

A Randomized Community-Based Trial of Behavior Therapy vs. Usual Care for Adolescent ADHD: Secondary Outcomes and Effects on Comorbidity

Margaret H. Sibley

University of Washington School of Medicine, Seattle Children's Research Institute

Paulo A. Graziano

Stefany J. Coxe

Florida International University

Leonard Bickman

Center for Children & Families, Florida International University

Pablo Martin

Florida International University

Sabrina Flores

Center for Child Health, Behavior, and Development, Seattle Children's Research Institute

Though behavior therapy (BT) for ADHD in adolescence is evidence-based, almost no work examines its implementation and effectiveness in community settings. A recent randomized community-based trial of an evidence-based BT for adolescent ADHD (Supporting Teens' Autonomy Daily; STAND; $N = 278$) reported high clinician, parent, and youth acceptability but variable implementation fidelity. Primary outcome analyses suggested no significant differences between STAND and usual care (UC) unless the clinician delivering STAND was licensed. The present study reports secondary outcomes for this trial on indices of comorbidity (anxiety, depression, oppositional defiant disorder, conduct disorder) and ADHD outcomes not targeted by the active treatment (social skills, sluggish cogni-

tive tempo). We also examine whether therapist licensure moderated treatment effects (as in primary outcome analyses). Using intent-to-treat and per protocol linear mixed models, patients randomized to STAND were compared to those randomized to UC over approximately 10 months of follow-up. Group $\times$ Time effects revealed that, overall, STAND did not outperform usual care when implemented by community clinicians. However, a Group $\times$ Time $\times$ Licensure interaction revealed a significant effect on conduct problems when STAND was delivered by licensed clinicians ($d = .19-.47$). When delivered in community settings, behavior therapy for adolescent ADHD can outperform UC with respect to conduct problems reduction. Community mental health clinics should consider: (1) assigning adolescent ADHD cases to licensed professionals to maximize impact and (2) choosing psychosocial approaches when ADHD presents with comorbid conduct problems. There is also a need to reduce implementation barriers for unlicensed clinicians in community settings.

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Address correspondence to Margaret H. Sibley, Ph.D., Associate Professor of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle Children's Research Institute. e-mail: margaret.sibley@seattlechildrens.org.

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THERE ARE TWO CLASSES of evidence-based treatments for attention-deficit/hyperactivity disorder (ADHD) in adolescence: pharmacological and psychosocial (Chan et al., 2016; Sibley et al., 2014). Pharmacological treatments demonstrate acute efficacy in addressing ADHD symptoms but seem to face patient acceptability issues in adolescence (Bangs et al., 2007; Brinkman et al., 2018; Findling et al., 2011; Klorman et al., 1990; Spencer et al., 2006). Most teenagers desist childhood ADHD medications by high school and report negative beliefs about their utility and side effects (Brinkman et al., 2018; Molina et al., 2009). Psychosocial treatments for ADHD in adolescence emerged in the last decade that include youth-directed organization and time-management skills training to address executive function deficits paired with contingency management to address motivation deficits (Chan et al., 2016; Rios-Davis et al., 2023; Sibley et al., 2014). Multiple randomized controlled trials (RCTs) substantiate the efficacy of these treatment packages on gold-standard measures of ADHD symptoms when compared to untreated control groups (Evans et al., 2016; Langberg et al., 2012; Sibley, Graziano, et al., 2016; Sprich et al., 2016). Although psychosocial treatments for adolescent ADHD appear more palatable to youth, attempts to export them into the community setting have led to poor uptake, potentially due to burdens associated with delivering these models (Evans et al., 2007; Sibley, Olson, et al., 2016).

To carefully study, and eventually improve implementation of, community-delivered, evidence-based psychosocial treatment for adolescent ADHD, we recently conducted a first community-based trial of a psychosocial treatment for this population. Specifically, we conducted a hybrid implementation-effectiveness trial of Supporting Teens' Autonomy Daily (STAND; Sibley, 2016) delivered by practitioners in four community mental health agencies and compared to agency usual care (Sibley, Graziano, Coxe, et al., 2021). STAND primarily targets the impact of ADHD symptoms on school and family impairment (Sibley, Johansson, et al., 2022) by blending behavior therapy approaches with Motivational Interviewing (MI; Miller & Rollnick, 2013) that targets engagement. STAND's implementation features were selected to promote translation into real-world settings: (1) an insurance billing compatible service delivery model, (2) a simple step-by-step manual and family activity workbooks, and (3) content that can be delivered with fidelity by even beginner therapists (Sibley, Graziano,

et al., 2016). STAND is a 10-session modular therapy that honors the heterogeneity of adolescent ADHD by allowing families to self-select into organization, time management, and planning (OTP), communication skills, and behavioral contracting modules that infuse MI strategies such as goal setting and implementation intentions, identifying patient values, reinforcing patient language about change, and mental contrasting (Miller & Rollnick, 2013). Three RCTs in university settings support STAND's acceptability, patient-engagement, and efficacy compared to treatment as usual, as well as standard evidence-based behavior therapy for adolescent ADHD for certain families (Sibley et al., 2013; Sibley, Graziano, et al., 2016; Sibley, Rodriguez, et al., 2020).

In our community-based trial of STAND, there were no differences in the amount of therapy delivered to youth in the STAND vs. usual care groups, but that parents were significantly better engaged in STAND than usual care. Community practitioners found the intervention acceptable to deliver and easier than usual care practices (potentially because the treatment manual provides a step-by-step guide to implementation); however, implementation fidelity was variable and correlated with patient outcomes (Sibley, Graziano, Bickman, et al., 2021). Specifically, content fidelity for STAND was adequate in the treatment's initial engagement and skills training phases but was poor during the intervention's final planning phase. MI strategies were implemented at a significantly higher rate in the STAND vs. usual care group, but the STAND group's MI integrity was notably lower than in STAND's previous efficacy trials (when treatment was delivered by university trainees). Content fidelity, in particular, correlated with impairment outcomes within the STAND group, indicating that those who received treatment delivered with higher fidelity demonstrated better treatment outcomes (Sibley, Bickman, et al., 2021).

Most patients and parents adequately engaged in community-delivered STAND. However, on key patient outcomes (i.e., ADHD symptom severity, impairment indices), STAND only outperformed usual care when clinicians were licensed (this effect was unrelated to length of time practicing). In the U.S., therapists who have not received a license to practice from their state department of health often comprise most of the community mental health workforce (Schoenwald et al., 2008) because they cost less to employ than those who are licensed. We hypothesized that licensed clinicians were more skilled and professionally engaged than their counterparts who had not

chosen to obtain a practitioner's license, leading to higher quality intervention (Daniels, 2002). Unlicensed clinicians, who comprised most of the sample, delivered a version of STAND that was significantly less effective. Based on these results, we concluded that additional efforts were needed to support implementation of psychosocial treatments for adolescent ADHD by the largely unlicensed community mental health workforce (Schoenwald et al., 2008). Following the trial's conclusion, we conducted an Innovation Tournament with community mental health stakeholders to identify barriers to intervention fidelity and strategies to improve implementation quality (Sibley, Ortiz, et al., 2022). Our work to build and test a new implementation model for STAND is ongoing (Sibley, Bickman, et al., in press).

Following publication of the trial's main results, we turned our interest to better understanding usual care, and the extent to which evidence-based versus low-value practices were typically implemented by community clinicians. Sibley, Reyes Francisco, et al. (2022) conducted a detailed content analysis of audio recordings of usual care therapy sessions, finding that most practitioners implemented low-value ADHD practices characterized by high levels of social skills training, youth-directed therapy without parental involvement, and failure to assign therapy homework. Some practitioners implemented evidence-based practices (most commonly time-management skills training), but typically did so with very low thoroughness. Despite the apparent limitations of usual care, one benefit was its flexibility; practitioners were free to address comorbidities and target behaviors outside of the manualized content prescribed by STAND. Therefore, it is possible that usual care could have insufficiently addressed ADHD symptom severity and academic and family functioning (Sibley, Reyes Francisco, et al., 2022), while still successfully treating other outcomes that were not targeted by STAND. For example, despite a research team ADHD diagnosis being a trial inclusion criterion, agencies assigned a primary diagnosis of ADHD to only 53.3% of the youth who were enrolled in the community-based STAND RCT (Sparber et al., 2022). The most common alternative diagnoses were depression disorders (7.2%), anxiety disorders (4.3%), oppositional defiant disorder (ODD; 5.8%), and conduct disorder (4.0%). As a result, usual care agency treatment plans may have targeted comorbidities instead of ADHD when staff deemed these presenting problems to be more urgent. Similarly, usual care may have targeted ADHD-related domains of impairment that are not targeted by

STAND (e.g., social skills deficits, sluggish cognitive tempo; SCT).

It is also possible that community-delivered STAND offered secondary effects on comorbidities and nontargeted ADHD-related outcomes. For example, school-based behavior therapy for ADHD has been shown to positively impact parent ratings of ODD at home (Evans et al., 2011) as well as internalizing problems and child-reported conduct problems (Molina et al., 2008), and SCT (Smith & Langberg, 2020). Previously, a lab-based RCT of STAND also demonstrated impact on parent-reported ODD, despite not directly targeting oppositional behaviors in treatment (Sibley et al., 2013). While comorbid disorders are not explicitly treated in STAND, parent-teen communication skills training may have a secondary impact on youth social skills. Similarly, behavioral contracting may have a secondary impact on ODD or CD-related behaviors if parents request to include these targets in the individualized behavioral contracts. Time management or homework skills training may improve SCT symptoms while reduction of impairment may relieve anxiety and depression that is driven by problems at home or school. Therefore, an analysis of secondary outcomes is necessary to fully understand the impact of evidence-based psychosocial treatment for ADHD delivered in community settings.

The purpose of the present study is to gain broader understanding of the potency of community-based usual care for adolescent ADHD, as well as potential secondary effects of community-delivered STAND, on nontargeted patient outcomes. Herein, we conduct secondary intent to treat (ITT) and per protocol (PP) analyses that compare STAND vs. Usual Care on six secondary patient outcomes: youth-reported depression and anxiety and parent-reported ODD, CD, SCT, and social problems. We also evaluated whether the previously detected Group $\times$ Time $\times$ Licensure effect generalized to secondary outcomes. We hypothesized that usual care would be of higher value to STAND on depression, anxiety, and social skills outcomes because depression and anxiety are more likely to be directly addressed in UC (vs. STAND) and social skills training was the most commonly delivered element of UC (Sibley, Reyes Francisco, et al., 2022). We further hypothesized that when clinicians were licensed, STAND would outperform UC for ODD, CD, and SCT, because behavior therapy for ADHD may target these symptom clusters in an indirect way, and, when implemented with fidelity, similar therapies have demonstrated effects on these indices (Evans

et al., 2011; Molina et al., 2008; Sibley et al., 2013; Smith & Langberg, 2020).

Method

All procedures were approved by the Florida International University Institutional Review Board. Parents, therapists, and adolescents signed consent/assent documents prior to participating.

PARTICIPANTS

Adolescents

Adolescents ($N = 278$; ages 11–17) were incoming patients at four community agencies in a large pan-Latinx and pan-Caribbean U.S. city. They were required to meet full DSM-5 ADHD criteria using a structured diagnostic interview and parent and teacher rating scales. These procedures have been described at length elsewhere (Sibley, Graziano, Coxe, et al., 2021). Autism spectrum disorder and intellectual disability ($IQ < 70$) were exclusionary. Adolescents were randomly assigned to STAND or UC using a stratified randomization procedure within agency. Randomization occurred after agency and study intake and before initiation of treatment at the agency (see Sibley, Graziano, Coxe, et al., 2021). Table 1 presents sample demographic characteristics. There were no significant group differences on any variable.

Therapists

Therapists ($N = 82$) were mental health professionals employed at four agencies. Therapists were recruited on a rolling basis to accommodate the pace of patient enrollment and turnover of previously enrolled therapists. The number of therapists that ultimately enrolled and characteristics of these therapists (i.e., licensure status, therapist language, degree held) were allowed to vary naturalistically. Therapists self-identified as 19.8% non-Hispanic White ($n = 16$), 14.8% Black or African-American ($n = 12$), 64.2% Hispanic ($n = 53$), and 1.2% Other ($n = 1$). They were 86.6% female ($n = 71$), with 61.0% ($n = 50$) offering treatment in both Spanish and English. 86.6% ($n = 71$) held a master's degree [7.3% held a doctorate ($n = 6$) and 6.1% were bachelor's level interns ($n = 5$)]. 22.0% of therapists ($n = 18$) were licensed to practice by the state department of health and 78.0% were not. Unlicensed therapists included bachelor's-level, master's-level, and doctoral-level practitioners. On average, clinicians reported 5.24 years delivering therapy ($SD = 5.00$). STAND ($N = 44$) and UC therapists ($N = 38$) did not differ on any of the background variables noted above.

PROCEDURES

Recruitment and Intake

At agency intake, agency staff provided study information to parents of 6th–12th grade students with attention, organization, motivation, or behavior problems. Parents signed a permission to contact form and study staff administered an eligibility screen by phone that queried ADHD symptoms, impairment, exclusionary criteria, and treatment priority. If the research team deemed that another presenting problem (e.g., anxiety, substance use) took priority over ADHD, the teen was not eligible. Students with at least four inattention (IN) or hyperactivity/impulsivity (H/I) symptoms according to the screen attended a full diagnostic assessment to evaluate inclusion criteria. The study intake included an IQ screener (Wechsler Abbreviated Scale of Intelligence–2nd Edition; WASI-II; Wechsler, 2011) and parent-administered Diagnostic Interview Schedule for Children (DISC; Shaffer et al., 2000).

Therapist Recruitment

Detailed information about therapist recruitment can be found in Sibley, Graziano, Bickman, et al. (2021). All therapists were randomly assigned to STAND or UC at baseline.

Intervention Content

STAND is a manualized engagement-focused psychosocial treatment for adolescent ADHD. STAND consists of 10 weekly 60-minute sessions attended by the adolescent and parent (Sibley, 2016). Skill instruction is blended with MI and guided parent-teen behavioral contracting. Treatment targets family, behavioral, and academic impairment. Treatment is modular to promote flexibility and treatment tailoring. In the engagement phase, MI increases awareness of personal values and goals, identifies strengths, and recognizes ways to achieve personal goals and act consistently with values. The skills phase teaches parent-teen communication, parent behavioral strategies, and organization, time management and planning skills applied to homework, school, and chores. Planning sessions teach families to integrate skills into a daily routine, transfer new habits to school settings, and build a final parent-teen contract. MI in the final session promotes maintenance of change.

Therapist Procedures

Therapy was delivered across 3 years. Duration of treatment varied naturalistically to avoid built-in between-group dose differences. Participating

Table 1
Baseline Characteristics of Adolescent Sample

	STAND (<i>N</i> = 138)	UC (<i>N</i> = 140)
Diagnostic Variables		
WASI estimated Full-Scale IQ <i>M</i> (<i>SD</i>)	94.15(14.07)	96.81(13.20)
ADHD Presentation		
ADHD-Predominantly Inattentive (%)	50.0	54.3
ADHD-Combined (%)	50.0	45.7
ODD	49.3	46.4
CD	7.2	2.9
Elevated Depressive Symptoms	21.0	12.2
Elevated Anxiety Symptoms	21.0	15.8
Current ADHD Medication (%)	31.2	23.6
Demographic Variables		
Age <i>M</i> (<i>SD</i>)	13.97(1.51)	14.08(1.50)
Male Patients (%)	70.3	70.7
Race/Ethnicity (%)		
White Non-Hispanic	5.1	3.6
Black Non-Hispanic	16.7	10.0
Hispanic Any Race	77.5	85.7
Other	0.7	0.7
Single Parent (%)	35.5	36.4
Limited Parent English Proficiency (%)	36.2	46.4
Billing Source (%)		
Medicaid	57.0	55.0
State/County Subsidy	12.2	14.4
Sliding Scale	29.8	28.8
Pro Bono	0.0	1.8
Private Insurance	0.9	0.0
Parent Education Level		
High School Grad or less (%)	23.9	27.3
Part College or Specialized Training (%)	30.4	30.2
College or University Graduate (%)	33.3	33.1
Graduate Professional Training (%)	12.3	9.4

Note. STAND = Supporting Teens Autonomy Daily; UC = Usual Care; WASI = Wechsler Abbreviated Scale of Intelligence; ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; CD = Conduct Disorder *M* = Mean, *SD* = Standard Deviation; Elevated symptoms at baseline *t*-score > 65 on YSR depressed/withdrawn scale and anxiety problems scale.

therapists treated an average of 2.74 study cases (range: 0–14). Study interventions were provided by agency employees using typical billing procedures. Therapists randomized to STAND were offered a 3-day training and 30 minutes of weekly supervision while treating study cases. Every 12 months, a 4-hour booster training was provided. STAND therapists were provided with a treatment manual and a family workbook for each case. Therapists in both groups were instructed to utilize usual-care procedures for termination, allowing STAND therapists to continue treatment after completing STAND manualized content. UC therapists were instructed to treat study cases using usual procedures in the agency and the treatments they believed would be most effective for the youth. They received weekly supervision for study cases from agency supervisors according to typical agency practices. UC therapists were offered STAND training at study conclusion. Fidelity and differentiation data are presented elsewhere

(Sibley, Graziano, Bickman, et al., 2021; Sibley, Graziano, Coxe, et al., 2021).

Data Collection

Participants were permitted to utilize naturalistic stimulant medication during the study; all medications were monitored and controlled for in analyses. Because therapy duration was allowed to vary naturalistically, PT assessments were scheduled for 16 weeks after the participant's first session at the agency, which provided ample time for families to complete the 10-session STAND protocol with assumed cancellations. On average, PT assessments occurred 5.11 months after BL (*SD* = 2.26). FU assessments were attempted at approximately 12 weeks after PT. On average, FU assessments occurred approximately 4.70 months after PT (*SD* = 2.50). Retention was 99.3% (*n* = 276) at PT and 97.5% (*n* = 271) at FU (data provided by at least one informant). Electronic health records were accessed directly. Parent

ratings were available in Spanish or English. Families received \$100 for each assessment.

MEASURES

Outcomes

The Child Behavior Checklist–Ages 6–18 (CBCL; Achenbach, 2009) was used to measure social problems, SCT, oppositional defiant problems (ODD), and conduct problems. The Youth Self Report, Ages 11–18 (YSR; Achenbach & Rescorla, 2001) was used to assess depressive (withdrawn/depressed) and anxiety problems. Both the Youth Self-Report (YSR) Achenbach and CBCL produce T-Scores in eight empirically based syndrome subscales and six DSM-oriented scales. Respondents answer each item on a 0 (*never*) to 2 (*often*) scale. All CBCL and YSR scales have excellent internal consistency, test-retest reliability and validity (Achenbach & Rescorla, 2001). In the current study, alpha for each subscale was as follows: Social Problems (11 items; e.g., not getting along with others, teased, prefers younger children, not well-liked) = .72, SCT (4 items; e.g., daydreams, lacks energy, stares, acts confused) = .67, ODD (5 items; e.g., argues with others, disobeys, stubborn) = .80, Conduct Problems (17 items; e.g., property destruction, breaks rules, lying, stealing, threatening people) = .81, Depression (8 items; e.g., sad, withdrawn, enjoys very little) = .74, Anxiety Problems (9 items; e.g., nervous, fearful, worries) = .78.

Licensure

Therapists self-reported their licensure status at enrollment into the trial. No therapists changed licensure status during the trial. Licensure was coded as 0 = not licensed and 1 = licensed.

ANALYTIC PLAN

Linear mixed models (LMMs) with random intercepts were conducted in SPSS 25. We first conducted intent to treat analyses ($N = 278$). Separate LMMs were conducted for each outcome and dummy codes were specified for group (UC = 0, STAND = 1). We included three dummy codes with agency 1 (largest) serving as the reference group. We tested various time curves and found linear time to possess the best fit. Time was coded as a continuous, subject-specific measure reflecting months since BL (BL time = 0). Data were assumed missing at random (MAR; Schafer & Graham, 2002). A full information robust Maximum Likelihood estimator was employed. For each outcome, the following specifications were

evaluated. The linear effects of time and group $\times$ time were the effects of interest to test aim 1 hypotheses.

$$\text{Level 1: } Y_{ij} = \pi_{0i} + \pi_{1i}(\text{time}) + e_{ij}$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{agency } 2) + \beta_{02}(\text{agency } 3) + \beta_{03}(\text{agency } 4) + \beta_{04}(\text{group}) + r_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{group})$$

$$\text{Combined: } Y_{ij} = \beta_{00} + \beta_{01}(\text{agency } 2) + \beta_{02}(\text{agency } 3) + \beta_{03}(\text{agency } 4) + \beta_{10}(\text{group}) + \beta_{11}(\text{group} \times \text{time}) + r_{0i} + e_{ij}$$

We then conducted per protocol (PP) analyses that included only participants who initiated treatment ($n = 225$). This analysis isolates the upper limit on true effects of STAND in community settings, given that ITT effects may be deflated by randomized participants who never engaged in services. Compared to those who initiated treatment, those who did not ($N = 53$) did not differ on demographic or clinical variables listed in Table 1. All analyses above were repeated and three-way interactions of Licensure $\times$ Group $\times$ Time indicated whether the group's effect on the mechanism over time varied by licensure.

Results

SOCIAL PROBLEMS

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for parent-reported social skills. However, both groups demonstrated significant reductions in social problems over time in both ITT and PP analyses (see Table 2). There was no significant Group $\times$ Time $\times$ Licensure interaction (see Table 3).

SLUGGISH COGNITIVE TEMPO

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for parent-reported SCT. However, both groups demonstrated significant reductions in SCT over time in both ITT and PP analyses (see Table 2). There was no Group $\times$ Time $\times$ Licensure interaction (see Table 3).

OPPOSITIONAL DEFIANT PROBLEMS

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for parent-reported ODD. However, both groups demonstrated significant reductions in ODD over time in both ITT and PP analyses (see Table 2). There was no significant Group $\times$ Time $\times$ Licensure interaction (see Table 3).

Table 2
Intent to Treat (ITT) and Per Protocol (PP) Analyses: Results from Linear Mixed Models

	STAND				UC				Time				Group × Time			
	BL	PT	FU		BL	PT	FU									
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>d</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>d</i>	<i>b (SE)</i>	<i>p</i>	95% CI	<i>b (SE)</i>	<i>p</i>	<i>d^a</i>	95% CI	
ITT (<i>N</i> = 278)																
Social Problems	59.69(8.02)	57.91(7.59)	56.10(7.61)	.45	60.01(8.29)	58.86(7.43)	57.68(8.19)	.28	−.19(.06)	.001	−.31 to −.08	.10(.08)	.208	.15	−.26 to .06	
SCT	60.25(8.70)	58.63(7.87)	56.98(7.91)	.38	59.26(8.02)	57.90(7.45)	56.51(7.96)	.34	−.23(.06)	<.001	−.35 to −.10	−.04(.09)	.622	.06	−.21 to .13	
ODD	59.56(8.42)	57.98(7.85)	56.37(7.63)	.44	58.36(7.65)	57.02(7.61)	55.66(7.05)	.35	−.22(.06)	<.001	−.34 to −.11	−.04(.08)	.620	.06	−.20 to .12	
Conduct Problems	57.37(7.17)	56.69(6.91)	56.01(7.27)	.19	56.78(6.62)	56.11(7.14)	55.42(6.55)	.21	−.11(.05)	.017	−.20 to −.02	.00(.06)	1.00	.00	−.13 to .13	
Depression	57.80(9.55)	57.15(7.71)	56.48(7.78)	.14	56.53(8.28)	55.96(6.85)	55.37(8.73)	.14	−.10(.07)	.147	−.23 to .04	−.01(.09)	.888	.02	−.19 to .17	
Anxiety	56.75(8.11)	55.26(7.08)	53.73(6.57)	.37	56.12(7.06)	55.42(7.04)	54.72(7.40)	.20	−.12(.06)	.057	−.23 to .00	−.13(.08)	.105	.21	−.30 to .03	
PP (<i>N</i> = 225)																
Social Problems	60.19(8.10)	58.46(7.78)	56.70(7.87)	.43	59.39(8.04)	58.20(7.09)	57.00(7.67)	.15	−.20(.07)	.005	−.34 to −.06	−.09(.09)	.337	.14	−.27 to .09	
SCT	60.06(8.57)	58.69(7.78)	57.30(8.01)	.32	59.44(8.02)	57.82(7.64)	56.16(7.71)	.41	−.27(.07)	<.001	−.42 to −.12	.04(.10)	.666	−.06	−.15 to .24	
ODD	59.33(8.30)	57.90(7.58)	56.44(7.13)	.35	58.24(7.61)	56.66(7.21)	55.04(6.63)	.42	−.26(.07)	<.001	−.40 to −.13	.03(.09)	.783	−.04	−.16 to .21	
Conduct Problems	57.14(7.26)	56.65(6.70)	56.15(7.08)	.14	56.29(6.17)	55.43(6.16)	54.56(5.88)	.28	−.14(.05)	.008	−.25 to −.04	.06(.07)	.389	−.11	−.08 to .20	
Depression	58.47(10.07)	57.66(7.90)	56.84(7.98)	.16	56.85(8.55)	56.27(7.00)	55.67(9.24)	.14	−.10(.08)	.218	−.25 to .06	−.04(.11)	.727	.05	−.24 to .17	
Anxiety	56.76(8.34)	55.40(6.85)	54.00(6.81)	.33	56.27(7.14)	55.41(7.19)	54.52(7.28)	.25	−.15(.07)	.040	−.28 to −.01	−.08(.09)	.376	.13	−.27 to .10	

Note. BL = baseline; PT = post-treatment; FU = follow-up; SCT = Sluggish cognitive tempo; ODD = oppositional defiant disorder; Means are marginal estimates controlling for agency. Cohen's *d* within groups is difference between BL and FU divided by baseline pooled standard deviation. Significant *p*-values noted in bold. *alpha* = .05.

^a Difference between group change scores divided by baseline pooled standard deviation.

Table 3
Licensure Moderation Analyses

	Time $\times$ Licensure				Group $\times$ Time $\times$ Licensure			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% <i>CI</i>	<i>b</i>	<i>SE</i>	<i>p</i>	95% <i>CI</i>
Social Problems	−.03	.16	.832	−.35 to .28	−.20	.22	.351	−.63 to .22
SCT	−.14	.17	.406	−.48 to .19	.14	.23	.545	−.31 to .59
ODD	.01	.16	.949	−.30 to .32	−.27	.21	.206	−.68 to .15
Conduct Problems	.11	.12	.380	−.13 to .35	−.37	.16	.026	−.69 to −.05
Depression	.31	.18	.094	−.05 to .66	.06	.24	.814	−.42 to .54
Anxiety	−.09	.16	.579	−.41 to .23	.11	.22	.607	−.32 to .54

Note. SCT = Sluggish cognitive tempo; ODD = oppositional defiant disorder; bold values indicate statistical significance ($p < .05$)

CONDUCT PROBLEMS

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for parent-reported conduct problems (see Table 2). However, both groups demonstrated significant reductions in conduct problems over time in both ITT and PP analyses (see Table 2). In addition, there was a significant Group $\times$ Time $\times$ Licensure interaction (see Table 3 and Figure 1), indicating that the combination of STAND and a licensed therapist led to the greatest reductions in conduct problems over time ($p = .026$). Standardized difference scores for 3-way interactions were $d = .38$ (STAND licensed vs. UC licensed), $d = .19$ (STAND licensed vs. UC unlicensed), and $d = .47$ (STAND licensed vs. STAND unlicensed).

DEPRESSION

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for youth-reported depression. However, both groups demonstrated significant reductions in depression

over time in both ITT and PP analyses (see Table 2). There was no significant Group $\times$ Time $\times$ Licensure interaction (see Table 3).

ANXIETY

For both the ITT and PP analyses there were no significant Group $\times$ Time interactions for youth-reported anxiety. However, both groups demonstrated significant reductions in depression over time in the PP analyses, but not the ITT analyses (see Table 2). There also was no significant Group $\times$ Time $\times$ Licensure interaction (see Table 3).

Discussion

There were several findings of this study. First, despite its flexibility to address a greater range of presenting problems than manualized STAND, community-based UC for adolescent ADHD did not outperform STAND on indices of comorbidity (anxiety, depression, conduct problems, ODD) or

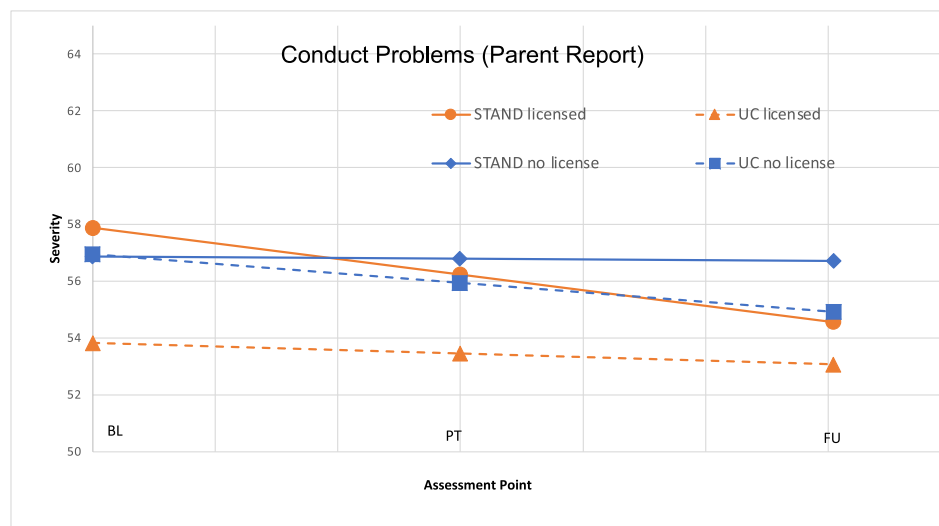


FIGURE 1 Group $\times$ Time $\times$ Licensure Interaction for Conduct Problems Outcome. Note. BL = baseline; PT = post-treatment; FU = follow-up.

ADHD-related targets outside STAND's scope (social problems, SCT). Second, we replicated previous findings on four other outcomes in this trial (ADHD symptoms, organization, time management, and planning skills, parent academic involvement, adolescent motivation; [Graziano et al., 2023](#); [Sibley, Graziano, Coxe, et al., 2021](#)) showing that the most effective condition in this trial was STAND delivered by licensed providers ($d = .19$ to $.47$)—extending the previously detected Group $\times$ Time $\times$ Licensure interactions to conduct problems ([Sibley, Graziano, Coxe, et al., 2021](#)). However, licensed therapists delivering STAND did not demonstrate greater efficacy on other indices of comorbidity or targets outside the scope of STAND. We discuss these findings below.

The results of this study suggest that both STAND and UC improved on all secondary outcomes over time (see [Table 2](#)). Therefore, it is possible that both conditions exerted an equal positive effect on these indices. For example, evidence-based psychosocial treatment targeting adolescent ADHD symptoms may have had indirect impacts on internalizing symptoms or externalizing problems by improving the executive function or motivation deficits that can lead to demoralization, anxiety, interpersonal problems, and choosing deviancy over academic engagement ([Evans et al., 2011](#); [Molina et al., 2008](#); [Sibley et al., 2013](#); [Smith & Langberg, 2020](#)). On the other hand, there is some evidence that clinicians delivering UC directly targeted outcomes such as social skills, SCT (through time management training), as well as anxiety ([Sibley, Reyes Francisco, et al., 2022](#)). Despite these possibilities, we cannot be confident that treatment is the reason for the significant effects of time. Confounding factors are known to produce changes in ADHD-related indices over time in non-inferiority trials (i.e., regression to the mean, maturation, placebo effects, baseline symptom exaggeration by raters who want to ensure acceptance into a study). Though active control groups, such as UC, are encouraged in ADHD RCTs to promote patient blinding ([Sonuga-Barke et al., 2013](#)), noninferiority trials also introduce differentiation issues that can make it challenging to interpret null effects. Thus, future work is needed to compare both UC and community-delivered STAND to nonactive control groups and to identify creative study designs that can elucidate their relative potency while minimizing confounds.

As with the primary outcomes of this trial ([Sibley, Graziano, Coxe, et al., 2021](#)) and its mechanistic effects ([Graziano et al., 2023](#)),

STAND delivered by a licensed therapist was associated with significantly greater reductions in conduct problems compared to UC and unlicensed therapists delivering STAND (see [Figure 1](#)). The average standardized effect size for the three-way interaction was approximately $d = .35$ and demonstrates clinical significance given that the average effect of behavioral treatments for adolescent ADHD on conduct problems is approximately $d = .34$ ([Sibley et al., 2014](#)). Previous attempts to explain this effect found that licensure status was not significantly related to therapist knowledge, competence, participation in training, supervision attendance, content fidelity, MI implementation, or therapeutic alliance ([Sibley, Graziano, Coxe, et al., 2021](#)). We hypothesize that licensed clinicians were more skilled and professionally engaged than their counterparts who had not chosen to obtain a practitioner's license, leading to higher quality care that may be nonspecific to our fidelity indices ([Daniels, 2002](#)). Because the majority of the community mental health workforce is unlicensed, our collaborative work with stakeholders moving forward has been focused on identifying implementation barriers and strategies to support high-quality delivery of care for unlicensed clinicians ([Sibley, Ortiz, et al., 2022](#)).

Overall, our findings suggest that of all the non-targeted indices we tested, conduct problems benefited most from evidence-based ADHD treatment delivered in a community setting. In our sample, factor loadings for the conduct problems dimension were strongest for items such as property destruction, breaks rules, lying, stealing, and threatening people. Molina and colleagues (2008) demonstrated that a school-based intervention for adolescent ADHD reduced conduct problems; however, this is the first RCT to demonstrate that a clinic-based intervention for adolescent ADHD reduces conduct problems. Another clinic-based intervention to use the parent-youth model (parent-child interaction therapy) also demonstrated effects on conduct problems in an RCT with younger children ([Matos et al., 2009](#)). Meta-analysis suggests that comorbid CD predicts poorer response to behavior therapy for ADHD ([Groenman et al., 2022](#)). Thus, it is promising that the parent-teen model may have a secondary effect of simultaneously mitigating conduct problems and ADHD in community settings. This finding fits with the family-based paradigm that is the primary evidence-based modality in the treatment of conduct disorder ([Fairchild et al., 2019](#)).

Perhaps somewhat surprisingly, the Group $\times$ Licensure $\times$ Time effect was not also present for two outcomes that seem to be naturally

targeted by STAND: SCT and ODD. In its initial efficacy RCT, STAND was shown to significantly impact ODD symptoms over time, though with effects smaller than for main outcomes (Sibley et al., 2013). Though SCT has not previously been tested as an outcome for STAND, similar behavior therapies for ADHD that focus on executive functioning and motivation show effects on SCT outcomes (Smith and Langberg, 2020). Overall, the effect sizes for outcomes previously demonstrating the Group $\times$ Time $\times$ Licensure interaction in this trial (ADHD symptoms, organization, time management and planning skills, adolescent motivation to change, parent academic involvement; Graziano et al., 2023; Sibley, Graziano, Coxe, et al., 2021) are the primary targets of the intervention and tended to have the largest effect sizes in our university efficacy trials. Given that all time effects appear to be significantly diminished in the community setting (at least in part due to fidelity problems; Sibley, Bickman, et al., 2021), we hypothesize that smaller effects did not survive this diminishing. Thus, it is hoped that our continued work to improve implementation fidelity in community settings will lead to stronger impacts on secondary variables like ODD and SCT.

As adaptation and iterative implementation of evidence-based treatments for ADHD continues in community settings, the collective results of the STAND community study emphasize that *who* delivers treatment appears to matter. With high turnover, few continuing education resources, and largely unlicensed workforces (Garland et al., 2010; Schoenwald et al., 2008), community mental health settings may need extra supports to launch evidence-based practice initiatives for ADHD. Licensed therapists, who appear best suited for effective delivery of evidence-based care for ADHD (see Table 2), may be underrepresented in community settings (just 22% of therapists in our sample; Sibley, Graziano, Bickman, et al., 2021). Intervention researchers in the field of ADHD, as well as community implementation specialists, are encouraged to identify factors that may improve treatment delivery by unlicensed therapists. Implementation science frameworks may provide useful tools for doing so (e.g., Moullin et al., 2019). For example, after an Innovation Tournament with therapist stakeholders, our team is rebuilding the STAND implementation strategy based on therapist input. As part of this we are investigating the utility of an artificial intelligence application to provide on-demand fidelity feedback to therapists delivering ADHD intervention in community settings (Sibley, Bickman, et al., in press). Though replication of our licen-

sure effect remains critical, in the meantime, community mental health administrators may consider prioritizing ADHD cases for licensed clinicians when doing so is practical. Furthermore, given only limited evidence that stimulant medications for ADHD directly mitigate adolescent conduct problems (Efron et al., 1997; Kaplan et al., 1990; Klein et al., 1997), psychosocial treatment may be an appropriate choice for adolescents with ADHD and comorbid CD who present in community settings.

This study has several important limitations. Therapist participation was voluntary, and we may have oversampled therapists with openness to evidence-based treatments. It was not possible to mask therapists or participants to group, though they were masked to hypotheses. Therapist to client ratio was low in this trial (i.e., 1:2.74) due to high turnover in community contexts and fine-grained patient-therapist matching that required consideration of agency, parent language, therapist catchment area, and insurance type. As a result, we did not cluster within therapist in analyses (though we covaried for agency). Additionally, we did not assess psychological service utilization outside of the agencies. Some comorbid symptom clusters were in the nonclinical range at baseline for the majority of the sample (see Table 1); results might be different in youth purposefully sampled for comorbidities.

This study offers evidence that psychosocial treatment for adolescent ADHD, delivered in community settings, can outperform UC with respect to reducing conduct problems. Despite this promising effect, treatment was only successful when delivered by licensed clinicians, who are often underrepresented in the community mental health workforce (Schoenwald et al., 2008). Community mental health clinics should consider assigning adolescent ADHD cases to advanced clinicians (such as licensed professionals) and should consider treating cases with ADHD and comorbid conduct problems with psychosocial treatment. Researchers developing ADHD treatments for community settings should consider efforts to enhance the deliverability of evidence-based treatments by a primarily unlicensed workforce. This adaptation may require changes to the content, process, structure, and implementation supports of treatment.

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