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Adding Function-Based Behavioral Support to First Step to Success: Integrating Individualized and Manualized Practices

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Abstract

This study investigated the effects of adding individualized, function-based support to the well-documented early intervention, First Step to Success. A single-subject multiple-baseline design was applied across three, K-1 students who did not respond to standard First Step to Success procedures. A functional behavioral assessment and individualized function-based support plan was added to the First Step protocol. The multiple baseline analysis documented an effect between adding individualized, function-based supports to the standard First Step program and both (a) a decrease in problem behavior and (b) an increase in academic engagement. Implications of the results are provided for the design of school-based behavior support, implementation of First Step to Success, and applications of manualized interventions.

Educators striving to implement evidence-based practices need: (a) practices defined with sufficient precision to allow implementation and dissemination with fidelity (Reid & Nelson, 2002), and (b) strategies for incorporating the “individualization” of interventions that addresses the range of challenges presented by students in today’s schools (Carr et al., 1999; Sugai et al., 2000). Treatment manuals represent one effective method for describing and disseminating effective practice (Addis, 1997), but the use of standardized interventions will not be effective in all cases and interventions may be enhanced by incorporating adaptations for non-responders (Addis, Wade, & Hatgis, 1999; Wilson, 1998). This study investigates one example of adding individualized, function-based support to a well-documented, manualized intervention, First Step to Success.

First Step to Success

First Step to Success is a standardized, collaborative, home-school secondary intervention designed to target kindergarten to second graders at-risk for developing antisocial behavior patterns (Walker et al., 1997). The program incorporates three interconnected modules: screening, school intervention, and parent training. Screening occurs through use of the Systematic Screening for Behavior Disorders (SSBD, Walker & Severson, 1992), a combined teacher report plus direct observation tool for identifying children with externalizing and internalizing problem behavior. The school intervention module (CLASS) is a consultant-based

intervention focusing on reducing problem behavior and increasing adaptive, pro-social behaviors. The CLASS module requires 30 program days across three phases (consultant, teacher, and maintenance) for successful completion. In the “consultant phase” a trained First Step Coach sits with the focus student and teaches him/her to discriminate appropriate from inappropriate behavior. The consultant “coach” uses a card that is red on one side and green on the other to define a “game” where the student earns points for appropriate behavior (e.g. when coach is displaying the green side of the card), and does not earn points for inappropriate behavior (e.g., when the coach is displaying the red side of the card). As the child progresses in the program, the length of sessions and points needed to earn class rewards are extended. Once the student is demonstrating high levels of appropriate behavior the consultant turns the red/green card over to the teacher, and the teacher gradually fades from tangible and frequent reinforcement to more natural and intermittent consequences (Golly, Stiller, & Walker, 1998; Walker, Kavanagh, et al., 1998; Walker, et al., 1997). The parenting component of First Step to Success is implemented in concert with the CLASS program at school, and involves providing families with training in limit setting, expectation definition, and supporting appropriate behaviors.

Experimental studies of First Step to Success with kindergarten students have shown improvements in students’ academic engagement and aggressive behavior both during and following implementation of the program (Golly, et al., 1998; Walker,

Kavanagh, et al., 1998). An initial evaluation of the program was completed with two cohorts of at-risk kindergarten students, consisting of 24 and 22 students, who were exposed to the program during successive school years. An experimental, randomized, wait-list control-group design was used with follow up data collected after 4 years for the first group and after 3 years for the second group to analyze the intervention effects. Across four teacher ratings and one direct observational measure used to evaluate pre- and post-intervention effects, the average effect size was .86, providing relatively powerful effects (Walker, Kavanagh, et al., 1998). A replication study completed by Golly, Stiller, and Walker (1998) with 20 kindergarten students provided near identical results using the same procedures and measures as used in the initial evaluation.

A single-subject multiple-baseline design study examining effects for three first and second grade students extended findings to slightly older students than those used in earlier kindergarten studies (Lien-Thorne & Kamps, 2005). Direct observation measures showed increases in academic engaged time and decreases in rates of inappropriate behavior. Positive behavior changes also were found in single-case multiple baseline design studies involving two sets of identical twins in kindergarten (Golly, Sprague, Walker, Beard, & Gorham, 2000). Results again indicated increases in academic engaged time and decreases in frequencies of five discrete classroom behaviors.

Social validation of the First Step program that asked participants of a training workshop to rate the importance, effectiveness and acceptability of the intervention found positive results regarding the content and quality of the training as well as the structure of the intervention itself. Training participants who later implemented the First Step program reported that (a) it was effective in teaching appropriate behavior, (b) it had a positive effect on the student's peer relationships, and (c) it was relatively easy to use and manage in conjunction with other teaching duties (Golly et al., 1998). A recent study conducted by Sprague and Perkins (2006), experimentally assessed the collateral effects of the First Step program on both teacher behavior and classroom peer behavior. They found that in addition to improving the social behavior of the target student, the behavior of "problem behavior" peers in the classroom and the level of the teachers' positive interactions with the target student also improved following intervention.

Integrating Individualized and Manualized Interventions

First Step to Success achieves the goal of manualized interventions by providing an overall framework for treatment and defining interventions with sufficient precision that practitioners can implement them with fidelity. Manual-based interventions are often empirically validated and assist in the dissemination and implementation of needed evidence-based practices (Addis, & Cardemil, 2006; Fonagy, 1999; Henggeler, & Schoenwald, 2002; Kendall, Chu, Gifford, Hayes, & Nauta, 1998). Despite their strengths, however, manual-based interventions face criticisms that interventionists will implement them with "thoughtless compliance" (Luborsky, 1993).

Behavioral interventions are used to serve a range of children with differing levels of needs. Even the most effective treatments will fail in a significant number of cases and this may be more common when comprehensive interventions are implemented with strict standardization (Wilson, 1996). It may well be important for manual developers to emphasize the role of the practitioner as one who balances strict adherence to an empirically supported treatment with bringing that treatment to life (Kendall et al., 1998). Manuals could be enhanced by describing common adaptations or strategies for non-responders in addition to specific techniques for standardized implementation (Addis, 1997; Addis et al., 1999; Wilson, 1998). The potential addition of functional behavioral assessment procedures to the standard First Step to Success protocol represents one example of combining common adaptations for individual students with an evidence-based, manualized program.

Research has shown notable results for interventions that are designed based on the hypothesized function of problem behavior (Carr et al., 1999; Didden, Duker, & Korzilius, 1997; Gunter, Hummel, & Conroy, 1998; Horner, 1994). Studies comparing function-based or indicated and nonfunction-based or contra-indicated interventions have found distinct differences in the level of problem behavior between phases with decreases during the function-based or indicated phase for most participants (Ellingson, Miltenberger, Stricker, Galensky, & Garlinghouse, 2000; Ingram, Lewis-Palmer, & Sugai, 2005; Newcomer & Lewis, 2004).

The First Step to Success program, in its standard form, provides access to adult and peer attention for engaging in appropriate behavior and removes access to adult attention for engaging in problem behavior.

These interventions act as function-based supports for students whose behavior is maintained by adult attention and partially for students whose behavior is maintained by peer attention. Carter and Horner (in press) completed a single-case withdrawal design study to examine the effects of adding function-based supports/adaptations to First Step to Success for a kindergarten student whose behavior was maintained by high rates of peer attention and who was not responsive to the standard First Step protocol. Function-based procedures were designed to increase the peer attention the student received for appropriate behavior beyond that which was built in to the standard First Step program and to decrease the peer attention received for engaging in inappropriate behavior. Results documented support for the addition of function-based supports to the standard program to decrease problem behavior and increase academic engagement.

The current research replicated this previous study using a multiple-baseline design across students. The following specific research questions were addressed:

- (a) Is there a differential effect between function-based First Step compared to non function-based First Step in the reduction of problem behavior and increased academic engagement for young children in typical school contexts?
- (b) Are First Step procedures with function-based support socially acceptable to participants' parents and the teachers implementing them?

Method

Participants and Settings

Three 5-7 year old boys in grades K-1 participated in the study based on referrals for behavior support by their teachers due to disruption, noncompliance and off-task behavior in the classroom. None of the participants were receiving special education services or taking any medication during the course of the experiment. Prior to intervention, teachers and parents completed the social skills and problem behavior scales of the Social Skills Rating System (SSRS, Gresham & Elliott, 1990). Teachers also completed the academic competence scale of the SSRS. A functional assessment, including permanent product review, direct observation, and teacher interview was also completed for each participant to confirm problematic behavior.

Permanent product review included a review of each student's academic and behavioral records in order to clearly define any academic deficits. Two interviews were completed with adults who had known the child for at least three months and had seen at least 15 episodes of the behavior using the Functional Assessment Checklist for Teachers and Staff (FACTS, March, et al., 2000). A function-based summary statement was then developed providing an operational definition of the problem behavior, identification of events that reliably predict problem behavior and the response that usually followed behavior as well as identification of the purpose or function of the behavior. Direct observation was then conducted during three 20-minute sessions using the Functional Assessment Observation Form (FAOF, O'Neill, et al., 1997) to confirm the developed summary statement. Since First Step to Success naturally provides function-based supports for students whose behavior is maintained by adult attention, participants were selected whose behavior was maintained by a function other than, or only in part by, adult attention.

All training and data collection was conducted in the classroom during an academic activity identified by the teacher to be associated with the occurrence of problem behavior. The target activity was individually identified for each participant.

Gabriel Gabriel was a six-year old male, Caucasian student in a half-day Kindergarten classroom with 17 students, 1 classroom teacher and 1 classroom aide. On the social skills scale of the SSRS, Gabriel scored in the 'fewer than average' range for cooperation and in the 'average' range on the assertion and self-control subscales on the teacher form. On the parent form, Gabriel scored in the 'average' range for all social skills subscales. On the problem behavior scale, Gabriel scored in the 'more than average' range on the externalizing and hyperactivity subscales and in the 'average' range on the internalizing subscale on the teacher form. On the parent form, Gabriel scored in the 'average' range for all problem behavior subscales. Gabriel scored near the low end of the 'average' range for academic competence.

Completion of the FACTS interview indicated that Gabriel's off task, talk out, out of seat, and noncompliant behaviors were maintained by peer and adult attention and were likely to occur during small group instruction, independent work, or unstructured time. Direct observation with the FAOF documented behavior patterns that were consistent with the FACTS hypothesis that problem behaviors were

likely to occur during instruction, independent work and unstructured time and were likely to be followed by peer and adult attention. Problematic routines included small group reading, independent work, math and transitions. Data collection took place during teacher-led, small group reading instruction.

Jonas Jonas was a seven-year old male, Caucasian student in a first grade classroom with 29 students. There was no classroom aide. On the social skills scale, Jonas scored in the 'fewer than average' range for cooperation and self-control and in the 'average' range for the assertion subscale on both the teacher and parent forms. On the responsibility subscale, Jonas also scored in the 'average' range on the parent form. On the problem behavior scale, Jonas scored in the 'more than average' range on the externalizing and hyperactivity subscales and in the 'average' range on the internalizing subscale on both the teacher and parent forms. Jonas scored in the 'average' range for academic competence. Completion of the FACTS interview indicated that Jonas' off task, talk out, out of seat, and noncompliant behaviors were maintained by peer attention and were likely to occur during whole class instruction or unstructured time. Direct observation with the FAOF documented behavior patterns that were consistent with the FACTS hypothesis that problem behaviors were likely to occur during instruction and unstructured time and were likely to be followed by peer attention. Problematic routines included calendar, spelling, recess and transitions. Data collection took place during teacher-led, whole class spelling instruction.

Patrick Patrick was a five-year old male, Caucasian student in a half-day Kindergarten classroom with 19 students, 1 classroom teacher and 1 classroom aide. On the social skills scale, Patrick scored in the 'fewer than average' range for all teacher-rated sub-scales (cooperation, assertion, self-control) and for the assertion and responsibility subscales on the parent form. Patrick scored in the 'average' range on the cooperation and self-control subscales on the parent form. On the problem behavior scale, Patrick scored in the 'more than average' range on all subscales on the teacher form and in the 'average' range for the same scales on the parent form (externalizing, internalizing, hyperactivity). Patrick scored in the 'below average' range for academic competence.

Completion of the FACTS interview indicated that Patrick's off task, talk out, out of seat, and noncompliant behaviors were maintained by peer and adult attention during transitions or less structured time with peers and were maintained by escape during difficult academic tasks (i.e., writing & math). Direct observation with the

FAOF documented behavior patterns that were consistent with the FACTS hypothesis that problem behaviors were likely to occur during transitions and unstructured time as well as during difficult academic tasks and were likely to be followed by peer and adult attention in the former and by escape from the difficult task in the latter. Problematic routines included writing, math, recess and transitions. Data collection took place during a letter-book activity, which was a writing activity that included whole class teacher-led instruction followed by independent work.

Measurement

Dependent Variable Dependent variables included measures of student social behavior, including problem behavior and academic engagement. Information about student behavior was collected in two formats: standardized assessment and direct observation.

Standardized assessment of student social skills, problem behavior, and academic competence were conducted prior to the standard First Step phase and at the conclusion of the First Step plus function-based supports phase using the Social Skills Rating System with parents and teachers (SSRS; Gresham & Elliott, 1990). The SSRS teacher and parent forms provided standardized, norm-referenced scores on four sub-domains of social skills: cooperation, assertion, responsibility, and self-control, as well as three sub-domains of problem behaviors: externalizing, internalizing, and hyperactivity. The teacher form provided additional scores for academic competence.

Both problem behavior and academic engagement were also measured through direct observation. Problem behavior included talk outs/disruption, out of seat/wandering, noncompliance/defiance, and confrontation/aggression. Talk outs/disruptions were defined as any statement made by a student that interrupts or interferes with instruction, or disrupts other students' attention to task (academic engagement) without being called on or asked a question directly. Interruptions could be directed toward self or others. Out of seat/wandering was defined as the student not being in the expected place or not being in his seat when expected, during an activity. Not being in his seat included when the student loses contact with the seat surface or when all four legs of the chair were not touching the ground. Wandering referred to when a student was off task when out of their seat. Noncompliance/defiance was defined as the student not complying with a teacher or classroom aide's directive for a behavior change (either to start doing something or to stop doing something) within five seconds. Confrontation/

aggression was defined as the student physically placing his body in front of another person in a threatening way, engaging in threatening gestures toward another person, touching/pushing/ hitting another person forcefully, throwing objects at another person or in the classroom in anger, or using language that is negative, and assaults another person. Academic engagement was defined as orienting toward the board/overhead/teacher, engaging physically or verbally with materials/ objects/tasks, contributing to assigned cooperative activities, or engaging in appropriate activities approved by the teacher if independent work was completed early.

The dependent variables were measured through daily 20 min observations by trained observers using a 10 s partial-interval recording system. All observers were graduate students in the social sciences who were trained using classroom-based examples, video, and on-site observations to a minimum level of 90% inter-observer agreement prior to beginning formal data collection. Only one type of problem behavior was marked during an interval using a hierarchical scoring system where only the most 'intense' behavior was documented, using the following order: (a) confrontation/aggression, (b) noncompliance/ defiance, (c) out of seat/inappropriate placement, and (d) talk-out/disruption. For example, if a participant was out of his seat and talking, only out of seat behavior was recorded for that interval. Academic engagement was recorded when participants were engaged for at least eight out of ten seconds in an interval.

Independent Variable The independent variable was implementation of two variations of First Step to Success: (a) standard First Step, and (b) First Step plus function-based support. Fidelity of implementation of each variation of First Step was measured daily through direct observation by the same trained observers who conducted daily problem behavior and academic engagement observations.

Fidelity of implementation of First Step to Success components was the same for each participant and included direct observation of 13 key features of the First Step intervention. Prior to implementation of the red/green card game, the teacher was observed for eliciting a pledge of cooperation from the entire class and announcing the reward the child had chosen as well as the number of points needed to earn that reward. During the red/green card game observers tracked the visibility of the card to the child, the teacher's consistency at turning the card to red when appropriate, and the teacher's use of positive and

corrective feedback. At the conclusion of the game, the fidelity measure documented whether the end of the game was announced, whether a reward was provided for the class, if appropriate, whether peers provided positive feedback to the student, and whether the teacher signed the card and encouraged the student to take it home for his parents to sign. The First Step fidelity checklist generated a percent of items implemented score.

Fidelity of implementation of First Step plus function-based support procedures was assessed with a second checklist that required direct observation of the procedures uniquely defined as appropriate for each participant. The fidelity measure for added function-based supports included 7-8 items and was scored in the same manner as the First Step component fidelity measure. Table 1 documents the major components of the added function-based supports for each participant.

<Table 1 Here>

Interobserver Agreement Interobserver agreement was assessed for each of the dependent variables and independent variables, including each subtype of problem behavior and each variation of First Step. The first author acted as a second observer and independently scored problem behavior, academic engagement, and fidelity of implementation during real-time observations. Inter-observer agreement was calculated for all variables during 36% of observations using total percent agreement. Occurrence only agreement and kappa were also calculated for academic engagement, problem behavior, and each subtype of problem behavior.

Dependent Variable. Average inter-observer agreement across phases for academic engagement was 94% for total agreement, 81% for occurrence only agreement, and 84% for kappa. For problem behavior, average inter-observer agreement across phases was 96% for total agreement, 86% for occurrence only agreement, and 89% for kappa. Percent agreement was calculated by taking the number of intervals in which the two observers agreed and dividing by the total number of intervals. Occurrence only agreement was calculated by taking the number of intervals in which the two observers agreed that problem behavior or academic engagement occurred and dividing by the number of intervals in which either observer recorded the targeted behavior.

Independent Variable. For the fidelity of implementation of the independent variables, total agreement was calculated by taking the number of

items on which the two observers agreed and dividing by the total number of items. Average inter-observer agreement across phases for the fidelity of implementation of First Step components was 95%, and for function-based support components was 97%.

Design and Procedures

This study employed a non-concurrent multiple-baseline design across students to document that an unacceptable level of problem behavior existed, and to assess the effects of a First Step intervention that was “function-based” versus a standard intervention that was “non-function-based”. To maintain experimental control, participants as well as independent and dependent variables were operationally defined, and both independent and dependent variables were observed directly and measured for inter-observer agreement. Further, major threats to internal validity were controlled by making comparisons within and between subjects, by demonstrating control of the independent variable through documentation of fidelity of both First Step and function-based support components, and by showing at least three demonstrations of the effect at three different points in time (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005).

Two phases were conducted in this multiple-baseline design across subjects.

Standard First Step During this phase, the teacher implemented the standard First Step intervention in the classroom. The First Step coaching phase was complete and the coach faded support to the teacher who worked with the student throughout the day to provide intervention that incorporated all the core features of First Step but did not include function-based support features.

First Step Plus Function-Based Supports Implementation of First Step was combined with specific adaptations developed from the functional behavioral assessment. These included the addition of academic supports, changes in the selection of reinforcers, and adaptations in the allocation of attention. Added function-based supports targeted methods for decreasing access to reinforcers for problem behavior, increasing access to reinforcers for appropriate behavior, and minimizing the effects of triggering antecedents. All standard features of First Step continued to be implemented during this phase.

Results

This study provides support for the addition of function-based support procedures to the design of First Step intervention protocols to decrease problem behavior and increase academic engagement.

Problem Behavior

Results for problem behavior as well as fidelity of implementation of First Step and function-based supports are summarized in Figure 1. **<Fig. 1 here>** Data were collected using a non-concurrent multiple baseline design with Gabriel starting baseline in session 32 of the study, Jonas starting baseline in session 22 of the study, and Patrick starting baseline in session 1. The baseline phase allowed for documentation of existing problem behavior during the standard First Step program as well as documentation that standard First Step components were in place but that function-based support components were not. During standard First Step, Gabriel engaged in problem behavior an average of 50% of intervals, with a range from 35% to 68%. Fidelity of implementation of First Step components for Gabriel averaged 83% fidelity while function-based supports averaged 4% fidelity. Jonas engaged in problem behavior an average of 24% of intervals with a range from 6% to 41%. The last eight sessions of the standard First Step phase for Jonas show all data points over 25% with a clear increasing trend across the phase. Throughout this phase, fidelity of implementation of standard First Step averaged 89% while fidelity of function-based supports averaged 3% for Jonas. For Patrick, the standard First Step phase showed problem behavior an average of 37% of intervals with a range from 18% to 76%. Again with Patrick we see an increasing trend in problem behavior across the standard First Step phase. Fidelity of standard First Step averaged 79% during baseline with the last 7 sessions, which documented high and variable rates of problem behavior, averaging 89% fidelity. Fidelity of function-based supports averaged 5% for Patrick during the standard First Step phase.

Implementation of the added function-based supports show a drop in problem behavior for all participants as well as an increase in fidelity of implementation of function-based supports while fidelity of standard First Step components remained consistent. Gabriel’s problem behavior dropped quickly to an average of 24% of intervals with a range for all but one data point from 13% to 19%. There was a spike in Gabriel’s problem behavior on the third day of the intervention to 72% of intervals that corresponded with a decrease in fidelity of

implementation of both First Step and function-based support. Fidelity of implementation of standard First Step components averaged 82% and fidelity of function-based supports averaged 83% across the intervention phase. On the third day of the intervention phase, when problem behavior spiked to 72% of intervals, First Step fidelity dropped to 50% and function-based support fidelity dropped to only 20%. This fluctuation represented a change in implementation. The classroom teacher left the room and a classroom aide, who had not been trained in either First Step or function-based supports, took over implementation during the observation period. Gabriel also had events outside the classroom that may have affected observation data. Two days prior to implementation of function-based supports, Gabriel was removed from his home and placed in foster care. This change is indicated on the graph by a double line.

The addition of function-based supports showed a decrease in average rates of problem behavior for Jonas as well with a reduction to an average of 13% of intervals with a range from 4% to 23%. The function-based support data points show no overlap with the last eight sessions during standard First Step. Fidelity of implementation of First Step components remained fairly consistent at an average of 85% with fidelity of function-based supports increasing to 50%. Fidelity of implementation of function-based supports for Jonas do not document full implementation of the comprehensive intervention developed. Function-based supports developed for Jonas focused on (a) reducing peer attention for problem behavior and (b) increasing peer attention for appropriate behavior. Fidelity of implementation data document implementation of interventions designed to decrease peer attention received for appropriate behavior (100%; rewarding the class for “ignoring distractions”) but do not document consistent implementation of interventions designed to increase peer attention received for appropriate behavior (21%; rewarding the student with a “Hooray” that he could then award to another student). The teacher occasionally rewarded Jonas with a “Hooray” to give out to another student during the academic session (43% fidelity), but never rewarded Jonas with a “Hooray” during transitions or less structured time (0% fidelity).

The addition of function-based supports for Patrick also marked a drop in problem behavior to an average of 16% of intervals with a range from 4% to 50% with all but one data point below 35% of intervals. The one session that documents problem behavior at a rate of 50% of intervals corresponds to a day when

implementation fidelity for both First Step and function-based supports were 0%. On average for the intervention phase, fidelity of implementation of First Step was 82% while fidelity of implementation of function-based supports was 78%. Over the course of the intervention phase, fidelity of function-based supports reflected somewhat variable implementation with various components of the intervention being left out. Often, the teacher and teacher aid did not reward the class with points for “ignoring distractions” in order to decrease peer attention received for problem behavior. Function-based support fidelity also documents occasions where Patrick did not receive modified work or one-on-one instruction for the academic task.

Academic Engagement

Results for academic engagement are provided in Figure 2 and demonstrate a pattern inverse to that observed for problem behavior. **<Fig. 2 here>** During the standard First Step phase, Gabriel was academically engaged for an average of 56% of intervals with a range from 36% to 75%. Data during this phase show some variability with a fairly stable trend line. For Jonas, academic engagement averaged 66% of intervals with a range from 54% to 77%, excluding one day at 40% and one day at 77%. Data for Jonas in the standard First Step phase document a steady decreasing trend for academic engagement prior to implementation of function-based supports. Academic engagement for Patrick also demonstrate a decreasing trend throughout the standard First Step phase with an average academic engagement of 60% of intervals, a range from 22% to 86% and with five of the last seven sessions below 40% of intervals.

Implementation of function-based supports showed an increase in the percent of intervals academically engaged for all participants. For Gabriel, average academic engagement increased to 78% of intervals with a range of 81%-97%, excluding one session at 22% that corresponded to low rates of fidelity of implementation for both standard First Step and function-based supports. For Jonas, academic engagement increased to an average of 74% of intervals with a range of 68% to 85%, placing the lowest data point above the average for the standard First Step phase. For Patrick, academic engagement increased to an average of 75% of intervals with a range of 37% to 94% with all but four data points above 65% of intervals. As with problem behavior, implementation of function-based supports for each participant corresponded with a change in rates of academic engagement for that participant and consistent rates of academic engagement for other participants.

Social Skills Rating System

Table 2 provides pre- and post-assessment standard scores and percentile ranks for social skills, problem behavior, and academic competence for both teacher and parent ratings. <Table 2 here>

Gabriel Prior to intervention, Gabriel ranked in the 18th percentile for social skills on the teacher rating and in the 53rd percentile for social skills on the parent rating. Following intervention, Gabriel ranked in the 12th percentile for social skills on the teacher rating. A post-assessment was not conducted for Gabriel using the parent rating because Gabriel was moved in to foster care during the experiment. For problem behavior, Gabriel ranked in the 98th percentile on the teacher rating and in the 91st percentile on the parent rating. Following intervention, Gabriel ranked in the 94th percentile on the teacher rating. For academic competence, Gabriel ranked in the 18th percentile before intervention and in the 16th percentile after intervention on the teacher rating (academic competence ratings are not completed by parents).

Jonas Prior to intervention, Jonas ranked in the 10th and 18th percentiles respectively for teacher and parent ratings of social skills. Following intervention he ranked in the 18th and 19th respectively. For problem behavior, Jonas ranked in the 94th and >98th percentiles respectively for teacher and parent ratings and following intervention he remained fairly consistent at the 95th and >98th percentiles. Jonas ranked in the 23rd percentile prior to intervention for academic competence and in the 30th percentile following intervention.

Patrick Prior to intervention, Patrick ranked in the 4th and 18th percentiles respectively for teacher and parent ratings of social skills. Following intervention he ranked in the 8th and 23rd percentiles respectively. For problem behavior Patrick ranked in the >98th and 70th percentiles for teacher and parent ratings and following intervention in the 94th and 55th. For academic competence, Patrick ranked in the <2nd percentile prior to and following intervention. At the conclusion of the intervention, Patrick was referred for additional academic support.

Social Validity

At the conclusion of the intervention, both the classroom teachers and the parents were asked to provide feedback on the First Step and function-based support interventions. The teachers were asked to independently rate how acceptable and socially appropriate they found the First Step and function-based

support interventions to be. Parents provided feedback on the same question for the interventions overall and were not asked questions separately about First Step and about function-based support interventions. Using a scale from 1 (low satisfaction) to 3 (high satisfaction), scores averaged between 2 (somewhat) to 3 (very). Table 3 provides more specific data on individual questions. <Table 3 here>

Discussion

This study examined one example of combining a proven, manualized intervention, First Step to Success, with individualized supports utilizing functional behavioral assessment technology. Results extend findings of a previously completed single-case withdrawal design analysis (Carter & Horner, in press), documenting similar results while controlling for the sequencing effect of introducing the function-based elements before assessing standard First Step. This study documents a decrease in problem behavior and an increase in academic engagement with the introduction of function-based supports to the standard First Step program for all three participants. A clear, strong effect is apparent for Gabriel with a mild effect paired with moderate implementation fidelity for Jonas and a definite change in level for Patrick, with some continued variability.

There are several limitations of this study that should be noted. First, the First Step to Success program includes both a classroom component and a home component for intervention. This research focused solely on the classroom component and did not take into account interaction effects that may have been in effect as a result of the multi-component intervention. Initially during the standard First Step phase only the classroom component was being implemented but later in this phase, the home component began. The addition of this home intervention may have had an effect on student behavior that was not independently documented.

Second, data were collected at the end of the school year, which prevented the collection of additional data points in the intervention phase. In the case of Gabriel, the number of data points was further limited because he was removed from his home and placed in foster care during the intervention. This change took place during the standard First Step phase but may have had confounding and residual effects throughout the remainder of the intervention. This change is indicated on the graphs with a double line. As a result, Gabriel's classroom placement was also changed, which limited the number of data points that could be collected during the intervention phase. This

shortened number of total data points prevents us from documenting consistency in Gabriel's behavior during implementation of the intervention for Patrick. With additional data for Gabriel we could document stronger control over the independent variable.

Third, in the case of Jonas, low fidelity of implementation of the independent variable may have limited our ability to interpret results and attribute changes in behavior to changes in the intervention. Jonas' teacher implemented select components of the intervention resulting in an incomplete intervention and possible effects on student outcomes.

Interventions to minimize the reinforcement received for problem behavior (placing the problem behavior on extinction) were implemented while interventions focused on providing access to reinforcement for appropriate behavior were not implemented consistently. This partial implementation may reflect a lack of contextual fit between the interventions developed and the environment within which they were implemented. Future research should examine teachers' views of the acceptability and appropriateness of individual components of the interventions developed.

Fourth, a testing effect may have confounded results of the SSRS assessments as the same test was given to teachers and parents at the beginning and end of the intervention. It is possible that teachers and parents recalled their initial responses on the assessment, affecting their post-assessment ratings. Further, the SSRS is designed as a screening tool and was used throughout this study as a behavior change measure. The tool itself was therefore not sensitive to changes in student behavior over the short duration of the study.

Fifth, a non-concurrent multiple baseline design was used due to the timing and availability of participants. Concurrent multiple baseline designs control for threats to internal validity by documenting similar behaviors in baseline, by giving all participants the same basic intervention, and by documenting change in only one participant while behavior remains constant for other participants. The non-concurrent multiple baseline controls for the length of time spent in baseline but does not control for other threats to internal validity.

Finally, the design for this study does not control for the possibility that function-based interventions alone may have been sufficient to control participants' problem behavior.

This study documents the utility of applying function-based behavior support to a proven

standardized program, First Step to Success. As the field moves toward an understanding of the need for function-based support components in conjunction with standardized or targeted interventions, we also will need to move toward developing a system of support that encourages and aids schools in identifying the function of a student's behavior prior to implementation of these standardized programs. Identifying the function of students' behavior prior to the selection and implementation of targeted or standardized programs for problem behavior allows schools and interventionists to more efficiently select or adapt interventions that align with each student's unique needs, creating better and more efficient support for students. Identifying the function of students' behavior prior to intervention also allows interventionists to make adaptations to intervention programs that will make them more effective.

Implementation of First Step to Success, as well as other manualized interventions, should focus on two goals: (a) implementing core program components with fidelity, and (b) identifying and providing necessary adaptations for potential non-responders. The benefits of manualized interventions and their ability to articulate and disseminate evidence-based practices should be applauded, but practitioners and interventionists should approach these programs as guides that communicate important principles and frameworks that may need to be adapted, rather than step-by-step instructions for implementation.

With any implementation of First Step to Success, it is worth the time and effort involved to complete a functional assessment to identify the events that reliably predict problem behavior and the purpose or function of the problem behavior. Completing this assessment prior to intervention will allow for necessary adaptations that create a match between the program implemented and the function of the student's behavior. We can predict, with reliable certainty, that if First Step is implemented and the teacher phase is not working one of two things may be causing the problem: (a) First Step is not being implemented with fidelity, or (b) there is a mismatch between the function of the student's problem behavior and the standard First Step program. Focus should be placed, in any implementation of First Step, on the fidelity of implementation of the standard program as well as the match of the program with the function of the student's behavior.

With increasing need to provide evidence-based behavior support practices in schools, educators are striving to provide intervention that is efficient, effective, and empirically supported. In order to meet this need,

replication and extension of this study should focus on the integration of individualized, function-based support with other manualized or standardized interventions for behavior support.

Future research should also focus on examining systems to improve the efficiency and effectiveness of combined manualized and function-based interventions. Educators are in need of effective interventions for young children with problem behavior, but unless those interventions are also efficient to implement they are not likely to be adopted or sustained in educational settings.

The combined interventions implemented in this study were comprehensive, multi-component interventions. While these interventions were effective and positive interventions, they may prove time consuming and challenging for some practitioners to implement. For example, the standard First Step program requires an initial one-on-one investment from a First Step coach, teacher training, and daily implementation of the First Step card and group rewards for the entire class. The addition of function-based supports required completion of a functional assessment, additional teacher training, and daily implementation of additional intervention strategies. While all of the strategies implemented were intended to fit within the context of the classroom and require minimal additional effort on the part of the teacher, the cumulative effect of implementing various components may be challenging for some teachers. Future research should examine which components are most meaningful for creating behavior change. A component analysis examining the relative efficacy of individual features of the intervention may provide useful information that could increase the efficiency of these combined interventions.

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Figure Caption

Figure 1. Percent of intervals with problem behavior across sessions.

Figure 2. Percent of intervals academically engaged across sessions.

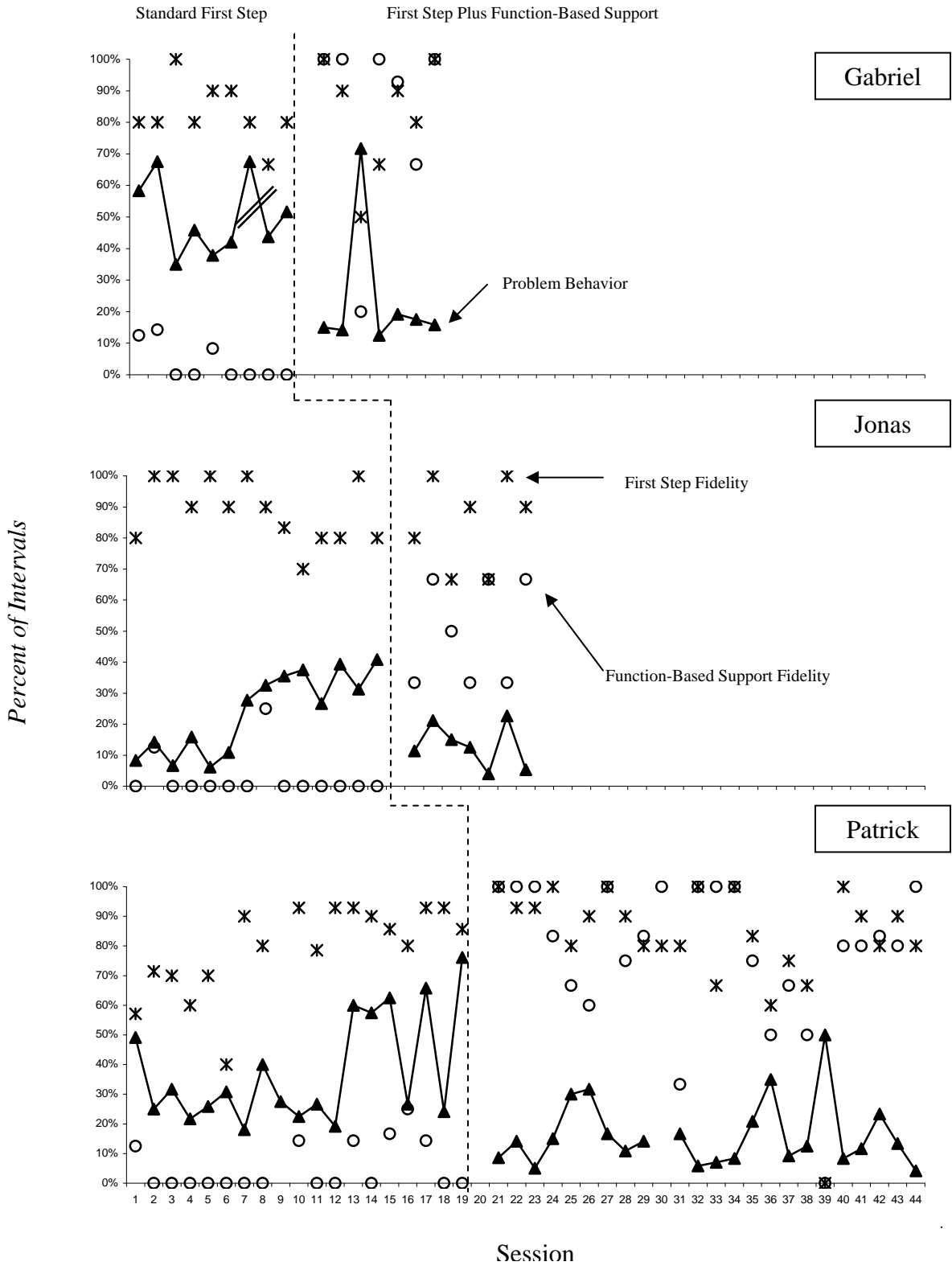


Table 1. Added Function-Based Supports

| <i>Intervention Component</i> | <i>Function</i> |
|--|--|
| Gabriel | |
| Class points for ignoring distractions | Decrease peer attention for problem behavior |
| Positive behavior slip for appropriate behavior that Gabriel could award to another student | Increase adult and peer attention for appropriate behavior |
| Consistent response to noncompliant behavior (warning, calming routine, choice between 2-minute time-out and compliance) | Decrease attention for problem behavior |
| Jonas | |
| Class points for ignoring distractions | Decrease peer attention for problem behavior |
| Positive behavior slip for appropriate behavior that Jonas could award to another student | Increase adult and peer attention for appropriate behavior |
| Consistent response to noncompliant behavior (warning, reminder, time-out) | Decrease attention for problem behavior |
| Patrick | |
| Class points for ignoring distractions | Decrease peer attention for problem behavior |
| Positive behaviors slip for appropriate behavior that Patrick could award to another student | Increase adult and peer attention for appropriate behavior |
| Modified work during difficult academic tasks | Minimize effect of antecedent trigger |
| Preferred activity for completing difficult work tasks with time remaining | Escape task for appropriate behavior |

Table 2. SSRS Data for Pre- and Post-Assessment

| | <i>Pre-Test</i> | | | | <i>Post-Test</i> | | | |
|---------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|
| | <i>Teacher</i> | | <i>Parent</i> | | <i>Teacher</i> | | <i>Parent</i> | |
| | <i>Std. Score</i> | <i>%ile Rank</i> | <i>Std. Score</i> | <i>%ile Rank</i> | <i>Std. Score</i> | <i>%ile Rank</i> | <i>Std. Score</i> | <i>%ile Rank</i> |
| Gabriel | | | | | | | | |
| Social Skills | 86 | 18th | 101 | 53rd | 82 | 12th | N/A | N/A |
| Problem Behavior | 130 | 98th | 120 | 91st | 123 | 94th | N/A | N/A |
| Academic Competence | 86 | 18th | N/A | N/A | 85 | 16th | N/A | N/A |
| Jonas | | | | | | | | |
| Social Skills | 81 | 10th | 86 | 18th | 86 | 18th | 87 | 19th |
| Problem Behavior | 123 | 94th | 135 | >98th | 125 | 95th | 133 | >98th |
| Academic Competence | 89 | 23rd | N/A | N/A | 92 | 30th | N/A | N/A |
| Patrick | | | | | | | | |
| Social Skills | 74 | 4th | 86 | 18th | 79 | 8th | 89 | 23rd |
| Problem Behavior | 137 | >98th | 108 | 70th | 123 | 94th | 102 | 55th |
| Academic Competence | 67 | <2nd | N/A | N/A | 62 | <2nd | N/A | N/A |

Table 3. Average Social Validity Data by Question

| | <i>Teachers</i> (<i>n=3</i>) | <i>Parents</i> (<i>n=2</i>) |
|---|-----------------------------------|----------------------------------|
| How acceptable and socially appropriate were the interventions? | | 2.50 |
| First Step | 2.67 | |
| Function-based Support | 2.67 | |
| How likely are you to continue using the intervention procedures? | | 1.50 |
| First Step | 2.00 | |
| Function-based Support | 3.00 | |
| How satisfied are you with the results? | 2.00 | 2.00 |

Note. The higher the score, the greater the social validity rating. Scores range from 1 to 3.