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Engaging Resistant Adolescents in Drug Abuse Treatment

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Abstract

In the first phase of a two-part treatment development study, families with a treatment-resistant, drug-abusing adolescent ($n=42$) were offered 12 sessions of Community Reinforcement and Family Training (CRAFT). This parent-focused intervention was designed to help parents facilitate their adolescents' entry in treatment and support adolescents' subsequent behavior change and to improve parent and family functioning. In the second phase, successfully engaged adolescents ($n=30$) were offered 12 sessions of a multicomponent individual cognitive behavioral therapy (CBT) targeting substance use and related problem behaviors. Measures were collected at pre- and post-treatment for parents and adolescents, with an additional follow-up assessment for parents at 3-months post-treatment. Parents in the CRAFT intervention experienced a significant reduction in negative symptoms and 71% of parents were successful in engaging their resistant youth in treatment. The CBT intervention for the engaged youth was associated with a statistically significant, but not clinically significant, reduction in marijuana use.

Keywords

Adolescents; substance abuse; treatment engagement; CRAFT; treatment outcome

1. Introduction

According to a recent estimate by the Department of Health and Human Services (2002), 93.6% of the 2.6 million adolescents exhibiting severe drug or alcohol problems receive no treatment. The discrepancy between adolescents with problem substance use who enter counseling and those who do not represents a profound gap in treatment services, leaving significant numbers of youth vulnerable to ongoing problems into young adulthood (Duncan, Duncan, Alpert, & Hops, 1997; Zucker, Chermack, & Curran, 2000). Moreover, the potential impact of empirically supported treatments to mitigate the problem (Dennis et al., 2004b; Kaminer & Burleson, 1999; Liddle et al., 2001; Waldron, Slesnick, Brody, Turner, & Peterson, 2001) is severely diminished.

A variety of underlying factors likely contribute to the magnitude of the drug abuse treatment gap for adolescents. When drug-abusing youth enter treatment, they generally do so in response to external pressures from families, schools or employers, or the legal system (Battjes, Onken, & Delany, 1999) and without external pressure, treatment entry is unlikely. Although the juvenile justice system is a primary source of entry into treatment, as few as 20% of adolescents in need of treatment in the past year had an arrest (DHHS, 2002). Thus, engagement in treatment through the legal system has a relatively low impact on the treatment gap. Most traditional intervention programs, including those that are ecologically based, typically depend on social

systems to identify youth in need of treatment services (Henggeler & Borduin, 1990; Sexton & Alexander, 2002). Although youth who are remanded to treatment (e.g., court order, in lieu of school suspension)

likely still have limited commitment to change and readiness for treatment (Cunningham & Henggeler, 1999; Diamond, Liddle, Hogue, & Dakof, 1999; Melnick, DeLeon, Hawke, Jainchill, & Kressel, 1997; Prochaska, DiClemente, & Norcross, 1992) most interventions incorporate procedures to enhance adolescents' readiness for change (Dennis et al., 2004b; Waldron et al., 2001) once they begin to meet with a therapist. When youth elude treatment or maintain active refusal to participate in therapy, however, linking them with available services requires the development of qualitatively different and more effective engagement interventions than are currently available in the field.

One could argue that the power differential between adolescents and parents would ensure parents' ability to influence their adolescents to enter treatment. In cases where behavioral problems such as substance abuse have developed, the pattern of adolescents rebelling against or refusing parental demands is often firmly established. Szapocznik et al. (1988) have noted that, in the face of a powerful adolescent, parents may encounter significant challenges in getting their adolescent to enter drug abuse treatment. The adolescents' resistance, coupled with an abdication of authority by the parents, may reflect a more general condition of a disrupted family hierarchy and/or an enmeshed boundary between the parent and adolescent subsystem. Such resistant youth are unlikely to enter or engage in treatment without the implementation of specialized engagement interventions, including specific strategies implemented with resistant adolescents outside the clinic setting (Santisteban et al., 1996; Stanton & Heath, 2004).

A number of adult studies have demonstrated the potential of the family as a route for engaging treatment-resistant individuals with substance abuse or dependence (Garrett et al., 1997; Kirby, Marlowe, Festinger, Garvey, & LaMonaca, 1999; Marlowe, Merikle, Kirby, Festinger, & McLellan, 2001; Meyers, Miller, Hill, & Tonigan, 1999; Miller, Meyers, & Tonigan, 1999). According to Marlowe et al. (1996), substance abusers reported that family members exerted substantially more influence over their decision to enter treatment than other sources of influence, including legal pressures exerted by court-mandated treatment. Research has also shown that family members and significant others can be important resources in treating drug abuse (Azrin, 1976; Garrett et al., 1997; McGillicuddy, Rychtarik, Duquette, & Morsheimer, 2001; O'Farrell & Fals-Stewart, 2003; Sisson & Azrin, 1986; Szapocznik, Kurtines, Foote, Perez-Vidal, & Hervis, 1983; Thomas & Santa, 1982). Yet, little research has systematically examined interventions for family members who could facilitate the entry of drug-abusing youth in treatment. The development of a theoretically and empirically derived treatment, which is sensitive to the needs of adolescents and involves the family in the process of treatment engagement has potential merit for addressing the treatment gap for treatment-elusive youth. Once youth take the initial step of meeting with a therapist, then techniques within therapy could be implemented to increase adolescents' motivation and investment in therapy process and enhance their retention in treatment, with the aim of ensuring an adequate treatment dose.

Community Reinforcement and Family Training (CRAFT)

One promising approach for engaging treatment-elusive youth is the CRAFT intervention, a unilateral family treatment approach specifically designed to aid family members or concerned significant others (CSOs) in modifying the behavior of initially unmotivated adult drug and alcohol abusers and engaging them in treatment (Kirby et al., 1999; Meyers et al., 1999; Miller et al., 1999). CRAFT, recommended in recent reviews of the engagement literature (Stanton, 2004; Stanton & Heath, 2004), is an outgrowth of work by Azrin and his colleagues (Azrin, Sisson, Meyers, & Godley, 1982; Sisson & Azrin, 1986) and later adapted by Meyers and

Miller and their colleagues (Meyers et al., 1999; Miller et al., 1999) for use with adult substance users refusing treatment. The theoretical foundation of the model derives from the operant learning perspective, in which substance abuse is viewed as occurring within the context of a network of operant social contingencies (Sisson & Azrin, 1989, Meyers et al., 1999). Studies evaluating the efficacy of the CRAFT approach with adult substance abusers have demonstrated the marked success of training CSOs in CRAFT procedures to influence treatment entry (Kirby et al., 1999; Miller et al., 1999; Meyers et al., 1999). Engagement rates for CRAFT have ranged from 59% to 74% for CRAFT intervention, compared to a range of 13% to 30% for AI Anon and other family-based engagement comparison conditions. Based on these findings, CRAFT may also offer a viable approach for initiating treatment with resistant or elusive drug-abusing adolescents.

Cognitive Behavioral Therapy for Engaged Adolescents

For adolescents who engaged in treatment as a result of the CRAFT intervention with their parents, cognitive behavioral therapy (CBT) was offered. CBT is an empirically supported intervention for adolescent substance abuse and dependence (Waldron & Kaminer, 2004), with studies demonstrating significant reductions in substance use (Dennis et al., 2004b; Kaminer & Burlison, 1999; Liddle et al., 2001) and increased abstinence rates and increases abstinence rates (Waldron et al., 2001). Given the empirical support for CBT in traditional outpatient adolescent substance abuse treatment, CBT was expected to be efficacious for treatment-resistant youth who were successfully engaged in treatment through the CRAFT intervention.

The current study was conducted in two phases and was designed to: (1) evaluate a systematic, theory-based and manually guided CRAFT parent training approach designed to engage unmotivated substance-abusing adolescents into treatment through their parents (Phase I), and (2) implement and evaluate CBT (Phase II) with the adolescents who are successfully engaged in treatment during Phase I. In this treatment development study, the emphasis was on adapting CRAFT to be a developmentally appropriate intervention for parents of treatment resistant adolescents and on demonstrating the potential of CRAFT for engagement youth in treatment, rather than formally evaluating CRAFT for parents of substance-abusing adolescents through a randomized clinical trial.

2. Materials and Methods

Participants

Participants in Phase I of the study were 42 parents or parent surrogates, including 35 mothers, 7 fathers, 2 other family members. The majority were recruited through newspaper advertising, although a few participants were recruited through public schools and other community agencies. Parents' average age was 46 years ($SD = 7.9$). The sample included 48% Hispanic-, 48% Anglo-, and 4% Native American. Two-parent households represented 49%, with 39% single-parent households and 12% living with other relatives. Average education level of parents was 14.5 years ($SD = 2.6$) and ranged from 6th grade to post-graduate education. Adolescent mean age was 16.6 years ($SD = 1.3$), ranging from 14 to 20 years; 79% were male. Adolescents averaged 10.2 years of education ($SD = 1.4$), ranging from 7th grade to some college.

Participants in Phase II were 30 adolescents who were successfully engaged into treatment following their parents' participation in Phase I of the study. Participating adolescents included 23 males and 7 females between 14 and 20 years of age ($M = 16.6$ years; SD [junk]= 1.3). Youth ethnicity was 40% Anglo, 47% Hispanic, and 14% of other ethnic origin. The majority of youths lived with their parent(s) (83%). Most of the participants were enrolled in school (83%)

and were employed (60%). Adolescents reported a mean age of initiation of marijuana use at 12 years ($M = 12.33$, $SD = 2.07$).

Procedure

Initial telephone eligibility screening occurred when parents called with a concern about their son/daughter's substance use. The screening was designed to differentiate between parents who, with some guidance and support, could be assisted in bringing their adolescent to treatment and parents who had exhausted their resources and were unable to do so. If parents had not yet discussed treatment with the adolescent, the therapists discussed how to initiate those steps (e.g., choose a good time, describe treatment positively) with them. Adolescent refusal, despite genuine parental efforts to engage youth, was a key inclusion criterion for the study. Other inclusion criteria were: adolescents were aged 14 to 20 years, had a suspected substance use disorder, lived in the area, had sufficient contact with parents to allow parents to implement newly acquired skills with the youth (i.e., direct contact on 40% of the days during the past 3 months). Youth were excluded if there was evidence of psychotic or organic state in parents or adolescents of sufficient severity to interfere with understanding of procedures or if they had participated in drug treatment in the past 90 days.

After consenting to participate in the study, in accord with human subject research standards, parents enrolled in Phase I received the CRAFT intervention and were assessed on measures of parent, adolescent, and relationship functioning at pre- and post-treatment, and at 6 months after the pre-treatment assessment. Parents were compensated \$75 each for completing the post-treatment and follow-up assessment.

Adolescents' entry into Phase II of the study was coordinated by the parents' and adolescents' therapist and assessment staff in order to facilitate engagement. After providing informed consent with respect to participating in the study, youth completed a pre-treatment assessment and received individual CBT. They were assessed again at post-treatment and provided \$75 compensation. The timing of data collection for adolescents was based on their entry into treatment, and thus was not synchronized with the timing of the parents' data collection. The adolescent pre-treatment assessment generally occurred between the parent's pre- and post-intervention assessments, while the adolescent post-treatment assessment corresponded most closely with parent's follow-up assessment.

CRAFT for Parents

The CRAFT intervention for parents or parent surrogates of substance-abusing adolescents was patterned after the adult-focused CRAFT intervention developed by Meyers and Miller and their colleagues (Meyers et al., 1999; Miller et al., 1999). The intervention involved enhancing the psychosocial functioning of the parent, assisting the parent in building skills necessary to help engage their resistant adolescent into treatment, and improving family relationships by teaching the parent adaptive social skills. Specific components of CRAFT included: (1) raising awareness of negative drug use consequences and of potential benefits of treatment; (2) contingency management training to reinforce abstinence/reduced substance use and avoid interfering with natural consequences; (3) communication training; (4) planning and practicing activities to interfere and compete with drug use; (5) increasing the parent's own reinforcing activities; (6) specific strategies for preventing dangerous situations; and (7) preparing to initiate treatment when the parent is successful in engaging the adolescent. Unique elements of the model included a reliance on functional analyses of behavior, a focus on identifying and utilizing positive reinforcers for both adolescents and parents, and an emphasis on personal lifestyle changes for the parent.

Parents were offered 12 CRAFT sessions to develop skills needed to engage their resistant adolescent into treatment, with additional crisis sessions available. Parents continued to receive the CRAFT intervention even after their adolescents were engaged into treatment in order to continue their own skill building. A 6-month window of opportunity after parents initiated CRAFT was permitted for the adolescent to engage.

CBT for Engaged Adolescents

CBT for adolescents involved a multicomponent individual treatment modeled upon various programs described in the literature (Kadden et al., 1992; Monti, Abrams, Kadden, & Cooney, 1989; Waldron & Kammer, 2004). The CBT manual developed for an earlier study (Waldron et al., 2001) included a functional analysis of substance use behavior to enhance motivation for change, specific skill training modules, and relapse prevention. A functional analysis is a structured interview that examines the antecedents and consequences of specific behaviors, such as drinking or using drugs (Meyers & Smith, 1995). This information is integral for identifying stimulus cues associated with higher risk for substance use and identifying the positive and negative consequences the adolescent experiences with respect to substance use and restraint from use. Positive or pro-social reinforcing behaviors that may compete with problem behaviors, or provide pleasant activities for the youth are also identified. The skill training phase consisted of 8-10 sessions during which specific skills were taught, monitored, and practiced, including: coping with cravings, communication and problem-solving skills, management of anger and depression, refusal skills, social support, school attendance and vocational goals, and relapse prevention (Marlatt & Gordon, 1985).

Adolescent were assigned to a different therapist for CBT than the one meeting with their parents for the CRAFT intervention. Youths were offered 12 weekly CBT sessions, with additional crisis sessions available. All therapy sessions were videotaped for purposes of clinical supervision and therapist adherence to treatment guidelines.

Measures

Parent functioning—In Phase I, parents provided self-report information on their emotional status, physical health, and psychosocial adjustment. Standard instruments included to assess depressive symptoms, state anger, and anxiety, respectively, were: the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988), the State-Anger subscale of the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988) and the State-Trait Anxiety Inventory (STAI; Spielberger, 1983).

Adolescent functioning—During Phases I and II, parents provided collateral reports on adolescent functioning in several areas. In Phase II, adolescents were assessed directly. Adolescent substance use was measured using a Timeline Followback (TLFB) interview (Dennis, Funk, Godley, Godley, & Waldron, 2004a; Miller & Delboca, 1994; Sobell & Sobell, 1992; Waldron et al., 2001). The primary measure was the percent days of marijuana use. Urine drug screens were also used as a biological indicant of adolescent substance use. Parents provided information on adolescent substance use using the TLFB collateral form. The use of timeline interviewing to collect collateral data about substance use through significant others, including parents of substance-abusing youth, is well established (Ciesla, Spear & Skala, 1999; Sobell & Sobell, 1992).

Parents and adolescents also reported on other problem behaviors, with parents completing the Child Behavior Checklist (CBCL) and adolescents completing the Youth Self Report (YSR) in Phase II (Achenbach & Edelbrock, 1982). The BDI (Beck et al., 1988) was used for clinical screening of depression, a problem commonly associated with substance use.

The Conflict and Cohesion subscales of the Family Environment Scale (FES; Moos & Moos, 1986) were used to measure parents' and adolescent's perceptions of family relationship functioning. The FES, a widely used, standardized family assessment instrument, has been used to assess the severity of family dysfunction and to discriminate between normal from disturbed families, including alcohol-abusing families (Moos, Finney, & Chan, 1981).

Therapists

Treatment in Phases I and II of the study was provided by 9 therapists. All 9 therapists provided CRAFT to parents and 8 of the 9 provided CBT to adolescents, although none of the therapists provided treatment for a parent and adolescent within the same family. Therapists had from 1 to 15 years of experience; all therapists were Master's level substance abuse counselors or doctoral students in clinical or counseling psychology. All therapists were fully trained in the CRAFT and CBT interventions and participated in weekly group supervision with a licensed Master's level clinical supervisor with more than 15 years of experience with CRAFT and CBT interventions throughout the duration of the treatment phases of the project. Treatment adherence was monitored by the supervisor, who reviewed adherence checklists with each therapist during weekly group supervision. Therapists were given corrective feedback by the supervisor on the basis of videotape review, discussions, and reviews of adherence checklists.

3. Results

Overview of the Analysis

The results section summarizes Phase I and Phase II findings in six sections: 1) engagement rates for parents and youths, 2) Phase I pre- to post-intervention results of changes in parent functioning, 3) a comparison of parents' perceptions of engaged and non engaged youths, 4) parent and adolescent relationship functioning, 5) Phase II pre- to post-intervention changes for the youths' substance use, and 6) changes in other areas of the youths' functioning.

Phase I and II Treatment Engagement and Attendance

The first important research question was whether parents and youths could be successfully engaged in therapy with the CRAFT procedures. The results for the 42 parents participating in the study indicated that they attended an average of 9.9 sessions of CRAFT ($SD = 3.7$), with attendance ranging from 1 to 18 sessions. During or immediately following the parent's treatment, parents successfully engaged 71% of the adolescents into treatment ($n = 30$) while 29% of the adolescents were not engaged ($n = 12$). The engagement rate was 66% for one-parent families and 72% for two-parent families.

Engaged adolescents were offered 12 sessions of CBT, with the option of 1-2 additional crisis sessions if clinically indicated. The average time between parents' completion of CRAFT and adolescents' initiation of CBT was 6.3 weeks ($SD = 4.9$). Engaged youth attended a mean of 8.1 sessions of CBT ($SD = 4.34$), and a median of 9.5 sessions (range: 1-13 sessions). Forty-three percent of the adolescents completed all 12 CBT sessions. Two adolescents attended only one session, while four completed one additional emergency session (13 sessions total).

Parents ($n = 42$) and 30 adolescents ($n = 30$) completed intake assessments. Thirty-eight parents (90%) completed follow-up assessments; 28 adolescents (93% of engaged adolescents) completed follow-up assessments. The engagement and retention rates for both parents and adolescents in the present study are consistent with previous studies using CRAFT with adult substance abusers (Meyers et al., 1999). The present findings are presented in a manner to facilitate comparisons with the Meyers et al. (1999) findings.

Phase I: Community Reinforcement Training Outcomes for Parents

An important objective of CRAFT procedures is to improve the functioning of parents, thereby enhancing their ability to engage their adolescent in treatment. Therefore, we evaluated such improvements before and after CRAFT. Measures comparing parent emotional functioning before and after treatment indicated that parents derived some benefit from the CRAFT intervention. Table 1 summarizes data for 4 parent functioning measures at intake, post-treatment, and 6-month follow-up points.

A 2 (Engagement Status) \times 3 (Time) repeated measures multivariate analysis of variance (MANOVA) examined parent outcomes. Engagement Status served as a between subjects factor and Time as a within subjects factor while five parent emotional functioning variables served as dependent variables. These measures included the Beck Depression Inventory (BDI) total score, the State-Trait Anxiety Inventory (STAI) subscales, and the State-Trait Anger Inventory (STAXI) subscales. These means and standard deviations for these measures are summarized in Table 1.

The results of these analyses indicated that parents experienced improved emotional functioning across assessment points, and these improvements did not depend upon the adolescent's engagement in treatment. The multivariate analyses indicated a significant within-subjects main effect for Time across all dependent variables [$MVF(10,128) = 2.59, p < .007, \eta^2 = 0.168$]. These analyses revealed that the Engagement Status main effect and the Engagement Status \times Time interaction were not statistically significant (see Table 1). Thus, it does not appear that parent improvement on emotional functioning constructs following treatment was contingent upon whether their adolescent was engaged into treatment.

To further examine the effects of the CRAFT intervention on each dependent variable, repeated measures univariate analysis of variance (ANOVA) tests were performed for each parent emotional functioning variable. The results of the ANOVA tests and pairwise comparisons are presented in Table 1. Pairwise comparisons of means for significant main effects reported below included a Bonferroni adjustment for multiple comparisons. Results indicated a significant main effect for time on BDI total score [$F(1.66,56.56) = 6.69, p < .004, \eta^2 = .164$] with Huynh-Feldt adjustment.

Pairwise comparisons revealed a marginally significant reduction ($p < .06$) in parent depression (BDI total score) from intake ($M = 9.75, SD = 8.32$) to post-treatment ($M = 6.19, SD = 6.20$) and a significant reduction ($p < .01$) from intake to 6-month follow-up ($M = 5.31, SD = 6.20$). The Time main effect was also statistically significant for State Anxiety [$F(2,68) = 10.79, p < .001, \eta^2 = 0.241$] and Trait Anxiety [$F(1.78,60.34) = 5.86, p < .006, \eta^2 = 0.147$] with Huynh-Feldt adjustments. Pairwise comparisons on State Anxiety revealed a significant reduction ($p < .001$) in anxiety from intake ($M = 42.94, SD = 12.93$) to post-treatment ($M = 32.56, SD = 11.49$), and the difference from baseline was maintained at 6-month follow-up ($M = 33.44, SD = 10.73; p < .01$). Pairwise comparisons indicated that the difference between intake ($M = 40.00, SD = 9.99$) and post-treatment ($M = 36.58, SD = 11.17$) was not significant; however, the results revealed a significant reduction ($p < .01$) in Trait Anxiety between intake and 6-month follow-up ($M = 34.28, SD = 10.12$). Univariate ANOVAs for the Time main effect revealed no significant changes on the State or Trait Anger dependent variables.

Comparison of Parents of Engaged versus Unengaged Youth

We examined a number of variables to assess whether pre-intervention parent characteristics differentiated those who successfully engaged their adolescent in treatment. None of the parent variables examined differentiated the two groups. Moreover, parent reports of substance use

and other areas of functioning did not differ for adolescents engaged versus those who were not engaged in treatment.

Parent and Adolescent Relationship Functioning Outcome

In addition to the parent's own functioning, the CRAFT interventions are also designed to improve the relationship functioning of parents and youths. We created a composite of the FES Cohesion and Conflict scales (reverse scored) at each observation point to measure the perception of family functioning. Higher scores reflect more cohesion and less conflict. First, we conducted a 2 (Engagement Status) \times 3 (Time) repeated measures ANOVA with the parent FES family functioning as the dependent variable. The results revealed a significant Time effect [$F(2,70) = 5.67, p < .01, \eta^2 = 0.14$] but the Engagement Status [$F < 10$] and the interaction [$F < 10$] were not significant. Bonferroni adjusted pairwise comparisons indicated that the Intake ($M = 2.11, SD = 3.98$) and post-treatment ($M = 3.13, SD = 4.33$) levels of family functioning were significantly poorer than the 6-month followup ($M = 3.86, SD = 3.68$). Second, we examined the adolescent's perception of family functioning. Since all youths were engaged, we could not examine this independent and the dependent variable was collected only at the adolescent's intake and post-treatment. We conducted a one-factor, two-level repeated measures ANOVA for the Time factor, and the results showed that the Intake ($M = 2.04, SD = 4.55$) and the post-treatment means ($M = 2.46, SD = 3.82$) were not significantly different [$F(1,27) = .57, p < .45, \eta^2 = 0.02$].

In summary, parents reported significant improvements in their family environment and in their satisfaction with adolescents following treatment. They reported such improvements regardless of whether adolescents become engaged in treatment. Adolescents, however, did not report significant changes in the family environment following treatment.

Adolescent Substance Abuse Treatment Outcome

Both the parent and the youth provided measures of adolescent substance use. Adolescent data was available only for the 71% of adolescents who were successfully engaged into treatment. The parent report includes information on adolescents who were not engaged into treatment. For engaged adolescents, outcome could have been influenced by both the CRAFT and the CBT interventions, whereas outcome for unengaged adolescents would only be impacted by the CRAFT intervention. In addition, adolescent outcome data is available for two points in time, pre- and post-treatment, while for parents outcome data is also available at a third point in time, 6-month follow-up.

Adolescent Report of Substance Abuse

The youth's substance use was obtained from the Timeline Followback measure which creates an index of the percent days use in the past 90 days. The Phase II CBT intervention does focus on marijuana use but does not specifically target alcohol or tobacco use. We first examined the changes in the marijuana use measure over time (see Table 2). An analysis revealed that adolescents significantly [$F(1,27)=5.95, p<.02, \eta^2 = 0.180$] reduced their marijuana use from intake ($M = 74.22, SD = 34.33$) to post-treatment assessment ($M = 62.03, SD = 38.12$). We also examined changes in alcohol use and tobacco use. In contrast to findings for the marijuana index, the results for alcohol and tobacco use revealed no significant changes in either substance [F 's < 1.0]. Thus, the findings indicated that changes occurred only for the substance which was the particular focus of the CBT intervention and did not extend to alcohol or tobacco use.

Parent Report of Adolescent Substance Use

Parent report of adolescent outcome for substance use was measured by the percent days use of each marijuana, alcohol, and tobacco during the past three months (Table 2). Since the

engaged youths reported changes on marijuana use but not alcohol or tobacco use, we examined the marijuana dependent variable. A 2 (Engagement Status) \times 3 (Time) repeated measures ANOVAs revealed a significant Time main effect [$F(1.76, 65.26) = 3.87, p < .03, \eta^2 = 0.095$]; with Huynh-Feldt adjustments due to a significant finding for Mauchly's sphericity test. Neither main effects nor interactions of the Engagement Status independent variable was statistically significant [F 's < 1.1]. Bonferroni-adjusted pairwise comparisons revealed no significant difference between intake ($M = 54.95, SD = 34.85$) and post-treatment ($M = 44.86, SD = 33.13$) on marijuana use, but a marginally significant reduction ($p < .076$) occurred from intake to 6-month follow-up ($M = 38.98, SD = 36.45$). Univariate 2 (Engagement Status) \times 3 (Time) repeated measures ANOVAs for the tobacco and alcohol percent days use measures revealed no significant main effects and no interaction effects.

In summary, parents reported high levels of adolescent marijuana use at baseline and they reported reductions in marijuana following treatment. While tobacco and alcohol use were not targeted in the intervention, parents reported high levels of adolescent tobacco use and very low levels of alcohol use at baseline. These remain unchanged following treatment. The findings suggest that parent reports of adolescent substance use outcomes are consistent with, but not as robust as, adolescent self-reports.

Adolescent Outcomes in Other Areas of Functioning

Adolescents provided self-report in several areas of functioning including depression (BDI total score) and the YSR internalizing and externalizing dimensions (see Table 3). A MANOVA [$MVF(3,24) = 0.98, p < .42, \eta^2 = 0.11$] and separate univariate ANOVAs for all 3 dependent measures revealed no significant change over time. In contrast to the adolescent data, parents report numerous improvements in adolescent functioning following treatment. Parents CBCL ratings revealed a significant main effect for time on the internalizing [$F(1,37) = 10.91, p < .001$], externalizing [$F(1,37) = 18.59, p < .001$] dimensions., Neither the Engagement Status main effect nor interaction was statistically significant [F 's < 1.0].

Pairwise comparison of means from intake to post-treatment and from intake to 6-month follow-up assessments indicated significant improvements over time in adolescent functioning (see Table 3). The comparisons showed that improvements were maintained at 6-month follow-up. Specifically, parents reported a significant reduction ($p < .004$) in adolescents' internalizing symptoms from intake ($M = 15.24, SD = 9.65$) to post-treatment ($M = 10.32, SD = 9.09$) which was maintained at 6-month follow-up ($M = 9.41, SD = 7.08; p < .001$). Parents also reported significant reduction ($p < .001$) in externalizing symptoms from intake ($M = 22.43, SD = 10.53$) to post-treatment ($M = 15.92, SD = 10.28$) which was maintained at 6-months follow-up ($M = 13.84, SD = 8.50$).

4. Discussion

The CRAFT intervention was associated with a success rate for engaging resistant adolescents into treatment (i.e., 71%) that was similar to rates for CRAFT implemented with adult CSOs (Kirby et al., 1999; Meyers et al., 1999) and to rates for other adolescent engagement programs (Donohue et al., 1998). Once engaged, youth were retained in individual CBT, attending an average of two-thirds of the treatment sessions offered. In addition, parent report on numerous outcome variables demonstrated that the parents, adolescents, and the family environment all showed substantial improvements following the CRAFT intervention regardless of whether adolescents were successfully engaged in treatment. These findings are suggestive that parental involvement plays an influential role in adolescent treatment engagement and in effecting change in individual and family functioning, even when all family members are not present in therapy sessions. The CRAFT intervention with parents also appears to be relatively cost-effective (i.e., weekly one-hour sessions) compared to other methods of engaging resistant

adolescents in treatment (i.e., home visits, juvenile justice intervention). While these conclusions are tentative and based solely on parent report, our study lays a foundation for more systematic evaluation of CRAFT with adolescents and may provide a unique avenue for treatment providers to address the gap in services for adolescent substance use disorders.

Because we were not able to identify predictors of engagement or differentiate engaged vs. non engaged youth using parent or adolescent intake characteristics, the study provides little information about potential mechanisms of engagement associated with the CRAFT intervention. One possible reason for the failure to detect a difference between engaged and non engaged samples was the low statistical power that exists due to the relatively small sample size, especially for the non engaged participants ($n=12$) in the study. However, we determined that nearly 4 times as many participants would be required to detect the differences actually observed in the present study with power greater than 0.80. These results suggest that the failure to detect differences between engaged and non engaged families was not due solely to the modest sample sizes of the study, lending indirect support for the notion that the variables we examined are unrelated to the engagement process. Additional research will be required to link hypothesized mechanisms with the engagement process.

For adolescents who engaged in treatment, statistically significant reductions in substance use, generally, and on marijuana use in particular were found from pre- to post-treatment. These reductions, however, were not substantial enough to be clinically meaningful. At follow-up, adolescents had only reduced their marijuana use from 74% to 62% of the previous 90 days. Thus, while CBT appears to be a promising intervention, much improvement is needed if complete abstinence or meaningful harm reduction is to be achieved. One implication of this research is that adolescents who initially refused to enter treatment are more difficult to treat once engaged. Thus, stronger and/or different interventions may be needed for this unique subgroup of drug-abusing adolescents.

The specificity of impact on marijuana, the focus of the intervention, also suggests a lack of generalization of benefit across drugs or drug use behaviors. No significant changes were found for tobacco use, for which adolescents showed a high level of baseline use, or alcohol use, for which they showed a low level of use at baseline. These findings are inconsistent with a drug substitution hypothesis whereby, for example, adolescents may have reduced marijuana use but concurrently increased alcohol or other drug use. The data also provide evidence ruling out the possibility that outcomes are a result of regression to the mean, in that uniform reductions were not found for all drug classes. However, the pattern of results suggests that interventions may need to include a broader focus on the types of drugs adolescents are currently using.

The findings also indicated that parents and adolescents differ in their views of each other, the family, and their relationship. Thus, the extent to which the CRAFT intervention is successful in changing adolescent behaviors and the extent to which it influences parental perceptions of adolescent behaviors remains unclear. These results emphasize the importance of gathering data from multiple sources in order to gain a more complete picture of the family and of individual functioning. However, the CRAFT intervention is designed to teach parents new ways of interacting with their adolescents and to indirectly influence adolescent behavior. Moreover, in adapting the standard adult CRAFT intervention for working with parents of adolescents, CRAFT therapists focused on helping parents view their adolescents in more positive ways. This emphasis, along with parents' reductions in their own depression, anxiety, and physical symptoms, may have been associated with more positive parent perceptions of their adolescents in the absence of actual behavior change in their adolescents. However, changes in parental perceptions are likely to lead to changes in the way parents interact with their children and, thus, may result in changes in the youths' behavior over time.

Research Limitations and Future Directions

The research has several limitations that temper the conclusions that can be drawn about CRAFT as a treatment engagement strategy for adolescents. First and foremost, the study focused on treatment development and, hence, employed a one-group pre-post design. Parents were not randomly assigned to CRAFT or a comparison condition; rather, all parents received CRAFT. We cannot rule out that parents may, ultimately, have succeeded in getting their adolescents to enter treatment without CRAFT. A formal controlled trial is needed to evaluate efficacy of both CRAFT and CBT with families of treatment-resistant adolescents. However, the current findings are consistent with outcomes in adult CRAFT studies employing randomized designs and with other adolescent engagement studies, lending some confidence to the engagement outcome.

Second, the sample was relatively small and families were comprised mostly of mothers concerned about their sons' drug abuse. There was not a sufficient sample to evaluate whether the intervention is equally successful with fathers and/or with daughters. According to Stanton (2004) in his review of engagement studies involving both parents may also further enhance engagement results. Future research on CRAFT for adolescents should include number of family members participating as a variable of interest.

Given our assertion that treatment-elusive youth represent a distinct and important segment of the treatment gap found within mental health services for adolescents, it is important to identify the distinguishing characteristics of this population. One avenue for future research is to compare treatment-elusive youth with traditional outpatient adolescent treatment samples and with other adolescent engagement intervention samples. Clearer specification of adolescent samples is a critical element in evaluating the efficacy of engagement programs, as other engagement studies have been implemented with parents of adolescents who had not “refused” treatment (Donahue et al., 1998; Santisteban et al., 1996). A greater understanding of the “treatment refusing” population” could be key in guiding treatment development research for engaging and effecting change with these challenging adolescents. Better strategies are clearly needed to reach this segment of the population and link substance-abusing youth with treatment services. In addition to engagement strategies such as CRAFT, outreach programs and other interventions that mobilize resources for youth within their communities may be helpful in addressing the adolescent drug abuse treatment gap (Himmelgreen & Singer, 1998; NIDA, 2000).

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Mean (M) and Standard Deviations (SD), for Measures of Parent Emotional Functioning at Intake, Post-Treatment, and 6-Month Follow-up Assessments.

Table 1

Measure of Parent Emotional Functioning	Assessment Point					
	Intake		Post-Treatment		6-Month Follow-Up	
	M	(SD)	M	(SD)	M	(SD)
Beck Depression		9.75 (8.32)		6.19 (6.20)		5.31 (6.20)
STAI: State Anxiety		42.94 (12.93)		32.56 (11.49)		33.44 (10.73)
STAI: Trait Anxiety		40.00 (9.99)		36.58 (11.17)		34.28 (10.12)
STAI: State Anger		12.42 (4.85)		10.50 (1.73)		10.75 (1.81)
STAI: Trait Anger		14.86 (3.14)		14.17 (3.18)		13.81 (2.67)

Note: Cell entries are means and standard deviations for each measure at intake, post treatment and follow-up. Parent reports of functioning are for the 3 months preceding the assessment point.

Mean (M) and, Standard Deviations (SD) for Measures of Adolescent Substance Abuse from Parent (PR) or Adolescent (AR) at Assessment Points.

Table 2

Parent (PR) and Adolescent (AR) Reports on Adolescent Substance Use (% days)	Assessment Point					
	Intake		Post-Treatment		6-Month FU	
	M	(SD)	M	(SD)	M	(SD)
Marijuana Use (PR)	54.95	(34.85)	44.86	(33.13)	38.98	(36.45)
Alcohol Use (PR)	15.87	(17.85)	12.71	(13.78)	12.46	(17.83)
Tobacco Use (PR)	68.48	(41.95)	65.33	(42.29)	60.55	(45.16)
Marijuana Use (AR)	74.22	(34.33)	62.03	(38.12)	NC	NC
Alcohol Use (AR)	16.93	(18.12)	15.94	(20.92)	NC	NC
Tobacco Use (AR)	66.75	(44.85)	65.39	(42.49)	NC	NC

Note: Cell entries are means and standard deviations for each measure at intake, post treatment and follow-up. Parent reports of functioning are for the 3 months preceding the assessment point. The parent report assessment points refer to evaluations that take place before and after the parents' treatment and do not indicate any information about the timeline of the adolescents' treatment or report. Adolescent data were not collected (NC) at 6-month follow-up.

Table 3
 Mean (M) and, Standard Deviations (SD) for Measures of Adolescent Functioning from Parent (PR) or Adolescent (AR) at Assessment Points.

Parent (PR) and Adolescent (AR) Reports on Adolescent Functioning	Assessment Point					
	Intake		Post-Treatment		6-Month FU	
	M	(SD)	M	(SD)	M	(SD)
CBCL Internalizing (PR)	15.24	(9.65) ^a	10.32	(9.09) ^b	9.41	(7.08) ^b
CBCL Externalizing (PR)	22.43	(10.53) ^a	15.92	(10.28) ^b	13.84	(8.50) ^b
YSR Internalizing (AR)	13.04	(9.99)	11.52	(9.25)	NC	NC
YSR Externalizing (AR)	20.93	(9.56)	19.78	(10.76)	NC	NC
BDI (AR)	8.96	(8.68)	6.96	(7.12)	NC	NC

Note: Cell entries are means and standard deviations for each measure at intake, post treatment and follow-up. Superscripts (a,b) indicate results of pairwise comparisons within each measure. Cells are significantly different if they do not share the same subscript. Parent and Adolescent reports are for the 3 months preceding the assessment point. Assessment points refer to evaluations that take place before and after the parents' treatment and do not indicate any information about the timeline of the adolescents' treatment. Adolescent data were not collected (NC) at the 6 month follow-up.