible results were confounded by the different teachers. Also, given sets of siblings within the camp, there were nested data in regards to responders on rating scales at pretreatment, posttreatment, and three-month follow-up.

**Three-month follow-up response rate.** Missing data from the three-month follow-up is a limitation of the study. It is possible a bias subsample responded. Given the expectation that significant changes would occur between posttreatment and three-month follow-up, it is damaging to the study's discussion to have missing data.

## **Implications for Research**

This pilot feasibility study sets a foundation for investigation of intensive summer day camps as treatment for SM, as to date, intensives have only been reported in the literature for other anxiety-related conditions (e.g., Donovan et al., 2015, Santucci et al., 2009). Replications of this study, with refinements, are warranted to address its limitations. First, more research is needed to better understand family acceptability of intensive summer day camp intervention as treatment for SM to clarify inconsistencies in this study's results of effectiveness acceptability. Future research should consider using the TEQ-P to assess family acceptability, but place it at a follow-up data collection time point for more accurate perceptions about intervention effectiveness. Also, a future study could explore psychometric properties of the semi-structured interview used in this study, as it could be an important tool for quality improvement efforts. Continued research efforts to evaluate the acceptability of intensive summer day camps as treatment for SM is critical to establishing its feasibility.

More research is needed to better understand factors contributing to implementation integrity of behavioral therapy during and after the intensive summer day camp for children with SM. Given the high rates of integrity by counselors and caregivers during camp after only a brief training from the lead CKC clinician, it would be interesting to assess which parts of the parent and counselor training promote integrity. Most notably, more research is needed to understand parent implementation integrity of SM behavioral therapy after intensive summer day camp is over. Specifically, understanding which components of acceptability optimize the likelihood parents will practice SM behavioral therapy and track their implementation integrity would be useful for practice.

Future research may address limitations from this study's evaluation of effectiveness of intensive summer day camp intervention. Researching the possible treatment effects of the lead-in session are warranted. As such, ensuring a baseline for speaking behaviors and anxiety levels is established before intervention will result in more valid data. Also, implementation with more severe SM campers and with a control group will make for exciting progress in the literature. Next, a better understanding of responsive speech changes to spontaneous speech will be warranted for the intensive summer day camp intervention research. Additionally, controlling for a clinic effect will be important to future research. While this study's intensive intervention simulated a school-like environment, it will be interesting and essential to transition treatment to the child's unique environment, especially school.

The above directions for future research consider ideas that continue to assess acceptability, integrity, and effectiveness of an intensive summer day camp intervention for children with SM. Given this was a pilot study that was the first to assess behavioral therapy for SM in an intensive summer day camp intervention format, the research focus remained on feasibility (Sheridan, 2014). This study provides a foundation for future research of intensive summer day camp intervention for SM, which through replications/refinements of this study, will hopefully progress through the research trajectory towards evaluation of a small sample with intensity/precision next (Sheridan, 2014). As research about intensive summer day camp intervention for children with SM progresses, there will be exciting directions for it in the future. Notably, parent training emerged as a foundational component of family acceptability, so it would be interesting to investigate the parent training curriculum and the possibility of standardizing and disseminating it. Eventually, this information could be useful to efficiently

train school professionals (e.g., teachers) about behavioral therapy for children with SM, which aligns with the overall goal of BICs to increase access to services (Ost & Ollendick, 2017).

### **Implications for Practice**

This study informs initial implications for practice. First, this study suggests SM behavioral therapy can be implemented with integrity by novice clinicians and parents after training from a SM expert clinician. Given training was brief and there is need for SM-competent clinicians, SM expert clinicians may be motivated to travel to places with less access to SM treatment and provide trainings to clinicians, schools, and parents. Second, lack of replicated change across campers at posttreatment and inadequate follow-up response rate may reveal a need for more frequent booster sessions. This implication for practice would be interesting to investigate alongside increasing access to teletherapy, as it is also perceived as a cost effective and accessible treatment for anxiety disorders (Ophius, Lokkerbol, Heemskerk, van Balkom, Hiligsmann, & Evers, 2017). In-clinic boosters and parent training boosters may be more easily accessible to families in close proximity to a SM expert clinician.

### **Conclusion**

Twenty-five children with SM between the ages of four and eleven participated in the summer intensive day camp (i.e., CKC 2019). As a feasibility pilot study, the purpose of this research was to establish an initial understanding of acceptability and integrity of an intensive summer day camp for SM, as the thorough assessment of these variables are novel to the intensive intervention literature for similar disorders. Results from the TEQ-P revealed that the majority of caregivers perceived the time required and quality of treatment as acceptable, but most did not endorse satisfactory scores for effectiveness. Impressive rates of integrity were demonstrated by both counselors and caregivers after brief training from a SM expert clinician,



which provides a promising foundation for the dissemination of behavior therapy skills for SM to novice clinicians, teachers, and caregivers using a brief training approach. Ultimately, the dissemination of implementation competency will improve accessibility to treatment, which is a common barrier to traditional behavioral therapy. Increased access to services promotes early intervention, which is critical to children with SM to promote best outcomes.

Caregiver-rated effectiveness scores at posttreatment were consistent for a lack of anxiety change and speaking behavior change across participants. Conversely, counselors endorsed significant decreases in anxiety for most campers by posttreatment, as rated on the their individual DBR. These data suggest counselors were privy to observing the breakdown of the speech avoidance cycle throughout the intensive summer day camp. These important changes within camp then appeared to lead to important changes after camp. By three-month follow-up, most caregivers reported significant improvements in speaking behaviors for campers, indicating they observed the generalization of speaking behavior skills obtained during camp. Through repetition of exposure, campers associated prompts to speak with speaking behavior (instead of avoidance), and were more likely to engage in speaking in other settings, such as school and the community.

In conclusion, this study adds to the intensive intervention literature by thoroughly assessing acceptability and integrity. It adds to the SM literature by coding speaking behaviors to explore rate of speech and tracking heterogeneous anxiety subtypes throughout behavioral therapy for SM. The limitations from the current study can be considered and addressed in future research to ultimately provide implications for practice.

## APPENDICES

## Appendix A

### Treatment Evaluation Questionnaire (TEQ) – Parent Form

**Camper Name:**\_\_\_\_\_

**Parent/Guardian Name:**\_\_\_\_\_

Your child recently completed Confident Kids Camp, a treatment approach for selective mutism. Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. Please answer each question.

	<i><b>Strongly Disagree</b></i>	<i><b>Disagree</b></i>	<i><b>Slightly Disagree</b></i>	<i><b>Slightly Agree</b></i>	<i><b>Agree</b></i>	<i><b>Strongly Agree</b></i>
1. This was an acceptable intervention for my child's problem behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
2. Most parents would find this intervention appropriate for behavior problems.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
3. The intervention was effective in changing my child's problem behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
4. I would suggest the use of this intervention to other parents.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
5. My child's behavior problem was severe enough to warrant use of this intervention.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
6. Most parents would find this intervention suitable for the behavior problem described.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
7. The intervention did <u>not</u> result in negative side effects for my child.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
8. The intervention would be appropriate for a variety of children.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

9. The intervention was a fair way to handle my child's problem behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
10. I liked the procedure used in the intervention.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
11. The intervention was a good way to handle my child's behavior problem.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
12. Overall, the intervention was beneficial for my child.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
13. The intervention quickly improved my child's behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
14. The intervention produced a lasting improvement in my child's behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
15. The intervention improved my child's behavior to the point that it would not noticeably deviate from other children's behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
16. Soon after starting the intervention, I noticed a positive change in my child's problem behavior.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
17. My child's behavior remained at an improved level even after the intervention was discontinued.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
18. Using the intervention not only improved my child's behavior in the home, but also in other settings.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

19. When comparing my child with a peer before and after use of the intervention, my child's and peer's behavior was more alike after using the intervention.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
20. The intervention produced enough improvement in my child's behavior, so the behavior no longer was a problem.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
21. Other behaviors related to the problem behavior also were improved by the intervention.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

## Appendix B

### Posttreatment Interview Questions

Posttreatment Interview:

1. Interviewer Name: \_\_\_\_\_
2. Caregiver Name(s): \_\_\_\_\_
3. Residence Location: \_\_\_\_\_
4. Child's Name and Age: \_\_\_\_\_
5. Has your child received treatment for SM before? \_\_\_\_\_

### **PREVIOUS TREATMENT QUESTIONS**

<u>Time Required (previous treatment)</u>	
1. When?	
2. For how long?	
3. Describe the frequency of treatment.	
4. How did the <b>cost</b> of CKC compare to previous treatment?  a. How much money was CKC, including travel and hospitality?	
5. How did the <b>scheduling</b> of CKC compare to previous treatment?	
<u>Effectiveness (previous treatment)</u>	
1. How did your child's <b>reaction</b> to CKC differ from previous treatment?	
2. Please describe your child's <b>improvement</b> in CKC compared to previous treatment.	
3. Please describe whether you think CKC or previous treatment are more <b>effective</b> in	

decreasing your child's anxiety and increasing their speaking behaviors.	
4. Please describe your perceptions of your child's counselor's treatment <b>implementation competencies</b> compared to the competencies of your previous treatment provider.	
<u>Acceptability (previous treatment)</u>	
5. Please describe your <b>willingness to use</b> the strategies taught during CKC parent training compared to the strategies from previous treatment.	
6. Please describe whether the CKC strategies taught or previous treatment strategies make more <b>common sense</b> to you.	
7. Please describe whether the CKC strategies taught or previous treatment strategies are more <b>suitable</b> to decreasing your child's anxiety and increasing their speaking behaviors.	
8. Did you <b>like</b> CKC or previous treatment better?	
9. Overall, do you believe CKC or previous treatment is a more <b>acceptable</b> treatment to treating your child's SM?	



10. Please compare the <b>accessibility</b> of CKC to your previous treatment.	
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### **NO PREVIOUS TREATMENT QUESTIONS**

<u>Time Required (no previous treatment)</u>	
1. Was the cost of CKC acceptable to you? a. How much money was CKC, including travel and hospitality?	
2. Were the scheduling requirements for CKC acceptable to you?	
<u>Effectiveness (no previous treatment)</u>	
1. How did your child <b>react</b> to CKC?	
2. Do you feel like your child <b>improved</b> during CKC?	
3. Do you believe CKC was an <b>effective</b> treatment in decreasing your child's anxiety and increasing their speaking behaviors?	
4. How did you feel about your child's counselor's treatment <b>implementation competencies</b> ?	
<u>Acceptability (no previous treatment)</u>	
1. Are you <b>willing to use</b> the strategies taught during parent training after CKC?	
2. Did the strategies taught during parent training make <b>logical sense</b> to you?	

3. Do you believe the strategies are <b>suitable</b> to decreasing your child's anxiety and increasing their speaking behaviors?	
4. Did you <b>like</b> your experience with CKC?	
5. Overall, do you believe CKC is an <b>acceptable</b> treatment to treating your child's SM?	
6. Do you believe CKC is an <b>accessible</b> treatment for families with a child with SM?	

## Appendix C

### Sample Counselor Integrity Checklist

#### Monday Middle Class

Counselor Name: \_\_\_\_\_

Camper: \_\_\_\_\_

*Directions:* Please rate your implementation skills throughout the day below. Please circle one number for each activity that best represents your skills as a counselor during that time.

Note: “Not observed” does *not* mean non-applicable, it means failure to demonstrate the skill. All activities should be applicable given the day’s curriculum, so please answer for each activity.

Time	Activity	Please circle one option that reflects your implementation of the corresponding activity			
		<i>Not observed</i>	<i>Implemented inappropriately</i>	<i>Implemented somewhat appropriately</i>	<i>Implemented appropriately</i>
All day	Consistently rewarded positive behavior throughout the day (i.e., stickers, brave bucks)	0	1	2	3
9-9:30	Implemented PRIDE skills	0	1	2	3
9:30 - 10:45	Implemented communication hierarchy to encourage camper speech during morning time (introduce yourself, jobs board, snack, psychoeducation)	0	1	2	3
10:45 - 11:30	Implemented communication hierarchy to encourage camper speech during “Why We Practice” and psychoeducation	0	1	2	3
11:30 - 12:15	Implemented communication hierarchy to encourage camper speech during lunch (with peers, counselors, teacher)	0	1	2	3
12:15 - 12:45	Completed goal setting for Art Class in workbook with camper	0	1	2	3
12:15 -	Practiced Art Class goals with camper (e.g., role play, practice w/teacher)	0	1	2	3

12:4 5					
12:4 5- 1:00	Implemented communication hierarchy to encourage camper speech while picking a prize at the prize store	0	1	2	3
1:00 - 1:30	Implemented communication hierarchy to encourage camper speech during Verbal Board Games (with peers, counselors, teacher)	0	1	2	3
1:30 - 2:15	Facilitated support/initiative to help camper achieve Art Class goals	0	1	2	3
1:30 - 2:15	Implemented communication hierarchy to encourage additional camper speech during Art Class	0	1	2	3
2:15 - 3:00	Implemented communication hierarchy to encourage camper speech during afternoon closing assembly (closing with teacher, prize delivery)	0	1	2	3

## Appendix D

### Sample Inter-Rater Integrity Checklist

#### Monday Middle Class

Counselor Name: \_\_\_\_\_

Camper Name: \_\_\_\_\_

Observer (your) Name: \_\_\_\_\_

Time observed: \_\_\_\_\_ to \_\_\_\_\_

**Directions:** Please rate the counselor's level of implementation integrity during the time you observed his/her camper. Please circle the level of implementation only during the timespan you were observing **& the first box about rewards**. All the other boxes can be left blank.

**Note:** "Not observed" is not synonymous with "non-applicable." "Not observed" means counselor failure to implement the skill/activity during the observation time (i.e., low integrity).

Time	Activity	Please circle one option that reflects your implementation of the corresponding activity			
		<i>Not observed</i>	<i>Implemented inappropriately</i>	<i>Implemented somewhat appropriately</i>	<i>Implemented appropriately</i>
All day	Consistently rewarded positive behavior throughout the day (i.e., stickers, brave bucks)	0	1	2	3
9-9:30	Implemented PRIDE skills	0	1	2	3
9:30 - 10:45	Implemented communication hierarchy to encourage camper speech during morning time (introduce yourself, jobs board, snack, psychoeducation)	0	1	2	3
10:45 - 11:30	Implemented communication hierarchy to encourage camper speech during "Why We Practice" and psychoeducation	0	1	2	3
11:30 - 12:15	Implemented communication hierarchy to encourage camper speech during lunch (with peers, counselors, teacher)	0	1	2	3
12:15 -	Completed goal setting for Art Class in workbook with camper	0	1	2	3

12:4 5					
12:1 5- 12:4 5	Practiced Art Class goals with camper (e.g., role play, practice w/teacher)	0	1	2	3
12:4 5- 1:00	Implemented communication hierarchy to encourage camper speech while picking a prize at the prize store	0	1	2	3
1:00 - 1:30	Implemented communication hierarchy to encourage camper speech during Verbal Board Games (with peers, counselors, teacher)	0	1	2	3
1:30 - 2:15	Facilitated support/initiative to help camper achieve Art Class goals	0	1	2	3
1:30 - 2:15	Implemented communication hierarchy to encourage additional camper speech during Art Class	0	1	2	3
2:15 - 3:00	Implemented communication hierarchy to encourage camper speech during afternoon closing assembly (closing with teacher, prize delivery)	0	1	2	3

## Appendix E

### Parent Community-Based Integrity Checklist

**Parent Name(s):** \_\_\_\_\_

**Camper Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

*Directions:* Please rate your implementation skills during the community activity. Please circle one number for each activity that best represents your skills during that time.

Activity	Please circle one option that reflects your implementation of the corresponding activity			
	<i>Not observed</i>	<i>Implemented inappropriately</i>	<i>Implemented somewhat appropriately</i>	<i>Implemented appropriately</i>
Met with counselor to identify child's goals for community-based exposure activity	0	1	2	3
Consistently rewarded positive behavior throughout the day (e.g., positive words, stickers, brave bucks, etc.)	0	1	2	3
Implemented communication ladder to encourage child speech at restaurant	0	1	2	3
Implemented communication ladder to encourage child speech during scavenger hunt	0	1	2	3
Implemented communication ladder to encourage child speech with at least 1 new peer/adult	0	1	2	3



## Appendix F

### Parent Integrity Checklist Posttreatment

**Parent Name(s):** \_\_\_\_\_

**Child Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

*Directions:* Please rate your implementation skills during the community activity. Please circle one number for each activity that best represents your skills during that time.

Activity	Please circle one option that reflects your implementation of the corresponding activity			
	<i>Not observed</i>	<i>Implemented inappropriately</i>	<i>Implemented somewhat appropriately</i>	<i>Implemented appropriately</i>
Made goal(s) with child for community-based exposure activity	0	1	2	3
Consistently rewarded positive behavior throughout the activity (e.g., positive words, stickers, brave bucks, etc.)	0	1	2	3
Implemented communication ladder to encourage child speech in community	0	1	2	3
Implemented communication ladder to encourage child speech with at least 1 new peer/adult	0	1	2	3

## Appendix G

### Screen for Child Anxiety Related Disorders (SCARED)- Parent Version

**Child Name:** \_\_\_\_\_

**Parent/Guardian Name:** \_\_\_\_\_

**Relationship to Child:** \_\_\_\_\_

**Directions:** Below is a list of sentences that describe how people feel. Read each phrase and decide if it is “Not True or Hardly Ever True” or “Somewhat True or Sometimes True” or “Very True or Often True” for your child. Then, for each statement, circle one answer (i.e., number) that corresponds to the response that seems to describe your child for the last 3 months. *Please respond to all statements as well as you can, even if some do not seem to concern your child.*

	<b>0 (Not true or Hardly Ever True)</b>	<b>1 (Somewha t True or Sometimes True)</b>	<b>2 (Very True or Often True)</b>
<b>1.</b> When my child feels frightened, it is hard for him/her to breathe.	<b>0</b>	<b>1</b>	<b>2</b>
<b>2.</b> My child gets headaches when he/she is at school.	<b>0</b>	<b>1</b>	<b>2</b>
<b>3.</b> My child doesn't like to be with people he/she doesn't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>4.</b> My child gets scared if he/she sleeps away from home.	<b>0</b>	<b>1</b>	<b>2</b>
<b>5.</b> My child worries about other people liking him/her.	<b>0</b>	<b>1</b>	<b>2</b>
<b>6.</b> When my child gets frightened, he/she feels like passing out.	<b>0</b>	<b>1</b>	<b>2</b>
<b>7.</b> My child is nervous.	<b>0</b>	<b>1</b>	<b>2</b>
<b>8.</b> My child follows me wherever I go.	<b>0</b>	<b>1</b>	<b>2</b>
<b>9.</b> People tell me that my child looks nervous.	<b>0</b>	<b>1</b>	<b>2</b>
<b>10.</b> My child feels nervous with people he/she doesn't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>11.</b> My child gets stomachaches at school.	<b>0</b>	<b>1</b>	<b>2</b>
<b>12.</b> When my child gets frightened, he/she feels like he/she is going crazy.	<b>0</b>	<b>1</b>	<b>2</b>
<b>13.</b> My child worries about sleeping alone.	<b>0</b>	<b>1</b>	<b>2</b>
<b>14.</b> My child worries about being as good as other kids.	<b>0</b>	<b>1</b>	<b>2</b>
<b>15.</b> When he/she gets frightened, he/she feel like things are not real.	<b>0</b>	<b>1</b>	<b>2</b>
<b>16.</b> My child has nightmares about something bad happening to his/her parents.	<b>0</b>	<b>1</b>	<b>2</b>

<b>17.</b> My child worries about going to school.	<b>0</b>	<b>1</b>	<b>2</b>
<b>18.</b> When my child gets frightened, his/her heart beats fast.	<b>0</b>	<b>1</b>	<b>2</b>
<b>19.</b> He/she gets shaky.	<b>0</b>	<b>1</b>	<b>2</b>
<b>20.</b> My child has nightmares about something bad happening to him/her.	<b>0</b>	<b>1</b>	<b>2</b>
<b>21.</b> My child worries about things working out for him/her.	<b>0</b>	<b>1</b>	<b>2</b>
<b>22.</b> When my child gets frightened, he/she sweats a lot.	<b>0</b>	<b>1</b>	<b>2</b>
<b>23.</b> My child is a worrier.	<b>0</b>	<b>1</b>	<b>2</b>
<b>24.</b> My child gets really frightened for no reason at all.	<b>0</b>	<b>1</b>	<b>2</b>
<b>25.</b> My child is afraid to be alone in the house.	<b>0</b>	<b>1</b>	<b>2</b>
<b>26.</b> It is hard for my child to talk with people he/she doesn't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>27.</b> When my child gets frightened, he/she feels like he/she is choking.	<b>0</b>	<b>1</b>	<b>2</b>
<b>28.</b> People tell me that my child worries too much.	<b>0</b>	<b>1</b>	<b>2</b>
<b>29.</b> My child doesn't like to be away from his/her family.	<b>0</b>	<b>1</b>	<b>2</b>
<b>30.</b> My child is afraid of having anxiety (or panic) attacks.	<b>0</b>	<b>1</b>	<b>2</b>
<b>31.</b> My child worries that something bad might happen to his/her parents.	<b>0</b>	<b>1</b>	<b>2</b>
<b>32.</b> My child feels shy with people he/she doesn't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>33.</b> My child worries about what is going to happen in the future.	<b>0</b>	<b>1</b>	<b>2</b>
<b>34.</b> When my child gets frightened, he/she feels like throwing up.	<b>0</b>	<b>1</b>	<b>2</b>
<b>35.</b> My child worries about how well he/she does things.	<b>0</b>	<b>1</b>	<b>2</b>
<b>36.</b> My child is scared to go to school.	<b>0</b>	<b>1</b>	<b>2</b>
<b>37.</b> My child worries about things that have already happened.	<b>0</b>	<b>1</b>	<b>2</b>
<b>38.</b> When my child gets frightened, he/she feels dizzy.	<b>0</b>	<b>1</b>	<b>2</b>
<b>39.</b> My child feels nervous when he/she is with other children or adults and he/she has to do something while they watch him/ her (for example: read aloud, speak, play a game, play a sport.)	<b>0</b>	<b>1</b>	<b>2</b>
<b>40.</b> My child feels nervous when he/she is going to parties, dances, or any place where there will be people that he/ she doesn't know well.	<b>0</b>	<b>1</b>	<b>2</b>

<b>41.</b> My child is shy.	<b>0</b>	<b>1</b>	<b>2</b>
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Developed by Boris Birmaher, M.D., Suneeta Khetarpal, M.D., Marlane Cully, M.Ed., David Brent, M.D., and Sandra McKenzie, Ph.D., Western Psychiatric Institute and Clinic, University of Pittsburgh (October, 1995).

## Appendix H

### Screen for Child Anxiety Related Disorders (SCARED)- Child Version

**Name:** \_\_\_\_\_

**Directions:** Below is a list of sentences that describe how people feel. Read each phrase and decide if it is “Not True or Hardly Ever True” or “Somewhat True or Sometimes True” or “Very True or Often True” for you. Then, for each sentence, circle one answer (i.e., number) that corresponds to the response that seems to describe you for the last 3 months.

	<b>0 (Not true or Hardly Ever True)</b>	<b>1 (Somewha t True or Sometimes True)</b>	<b>2 (Very True or Often True)</b>
1. When I feel frightened, it is hard to breathe.	0	1	2
2. I get headaches when I am at school.	0	1	2
3. I don't like to be with people I don't know well.	0	1	2
4. I get scared if I sleep away from home.	0	1	2
5. I worry about other people liking me.	0	1	2
6. When I get frightened, I feel like passing out.	0	1	2
7. I am nervous.	0	1	2
8. I follow my mother or father wherever they go.	0	1	2
9. People tell me that I look nervous.	0	1	2
10. I feel nervous with people I don't know well.	0	1	2
11. I get stomachaches at school.	0	1	2
12. When I get frightened, I feel like I am going crazy.	0	1	2
13. I worry about sleeping alone.	0	1	2
14. I worry about being as good as other kids.	0	1	2
15. When I get frightened, I feel like things are not real.	0	1	2
16. I have nightmares about something bad happening to my parents.	0	1	2
17. I worry about going to school.	0	1	2
18. When I get frightened, my heart beats fast.	0	1	2
19. I get shaky.	0	1	2
20. I have nightmares about something bad happening to me.	0	1	2
21. I worry about things working out for me.	0	1	2
22. When I get frightened, I sweat a lot.	0	1	2
23. I am a worrier.	0	1	2
24. I get really frightened for no reason at all.	0	1	2
25. I am afraid to be alone in the house.	0	1	2

<b>26.</b> It is hard for me to talk with people I don't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>27.</b> When I get frightened, I feel like I am choking.	<b>0</b>	<b>1</b>	<b>2</b>
<b>28.</b> People tell me that I worry too much.	<b>0</b>	<b>1</b>	<b>2</b>
<b>29.</b> I don't like to be away from my family.	<b>0</b>	<b>1</b>	<b>2</b>
<b>30.</b> I am afraid of having anxiety (or panic) attacks.	<b>0</b>	<b>1</b>	<b>2</b>
<b>31.</b> I worry that something bad might happen to my parents.	<b>0</b>	<b>1</b>	<b>2</b>
<b>32.</b> I feel shy with people I don't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>33.</b> I worry about what is going to happen in the future.	<b>0</b>	<b>1</b>	<b>2</b>
<b>34.</b> When I get frightened, I feel like throwing up.	<b>0</b>	<b>1</b>	<b>2</b>
<b>35.</b> I worry about how well I do things.	<b>0</b>	<b>1</b>	<b>2</b>
<b>36.</b> I am scared to go to school.	<b>0</b>	<b>1</b>	<b>2</b>
<b>37.</b> I worry about things that have already happened.	<b>0</b>	<b>1</b>	<b>2</b>
<b>38.</b> When I get frightened, I feel dizzy.	<b>0</b>	<b>1</b>	<b>2</b>
<b>39.</b> I feel nervous when I am with other children or adults and I have to do something while they watch me (for example: read aloud, speak, play a game, play a sport).	<b>0</b>	<b>1</b>	<b>2</b>
<b>40.</b> I feel nervous when I am going to parties, dances, or any place where there will be people that I don't know well.	<b>0</b>	<b>1</b>	<b>2</b>
<b>41.</b> I am shy.	<b>0</b>	<b>1</b>	<b>2</b>

Developed by Boris Birmaher, M.D., Suneeta Khetarpal, M.D., Marlane Cully, M.Ed., David Brent, M.D., and Sandra McKenzie, Ph.D., Western Psychiatric Institute and Clinic, University of Pittsburgh (October, 1995).

Appendix I  
Sample DBR

**Counselor:** \_\_\_\_\_

**Camper:** \_\_\_\_\_

Please rate your camper's behaviors during each of the day's activities. Please answer every question.

**1. During free play (i.e., PRIDE time)...**

	Not True or Hardly Ever True	Somewhat True or Sometimes True	Very True or Often True
3. My child doesn't like to be with people he/she doesn't know well.	0	1	2
10. My child feels nervous with people he/she doesn't know well.	0	1	2
26. It is hard for my child to talk with people he/she doesn't know well.	0	1	2

**2. During circle time/jobs/calendar...**

	Not True or Hardly Ever True	Somewhat True or Sometimes True	Very True or Often True
3. My child doesn't like to be with people he/she doesn't know well.	0	1	2
10. My child feels nervous with people he/she doesn't know well.	0	1	2
26. It is hard for my child to talk with people he/she doesn't know well.	0	1	2

**3. During prize store (e.g., prize selection)...**

	Not True or Hardly Ever True	Somewhat True or Sometimes True	Very True or Often True
3. My child doesn't like to be with people he/she doesn't know well.	0	1	2
10. My child feels nervous with people he/she doesn't know well.	0	1	2

26. It is hard for my child to talk with people he/she doesn't know well.	0	1	2
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**4. During art class...**

	Not True or Hardly Ever True	Somewhat True or Sometimes True	Very True or Often True
3. My child doesn't like to be with people he/she doesn't know well.	0	1	2
10. My child feels nervous with people he/she doesn't know well.	0	1	2
26. It is hard for my child to talk with people he/she doesn't know well.	0	1	2

**5. During closing assembly...**

	Not True or Hardly Ever True	Somewhat True or Sometimes True	Very True or Often True
3. My child doesn't like to be with people he/she doesn't know well.	0	1	2
10. My child feels nervous with people he/she doesn't know well.	0	1	2
26. It is hard for my child to talk with people he/she doesn't know well.	0	1	2

**Average:** \_\_\_\_\_



## Appendix J

### Selective Mutism Questionnaire (SMQ)

**Child Name:** \_\_\_\_\_

**Parent/Guardian Name:** \_\_\_\_\_

**Relationship to Child:** \_\_\_\_\_

Please consider your child's behavior in the last two weeks and rate how frequently each statement is true for your child. *Please answer each question.*

<b>AT SCHOOL</b>	Always	Often	Seldom	Never
1. When appropriate, my child talks to most peers at school.	3	2	1	0
2. When appropriate, my child talks to selected peers (his/her friends) at school.	3	2	1	0
3. When my child is asked a question by his/her teacher, s/he answers.	3	2	1	0
4. When appropriate, my child asks his or her teacher questions.	3	2	1	0
5. When appropriate, my child speaks to most teachers or staff at school.	3	2	1	0
6. When appropriate, my child speaks in groups or in front of the class.	3	2	1	0

<b>HOME/FAMILY</b>	Always	Often	Seldom	Never
7. When appropriate, my child talks to family members living at home when other people are present.	3	2	1	0
8. When appropriate, my child talks to family members while in unfamiliar places.	3	2	1	0
9. When appropriate, my child talks to family members that don't live with him/her (e.g., grandparent, cousin).	3	2	1	0
10. When appropriate, my child talks on the phone to his/her parents and siblings.	3	2	1	0
11. When appropriate, my child speaks with family friends who are well-known to him/her.	3	2	1	0
12. My child speaks to at least one babysitter.	3	2	1	0

<b>IN SOCIAL SITUATIONS (OUTSIDE OF SCHOOL)</b>	Always	Often	Seldom	Never
13. When appropriate, my child speaks with other children who s/he doesn't know.	3	2	1	0
14. When appropriate, my child speaks with family friends who s/he doesn't know.	3	2	1	0

15. When appropriate, my child speaks with his or her doctor and/or dentist.	3	2	1	0
16. When appropriate, my child speaks to store clerks and/or waiters.	3	2	1	0
17. When appropriate, my child talks when in clubs, teams, or organized activities outside of school.	3	2	1	0

<b>INTERFERENCE/DISTRESS</b>				
18. How much does not talking interfere with school for your child?	Not at all	Slightly	Moderately	Extremely
19. How much does not talking interfere with family relationships?	Not at all	Slightly	Moderately	Extremely
20. How much does not talking interfere in social situations for your child?	Not at all	Slightly	Moderately	Extremely
21. Overall, how much does not talking interfere with life for your child?	Not at all	Slightly	Moderately	Extremely
22. Overall, how much does not talking bother your child?	Not at all	Slightly	Moderately	Extremely
23. Overall, how much does your child's not talking bother you?	Not at all	Slightly	Moderately	Extremely

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Appendix K

CKC 2019 Curriculum

MONDAY		Younger		Middle		Older	
8		Counselors arrive at 8am... Prep / Review Plans		Counselors arrive at 8am... Prep / Review Plans		Counselors arrive at 8:00am... Prep / Review Plans	
8:15							
8:30							
8:45							
9		Free Play		Free Play <i>(may want to make</i>		Free Play <i>(may want to make</i>	
9:15							
9:30							
9:45							
10		Make Sticker Sheets		Introduce Yourself (in workbook) + Jobs Board		Assembly: Intros (workbook), Mission Statement, Psychoed/What is	
10:15		Very Quiet Cricket		What is Anxiety?/ Relaxation		JCs Introduction	
10:30		JC Introduction		RECESS / SNACK		BREAK / SNACK	
10:45		SNACK / RECESS		Practice + Psychoed		Why we Practice	
11		Why We Practice		We practice before		We practice before	
11:15		We practice before		field trips/activities		field trips/activities	
Parent Training +	11:30	LUNCH / RECESS		LUNCH / RECESS		LUNCH / BREAK	
	11:45	(lunch in lunchroom,		(lunch in lunchroom,		(lunch in lunchroom,	
	12	verbal games outside)		verbal games		recess with verbal	
	12:15	Goal Setting, Role		Goal Setting, Role		Free Play + Make	
	12:30	Play, Practice with		Play, Practice with		Brave Buck Bags,	
	12:45			Prize Store		Art Class	
1		Verbal Play Outside		Verbal Board Games		Art Class (with Teen class)	
1:15		Prize Store Layaway					
1:30		Art Class		Art Class		Prize Store	
1:45		(with Middle class)		(with Younger class)		Verbal Board Games	
2							
2:15		BREAK		BREAK		BREAK	
2:30		Counselors Meet with	Prize	Counselors Meet with	Prize	Counselors Meet with	Prize
2:45			Closing		Closing		Closing
3							

<b>3:15</b>	<i>Counselors recap</i>	<i>Counselors recap</i>	<i>Counselors recap</i>
<b>3:30</b>	<i>the day + complete</i>	<i>the day + complete</i>	<i>the day + complete</i>
<b>3:45</b>	<i>session forms!</i>	<i>session forms!</i>	<i>session forms!</i>
<b>4</b>			

<b>TUESDAY</b>	<b>YOUNGER</b>	<b>MIDDLE</b>	<b>OLDER</b>
<b>8</b>			
<b>8:15</b>			
<b>8:30</b>	Counselors arrive		Counselors arrive
<b>8:45</b>	at 8:30	Counselors arrive	at 8:30
<b>9</b>			Free Play (until 9:20)
<b>9:15</b>	Free Play	Free Play	
<b>9:30</b>	<b>Circle Time,</b>	<b>Jobs Board, Set</b>	<b>Recite Mission</b>
<b>9:45</b>	<b>Jobs, Set CC</b>	<b>CC Goals,</b>	<b>Statement, Set</b>
<b>10</b>	SNACK / PRACTICE	<i>Daredevil Duck book</i>	SNACK / PRACTICE
<b>10:15</b>	<i>You Are Brave</i>	SNACK / PRACTICE	Prize Store
<b>10:30</b>	Bus @ 10:30am	Bus @ 10:30am	Bus @ 10:30am
<b>10:45</b>	Bus to Creature	Bus to Creature	Bus to Creature
<b>11</b>	Conservancy	Conservancy	Conservancy
<b>11:15</b>			
<b>Parent Training + Daycare (Mon, Tues, Wed, Fri)</b>	<b>11:30</b>	LUNCH	LUNCH
	<b>11:45</b>	at Creature	at Creature
	<b>12</b>		
	<b>12:15</b>		
	<b>12:30</b>		<b>Creature</b>
	<b>12:45</b>		<b>Conservancy</b>
<b>1</b>			
<b>1:15</b>	<b>Creature</b>	<b>Creature</b>	
<b>1:30</b>	Bus @ 1:30pm	Bus @ 1:30pm	Bus @ 1:30pm
<b>1:45</b>			

2	Bus back	Bus back	Bus back
2:15	Prize Store	Closing Assembly Prize Store	Prize Store Delivery + Closing Assembly
2:30			
2:45	Closing Assembly		
3	Counselors recap	Counselors recap	Counselors recap the day + complete session forms!
3:15			
3:30			
3:45			
4			

WEDNESDAY		YOUNGER	MIDDLE	OLDER
	8			
	8:15			
	8:30	Counselors arrive at 8:30	Counselors arrive at 8:30	Counselors arrive at 8:30
	8:45			
	9	Free Play	Free Play (until 9:20)	Free Play (until 9:20)
	9:15			
	9:30	Circle Time, Jobs, Set + Relaxation	Jobs Board, Set Goals, Relaxation	Recite Mission Statement, Set Goals
	9:45			
	10	Therapy Dogs	BREAK / SNACK	SNACK / RELAXATION
	10:15		*Practice for	
	10:30	RECESS /	Therapy Dogs	Prize Store
	10:45	Psychoed about Anxiety, Practice		Motivational Interviewing
	11		Practice for	
	11:15	Princess Visit	Princess Visit	Therapy Dogs
Parent Trainin +	11:30	(with Middle Class)	(with Younger class)	
	11:45			Verbal Board
	12	LUNCH / BREAK	LUNCH / BREAK	
	12:15			

	12:30			
	12:45	<b>Interrupting Lesson and Practice</b>	<b>Giving/Receiving Compliments</b>	<b>Initiating/Interrupting Lesson and Practice</b>
1			Prize Store	<b>Person Bingo</b>
1:15				
1:30		<b>Person Bingo</b>	<b>Verbal Play</b>	<b>Person Bingo</b>
1:45			<b>Interrupting Lesson and Practice</b>	<b>BREAK</b>
2		<b>Play Outside (verbal games)</b>		<b>Giving/Receiving Compliments</b>
2:15				
2:30		<b>Prize Store</b>	<b>Person Bingo</b>	<b>Prize Delivery + Closing Assembly</b>
2:45		<b>Closing Assembly</b>	<b>Prize Delivery + Closing Assembly</b>	
3		<i>Counselors recap the day + complete session forms!</i>		
3:15				
3:30			<i>Counselors recap</i>	<i>Counselors recap</i>
3:45				
4				

<b>THURSDAY</b>	<b>YOUNGER</b>	<b>MIDDLE</b>	<b>OLDER</b>
8			
8:15			
8:30	Counselors arrive at 8:30	Counselors arrive	Counselors arrive
8:45			
9	Free Play	Free Play	Free Play
9:15			<b>Recite Mission Statement, Set Goals</b>
9:30	<b>Circle Time, Jobs, Set + Practice</b>	<b>Jobs Board, Set + Practice Goals</b>	<b>Obstacle Course</b>
9:45			
10	<i>Leo's Words</i> story	<b>BREAK / SNACK</b>	<b>BREAK / SNACK</b>
10:15	<b>Obstacle Course</b>		
10:30		<b>Making Calls</b>	
10:45	<b>BREAK / SNACK</b>	<b>Obstacle Course</b>	<b>Maintaining</b>
11			
11:15			

<b>Parent Training +</b>	<b>11:30</b>	<b>Counselors set</b>	<b>Counselors set</b>	<b>Counselors set</b>
	<b>11:45</b>	Drive to Lunch	Drive to Lunch	Drive to Lunch
	<b>12</b>	LUNCH		
	<b>12:15</b>	with parents + counselors	LUNCH	LUNCH
	<b>12:30</b>		with parents + counselors	with parents + counselors
	<b>12:45</b>	<i>(Leo's, Chipotle, HOD)</i>		
	<b>1</b>	<b>Home Depot or Target Scavenger Hunt</b>		
	<b>1:15</b>			
	<b>1:30</b>		<b>Home Depot or Target</b>	<b>Home Depot or Target</b>
	<b>1:45</b>			
	<b>2</b>	Drive back to Camp	Drive back to Camp	Drive back to Camp
	<b>2:15</b>	<b>Circle Time / Closing Assembly</b>	<b>Unexpected</b>	Prize Store
	<b>2:30</b>		Prize Store	<b>Making/Receiving Phone Calls</b>
	<b>2:45</b>	Prize Store	<b>Closing Assembly</b>	<b>Closing Assembly</b>
	<b>3</b>	<i>Counselors recap</i>	<i>Counselors recap</i>	<i>Counselors recap</i>
	<b>3:15</b>	<i>the day + complete session forms!</i>	<i>the day + complete session forms!</i>	<i>the day + complete session forms!</i>
	<b>3:30</b>			
	<b>3:45</b>			
	<b>4</b>			

<b>FRIDAY</b>	<b>YOUNGER</b>	<b>MIDDLE</b>	<b>OLDER</b>
<b>8</b>			
<b>8:15</b>			
<b>8:30</b>	Counselors arrive at 8:30	Counselors arrive at 8:30	
<b>8:45</b>			Counselors arrive
<b>9</b>	Free Play	Free Play (until 9:20)	Free Play (until 9:20)
<b>9:15</b>			
<b>9:30</b>	<b>Circle Time, Jobs, Set + practice</b>	<b>Jobs + Relaxation</b>	<b>Mission Statement, Prayer</b>
<b>9:45</b>		BREAK /	
<b>10</b>	<b>State Trooper Visit</b>	<b>State Trooper Visit</b>	BREAK / SNACK
<b>10:15</b>			

	10:30	(with Middle class)	(with Younger class)	
	10:45	SNACK / PRACTICE	Verbal Board	
	11			
	11:15		Sharing Time	State Trooper Visit
Parent Training +	11:30	Show and Tell	Ceremony Goal Setting/ Practice	Set + Practice Goals for Ceremony
	11:45	<i>Daredevil Duck</i>		
	12			
	12:15	LUNCH / BREAK	LUNCH / BREAK	LUNCH / BREAK
	12:30			
	12:45	Practice Ceremony Goals	Motivational Interviewing	Final Reflections/ Review Lessons
	1			
	1:15	Structured	Prize Store	
	1:30	Verbal Play		Structured Verbal
	1:45	Play Outside	Structured Verbal	Prize Store
	2	Prize Store	<i>Buster the Dog book</i>	Closing Ceremony
	2:15	BREAK	Closing Ceremony with Dr. K	Free Play (inside or outside) and T-Shirt Signing
	2:30	Closing Ceremony with Dr. K	Close with Teacher	
	2:45	Goodbyes! :(	Goodbyes! :(	Goodbyes! :(
	3			
	3:15	<i>Counselors recap the day + complete session forms!</i>		
	3:30		<i>Counselors recap</i>	<i>Counselors recap</i>
	3:45			
	4			



Appendix L

Visual Analyses Guide

RESPONSIVE WORDS SPOKEN	
<b>Preliminary Analysis.</b> Do the data clearly depict problematic behavior (e.g., low frequency of speech)?	<input type="checkbox"/> Yes (Continue to Step 1) <input type="checkbox"/> No (Discontinue analysis)
<b>Step 1: Level (Mean).</b> Is there a noticeable change in the level (mean) between the baseline phase and the treatment phase: Is the treatment level visually <u>higher</u> than the baseline phase?	<input type="checkbox"/> Yes, the level of treatment scores is visually higher than baseline (Continue to Step 2)  <input type="checkbox"/> No (Discontinue analysis, mark “No noticeable treatment effect” at bottom of page)
<b>Step 2: Trend (Slope).</b> Is the trend (slope) distinctly more prominent during the treatment phase compared to the baseline phase? Is it trending in the anticipated direction (i.e., <u>upward trend over time</u> )?	<input type="checkbox"/> Yes, the trend is more prominent in the anticipated direction during treatment (Continue to Step 3)  <input type="checkbox"/> No (Discontinue analysis, mark “No noticeable treatment effect” at bottom of page)
<b>Step 3: Variability.</b> Are data from the treatment phase relatively stable (i.e., with minimal vertical spread and/or change in direction of slope)?	<input type="checkbox"/> Yes, data from the treatment phase are stable (Continue to Step 4)  <input type="checkbox"/> No (Discontinue analysis, mark “No noticeable treatment effect” at bottom of page)
<b>Step 4: Immediacy of Effect.</b> Are these changes noticeable within the first 3-5 data points after the treatment start point (i.e., by first three exposure activities of day)? Did changes begin <i>after</i> the baseline phase (after the intervention began)?	<input type="checkbox"/> Yes, observable changes occurred within 3 data points after treatment onset (Continue to next graph or proceed to Step 5)  <input type="checkbox"/> No (Mark “No noticeable treatment effect” at bottom of page)
<div style="display: flex; justify-content: space-between;"> <span><input type="checkbox"/> Noticeable treatment effect</span> <span><input type="checkbox"/> No noticeable treatment effect</span> </div>	
SPONTANEOUS WORDS SPOKEN	
<b>Preliminary Analysis.</b> Do the data clearly depict problematic behavior (e.g., low frequency of speech)?	<input type="checkbox"/> Yes (Continue to Step 1) <input type="checkbox"/> No (Discontinue analysis)



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