

# The SAFETY Program: A Treatment-Development Trial of a Cognitive-Behavioral Family Treatment for Adolescent Suicide Attempters

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The purpose of this article is to describe feasibility, safety, and outcome results from a treatment development trial of the SAFETY Program, a brief intervention designed for integration with emergency services for suicide-attempting youths. Suicide-attempting youths, ages 11 to 18, were enrolled in a 12-week trial of the SAFETY Program, a cognitive-behavioral family intervention designed to increase safety and reduce suicide attempt (SA) risk ( $N=35$ ). Rooted in a social-ecological cognitive-behavioral model, treatment sessions included individual youth and parent session-components, with different therapists assigned to youths and parents, and family session-components to practice skills identified as critical in the pathway for preventing repeat SAs in individual youths. Outcomes were evaluated at baseline, 3-month, and 6-month follow-ups. At the 3-month posttreatment assessment, there were statistically significant improvements on measures of suicidal behavior, hopelessness, youth and parent depression, and youth social adjustment. There was one reported SA by 3 months and another by 6 months, yielding cumulative attempt rates of 3% and 6% at 3 and 6 months, respectively. Treatment satisfaction was high. Suicide-attempting youths are at high risk for repeat attempts and continuing mental health problems. Results support the value of a randomized controlled trial to further evaluate the SAFETY intervention. Extension of treatment effects to parent depression and youth social adjustment are consistent with our strong family focus and social-ecological model of behavior change.

Adolescence is a key period for suicide prevention; rates of suicide deaths and suicide attempts (SAs) increase during adolescence, and suicide is a leading cause of death for adolescents (National Action Alliance for Suicide Prevention: Research Prioritization Task Force, 2014). Despite efforts to develop effective treatments and accumulating treatment research, empirically

supported treatments for reducing SA risk in suicidal adolescents remain elusive. Although there is increasing literature on broad suicidality outcomes (for review, see Brent et al., 2013; Corcoran, Dattalo, Crowley, Brown, & Grindle, 2011; Goldston et al., 2010; Ougrin, Tranah, Leigh, Taylor, & Asarnow, 2012), currently there are only four randomized controlled trials (RCTs) with adolescents documenting statistically significant reductions in repeat SAs or self-harm (a broader category including self-harm with and without suicidal intent). Two of these four RCTs included strong emphases on the

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family/social environment: 1) a small trial ( $N=40$ ) demonstrating significant reductions in SAs after integrated cognitive-behavior therapy (CBT) with separate therapists for youths and parents targeting both suicidal behavior and substance use, compared to treatment as usual (TAU; Esposito-Smythers, Spirito, Kahler, Hunt, & Monti, 2011); and 2) an RCT demonstrating that multisystemic therapy (MST) led to reduced rates of SAs by youth (but not parent-report) among youths presenting to the emergency department (ED) and authorized for psychiatric hospitalization, however, intervention effects were nonsignificant within the smaller group of youths with suicidality at baseline (Huey et al., 2005). Third, initial positive results for developmental group therapy, relative to TAU (Wood, Trainor, Rothwell, Moore, & Harrington, 2001), failed to replicate in later trials (Green et al., 2011; Hazell et al., 2009). A fourth trial indicates reduced self-harm (with and without suicidal intent) following mentalization-based therapy versus TAU; however, results for SAs are not reported separately (Rossouw & Fonagy, 2012). As previously noted, there are other trials documenting reductions in broader suicidality and self-harm outcomes, but these trials have not reported statistically significant effects on suicide attempts or the broader self-harm category (for reviews, see Brent et al., 2013; Corcoran et al., 2011; Goldston et al., 2010; Ougrin et al., 2012).

Because of the low rate of SAs, even among high-risk youths with prior SAs, large samples are required for adequate statistical power to evaluate intervention effects on SA outcomes. This underscores the importance of treatment development research to pretest promising treatment strategies before launching the large expensive trials required to adequately power analyses of SA outcomes.

The SAFETY Program is a novel 12-week ecological cognitive-behavioral treatment designed to be integrated within emergency services and grounded in social-ecological theory (Henggeler, Schoenwald, Rowland, & Cunningham, 2002). Consistent with the social-ecological model, the treatment emphasizes enhancing protective supports within social systems (family, peers, community) and includes one therapist for the youth and another focusing on the family/community. Sessions include a first component where youths work with the youth therapist while parents work with the parent therapist, and a second family component where all come together to *practice* skills identified as critical in the pathway for preventing repeat SAs.

The SAFETY model addresses previously identified challenges in novel ways. First, many youths receiving ED treatment for SAs never attend or receive inadequate doses of follow-up mental health treatment (U.S. Department of Health and Human Services,

2012). Research has shown that enhanced ED mental health interventions improve rates of outpatient follow-up treatment, relative to ED TAU, but benefits on clinical outcomes have not emerged (Ougrin et al., 2012), perhaps due to limited effectiveness of community TAU (Asarnow et al., 2011), underscoring the critical need for effective outpatient treatments. Because treatment adherence is improved with in-home treatment (Harrington et al., 1998), in-home treatment is used for the first SAFETY session and as needed. Our family emphasis also aimed to increase parent motivation and decrease family treatment barriers.

Second, to address heterogeneity/complexity among the diverse group of suicide-attempting youths, SAFETY focuses specifically on decreasing suicidal behavior, a key treatment target regardless of diagnostic presentation. To balance the need for adequate specification of the treatment model with the need to address heterogeneity in pathways to SAs, we adopt the MST approach of using core principles to guide treatment and design treatment around a cognitive-behavioral fit analysis (CBFA) that specifies key risk and protective processes hypothesized to impact the likelihood of repeat SAs for *each* youth.

This report describes a Phase 1 treatment development trial of the SAFETY Program, emphasizing feasibility, safety, and outcomes. We hypothesized that the SAFETY Program would be associated with reductions in suicidal behavior (primary outcome). Improvements were also predicted on secondary outcomes: youth and parent depression, hopelessness, and social adjustment.

## METHODS

All youths gave written informed assent (or consent if age 18 or older), and parents gave written informed consent in accordance with local Institutional Review Board regulations. Progress was monitored by the Data and Safety Monitoring Board.

### Participants

Building on our prior case finding system (Asarnow et al., 2011), study staff informed ED/hospital staff about the study, were on-call to one medical ED and available to enroll participants in the ED, hospital, or clinic as soon after the SA as possible. To enhance recruitment, we accepted community referrals. Inclusion criteria were SA within past 3 months (defined as self-injury with some nonzero intent to die), age 11 to 18 years, and stable living situation/no immediate plans for out-of-home placement. Exclusion criteria were no contact information available for follow-up, psychosis,

substance abuse/dependence, or other factors that would impede participation in assessments and/or intervention (not English speaking; no family to participate). Toward the end of the trial, we included two Spanish-speaking families and bilingual therapists.

### SAFETY Program

The SAFETY Program stands for Safe Alternatives for Teens & Youths, with the name intended as a reminder that the program focused on enhancing SAFETY. Treatment was structured using the SAFETY Pyramid (Figure 1), which describes treatment targets and modules addressing each pyramid level for youths and parents. This pyramid emphasized (a) grounding in the principle of SAFE SETTINGS achieved through restricting access to dangerous SA methods and increasing time in safe settings; (b) promoting interactions with SAFE PEOPLE—strengthening listening, validation, and self-care in parents to increase the likelihood that their children would turn to them instead of suicidal behavior, and enhancing SAFE social connections; (c) encouraging SAFE ACTIVITIES AND ACTIONS; (d) SAFE THOUGHT patterns that reversed escalating downward SA-triggering spirals; and (e) SAFE STRESS REACTIONS, strengthening safe emotion regulation and distress tolerance versus suicidal behavior.

Core principles guide the assessment and treatment process; the intervention uses a standard structure with three phases addressing distinct goals (Table 1). Sessions include both required and individually selected components.

*Phase 1: Establishing safety and treatment planning.* Session 1 had a standard structure and was conducted in the home unless families refused. Modeled after our ED crisis-therapy session (Asarnow, Berk, & Baraff, 2009; Rotheram-Borus, Piacentini, Cantwell, Belin, & Song, 2000), this session included (a) psychoeducation emphasizing the importance of restricting access to dangerous SA methods, protective monitoring, and commitment to treatment; (b) working with youths and parents to identify youth and family strengths; (c) an “emotional thermometer” task to develop an hierarchy of potential SA-triggering situations and associated youth emotional, physiological, cognitive, and behavioral reactions; (d) developing and practice using a “safety plan” for reducing “emotional temperature” and SA risk; and (e) generating a “Safety Plan Card,” given to youths. Therapists worked with youths to obtain a commitment to use the SAFETY Plan instead of suicidal behavior.

To reduce access to dangerous SA means, a risk factor for suicide deaths (National Action Alliance for Suicide Prevention: Research Prioritization Task Force, 2014), therapists brought a lock box to the session and supported youths and parents in removing potentially dangerous SA methods (e.g., medications) and looking at youth’s room/living situation (e.g., meeting family pet). Youths were introduced to a mood monitoring form with sections for monitoring suicidal/self-harm thoughts and behavior, to be used in safety checks and assigned as homework (referred to as “practice”). Sessions included a “thanks note” exercise designed to enhance protective family support, in which family members gave each other short notes sharing something

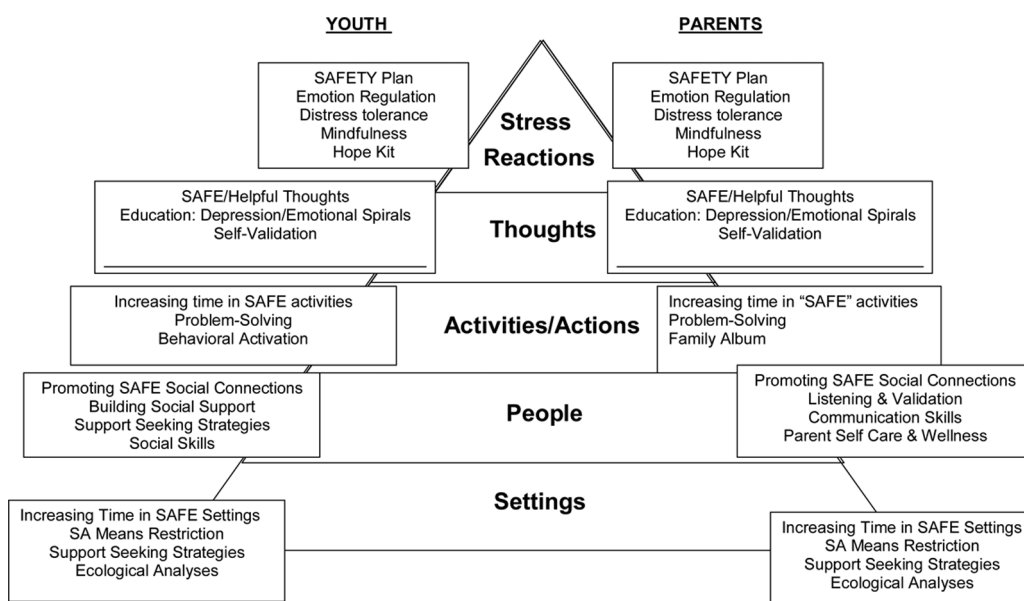


FIGURE 1 SAFETY Pyramid: Conceptual model and youth and parent intervention modules and foci. © Joan R. Asarnow (2014). *The SAFETY Program*. Los Angeles, CA: Layla A & A Press.

TABLE 1  
Overview of SAFETY Program: Principles and Sessions

*A. SAFETY Program Principles<sup>a</sup>*

1. The primary aim of treatment is to enhance SAFETY and reduce suicide attempt risk
2. Interventions are designed to promote SAFE versus UNSAFE: settings/environments, social connections, actions/activities, thoughts, and stress reactions. (See SAFETY Pyramid.)
3. The primary aim of assessment is to understand the “cognitive-behavioral fit” between suicide attempts, their broader environmental context, and cognitive-behavioral processes; assessment aims to identify (a) cognitive-behavioral and social-environmental processes that increase risk for suicide attempts, and (b) protective processes that can reduce risk of repeat SAs for individual youths and families.
4. Assessment is continuous, linked with treatment, and used to refine the cognitive-behavioral fit analysis and treatment plan.
5. Treatment interventions build on strengths in the youth, family, and environment as levers of change.
6. Interventions are patient and family-centered and collaborative.
7. Interventions focus on the present, requiring consistent effort by the youth and parents/caregivers.
8. Generalization and persistence of treatment effects are considered from the start; the role of parents/caregivers in nurturing, protecting, and addressing youths’ needs across multiple social contexts is emphasized.
9. Interventions are developmentally appropriate, culturally sensitive, and fit the developmental needs and cultural context of the youth and family.
10. Outcomes are evaluated continuously from multiple perspectives (e.g., youth, family, clinician) and used to inform treatment; therapists are accountable for overcoming barriers to successful outcomes.

*B. Structure, Objectives, Focus of Treatment Sessions<sup>b</sup>*

<i>Session/Week</i>	<i>Major Objectives and Focus</i>
Phase 1	Establishing safety, development of cognitive-behavioral fit analysis, and treatment plan
Session 1	In home. Initial CBFA of suicidal behavior, build protective support and monitoring in the home, restrict access to potentially lethal methods, develop and practice initial SAFETY plan, gain commitment to treatment.
Session 2	Expand CBFA to explain how suicidal behavior “fits” within multiple systems (families, peers, school, community) through an ecological analysis identifying risk and protective factors to be targeted through treatment plan. Review and update SAFETY plan
Session 3	Collaborate with youth and family to develop the initial treatment plan and targets, considering all levels of the SAFETY Pyramid. The treatment plan specifies treatment targets, which are linked to treatment modules.
Phase 2.	Implement treatment plan
Session 4: Week 9	Implement treatment plan, refine as new information is acquired and the CBFA clarified. Monitor youth and family response and revise treatment plan as appropriate. As in DBT, session priorities based on an hierarchy of treatment targets: safety issues take priority when self-harm behavior or urges reported; followed by issues that threaten treatment adherence; and other CBFA targets.
Phase 3	Consolidate gains, relapse prevention, link to follow-up care, termination
Week 10–12	Consolidate gains, relapse prevention, termination, link to follow-up care as indicated. Final session is standard across participants, emphasizes relapse prevention and linkage to follow-up care and other needed services.

*Note:* SA = suicide attempt; CBFA = cognitive-behavioral fit analysis; DBT = Dialectical Behavior Therapy. © Joan R. Asarnow (2014). *The SAFETY Program*. Los Angeles, CA: Layla A & A Press.

<sup>a</sup>Adapted from Multisystemic Therapy (Henggeler et al., 2002).

<sup>b</sup>Frequency and timing of sessions adjusted to meet youth and family needs.

they appreciated about the other person’s actions (e.g., “thanks for sitting with me”). Thanks notes were assigned as family “practice.”

The next two sessions emphasized development of a CBFA, which identified the chain of triggering events; cognitive-behavioral, emotional, and environmental processes leading to SAs; protective processes that could prevent repeat SAs; and considered youth suicidal behavior within broad social systems (Table 1). The CBFA was developed from the youth and parent perspectives with their therapists during individual sessions. Based on the CBFA and structured using the SAFETY Pyramid (Figure 1), treatment plans provided a working conceptualization and formulation of the youth within his/her social-ecological context and were refined as new information emerged throughout treatment. Before

sessions, therapists met to share information, review clinical dashboards illustrating youth response by treatment modules across sessions (Chorpita, Bernstein, & Daleiden, 2008), and reach consensus on the CBFA and treatment targets.

After Session 1, sessions began with simultaneous individual youth and parent session components. The structure for individual session components included agenda setting; bridging to prior session, review of practices, and safety check; working on session-specific skill or topic; addressing issues identified by youths/parents; updating of SAFETY Plan incorporating session content; and assigning practices. To promote generalization and provide practice using “safe” behaviors in a “family context,” sessions concluded with a family session component, including (a) “thanks notes,” (b) practice

review, (c) capsule summaries in which youths and parents shared what they worked on during individual sessions, (d) work on skill/problem area, and (e) assigning family practice. Practices were standard and included the mood/self-harm monitoring exercise for youths, family “thanks notes,” and optional other practices.

**Phase 2: Skill-building based on CBFA.** Frequently used skills for youths included developing a “Hope Box” with reminders of reasons for living and cues for “safe” coping, behavioral activation, thoughts, problem solving, emotion regulation, distress tolerance, and understanding depression/emotional spirals. For parents, common topics were parent safety plan; active listening and validation; parent self-care/wellness; communication; problem solving; understanding depression/emotional spirals; and creating a family album, which was shared with youths to promote feelings of belonging and healthy connections (Figure 1). The sequencing of skills and topics was determined by the CBFA and a hierarchy of session priorities. Like Dialectical Behavior Therapy (Miller, Rathus, & Linehan, 2007), safety issues took priority if self-harm behavior or urges were present, followed by issues threatening treatment adherence, and other CBFA targets.

**Phase 3: Skill consolidation, relapse prevention, termination.** Phase 3 emphasized identifying skills that were most helpful for promoting safety, development, and guided practice of a relapse-prevention plan, and processing of emotions/reactions to treatment and termination. A care linkage plan connected youths to services if desired and indicated, always including linkage to primary care because of relatively universal access to primary care for children in California.

### Therapist Training and Treatment Adherence

Therapists were trained through manual review, guided practice, with treatment adherence checks and feedback from the principal investigator. Therapists had mental health training with a masters or PhD in psychology or social work. Because this was a treatment development trial rooted in CBT and social-ecological multisystemic theory, we rated a large proportion (65%) of randomly selected sessions for treatment adherence using the Cognitive Therapy Rating Scale, which indicated strong adherence to CBT principles—99% of sessions exceeded the Cognitive Therapy Rating Scale adherence score of 40 (Brent et al., 2009;  $M = 50.83$ ,  $SD = 8.59$ ) and the MST Therapist Adherence Measure–Revised (Henggeler et al., 2002), which indicated strong use of MST principles ( $M = 4.35$ ,  $SD = .28$ , range = 0–5).

### Assessment

Assessments included brief screening assessments (Asarnow et al., 2011), more extensive baseline assessments after ED discharge, 3-month posttreatment assessments, and brief parent phone interviews at 6 months. Assessment staff were blinded to study design and treatment condition.

### Measures: Baseline, 3 Months

Current mood disorders and suicidal behaviors were assessed using the depression module from the Diagnostic Interview Schedule for Children & Adolescents (NIMH DISC IV), a structured computer-assisted diagnostic interview designed for lay-interviewer administration (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). Timing, method, and lethality of suicidal/self-harm behavior was coded using the Columbia Suicide History Form (Brent et al., 2009) adapted to include nonsuicidal self-injury (NSSI) items. Using previously developed quality assurance procedures (Asarnow et al., 2011), 20% of randomly selected interviews were rated for accuracy in presenting questions, probing, and coding. Ratings indicated strong quality ( $M = 1.2$ ,  $SD = 0.54$ ; 3-point scale from 1 [*good*] to 3 [*poor*]). Self-report on the 17-item Harkavy–Asnis Suicide Survey (HASS; Harkavy-Friedman & Asnis, 1989) yielded scales for Active Suicidal Behavior and Ideation (ASBI), Passive Suicidal Ideation (PSI), an SA Behavior subscale (from the ASBI Scale) including two items assessing SA behavior (tried to kill yourself; started to do it, then stopped at the last minute; Asarnow, McArthur, Hughes, Barbery, & Berk, 2012). Youth and parent depressive symptoms were assessed using the Center for Epidemiological Studies–Depression Scale (CES-D; Radloff, 1977). The 20-item Beck Hopelessness Scale assessed hopelessness (Beck, Weissman, Lester, & Trexler, 1974). The Social Adjustment Scale–Self Report for Youth (SAS-SR; Weissman, Orvaschel, & Padian, 1980) assessed four areas/subscales: school adjustment, peer adjustment, family adjustment, spare time. Due to summertime assessments and expected missing data for the school scale, the Total SAS-SR excluded the school subscale. We used a Treatment Satisfaction Scale, sensitive to intervention effects in prior research (Asarnow et al., 2005). The Service Assessment for Children and Adolescents, adapted for the ED-population (Asarnow et al., 2011), assessed service use. Demographic variables (age, gender, race, ethnicity) were assessed by parent and youth report. Youth self-report on the Drug Use Screening Inventory measured substance use/abuse (Kirisici, Mezzich, & Tarter, 1995). Parent report on the Child Behavior Checklist

assessed broader youth externalizing and internalizing symptoms (Achenbach, 1991).

**6-month follow-up.** These parent telephone interviews included the DISC suicidal ideation and attempt items, and Service Assessment for Children and Adolescents questions assessing ER visits, hospitalizations, and residential placements.

**Statistical analysis.** This trial evaluated treatment feasibility, safety, and explored initial treatment effects, recognizing the need for caution in considering effect sizes from small treatment development studies (Kraemer, Mintz, Noda, Tinklenberg, & Yesavage, 2006). We report standard descriptive statistics and estimate intervention parameters (e.g., attrition, effect sizes; Cohen, 1988; Kraemer et al., 2006). Treatment effects are reported based on repeated measures *t* tests. Effect sizes are reported using Cohen's *d*, calculated as the standardized difference of the means at each time point, with standardization based on the pooled estimate of variance; thresholds for small, medium, and large effects are 0.30, 0.50, and 0.80, respectively (Cohen, 1988). Primary analyses reported here use all available information. As a sensitivity analysis, we used last observation carried forward, a conservative approach for intent-to-treat analyses when there are missing follow-up data. These analyses yielded very similar results to the primary analyses, with no substantive change in conclusions; although expected attenuation in effect sizes were observed and noted when interpretation differed from primary analyses. Analyses were conducted using SPSS, version 22.

## RESULTS

Figure 2 presents participant flow for the SAFETY trial. The final sample included 35 youths: 30 from the open trial recruited during 33 months between March 2006 and November 2010, and five drawn from the SAFETY condition of a small Phase 2 pretest of procedures for an RCT, recruited between December 2010 and September 2012. Outcome data were available for 32 (91%) and 31 (89%) youths at 3 and 6 months, respectively. Baseline assessments occurred at a mean of 6.86 days ( $SD = 9.59$  days) postemergency treatment; 3- and 6-month assessments occurred at a mean of 108.66 days/3.6 months ( $SD = 18.75$  days) and 208.59 days/6.9 months ( $SD = 28.43$  days) from baseline, respectively.

The sample was predominantly female, had a mean age of 14.89 years ( $SD = 1.60$ ), was about 60% minority, 97% received ED treatment (the other received treatment in a non-ED setting), and 86% were hospitalized

(Table 2). At baseline, 46% of youths reported multiple lifetime suicide attempts, 57% reported NSSI, 40% had past-year major depressive disorder (MDD), 62.5% met DISC criteria for either MDD or intermediate MDD (subsyndromal but significant symptoms); 50% reported current severe depressive symptoms ( $CES-D \geq 24$ ); and substance misuse, externalizing, and internalizing symptoms were common.

### Treatment Received

Youths received a mean of 10.14 sessions ( $SD = 4.63$ ,  $Mdn = 11$ , range = 1–20). Most youths (57%) received nine to 13 sessions, rates for youth, parent, and family session components were similar (Table 3).

### SA/Self-Harm Outcomes

Based on youth report, there was one SA at the 3-month follow-up point (3.1% of sample), confirmed by parent report. This attempt occurred at Week 14 from hospital discharge by asphyxiation. There was no injury/lethality. After a 4-day hospitalization, the youth continued in the trial with no additional SAs. An interrupted attempt occurred in another youth at Week 15, where the youth grabbed a knife in front of her parents, stating that she wanted to kill herself; her parents took the knife, preventing any self-harm. This family had discontinued treatment at Week 11, after only seven sessions. By 6 months, another youth made an SA by overdose. This occurred during Week 20 of the trial and resulted in an ED visit, psychiatric hospitalization, and placement in residential treatment.

Parents described SAs in two other youths; these youths described the same events as NSSI (cutting) with the intention of relieving distress and no intent to die.

At 3-month follow-up, statistically significant declines were seen on all of the HASS suicidality indicators: SA Scale, SA item, ASBI Scale, PSI Scale, and Total HASS Scale (Table 4). Effect sizes for the SA and ASBI scales were medium, and smaller for scales with more passive suicidal ideation items (PSI and Total scales).

### Other Outcomes

Statistically significant improvements were observed on youth hopelessness, youth and parent depressive symptoms ( $CES-D$ ), and all of the SAS scales (Table 4). Effect sizes were large for depression, hopelessness, and SAS scales, with the exception of medium effect sizes for parent depression, family adjustment, and spare-time scales. In sensitivity analyses using last observation carried forward, the effect size shifted from large

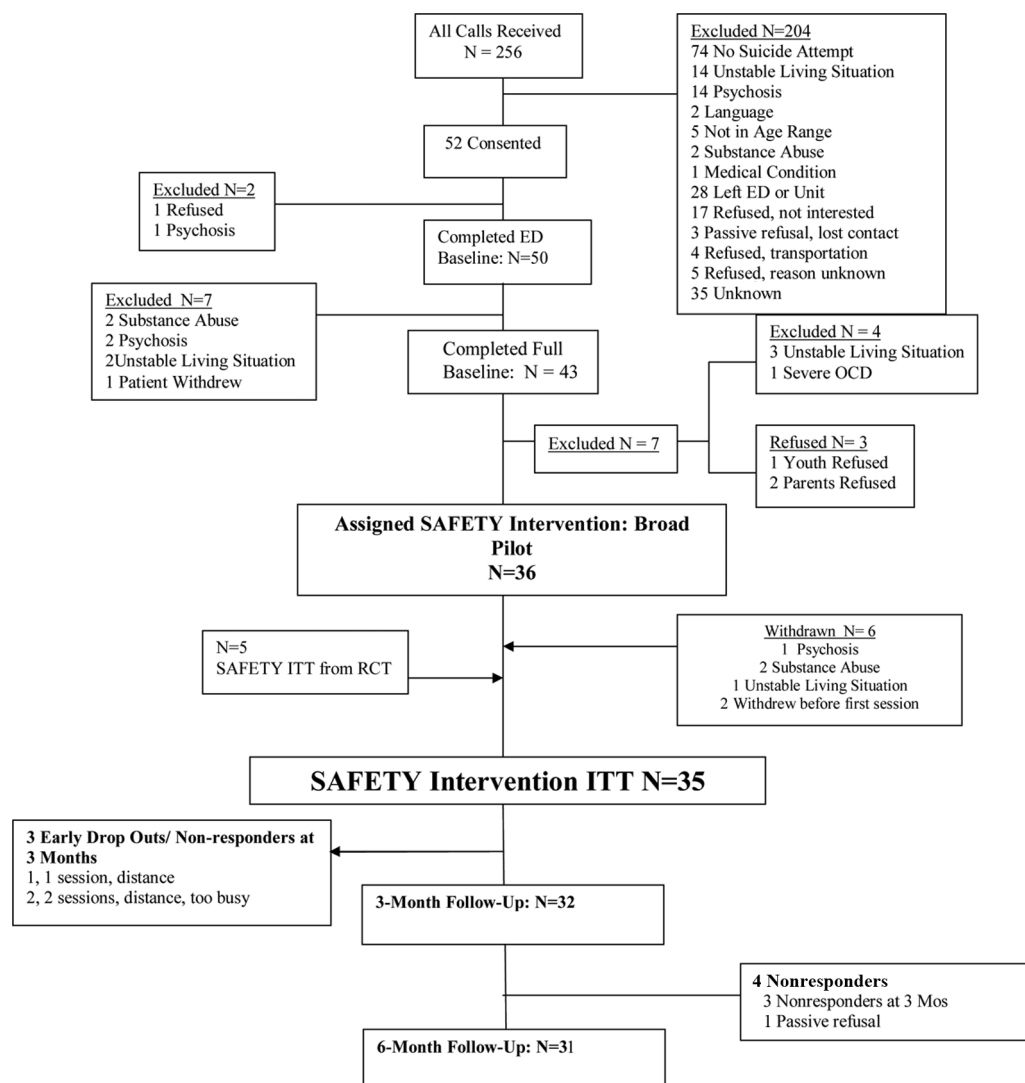


FIGURE 2 Participant flow through the SAFETY Trial.

to small for two variables—youth CES-D and School Adjustment—and from medium to small for Spare-time.

NSSI outcomes were explored using youth self-report (substituting parent-report for one nonparticipating youth). At follow-up, NSSI was reported for 10/32 youths (31.3% of sample) versus 20/35 youths at baseline (57.1% of sample). Effect size for this dichotomous variable was estimated using Cohen's  $w$  (Cohen, 1988; Cohen's  $w = .38$ ) and is considered a medium effect size using the standard interpretations (Cohen, 1988).

### Services Use and Patient Satisfaction

Four youths (12.5% of the sample) were seen in the ED and/or hospitalized during the 3-month follow-up period due to suicidality/self-harm: the youth reporting an SA was seen in the ED and hospitalized; two youths

were seen in the ED for suicidal ideation and hospitalized; another youth was hospitalized for suicidal ideation. Satisfaction with the SAFETY intervention was high. Mean satisfaction ratings were 4.07 ( $SD = 1.11$ ) and 4.1 ( $SD = 0.79$ ) for parents and youths, respectively, on a scale of 1 to 5 (5 = *very satisfied*).

### DISCUSSION

Results from this Phase 1 trial support feasibility, safety, and suggest treatment benefits. Youths receiving the SAFETY treatment showed statistically significant improvements in SA behavior, depression, hopelessness, suicidal ideation, and social adjustment. Their parents showed statistically significant declines in depressive symptoms. Treatment satisfaction was high in youths

TABLE 2  
Description of Sample Enrolled in SAFETY Treatment  
Development Trial

	<i>M or Frequency</i>	<i>SD or %</i>
Age, in Years	14.89	1.60
Gender		
Male	5	14%
Female	30	86%
Race, % ( <i>N</i> ) <sup>a</sup>		
White	14	40%
Hispanic	12	34%
African American	4	11%
Asian-Other	5	14%
Emergency Department Visit for Suicidal Behavior	34	97%
Inpatient Hospitalization	30	86%
No. of Lifetime Suicide Attempts		
1	19	54%
2	6	17%
3	6	17%
4	1	3%
5	3	9%
NSSI	20	57%
Youth, MDD (DISC)	16	40%
Total MDD + Intermediate MDD	25	63%
Severe Depressive Symptoms, CES-D $\geq$ 24	20	50%
DUSI, Problematic Substance Use	20	57%
CBCL Externalizing, Clinical Range	12	34%
CBCL Internalizing, Clinical Range	16	46%
CBCL Total Problem Behavior, Clinical Range	18	51%

Note: *N* = 35. NSSI = Nonsuicidal Self-Injury; MDD = Major Depressive Disorder; DISC = Diagnostic Interview Schedule for Children; CES-D = Center for Epidemiological Studies–Depression Scale; DUSI = Drug Use Screening Inventory, problematic use defined as endorsed some substance use related impairment; CBCL = Child Behavior Checklist.

<sup>a</sup>Some youth endorsed multiple categories, an hierarchical approach was used to categorize these youths with the following rank ordering applied: 1) Hispanic, 2) African-American, 3) Asian-other, 4) White.

and parents. The observed SA rate (3% at 3 months, increasing to 6% by 6 months) is somewhat lower than those in the literature, ranging from 10% to 43% over 6 months (Ougrin et al., 2012). Collectively, these data

support the value of an RCT to further evaluate efficacy and effectiveness.

The SAFETY intervention emphasizes safety planning, restricting access to dangerous SA methods, and allows for matching treatment dose to individual needs. In contrast to the TASA study, where 40% of suicidal events occurred within 4 weeks of intake (Brent et al., 2009), the SA occurring during the SAFETY treatment occurred toward the end of treatment. This pattern is consistent with the suggestion that an emphasis on safety and increased therapeutic contact early in treatment may prevent early repeat SAs (Brent et al., 2009).

Consistent with our social-ecological model and family emphasis, results indicating statistically significant improvements in parent depression and youth social adjustment after SAFETY treatment, indicate extension of treatment effects into youths' social environments. The SAFETY treatment provided parents with their own therapists to address their individual needs and included family session components to practice "safe coping/support." This may have increased parents' feelings of validation and enhanced their skills for coping with stress in themselves and their children, which in turn may have affected parent depression levels. Our results in conjunction with findings from RCTs indicating that interventions including family components (I-CBT, MST) had the strongest effects on SA outcomes, results from other trials testing family-focused interventions on suicidality and self-harm outcomes (Brent et al., 2013), and data pointing to improvements in family functioning as a mediator of decreasing adolescent suicidality (Pineda & Dadds, 2013) suggest that family and environmental intervention may be particularly critical for preventing SAs in youths.

This treatment development trial offered many lessons. First, expanding the target population to a broader population will be important for more feasible service-delivery programs. In this Phase 1 trial, we restricted sample heterogeneity and targeted youths with SAs, yet many youths seen in EDs present with severe suicidal ideation and/or NSSI, both of which predict

TABLE 3  
Distribution of Total Number of Sessions and Youth, Parent, and Family Session Components

	<i>Total Sessions</i>	<i>Youth</i>	<i>Parent</i>	<i>Family</i>
No. of Sessions, <i>M</i> ( <i>SD</i> )	10.14 (4.63)	9.46 (4.57)	8.74 (4.34)	9.23 (4.21)
Range	1–20	0–16	0–15	1–16
0–5 Sessions, <i>f</i> (%)	6 (17%)	7 (20%)	8 (23%)	6 (17%)
6–8 Sessions, <i>f</i> (%)	2 (6%)	2 (6%)	5 (14%)	5 (14%)
9–11 Sessions, <i>f</i> (%)	11 (31%)	11 (31%)	12 (34%)	12 (34%)
12–14 Sessions, <i>f</i> (%)	12 (35%)	12 (34%)	8 (23%)	10 (29%)
15–20 Sessions, <i>f</i> (%)	45 (12%)	3 (9%)	2 (6%)	2 (6%)

Note: *f* = frequency.



TABLE 4  
Outcome Results for the SAFETY Treatment Development Trial

	Baseline <i>M</i> ( <i>SD</i> )	Follow-Up <i>M</i> ( <i>SD</i> )	Paired Difference <i>M</i> ( <i>SD</i> )	95% Confidence Interval		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
				Lower	Upper			
HASS –SA Scale	0.89 (1.86)	0.13 (0.34)	.87 (1.96)	.15	1.59	2.42	.019	.64
HASS-ASBI	3.71 (4.42)	1.81 (2.69)	2.16 (4.58)	.48	3.84	2.63	.013	.59
HASS-PSI	12.69 (9.79)	9.19 (10.14)	3.87 (8.41)	.79	6.96	2.56	.016	.39
HASS-TOTAL	16.40 (13.52)	11.04 (12.05)	5.99 (12.34)	1.46	10.52	2.70	.011	.46
CES-D, Mean ± SD	24.54 (12.33)	13.69 (9.83)	9.86 (12.13)	5.41	14.31	4.53	.001	.91
Hopelessness (BHS)	8.86 (5.70)	3.94 (3.79)	4.85 (4.84)	3.08	6.63	5.58	.001	1.01
SAS Total	41.96 (7.07)	32.53 (7.26)	9.02 (8.06)	6.01	12.03	6.13	.001	1.27
SAS School	13.90 (4.94)	10.37 (3.57)	3.39 (4.50)	1.40	5.39	3.53	.002	.90
SAS Peer	17.26 (4.60)	12.78 (3.54)	4.48 (4.65)	2.77	6.18	5.36	.001	1.11
SAS Family	14.02 (3.61)	11.45 (3.83)	2.33 (4.57)	.63	4.04	2.79	.009	.66
SAS Spare Time	5.15 (1.76)	4.58 (1.57)	.84 (1.70)	.22	1.46	2.76	.01	.52
Parent CES-D	20.26 (13.34)	10.86 (8.55)	7.64 (12.07)	3.13	12.15	3.47	.002	.71

*Note:* Preliminary analyses indicated nonsignificant effects for age and gender, with the exception of a significant age-effect on SAS-Sparetime. Sensitivity analyses controlling for age, yielded similar results: Spare Time  $t = 2.20$ ,  $p < .03$ , Cohen's  $d = .52$ . HASS = Harkavy Asnis Suicide Survey; SA = suicide attempt; ASBI = Active Suicidal Behavior & Ideation; PSI = Passive Suicidal Ideation; CES-D = Center for Epidemiological Studies-Depression Scale; BHS = Beck Hopelessness Scale; SAS = Social Adjustment Scale (excludes school scale, higher scores reflect greater impairment).

later SAs (Brent et al., 2013). Second, although participation rates were similar to that for our prior ED study (Asarnow et al., 2011), restricting the target population to SAs in this study yielded slower recruitment, limiting feasibility from a service delivery perspective. Finally, a substantial number of youths were excluded for psychosis and substance abuse ( $n = 24$ ). Targeting the program for a broader population could be achieved using algorithms to match youths to intervention strategies/modules most appropriate for their clinical presentations and likely treatment adherence patterns (Asarnow et al., 2005; Chorpita et al., 2008). Using two therapists created challenges, and increased initial costs, but may have reduced treatment duration and later costs by intensifying treatment after the SA.

Study limitations include the nonrandomized design and small sample size. The study design and sample size precluded analysis of moderators of treatment effects. The follow-up period was brief and a 6-month assessment limited to parent report; expanded follow-up would have added information. Consistent with the finding of higher SA rates in females, the sample was 86% female. Special outreach may be needed to reach males, who have the highest risk of death. Results may not generalize to excluded subgroups (e.g., youths with substance abuse, psychosis). Evaluation of intervention costs, exportability, and moderators and mediators of treatment effects are issues for future research. Adherence ratings were designed to capture CBT and MST components of the treatment; future work is needed to develop training and quality assurance protocols to optimize therapist competence, treatment fidelity and adherence, and patient outcomes.

In conclusion, the present results provide Phase 1 support for the safety, feasibility, and benefits of the SAFETY intervention. Results support the need for a larger RCT to further evaluate efficacy and effectiveness.

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## REFERENCES

- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist*. Burlington: University of Vermont.
- Asarnow, J., Baraff, L. J., Berk, M., Grob, C. S., Devich-Navarro, M., Suddath, R., et al. (2011). An emergency department intervention for linking pediatric suicidal patients to follow-up mental health treatment. *Psychiatric Services*, 62, 1303–1309.
- Asarnow, J., Berk, M., & Baraff, L. J. (2009). Family intervention for suicide prevention: A specialized emergency department intervention for suicidal youth. *Professional Psychology: Research and Practice*, 40, 118–125.

- Asarnow, J., Jaycox, L. H., Duan, N., LaBorde, A. P., Rea, M. M., Murray, P., et al. (2005). Effectiveness of a quality improvement intervention for adolescent depression in primary care clinics: A randomized controlled trial. *Journal of the American Medical Association*, 293, 311–319.
- Asarnow, J., McArthur, D., Hughes, J., Barbary, V., & Berk, M. (2012). Suicide attempt risk in youths: utility of the Harkavy-Asnis suicide scale for monitoring risk levels. *Suicide Life Threat Behav.*, 42, 684–698.
- Beck, A., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: the hopelessness scale. *Journal of Consulting and Clinical Psychology*, 42, 861–865.
- Brent, D., Greenhill, L. L., Compton, S., Emslie, G., Wells, K., Walkup, J. T., et al. (2009). The Treatment of Adolescent Suicide Attempters study (TASA): Predictors of suicidal events in an open treatment trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48, 987–996.
- Brent, D. A., McMakin, D. L., Kennard, B. D., Goldstein, T. R., Mayes, T. L., & Douaihy, A. B. (2013). Protecting adolescents from self-harm: A critical review of intervention studies. *Journal of the American Academy of Child and Adolescent Psychiatry*, 52, 1260–1271.
- Chorpita, B. F., Bernstein, A., & Daleiden, E. L. (2008). Driving with roadmaps and dashboards: using information resources to structure the decision models in service organizations. *Adm Policy Ment Health*, 35, 114–123.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Corcoran, J., Dattalo, P., Crowley, M., Brown, E., & Grindle, L. (2011). A systematic review of psychosocial interventions for suicidal adolescents. *Children and Youth Services Review* 33, 2112–2118.
- Esposito-Smythers, C., Spirito, A., Kahler, C. W., Hunt, J., & Monti, P. (2011). Treatment of co-occurring substance abuse and suicidality among adolescents: A randomized trial. *J. Consult. Clin. Psychol.*, 79, 728–739.
- Goldston, D. B., Walrath, C. M., McKeon, R., Puddy, R. W., Lubell, K. M., Potter, L. B., et al. (2010). The Garrett Lee Smith memorial suicide prevention program. *Suicide and Life-Threatening Behavior*, 40, 245–256.
- Green, J., Wood, A. J., Kerfoot, M. J., Trainor, G., Roberts, C., Rothwell, J., et al. (2011). Group therapy for adolescents with repeated self harm: Randomised controlled trial with economic evaluation. *British Medical Journal*, 342, d682.
- Harkavy-Friedman, J. M., & Asnis, G. M. (1989). Assessment of suicidal behavior: A new instrument. *Psychiatric Annals*, 19, 382–387.
- Harrington, R., Kerfoot, M., Dyer, E., McNiven, F., Gill, J., Harrington, V., et al. (1998). Randomized trial of a home-based family intervention for children who have deliberately poisoned themselves. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37, 512–518.
- Hazell, P., Martin, G., McGill, K., Kay, T., Wood, A., Trainor, G., et al. (2009). Group therapy for repeated deliberate self-harm in adolescents: Failure of replication of a randomized trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48, 662–670.
- Henggeler, S., Schoenwald, S. K., Rowland, M. D., & Cunningham, P. B. (2002). *Serious emotional disturbance in children and adolescents: Multisystemic therapy*. New York: Guilford.
- Huey, S. J., Henggeler, S. W., Rowland, M. D., Halliday-Boykins, C. A., Cunningham, P. B., & Pickrel, S. G. (2005). Predictors of treatment response for suicidal youth referred for emergency psychiatric hospitalization. *Journal of Clinical Child and Adolescent Psychology*, 34, 582–589.
- Kirisci, L., Mezzich, A., & Tarter, R. (1995). Norms and sensitivity of the adolescent version of the drug use screening inventory. *Addictive Behavior*, 20, 149–157.
- Kraemer, H., Mintz, J., Noda, A., Tinklenberg, J., & Yesavage, J. A. (2006). Caution regarding the use of pilot studies to guide power calculations for study proposals. *Archives of General Psychiatry*, 63, 484–489.
- Miller, A., Rathus, J., & Linehan, M. (2007). *Dialectical Behavior Therapy with suicidal adolescents*. New York: Guilford.
- National Action Alliance for Suicide Prevention: Research Prioritization Task Force. (2014). *A prioritized research agenda for suicide prevention: An action plan to save lives*. Washington, DC: Author.
- Ougrin, D., Tranah, T., Leigh, E., Taylor, L., & Asarnow, J. R. (2012). Practitioner review: Self-harm in adolescents. *Journal of Child Psychology and Psychiatry*, 53, 337–350.
- Pineda, J., & Dadds, M. R. (2013). Family intervention for adolescents with suicidal behavior: A randomized controlled trial and mediation analysis. *Journal of the American Academy of Child and Adolescent Psychiatry*, 52, 851–862.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Rossouw, T. I., & Fonagy, P. (2012). Mentalization-based treatment for self-harm in adolescents: a randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51, 1304–1313.
- Rotheram-Borus, M. J., Piacentini, J., Cantwell, C., Belin, T. R., & Song, J. (2000). The 18-month impact of an emergency room intervention for adolescent female suicide attempters. *Journal of Consulting and Clinical Psychology*, 68, 1081–1093.
- Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 28–38.
- U.S. Department of Health and Human Services. (2012). *National strategy for suicide prevention: Goals and objectives for action*. Washington, DC: Author.
- Weissman, M., Orvaschel, H., Padian, N. (1980). Children's symptom and social functioning self-report scales. *Journal of Nervous and Mental Disease*, 168, 736–740.
- Wood, A., Trainor, G., Rothwell, J., Moore, A., & Harrington, R. (2001). Randomized trial of group therapy for repeated deliberate self-harm in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1246–1253.

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