An Experimental Analysis of the Treatment Validity of the Social Skills Deficit Model for At-Risk Adolescents

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Introduction and Social Significance of Study

Empirical evidence indicates that schools vastly under serve the school-age population with emotional and/or behavioral disorders (EBD) (Walker, Nishioka, Zeller, Severson, & Feil, 2000). Specifically, evidence suggests that over 20% of the school-age population demonstrate deficits that would qualify them for a psychiatric diagnosis; however, only about 1% of this population receives services under the EBD category (Walker, Ramsey, & Gresham, 2004; Hoagwood & Erwin, 1997). For the 1% of students that are identified for additional support based on the two-prong test of eligibility (i.e., disability and need), special education services are often delayed until early adolescence (United States Department of Education, 2001). By this time, the best we can hope for is amelioration of social skill deficits (Kazdin, 1987). In many ways, schools are failing when it comes to supporting the social and emotional welfare of students (Kauffman, Mock, & Simpson, 2007; Walker et al., 2000). As a result, students who exhibit emotional and behavioral difficulties that adversely impact their academic achievement often go unidentified and, consequently, receive no support until it is too late in their academic careers (Walker et al., 1995).

Longitudinal studies have indicated that children with poor social skills are at greater risk for poor school adjustment and adult psychopathology (Moffitt, Caspi, Harrington, & Milne, 2002; Newman et al., 1996; Patterson, Reid, & Dishion, 1992). Specifically, children and adolescents with poor social skills have been shown to be at greater risk for delinquency and antisocial behavior (Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984; Freedman, Rosenthal, Donahue, Schlundt, & McFall, 1978; Patterson et al., 1992); depression or social withdrawal (Christoff et al., 1985); poor academic performance (Hinshaw, 1992), and other serious emotional and behavioral disturbances (Newman et al., 1996) than youth with appropriate social skills. In contrast, successful acquisition of social skills is generally viewed as a developmental asset and is associated with a host of positive outcomes, including better social competence, higher academic achievement, and a greater likelihood of graduating high school (Caprara, Barbranelli, Pastorelli, Bandura, & Zimbardo, 2000; Chandler, Lubeck, & Fowler, 1992; Hinshaw, 1992).

Given the number of students who are at-risk for developing EBD's in adolescence, there is an urgent need for schools to proactively screen and identify those students entering, or currently in, the period of adolescence, who are in need of additional services and supports (Walker & Severson, 1990). Failure to intervene at this critical stage of early adolescence can potentially place students on a course toward detrimental adult outcomes (Moffitt et al., 2002).

The current study will significantly contribute to the extant literature in a number of ways. First, to date, no studies have experimentally manipulated the treatment validity of the skill-deficit model as a means of empirically linking assessment to intervention. Second, this study will focus on urban adolescents at-risk for EBD, which is a vastly under-researched population in the EBD field when it comes to SST research. Third, this research will evaluate the impact of SST when implemented by everyday school personnel. This is noteworthy considering that one of the primary weaknesses of the SST literature is the lack of effectiveness research that has evaluated the effects of SST with minimal participation by researchers. Fourth, no research has examined the use of functional assessment technology to concurrently determine the type of skill deficit a student possesses, and inform the development of SST strategies. Lastly, this investigation will attempt to fill the gap in the SST literature indicating poor generalization and maintenance of positive student outcomes produced by SST programs. It is hypothesized that with the use of the skill-deficit model to guide the development and implementation of SSTs, gains will generalize to novel settings and maintain after the SST program is terminated. Overall, the present study will contribute to the literature by examining a number of limitations that researchers have reported regarding the efficacy and effectiveness of SST for students with or at-risk for EBD.

The primary purpose of the present is study is to evaluate the treatment validity of the social skill-deficit model for the development and implementation of SST for adolescents who are at-risk for developing an EBD. The hypothesis is that the social skill-deficit model will lead to improved social skills and decreases in competing problem behaviors that will be maintained long after the intervention has been terminated. In addition, such findings will further enhance and contribute to the extant literature regarding the most effective methodology to assess and deliver SST.

Research Questions

The purpose of the present study was to evaluate the treatment validity of the social skill-deficit model for the development and implementation of SST for 10 adolescents (see demographics in Table 1) who were identified as at-risk for developing an emotional-behavioral disorder. Specifically, the type of social skill deficit the adolescents demonstrated was identified through teacher rating scales, direct observations, and functional behavioral assessment (FBA). Teachers completed the Social Skills Rating System (SSRS) for each student, and based on their ratings a hypothesis was developed regarding the type of skill deficit the student demonstrated (i.e., performance or acquisition). This hypothesis was further tested and validated through an FBA of the student's target behavioral

deficits (see Table 2). Based on the comprehensive behavioral assessment, participants were matched to a particular SST program based on their respective acquisition or performance deficits. In order to establish the treatment validity of the social skill deficit model, all students were first exposed to a non-skill deficit based SST program that is not based on the type of social skill deficit the students have. The following are the research questions that guided the study:

1. Is a non-skill deficit based social skills training package an effective intervention for adolescent students at-risk for EBD?
2. Is social skills training more effective when matched to the type of social skill deficit (e.g., acquisition versus performance deficit) than a non-skill deficit based social skills training package?
3. Are the hypotheses regarding students' social skills deficits (acquisition and performance), as determined by the Social Skills Rating System (SSRS), confirmed through a functional behavioral assessment?
4. Does social skills training based on the social-skill deficit model lead to generalized and maintained performance for students?

The overall goal of this study was to determine if the use of the Social Skills-Deficit model in the remediation of social skills problems with at-risk adolescents would lead to better intervention outcomes beyond those obtained from a non-deficit based SST program. An additional goal was to determine the implementation utility of the Social Skills-Deficit model by everyday school personnel. To that extent, the uses of visual inspection (see Figures 1 - 3) and effect size estimation, percent change from baseline (PCB; see Table 3) and percentage of nonoverlapping data points (PND; see Table 4), were utilized to evaluate the results. Lastly, the inclusion of simple and effective progress monitoring, treatment integrity checks, and social validation procedures were used in the evaluation of treatment outcomes.

Results

Research Question One

Based on the data gathered in the present study, evidence suggests that the non-deficit based SST produced stronger gains in improving student's positive social interactions than reducing their disruptive behavior for the performance group (see Table 3 and 4). Moreover, visual inspection revealed a relative, not strong, functional relationship for the performance group on improving positive social interactions (see Figure 3) and reducing competing problem behavior. In contrast, visual inspection did not reveal a reliable functional relationship for the

acquisition group on improving positive social interactions and reducing competing problem behavior (see Figure 3). This lack of strong treatment effect for both groups may be attributed to the short duration of the non-skill-deficit based SST for both groups. It may be that six weeks is not enough to see a demonstrative effect on student outcomes.

Research Question Two

Another primary goal of the present study was to compare the effectiveness of SST programs that are deficit-based with those that are non-deficit-based. This comparison focused specifically on the reduction of disruptive behaviors and negative social interactions, while increasing positive social interactions. Prior to implementing the study, it was hypothesized that a moderate to large effect size, above that observed in the non-deficit-based SST program, would show that SST programs matched to a student's specific social skill deficit (acquisition or performance) would enhance gains in social skills, and effectively reduce competing problem behaviors.

Data demonstrated that, for both the acquisition and performance groups, a skill-deficit based SST produced significant gains beyond those obtained from the non-deficit based SST. Specifically, all effect size measures obtained during the deficit-based SST were above and beyond those obtained during the non-deficit-based SST for both groups and all dependent measures. Identical findings were obtained for PND measures. All PND measures obtained during the deficit-based SST were greater than those obtained during the non-deficit-based SST for both groups and all dependent measures.

In the present study, the acquisition group exhibited significantly lower positive social skills and more problem behaviors than the performance group on the SSRS. In addition, the acquisition group exhibited lower positive social interactions and greater total disruptive than the performance group on direct classroom observations. Given that the non-deficit based SST did not address the underlying deficits of the acquisition group, as a result, this group achieved minimal gains. In contrast, the performance group had an advantage entering the study. Specifically, they possessed the ability to interact well with adults and peers, but chose not to behave appropriately. Consequently, the basic strategies in the non-deficit based SST were sufficient to improve the social behavior of the performance group, but not the acquisition group.

Research Question Three

This study is an initial attempt at embedding functional assessment data with social skills training for adolescents at-risk for EBD. Specifically, historically FBA research and technology was developed originally for individuals with developmental disabilities and severe challenging behavior (Fox, Conroy, Heckaman, 1998). Moreover, literature reviews on school-based FBA (Ervin et al., 2001) demonstrate that approximately 71% of FBA's are conducted with students with cognitive impairments, and only 18% with students with EBD. In a recent abstract and keyword literature search on *PsychInfo*, revealed no empirical studies involving social skills training and functional assessment with adolescents at-risk for EBD.

Results of the FBA (see Table 2) showed that the students' social skill deficits, as determined by the SSRS, were confirmed through the FBA for nine of ten students. Data indicates that acquisition-hypothesized students exhibited lower levels of initiating behaviors than performance-hypothesized students. Moreover, the social interactions that were initiated by the acquisition-hypothesized students were typically negative. In addition, acquisition-hypothesized students responded more negatively to peers than the performance-hypothesized students. This is consistent with an acquisition-deficit profile. In contrast, performance-hypothesized students initiated and responded more positively to peers than the acquisition-hypothesized students. However, the performance-hypothesized students frequency of negative initiating and responding behaviors was higher than their positive behaviors. This is consistent with a performance-deficit profile. Overall, results from the FBA confirmed the hypotheses regarding students' social skills deficits (acquisition and performance), as determined by the SSRS.

However, researchers have questioned the internal and external validity of functional assessment technology with students with or at-risk for emotional behavioral disorders (Sasso, Conroy, Stichter, & Fox, 2001). However, recent research by Alter, Conroy, Mancil, and Haydon, (2008) indicates that direct assessment procedures (ABC functional behavioral assessment) agreed with the results of systematic experimental functional analyses. Specifically, their results support the use of FBA process with students at-risk for or with EBD as a time efficient technology to assess the underlying deficits students exhibit. Consequently, this study contributes significantly to the EBD adolescent literature regarding the treatment utility of FBA with social skills training program as a means of improving socially significant outcomes.

Research Question Four

Lastly, this study examined how well gains in positive social skills and reductions in problem behaviors maintain over time. A frequently cited limitation and concern with SST is that students do not maintain gains over time and rarely generalize to novel situations (Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). The SST practices used in this study were carefully designed to promote maintenance and generalization (Elliott & Gresham, 1991).

Ongoing assessment during the intervention process and assessment two months after termination of the SST were conducted to see how successful the SST was for maintenance and generalization of positive social skills. Data from multiple measures showed that students that responded to the intervention maintained their gains across time and generalized their skills at home and other school settings. Specifically, during and after the SST programs students:

- Joined the school choir
- Enrolled in the after-school social club called "The Cougars Den"
- Made the school honor roll
- One students made the Principal's honor roll and began attending church with his mother
- One student joined the school's running club.
- At the conclusion of the SST program a student began to attend group therapy for adolescents with Asperger's Syndrome, a group that he had refused to attend for the past 2 years.

Conclusions

When considering the possible efficacy of a deficit-based model to SST, precise assessment and skill matching should not be the only variables considered when developing SST for at-risk adolescents. Rather, the type of instructional training delivered during SST should match the type of social skill deficit should be considered. Specifically, promoting social skill acquisition requires the systematic use of social modeling, coaching, behavioral rehearsal, and social problem solving (Elliott & Gresham, 1991). In contrast, enhancing social skill performance requires the systematic use of prompting and cuing, peer-initiated and group-oriented strategies, behavioral contracting, and differential reinforcement (Elliott & Gresham, 1991).

The present findings will enhance the literature in that an analysis of the efficacy and effectiveness of a deficit-based SST program for at-risk adolescents has not yet been addressed in the literature (Cook, Gresham, Kern,

Barreras, Thornton, & Crews, 2008; Gresham, 1998). Specifically, the current study significantly contributed to the extant literature in a number of ways. First, to date, no studies have experimentally manipulated the treatment validity of the skill-deficit model as a means of empirically linking assessment to intervention (Barreras, 2008).

Second, this study focused on urban adolescents at-risk for EBD, which is a vastly under-researched population in the EBD field when it comes to SST research. Specifically, as previously discussed, the majority of SST research has been conducted with younger elementary-aged populations at-risk for EBD. In addition, in a recent abstract literature search on *PsychInfo*, no published SST studies were found that targeted urban adolescents at-risk for EBD.

Third, this research evaluated the impact of SST when implemented by everyday school personnel. This is noteworthy considering that one of the primary weaknesses of the SST literature is the lack of effectiveness research that has evaluated the effects of SST with minimal participation by researchers (Gresham, Cook, Crews, & Kern, 2004).

Fourth, no research has examined the use of functional assessment technology to concurrently determine the type of skill deficit a student possesses, and inform the development of SST strategies (Barreras, 2008). Lastly, this investigation attempted to fill the gap in the SST literature indicating poor generalization and maintenance of positive student outcomes produced by SST programs. Results demonstrated that the majority of the students generalized the skills they learned during SST and maintained those gains after the SST program is terminated.

Overall, the present study contributed to the literature by examining a number of limitations that researchers have reported regarding the efficacy and effectiveness of SST for students with or at-risk for EBD (Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; Quinn et al., 1999).

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Table 1

Student Characteristics

Variables	Students									
	Kyle	Oscar	Bryan	Jacob	Joey	Mohamme	Lev	Rigoberto	Julio	Freddy
Group	A	A	A	A	A	P	P	P	P	P
Demographics										
Gender	M	M	M	M	M	M	M	M	M	M
Ethnicity	C	H	C	H	C	A-A	C	H	H	H
Age	13-3	12-9	11-10	12-10	13-2	13-10	13-8	13-4	12-9	12-1
Grade	8	7	7	7	8	8	8	8	8	7
Special Education Eligibility	No	ED	AUT	No	ADH	No	No	No	No	No

Note. Group is defined as follows: (A) Acquisition and (P) Performance. Ethnicity is defined as follows: (C) Caucasian; (H) Hispanic; (A-A) African-American.

Table 2

Functional Behavioral Assessment Results from A-B-C Analysis

Student	Presenting Problem	Antecedent	Behavior	Consequence	Hypothesized Social Skill Deficit	SSRS Hypothesized Skill Deficit
Bryan	Disruptive, Peer Rejection, Poor Peer Relationships	Peers present, Teacher not in proximity, difficult assignment	Talks to peers, out of his, interrupting teacher lesson, teasing peers	Peers yell back, teacher reprimand, peers push student	**Acquisition**: Poor responding and positive social interactions. PIB 5%, PRB 10%, NIB 55%, NRB 30%	**Acquisition**
Freddy	Disruptive, Defiance, Verbal Aggression	Peers present, favorite peers, enjoys classwork	Bullies peers, takes materials away from peers, shares materials talks respectfully	Peers tease back, sent out of class, peers laugh,	**Performance:** Initiates positive peer behavior, chooses when to behave. PIB 20%, PRB 25%, NIB 25%, NRB 30%.	**Performance**
Jacob	Verbal and Physical Aggression, Profanity, Defiance	Peers present, difficult assignment	Bothers and teases peers, gets out of seat, walks around classroom	Redirected by teacher, receives peer and teacher attention	**Acquisition**: Poor responding and positive interactions. PIB 2%, PRB 4%, NIB 28%, NRB 66%.	**Acquisition**
Joey	Disruptive, Poor Peer Relationships	Peers and teacher present, difficult assignment	Interrupts peer and adult conversations, harasses peers, talks back to peers and adults	Peers reject and tease attempts to socialize, teacher reprimands	**Acquisition**: Lacks positive poor social interactions. PIB 4%, PRB 6%, NIB 75%, NRB 15%	**Acquisition**
Julio	Disruptive, Defiance, Poor Peer Relationships	Peers present, favorite peers, enjoys classwork, difficult work	Teases and bullies peers, defiant to teacher directives	Sent out of classroom, peers tease and make fun of him	**Performance:** Initiates positive peer interactions, chooses when to behave. PIB 18%, PRB 22%, NIB 36%, NRB 24%.	**Performance**

Note: Positive initiating behaviors (PIB), positive responding behaviors (PRB), negative initiating behaviors (NIB), and negative responding behaviors (NRB).

Table 2 continued

Student	Presenting Problem	Antecedent	Behavior	Consequence	Hypothesized Social Skill Deficit	SSRS Hypothesized Social Skill Deficit
Kyle	Disruptive Defiance	Peers and teacher present, difficult assignment	Defiant to teacher directives, does not complete any classwork, bothers peers	Sent to another part of the room or out of class, assignment is removed	**Performance:** Completes work, initiates peer interactions. PIB 15%, PRB 12%, NIB 45%, NRB 38%.	**Acquisition**
Levi	Verbal Aggression, Disruptive	Peers present, teacher not present, difficult or easy work	Talks to peers, interrupts teacher lessons, requesting help on work that he can do	Peers talk and laugh with him, teacher reprimands and provides 1:1 help	**Performance:** Chooses when to behave and complete work, initiates peer interactions. PIB 15%, PRB 20%, NIB 35%, NRB 30%.	**Performance**
Mohammed	Disruptive, Teasing/ Bullying Peers	Peers present, favorite peers, enjoys classwork	Talks to peers, interrupts teacher lessons, does not complete assigned work	Sent out of the classroom, assignment is removed, peers laugh	**Performance:** Chooses when to behave and complete work, initiates peer interactions. PIB 22%, PRB 16%, NIB 38%, NRB 24%.	**Performance**
Oscar	Defiance, Lying, Cheating, Verbal Aggression	Peers present, Teacher not in proximity, difficult assignment	Yells and screams at peers and adults, throws materials	Sent out of the classroom, assignment is removed, peers harass and tease	**Acquisition**: Lacks positive social skills; initiates poor social interactions. PIB 3%, PRB 2%, NIB 45%, NRB 50%.	**Acquisition**
Rigoberto	Disruptive, Physical Aggression	Peers present, favorite peers, enjoys classwork	Does not complete assigned work, defiant to teacher, interacts positively with favorite peers	Sent out of class, classwork, detention, peers laugh with him	**Performance:** Chooses when to behave and complete work, initiates peer interactions. PIB 23%, PRB 19%, NIB 34%, NRB 24%.	**Performance**

Note: Positive initiating behaviors (PIB), positive responding behaviors (PRB), negative initiating behaviors (NIB), and negative responding behaviors (NRB).

Table 3

Group Percent Change from Baseline by Phase for TDB, NSI, and PSI

Group		Phase		
	Variable	Non Deficit Based	Deficit Based	Follow-Up
Acquisition				
	TDB	7.69	27.79	30.80
	NSI	-0.33	19.28	21.92
	PSI	-70.47	-229.33	-58.53
Performance				
	TDB	12.00	33.20	1.31
	NSI	11.42	41.36	31.27
	PSI	-39.13	-81.18	-13.26

Table 4

Group Percent Nonoverlapping Data (PND) Points by Phase for TDB, NSI, and PSI

Group		Phase		
	Variable	Non Deficit Based	Deficit Based	Follow-Up
Acquisition				
	TDB	58.33%	93.75%	0%
	NSI	50.0%	68.75%	50.0%
	PSI	83.33%	93.75%	25.0%
Performance				
	TDB	66.67%	81.25%	0%
	NSI	75.0%	100%	0%
	PSI	83.33%	93.75	0%

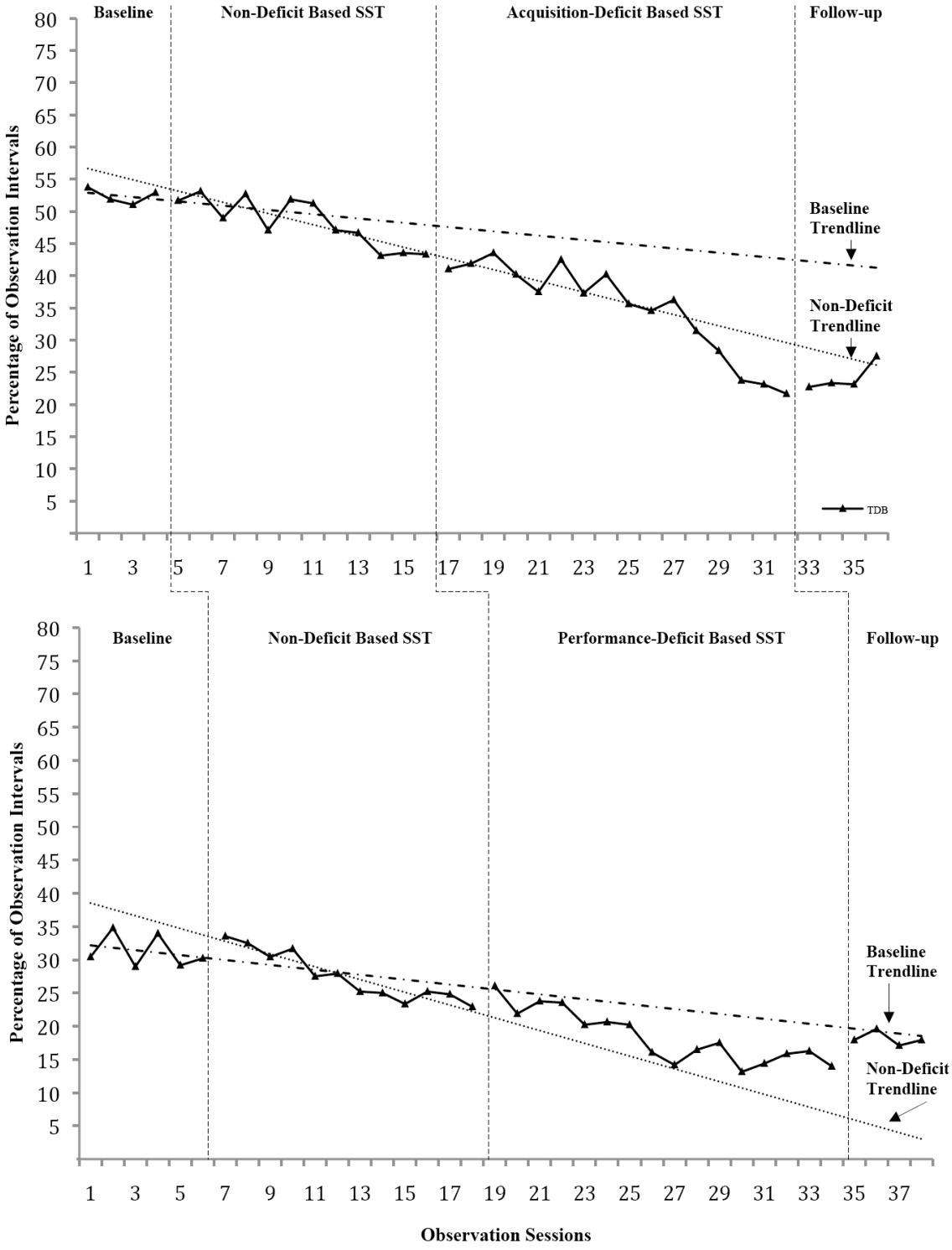

Figure 1. Multiple-baseline with phase change graph for acquisition and performance groups on total disruptive behavior (TDB), and corresponding trendlines for baseline and non-deficit phases.

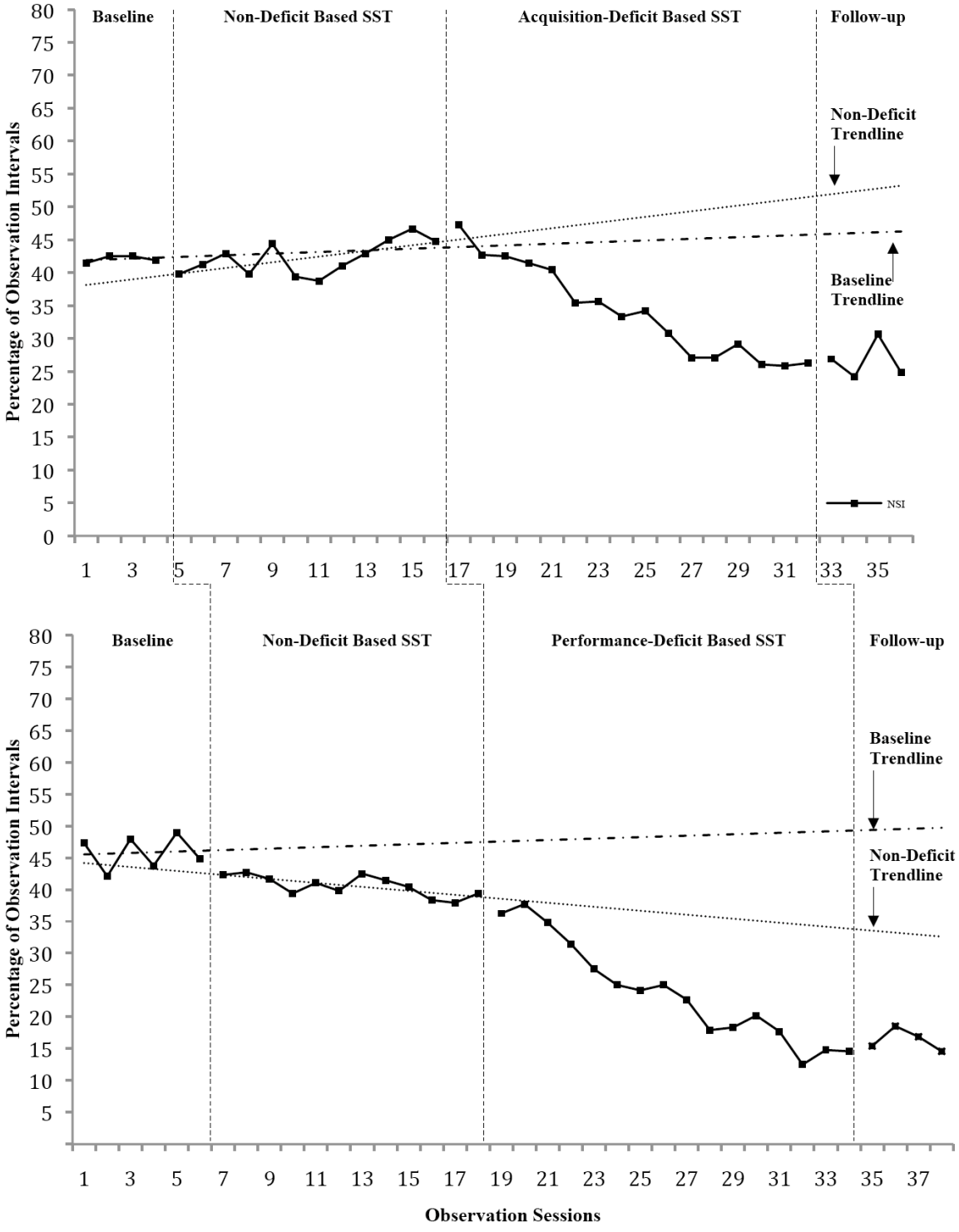

Figure 2. Multiple-baseline with phase change graph for acquisition and performance groups on negative social interactions (NSI), and corresponding trendlines for baseline and non-deficit phases.

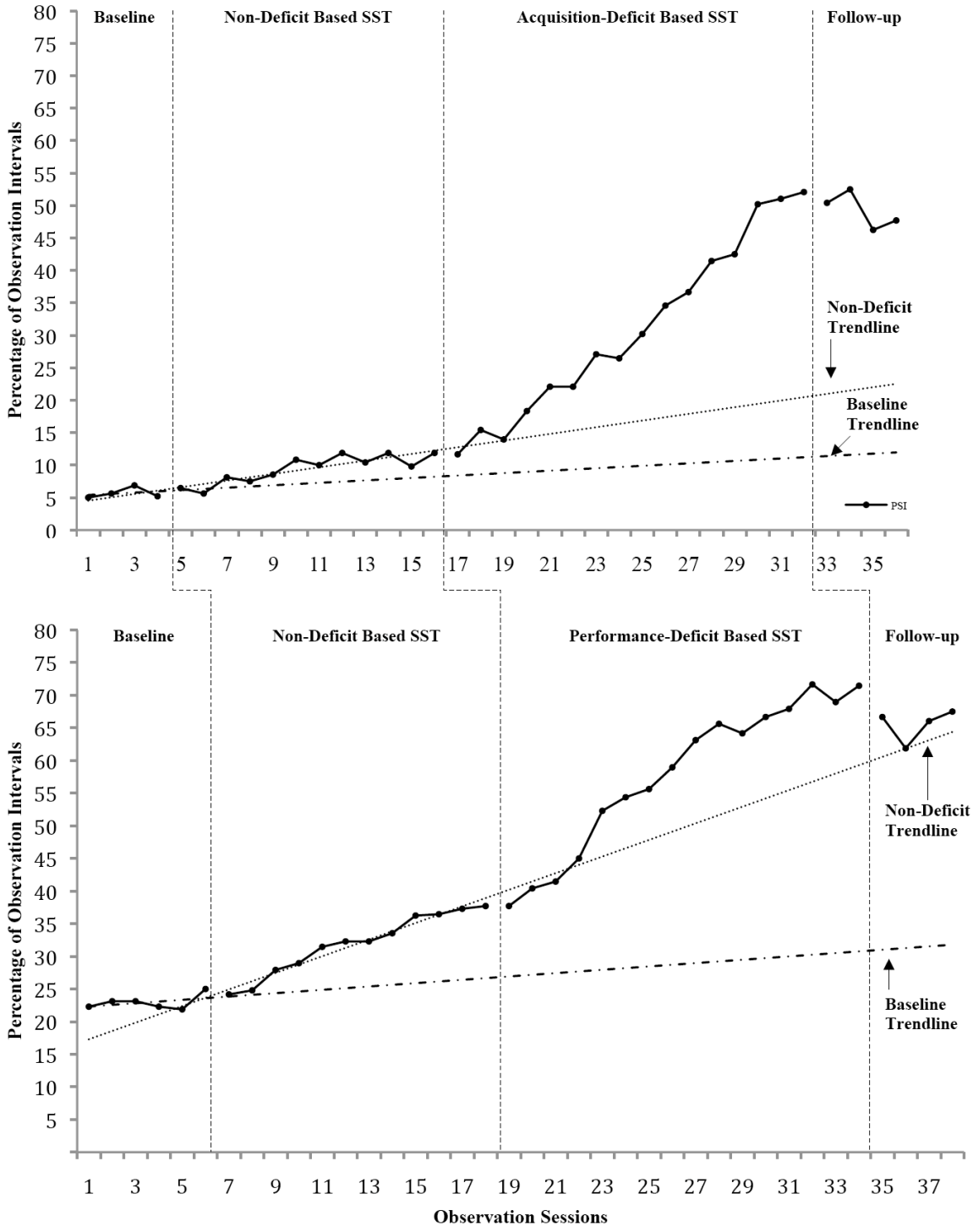

Figure 3. Multiple-baseline with phase change graph for acquisition and performance groups on positive social interactions (PSI) and corresponding trendlines for baseline and non-deficit phases.