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To cite this article: Brooke D. Hunter, Mark D. Godley & Susan H. Godley (2014) Feasibility of implementing the Adolescent Community Reinforcement Approach in school settings for adolescents with substance use disorders, *Advances in School Mental Health Promotion*, 7:2, 105-122, DOI: [10.1080/1754730X.2014.888224](https://doi.org/10.1080/1754730X.2014.888224)

To link to this article: <http://dx.doi.org/10.1080/1754730X.2014.888224>



Published online: 05 Mar 2014.



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## Feasibility of implementing the Adolescent Community Reinforcement Approach in school settings for adolescents with substance use disorders

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*(Received 10 September 2013; accepted 16 January 2014)*

Nationally, approximately 10% of adolescents in need of treatment for a substance use (SU) disorder receive treatment. School-based treatment may provide an important opportunity to reduce the treatment gap by facilitating access to services. While some school-based SU treatment exists, little is known about whether newer, evidence-based treatments (e.g. Adolescent Community Reinforcement Approach [A-CRA]) can be well implemented in schools. The objectives of this study were to compare adolescents receiving A-CRA services in school-based versus clinic-based settings in regard to (1) intake characteristics, (2) treatment implementation quality, and (3) clinical outcomes. Results suggest that A-CRA in school-based settings was more likely to reach girls and youth with shorter SU histories; A-CRA was well implemented within school-based settings and the school-based group had equivalent or better outcomes than the clinic-based group.

**Keywords:** Adolescent Community Reinforcement Approach; A-CRA; school-based treatment; substance use disorders; adolescents

### 1. Introduction

According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2013), in the years 2011–2012, approximately 1.5–1.7 million adolescents in the USA had a substance use (SU) disorder. SU among adolescents has been shown to have several deleterious consequences across many domains of life including academic problems, co-occurring mental health problems, HIV risk, and legal problems (Bray, Zarkin, Ringwalt, & Qi, 2000; Chan, Dennis, & Funk, 2008; Chan, Passetti, Garner, Lloyd, & Dennis, 2011; Fergusson, Horwood, & Beautrais, 2003; Godley, Garner, Smith, Meyers, & Godley, 2011; Hser et al., 2001; McClelland, Elkington, Teplin, & Abram, 2004). Furthermore, according to the 2011 National Survey on Drug Use and Health, only 10.5% of adolescents who needed SU treatment actually entered treatment (SAMHSA, 2011). Approximately one-fourth of respondents aged 12 or above who needed but did not receive SU treatment reported that they did not know where to go to receive treatment services, did not have transportation to treatment, or did not have time to attend treatment (SAMHSA, 2011).

An approach recommended by adolescent experts to increase access to SU treatment for adolescents is the provision of these services in schools (Rones & Hoagwood, 2000;

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Sterling, Valkanoff, Hinman, & Weisner, 2012; Wagner, Tubman, & Gil, 2004; Winters, Leitten, Wagner, & O'Leary, 2007). Such availability may result not only in better access to needed services, but also in earlier intervention and the reduction of group disparities in treatment access observed in clinic-based treatment populations. There is some evidence to support these suppositions. Kaplan, Calonge, Guernsey, and Hanrahan (1998) reported that adolescents were more likely to use school-based health centers (SBHCs) than clinics in the community, and Anglin, Naylor, and Kaplan (1996) reported that the proportion of students receiving school-based SU treatment was equivalent to the proportion in need in the general population. Godley and White (2006) reported that adolescents with access to a student assistance program (SAP) were more likely to self-refer to treatment, were female, were younger, and were less likely to have been arrested in the past year as compared to adolescents receiving clinic-based services. School-based services also provide school staff with a countermeasure when they observe a student beginning to engage in problem behaviors (Winters, Fahnhorst, Botzet, Lee, & Lalone, 2012). It has also been suggested that school-based treatment services may lead to better retention in SU treatment and compliance with continuing care because counselors have easier access to adolescents for monitoring recovery outcomes and the need for re-intervention (Godley, 2006; Godley & White, 2006).

One logical home for SU treatment are SBHCs. These centers have steadily grown in the last 30 years, and there are estimated to be 1930 located in public, alternative, and charter schools in the USA (Lofink et al., 2013; Rones & Hoagwood, 2000). As has been noted in the literature, another advantage of the SBHCs is that these settings provide the opportunity to effectively integrate SU treatment with other behavioral and primary health care (Sterling et al., 2012). Integrated treatment is important because the prevalence of comorbid psychiatric disorders is between 55% and 88% for youth with a SU disorder (Chan et al., 2008; Grella, Hser, Joshi, & Rounds-Bryant, 2001; Grella, Joshi, & Hser, 2004; Sterling & Weisner, 2005). Even with the growth in the number of SBHCs, however, the current relatively low number of centers (approximately 1.5% of all schools for grades K–12; Lofink et al., 2013) will not provide the availability of SU or other behavioral and primary health treatment needed; however, the system may be expanded with the Affordable Care Act's emphasis on non-specialty care settings (Sterling et al., 2012).

Empirical studies of SU interventions in school settings are very limited. Most published reports in this area are prevention studies (e.g. Botvin, Schinke, Epstein, & Diaz, 1994; Hostetler & Fisher, 1997), pilot studies/brief program evaluation reports (e.g. Godley & White, 2006; Grenard et al., 2007), or descriptions of the challenges and proposed solutions to implementing school-based SU interventions (e.g. Wagner et al., 2004). A notable exception is Winters et al.'s (2012) randomized clinical trial comparing two brief intervention conditions (with two to three sessions) and a control condition with a total of 315 adolescents identified in a school setting. This study revealed that adolescents in both brief conditions reduced their drug use behaviors compared to the assessment-only control condition, but that the adolescents in the condition with an additional parent session had better outcomes. While an important contribution to the literature, the study had the limitations of having a relatively small sample size, which was predominately white, middle class, suburban, and localized to one metropolitan area.

The Adolescent Community Reinforcement Approach (A-CRA), like the brief intervention tested in Winters et al.' (2012), study, has support from randomized clinical trials as an evidence-based treatment for adolescents. A-CRA is an adaptation of the Community Reinforcement Approach (CRA) that was initially developed and tested with

adults (Azrin, Sisson, Meyers, & Godley, 1982; Hunt & Azrin, 1973). The theory underlying the approach is that it is critical to involve a substance using individual's 'community' (i.e., family, friends, school, job, organizations) in the recovery process. The approach specifically avoids confrontation and instead relies heavily on positive reinforcement and operant techniques (Azrin, 1976; Hunt & Azrin, 1973). It has been found effective in randomized clinical trials with adolescents in outpatient clinics, homeless drop-in centers, and when used in continuing care following residential treatment (Dennis et al., 2004; Godley, Godley, Dennis, Funk, & Passetti, 2007; Godley et al., *in press*; Slesnick, Prestopnik, Meyers, & Glassman, 2007). Large samples from quasi-experimental studies also have documented a number of important relationships between participation in A-CRA, treatment engagement, retention, satisfaction, and outcomes. For example, one study supported the mediational relationship of A-CRA participation ( $n = 1467$ ) and reductions in juvenile justice involvement. That is, A-CRA participation was directly related to decreased SU, which was in turn related to decreased illegal activity (Hunter, Godley, Hesson-McInnis, & Roozen, 2013). Another study of 1962 adolescents who participated in A-CRA revealed that those with co-occurring problems had significant decreases in SU and emotional problems and also significant decreases in these outcomes relative to adolescents with SU problems only (Godley et al., *in press*). Moreover, the model was found to have equivalent implementation outcomes across gender and African-American, Caucasian, and Latino ethnic groups in a sample of 1819 A-CRA adolescent participants. Significant and equivalent improvements were found for therapeutic outcomes across ethnic groups and gender with better clinical outcomes for females (Godley, Hedges, & Hunter, 2011). One unpublished analysis of 313 adolescents receiving A-CRA in school-based settings found that overall posttreatment healthcare utilization costs were reduced by 24%, suggesting that the cost of providing A-CRA in schools may be offset by other healthcare costs (Dennis, Godley, & Godley, 2012). In addition, an infrastructure has been developed for widespread dissemination of A-CRA (Godley, Garner, et al., 2011); however, there has been no published evidence to date supporting the feasibility of the current A-CRA dissemination model across diverse school settings or a comparison of A-CRA implementation and outcomes between schools and other settings.

In summary, there are few studies in the published literature that have evaluated the effectiveness of manual-guided SU treatments in school settings, and, although A-CRA is an SU treatment with extensive experimental and quasi-experimental support, little is known about its effectiveness as a school-based treatment. Over several years, SAMHSA/CSAT (Center for Substance Abuse Treatment) funded an adolescent SU treatment initiative called Assertive Adolescent and Family Treatment (AAFT). Starting in 2006, the AAFT grants (SAMHSA TI-06-007, TI-09-002, TI-10-002) provided funding and technical support to numerous US organizations to implement A-CRA. Several grantees chose to locate grant-funded A-CRA services in schools, while most provided services in community clinic settings. This grant initiative created the opportunity for a quasi-experimental design study with a large sample that included implementation and six-month outcome data to assess differences among youth presenting in school versus clinic settings. At the same time, this presented the opportunity to compare A-CRA implementation and clinical outcomes between those settings. Therefore, this study adds to prior SU treatment study literature related to school-based interventions by being the first known study to test wide-scale implementation of an evidence-based treatment across seven geographically dispersed sites. It is also the first study to examine implementation and outcomes of A-CRA in school settings. The research questions

addressed are: (1) how do intake characteristics of adolescents treated in school-based settings differ from those treated in more traditional clinic-based settings? (2) is the quality of A-CRA implementation the same in both settings? and (3) are the treatment outcomes for adolescents receiving A-CRA in school-based settings equivalent to adolescents who received A-CRA in clinic-based settings?

## **2. Methods**

### **2.1. Study context**

The study's sample was derived from AAFT grantees funded between October 2006 and October 2010 (47 sites). The majority of the sites were community-based, not-for-profit organizations that provided services in a variety of settings including schools, treatment centers, detention centers, and the adolescent's home. All AAFT sites provided initial implementation information, which contained information that identified whether sites provided services in school-based or clinic-based settings. Adolescent assessments provided additional data on the location of each interview, which was used to cross-validate each site's categorization as a school-based or clinic-based treatment facility. Participants were recruited from 35 of 47 sites. Of the 12 sites not included in the study, 8 sites were excluded because they provided services to young adults (18–24 years old), and 4 sites were excluded because they were providing residential treatment. The treatment sites included in the study served diverse communities across the USA, including urban (49%), rural (17%), and mixed (34%) communities. Seven of the 35 treatment sites included in the study were identified as providing only school-based SU treatment services, and 28 sites were identified as providing only clinic-based SU treatment services.

### **2.2. Participants**

Participants were 2768 adolescents between the ages of 12 and 18 who reported attending school within the past year and were referred to SU treatment because they met criteria for an SU diagnosis. Overall, the sample was 26% female, 19.8% African-American, 34.5% Caucasian, 25.7% Hispanic, with the remaining participants reporting multiple or other ethnicities. Fifty-three percent reported they were from a single parent family, 65.8% reported symptoms of a co-occurring mental health disorder, and 64.5% were concurrently involved with the juvenile justice system at intake to treatment services. The majority of the participants ( $n = 2276$ ) received SU treatment in clinic-based settings, and 492 received school-based treatment.

### **2.3. A-CRA treatment and implementation model**

During A-CRA sessions, clinicians help adolescents learn how to access social reinforcement through engagement in pro-social activities and improved life skills, which then compete with substance using behavior to increase abstinence. The clinician is trained to express warmth and understanding, be non-judgmental, maintain focus to stay within the A-CRA protocol, and encourage adolescent participation. A-CRA includes 19 procedures (e.g., problem solving skills, communication skills, relapse prevention) from which clinicians can choose in order to address the immediate needs of their client during any given treatment session (Godley et al., 2001; Meyers & Smith, 1995). The manual notes that the planned number of sessions is 12–14, which includes two sessions with caregivers alone, and two with caregivers and the adolescents together. The AAFT grantees were also

required to provide an additional 12–14 sessions of continuing care following the initial treatment. Choosing the appropriate procedure(s) and the right number of procedures to introduce/practice during sessions is discussed during the clinical training, supervision, and certification process and is one of the components scored by trained raters during session reviews (i.e., ‘Introduced CRA procedures at appropriate times’). Clinicians may use more than one procedure during a given session based on the client’s needs and time available. For example, if a client’s issue was getting in trouble after acting out in a fight with a parent, the clinician would make the decision to use the anger management procedure. If a client indicated he/she was invited to a party where there would be SU, the clinician might choose to use the relapse prevention procedure. Most adolescents are exposed to several of the same procedures, but there is no requirement that all receive the same set of procedures, as clinicians are taught to individualize the approach based on the adolescent’s need. Each session ends with a jointly planned homework assignment to practice what was learned in the session in the adolescent’s natural environment.

The AAFT grant program required the development of a standardized implementation model that could be used across a large number of geographically diverse grantees simultaneously to ensure rapid implementation. The model developed to support dissemination is described in detail elsewhere (Godley, Garner, et al., 2011). It included standardized training for clinicians and onsite supervisors, fidelity assessment and feedback, and ongoing coaching. Clinicians were required to complete a multistep A-CRA clinical certification process that included having their competence of the A-CRA treatment model scored by trained raters who reviewed recorded treatment sessions uploaded to a website. The scores were based on a comprehensive CRA/A-CRA therapist coding manual, which included operational definitions for numeric ratings for components of each procedure (Smith, Lundy, & Gianini, 2007) and have been shown to be reliable across raters (Garner, Barnes, & Godley, 2009; Smith, Gianini, Garner, Krall, & Godley, *in press*). Clinicians had to receive a score of 3 or better (based on a five-point scale) on each component of a procedure to demonstrate competence in each procedure. They were given quantitative and qualitative feedback after each review. Over the course of the AAFT initiative, more than 550 clinicians were certified in the A-CRA model and more than 10,000 sessions were assessed for fidelity. After therapists completed certification, quality implementation was maintained by random fidelity reviews of recorded sessions and through supervision by a local certified A-CRA supervisor who was trained and certified to score A-CRA sessions and provide feedback.

## **2.4. Measures**

### *2.4.1. Implementation quality measures*

Five measures were used to assess implementation quality. These included measures of two components described by Perepletchikova and Kazdin (2005) as necessary to assess treatment integrity: treatment adherence and therapist competence. In addition, since treatment initiation, engagement, and retention measures provide an indication of clients’ acceptance and participation in treatment, standardized measures of these constructs were also included. The A-CRA Exposure Scale (AES) was used to assess treatment adherence (the degree to which the therapist uses prescribed procedures; Perepletchikova, Treat, & Kazdin, 2007). Clinician certification data were used as a measure of therapist competence (the level of the therapist’s skill and judgment; Perepletchikova et al., 2007).

The AES was computed from data clinicians entered into a web-based treatment log reporting each A-CRA procedure provided during each treatment session. The AES is the



count of the A-CRA procedures (e.g., relapse prevention skills, systematic encouragement, homework) received during treatment by a given A-CRA recipient, is calculated by summing the total number of A-CRA procedures received by the adolescent during treatment, and can range from 0 to 19 (Cronbach's  $\alpha = 0.86$ ; Garner, Godley, et al., 2009; Godley et al., 2001). It is based on all A-CRA treatment provided during the measurement period beginning with the first treatment session. Although some procedures (e.g., happiness scale, homework) may be repeated several times, only a count of unique procedures is summed to create the scale score. Thus, this scale measures both the use of prescribed procedures and the diversity of procedures received during a treatment episode. The treatment session data were cross-validated with (1) a treatment log documenting all treatment transitions for each participant, (2) clinical records, and (3) digital session recordings. As part of the certification process, digital session recordings were scored by trained raters during and after a clinician's certification process, and yielded a data set with verified procedures that were linked to clinicians' reported session data. Rates of agreement and Cohen's  $\kappa$  were calculated for individual procedures between these two data sources ( $n = 2915$  for number of sessions compared to ratings). Rates of agreement ranged from 89% to 100%. These comparisons resulted in 17 procedures with Cohen's  $\kappa$  ranging from 0.69 to 1.00, whereas two procedures were outside this range, increasing prosocial recreation (Cohen's  $\kappa = 0.40$ ) and systematic encouragement (Cohen's  $\kappa = 0.50$ ), likely due to clinicians underreporting these procedures. Garner, Godley et al. (2009) also have demonstrated that the AES mediates the relationship between treatment retention (i.e., number of sessions) and treatment outcome (i.e., SU and substance-related problems), thus providing evidence that exposure to A-CRA procedures was a mechanism by which clients achieved reductions in SU.

Three additional implementation measures were computed from these data. *Initiation* and *engagement* are dichotomous variables that were created based on the definitions provided by the Washington Circle Group (Garnick, Lee, Horgan, Acevedo, & the Washington Circle Public Sector Workgroup, 2009). Initiation was defined as the receipt of one additional treatment session within 14 days of the first treatment session, and engagement was defined as the receipt of two additional treatment sessions within 30 days of the date of initiation. The *total number of treatment sessions* received by each adolescent was used for a measure of retention.

Finally, the percentage of *therapists and supervisors attaining certification* was used as measures of therapist and supervisor competency. As noted above, the certification process was based on the demonstration of identified benchmarks (as defined in the rating manual) for A-CRA procedures. Clinicians first had to demonstrate the competent delivery of 9 specific A-CRA procedures to achieve 'Basic Certification' and then the remaining 10 to achieve 'Full Certification' (Godley, Garner, et al., 2011). The supervisor certification process required the demonstration of three distinct supervisor behaviors during a recorded supervision session, and the ability to score therapists' treatment session recordings with high consistency (80% or better) when compared to the scores of a trained A-CRA rater for at least six A-CRA sessions.

#### 2.4.2. Intake and follow-up assessments

Adolescent intake and follow-up assessment were conducted using the Global Appraisal of Individual Needs (GAIN; Dennis, Titus, White, Unsicker, & Hodgkins, 2003) – a biopsychosocial assessment instrument that uses a web-based platform for assessment, treatment planning, clinical decision support, and integration with electronic medical

records and has a 40–60% post-grant sustainment rate. Follow-up assessments were administered six months after intake. The self-report measures have been validated against measures of use based on timeline follow-back methods, urine tests, collateral reports, treatment records, and blind psychiatric diagnosis ( $\rho \geq 0.70$ ,  $\kappa \geq 0.60$ ; e.g., Dennis, Chan, & Funk, 2006; Dennis, Dawud-Noursi, Muck, & McDermeit, 2003; Dennis, Scott, & Funk, 2003; Godley, Godley, Dennis, Funk, & Passetti, 2002; Godley, Jones, Funk, Ives, & Passetti, 2004). Intake variables were used for propensity score matching. Six-month outcome variables included days of SU out of the past 90 days, days of illegal activity out of the past 90 days, days spent in a controlled environment out of the past 90 days, days of trouble with family out of the past 90 days, days of trouble at school out of the past 90 days, and the Emotional Problem Scale (EPS). Higher values on the EPS indicate greater emotional problems during the past 90 days ( $\alpha = 0.75$ ).

### 2.5. Analytic plan

To control for group differences and the unbalanced group sizes between participants receiving school-based and clinic-based treatment services, propensity scores were created from more than 60 intake variables and weighted by group size to create a matched sample with 492 participants per group. This technique has previously been used in studies employing GAIN data (e.g., Ives, Chan, Modisette, & Dennis, 2010; Smith, Godley, Godley, & Dennis, 2001; Subramaniam, Ives, Stitzer, & Dennis, 2010; Titus, 2010). It reduced the number of significant differences among the 60 + variables from 30 to 0 (discussed further below).

First, intake characteristics were compared between the school-based and clinic-based treatment group using bivariate linear and logistic regression analysis with and without propensity weights. Regression analyses were conducted using SPSS version 19. All subsequent analyses were conducted with the propensity weight applied to the data set. Next, equivalence testing was conducted, according to the methods outlined by Rogers, Howard, and Vessey (1993), to investigate whether the two groups received equivalent treatment services and whether they had equivalent six-month outcomes. Then, group mean differences were analyzed using regression analysis for all implementation and outcome measures that were not equivalent by group. Effect sizes were calculated;  $h$  effect sizes were calculated for dichotomous outcomes, and Cohen's  $d$  effect sizes were calculated for continuous outcomes. Both effect sizes can be interpreted in the same way, where a value of 0.20 is considered small, 0.50 is considered medium, and 0.80 is considered large (Cohen, 1992).

## 3. Results

### 3.1. Intake characteristics

The descriptive statistics and results of the unweighted and weighted bivariate regression analyses for the comparison of intake characteristics between the school-based and clinic-based treatment groups are provided in Table 1. Included in Table 1 are the means or rates, odds ratios or Cohen's  $d$ , and 95% confidence intervals for both the unweighted and weighted analyses. The school-based and clinic-based treatment groups differed in regard to several intake characteristics. Relative to the clinic-based group, the school-based group was more likely to (1) be female, (2) have more days of psychological problems in the past 90 days, (3) have health problems, (4) have attended more days of school in the past 90 days, and (5) have fewer SU and mental health problems. Relative to the clinic-based





Victimized in lifetime	1413	62%	282	57%	274	56%	<b>0.77*</b>	<b>0.63</b>	<b>0.94</b>	0.94	0.73	1.21
Victimized P90	442	19%	90	18%	88	18%	0.90	0.70	1.16	0.97	0.70	1.34
High severity victimization	998	44%	195	40%	186	38%	<b>0.78*</b>	<b>0.64</b>	<b>0.95</b>	0.92	0.72	1.20
5. Health and risk behavior												
Health problems	672	30%	191	39%	209	42%	<b>1.76*</b>	<b>1.44</b>	<b>2.15</b>	1.16	0.90	1.50
Sexually active	1524	67%	309	63%	298	61%	<b>0.76*</b>	<b>0.62</b>	<b>0.93</b>	0.91	0.70	1.17
Multiple sex partners	724	32%	136	28%	124	25%	<b>0.72*</b>	<b>0.58</b>	<b>0.90</b>	0.89	0.67	1.18
Unprotected sex P90	627	28%	125	25%	117	24%	0.82	0.65	1.03	0.92	0.69	1.23
Needle use	34	1%	11	2%	11	2%	1.51	0.76	3.00	1.05	0.45	2.46
6. Vocational												
School involvement	(0.6)	(0.3)	(0.7)	(0.2)	(0.7)	(0.2)	<b>(0.24*)</b>	<b>0.04</b>	<b>0.09</b>	(0.00)	-0.02	0.03
Days of trouble at school P90	(3.4)	(8.6)	(3.2)	(8.5)	(2.9)	(7.8)	<b>(-0.06)</b>	-1.34	0.32	<b>(-0.04)</b>	-1.33	0.71
Employed P90	522	23%	101	21%	94	19%	0.79	0.62	1.01	0.91	0.67	1.25
7. Legal												
Lifetime												
Juvenile justice involvement	1928	85%	368	75%	352	72%	<b>0.45*</b>	<b>0.36</b>	<b>0.57</b>	0.85	0.64	1.12
Past year												
Drug crime	983	43%	184	37%	165	34%	<b>0.66*</b>	<b>0.54</b>	<b>0.81</b>	0.85	0.65	1.10
Interpersonal crime	1005	44%	203	41%	188	38%	<b>0.78*</b>	<b>0.64</b>	<b>0.96</b>	0.88	0.68	1.13
Property crime	1056	46%	198	40%	181	37%	<b>0.67*</b>	<b>0.55</b>	<b>0.82</b>	0.87	0.67	1.12
Illegal activity	1453	64%	281	57%	261	53%	<b>0.64*</b>	<b>0.53</b>	<b>0.78</b>	0.85	0.66	1.1
Physical violence	1594	70%	342	70%	338	69%	0.94	0.76	1.16	0.96	0.73	1.26
Past 90 days												
1 + days in CE	743	33%	116	23%	100	20%	<b>0.53*</b>	<b>0.42</b>	<b>0.67</b>	0.83	0.61	1.13
13 + days in CE	401	18%	41	8%	33	7%	<b>0.34*</b>	<b>0.23</b>	<b>0.49</b>	0.80	0.50	1.29
Days in a CE	(9.1)	(20.9)	(4.3)	(14.1)	(3.6)	(13.0)	<b>(-0.26*)</b>	<b>-7.38</b>	<b>-3.53</b>	<b>(-0.05)</b>	-2.41	0.99
Days of illegal activity	(5.9)	(15.9)	(5.0)	(14.4)	(4.4)	(14.4)	<b>(-0.05)</b>	-2.98	0.076	<b>(-0.04)</b>	-2.37	1.23
Juvenile justice involvement	1529	67%	279	57%	259	53%	<b>0.54*</b>	<b>0.45</b>	<b>0.66</b>	0.85	0.66	1.10
8. Substance use												
First AOD use under age 15	1848	81%	405	82%	402	82%	1.03	0.80	1.33	0.96	0.69	1.33
3 + years AOD use	1188	52%	240	49%	231	47%	<b>0.81*</b>	<b>0.67</b>	<b>0.99</b>	0.93	0.72	1.19
Days of AOD use P90	(31.7)	(31.0)	(30.2)	(30.5)	(28.8)	(31.4)	<b>(-0.09)</b>	-5.96	0.10	<b>(-0.05)</b>	-5.27	2.49
Past year												

(Continued)

Table 1 – (continued)

	Clinic-based treatment				School-based treatment		Unweighted		Weighted			
	Unweighted		Weighted		n (M)	% (SD)	OR/(d)	95% CI		OR/(d)	95% CI	
	n (M)	% (SD)	n (M)	% (SD)				Lower	Upper		Lower	Upper
Substance severity	(3.7)	(1.2)	(3.7)	(1.2)	(3.7)	(1.3)	(0.02)	-0.11	0.13	(0.01)	-0.15	0.17
AOD dependence	1095	48%	234	48%	233	47%	0.97	0.80	1.18	0.99	0.77	1.28
AOD abuse	699	31%	151	31%	145	29%	0.94	0.76	1.17	0.95	0.72	1.24
Weekly use												
Tobacco use	1173	52%	247	50%	253	51%	1.00	0.82	1.21	1.05	0.82	1.35
Alcohol use	297	13%	57	12%	55	11%	0.84	0.62	1.14	0.96	0.65	1.42
Marijuana use	1066	47%	211	43%	200	41%	<b>0.78*</b>	<b>0.64</b>	<b>0.95</b>	0.92	0.71	1.18
Opioid use	68	3%	17	3%	15	3%	1.02	0.58	1.80	0.89	0.44	1.81
Crack/cocaine use	22	1%	10	2%	9	2%	1.91	0.87	4.17	0.95	0.38	2.37
Other drug use	99	4%	26	5%	25	5%	1.18	0.75	1.85	0.97	0.55	1.70
Prior SU treatment	699	31%	126	26%	117	24%	<b>0.70*</b>	<b>0.56</b>	<b>0.88</b>	0.90	0.68	1.21
Problem Count – AOD and mental health	(4.2)	(2.6)	(3.9)	(2.5)	(3.8)	(2.4)	(-0.16**)	-0.67	<b>0.17</b>	-0.03	-0.39	0.23
Perceives AOD use as a problem	470	21%	79	16%	67	14%	<b>0.61*</b>	<b>0.46</b>	<b>0.80</b>	0.82	0.58	1.17
Perceives need for AOD treatment	1680	74%	377	77%	384	78%	1.26	1.00	1.59	1.09	0.81	1.47

Note: Caucasian adolescents are the reference group for the race variable. P90 = past 90 days; CE = controlled environment; ADHD = attention deficit hyperactivity disorder; AOD = alcohol and other drugs. Cohen's *d* effect sizes are reported for continuous outcomes and odds ratios are reported for dichotomous outcomes. \**p* < 0.05. Significant differences are indicated by an asterisk (\*) and bold font.

group, the school-based group was less likely to (1) have social, vocational, and living environment risk; (2) be homeless or a runaway; (3) have been victimized; (4) be sexually active or have multiple sex partners; (5) have engaged in illegal activity in the past year; (6) have spent time in a controlled environment; (7) currently or ever have been involved in the juvenile justice system; (8) have had three or more years of SU; (9) use marijuana weekly; (10) have previously received SU treatment; and (11) perceived a need for SU treatment. All significant differences for intake characteristics were no longer significant after the propensity weight was applied to the data set.

### 3.2. Implementation quality measures

A summary of the results for the equivalence analyses for initiation, engagement, retention, and AES is provided in Table 2. The school and matched clinic-based group were not equivalent in terms of initiation or engagement; however, only engagement was significantly better for the clinic-based group (OR = 0.69, 95% CI = 0.35, 0.90). Also, the *h* effect size for this difference was 0.18, which is less than what is considered to be a small effect size. In spite of the non-equivalent rates of initiation and engagement, the results of the equivalence testing revealed that the school-based treatment group received an equivalent number of treatment sessions and had equivalent AES scores relative to the clinic-based treatment group. A comparison of the average percentage of adolescents that received each A-CRA procedure by group (school vs. clinic) revealed only one significant difference, which was that fewer school-based adolescents received the sessions that combined caregivers and adolescents. Forty-three percent of the clinic-based adolescents received these sessions, while only 25% of the school-based adolescents did.

While smaller percentages of school-based clinicians and supervisors achieved certification, the differences were not statistically significant by setting. Seventy-three percent ( $n = 178$ ) of the clinicians in the clinic settings achieved basic certification, while 20% achieved full certification. Seventy-one percent ( $n = 69$ ) of the clinic-based supervisors achieved certification. Of the school therapists, 58% ( $n = 36$ ) achieved basic certification and 11% achieved full certification. Sixty-nine percent of the school-based supervisors ( $n = 13$ ) achieved certification.

### 3.3. Outcome measures

A summary of the results for the equivalence analyses for the outcome measures at six months is provided in Table 2. Days of SU, days of illegal activity, and days of trouble at school were all found to be equivalent between school-based and clinic-based treatment groups. The results indicated that the school-based sample was not equivalent to the clinic-based sample with respect to EPS, days in a controlled environment, and days of trouble with family. The group mean difference for EPS was not significantly different by group; however, the school-based group did have significantly fewer days in a controlled environment ( $t = -3.39$ ,  $p = 0.001$ ;  $d = 0.24$ ) and significantly fewer days of trouble with family ( $t = -1.97$ ,  $p = 0.049$ ;  $d = 0.14$ ) than the clinic-based treatment group.

## 4. Discussion

The implementation of school-based SU treatment has increased since the early 1990s (Godley & White, 2006; Roness & Hoagwood, 2000; Wagner et al., 2004). These types of programs have gained support because they offer easier access to services for adolescents,

Table 2. Equivalence tests of A-CRA implementation measures and clinical outcomes.

	Community-based treatment		School-based treatment		SE	z1	z2	d/h	t/OR
	M (%)	SD (Variance)	Mean (%)	SD (Variance)					
<b>A-CRA implementation measures</b>									
Initiation	81%	(0.16)	76%	(0.18)	0.03	-2.96*	-0.65	-0.12	0.75
Engagement	65%	(0.23)	57%	(0.25)	0.03	-4.18*	-1.34	-0.18	<b>0.69*</b>
Total A-CRA treatment sessions	14.45	8.89	14.43	8.94	0.58	-3.10*	<b>3.02*</b>	0.00	-
AES	10.57	4.11	10.49	4.08	0.27	-3.35*	<b>2.79*</b>	0.02	-
<b>Outcome measures at six-months</b>									
Days of AOD use	14.86	25.43	13.33	23.92	1.73	-3.82*	<b>2.05*</b>	-0.06	-
Emotional problems scale	0.16	0.14	0.18	0.16	0.01	-1.23	<b>4.09*</b>	0.10	1.43
Days of illegal activity	3.07	11.94	2.59	10.74	0.80	-3.58*	<b>2.39*</b>	-0.04	-
Days in a controlled environment	7.01	21.05	2.94	12.44	1.20	-6.89*	0.12	-0.24	-3.39*
Days of trouble at school	1.28	5.56	1.28	5.98	0.41	-2.72*	<b>2.73*</b>	0.00	-
Days of trouble with family	7.60	18.23	5.26	15.44	1.19	-5.04*	1.10	-0.14	-1.97*

Note: Dichotomous outcomes that were not significantly equivalent were tested for significant differences using logistic regression and continuous outcomes that were not significantly equivalent were tested for significant differences using linear regression. Cohen's *d* effect sizes are provided for continuous outcomes and *h* effect sizes are provided for dichotomous outcomes; and both effect sizes can be interpreted in the same way (0.20 = small effect, 0.50 = medium effect, and 0.80 = large effect).

\**p* < 0.05.

may reduce treatment access disparities for female and minority adolescents, and provide school personnel with better access to services for adolescents when they are beginning to engage in problem behaviors. Our results support the findings of others that adolescents who engage in school-based SU treatment differ from those receiving clinic-based services in regard to several intake characteristics. Relative to the clinic-based group, the school-based treatment group was more likely to reach youth who were girls, were earlier in their SU trajectory, had less risky living environments and peers, and had less illegal activity involvement. Overall, the quality of implementation was high in both settings. While there was a difference in rates of treatment engagement, adolescents in the school-based group ultimately received equivalent amounts of A-CRA relative to the clinic-based group. Finally, the school-based group's outcomes were equivalent to the matched clinic-based group's outcomes for days of SU, days of illegal activity, and days of trouble at school. Moreover, the school-based treatment group actually reported fewer days of trouble with their families and fewer days spent in a controlled environment at the six-month follow-up.

Previous research suggests that adolescents receiving SU treatment in school-based settings tend to be younger than adolescents receiving the same services in clinic-based settings, thus suggesting that the availability of school-based services may provide the opportunity for earlier intervention (Godley & White, 2006). In contrast to previous findings, school-based treatment participants in this study were not significantly younger than adolescents receiving clinic-based services; however, we did find that adolescents receiving school-based services were less likely to have three or more years of SU (i.e., they were earlier in their life course of SU) and less likely to have a prior SU treatment episode. It is also true that the school-based group was less likely to report engaging in past year in drug, interpersonal, or property crime, or to have ever been involved with the juvenile justice system. These results are encouraging to the extent that earlier intervention may result in fewer treatment episodes and decrease the likelihood that adolescents will become involved in the juvenile justice system or the criminal justice system later in life, which may improve the quality of life for these adolescents and decrease future costs to society (e.g., adjudication, supervision, incarceration).

Consistent with previously published studies (Anglin et al., 1996; Godley & White, 2006; Weist, Myers, Hastings, Ghuman, & Han, 1999), we found that female adolescents were more likely to receive treatment services in school-based settings than clinic-based settings, which suggests that the availability of school-based services may reduce treatment disparities that typically exist between male and female adolescents in the clinic-based treatment population; however, Godley and White (2006) reported higher rates of female involvement in treatment than the current study (54% vs. 34%), which may be a result of school-based treatment being provided through an SAP. The latter typically have policies with explicit confidentiality and help-seeking philosophies, procedures, and training for school personnel to facilitate SAP referrals. These factors may improve referrals to treatment and self-initiation of treatment, thus increasing the rate of female adolescents participating in school-based treatment services. We had limited referral source data; however, for the 27% of the sample who did indicate their referral source, only 0.6% treated in a clinic-based setting self-referred to treatment, while 24% of adolescents treated in a school-based setting self-referred to treatment. In school-based settings, female adolescents were twice as likely to self-refer to treatment as male adolescents (15.9% vs. 32.6%).

Adolescents receiving school-based treatment services were less likely to meet the Washington Circle (Garnick et al., 2009) treatment initiation and engagement criteria;



however, they still received an equivalent number of treatment sessions and A-CRA procedures. This suggests several possible implications: (1) the initiation and engagement criteria established for outpatient clinics may not be appropriate for school settings due to school calendars (i.e., long breaks during winter holidays and summers) or other differences in these settings; (2) even if school-based clinicians are unable to engage adolescents early on in the treatment episode, they are still able to retain adolescents in A-CRA treatment over time; (3) school-based treatment settings provide the access to adolescents that may allow clinicians to re-engage early dropouts; or (4) a combination of these factors. Also, anecdotally we know that clinicians are often spread among multiple school buildings and may not be able to have sessions with each adolescent as frequently due to their availability in any one building; however, the finding that school-based participants did have an equivalent number of sessions as clinic-based participants suggests that providing SU treatment in schools may be an effective way to combat the outpatient treatment attrition that is common in clinic-based treatment (United States Department of Health and Human Services, 2009).

The results of the outcome analyses indicated that adolescents receiving school-based treatment had equivalent or better outcomes at six months post-intake to treatment. The school-based group was equivalent to the clinic-based group with respect to SU, illegal activity, and trouble in school. Also, the adolescents receiving school-based treatment reported significantly fewer days in a controlled environment and days experiencing family conflict relative to the clinic-based group. Taken in combination with the treatment implementation findings, these results support the feasibility of implementing A-CRA in school-based settings.

A strength of this study was the inclusion of a large and diverse sample of adolescents to investigate the feasibility of implementing an EBP for SU in school-based settings versus clinic-based settings. There were no previously published studies identified that compared school-based settings to the traditional clinic-based setting, specifically in regard to their ability to implement EBPs for adolescents with SU disorders. In addition, standardized assessment and a quasi-experimental research design were used that incorporated a propensity weighting technique to control for group differences on more than 60 intake characteristics and to equalize the group sizes.

The study also had limitations. All outcome measures relied on adolescents' self-report, which may impose a threat to internal validity because of inaccurate recall of events. Although prior research has generally supported the validity of self-reported SU in clinical research (Godley et al., 2002; Lennox, Dennis, Ives, & White, 2006; Lennox, Dennis, Scott, & Funk, 2006), differential false negative reporting between groups cannot be completely ruled out. Additionally, the analyses of participant outcomes were limited to six months following intake to treatment. More distal outcomes would provide important information about the extent to which the six-month improvements were sustained for each condition. Finally, no data were available regarding therapist characteristics (e.g., age, race, gender), and certain characteristics have been shown to be associated with the adoption of evidence-based practices.

While this study provides support for the feasibility of implementing A-CRA in school-based settings, there are several implications for future research. Because this study was based on a carefully designed grant-funded implementation effort, it is important to learn more about how well A-CRA can be implemented in school settings that do not receive the federal grants that helped seed the implementation efforts reported in the current paper. It is also important to learn more about sustainment of the approach in the absence of federal funds to support it. There is a National Institutes of Health (NIH)-

funded study underway that will address this question for sites that received federal funding to implement (Hunter, 2012), and this question must also be asked for sites that implement by other means. There is some support for A-CRA's current disseminability and affordability since more than 50 agencies have elected to use A-CRA outside of a grant program or federal mandate. This includes 17 states that are implementing A-CRA to improve their adolescent statewide system of care. Also, future research is needed to better understand the extent to which clinicians adjust school-based A-CRA procedure implementation and treatment duration relative to the degree of problem severity in school youth presenting for treatment. In addition, there is a need to examine longer term outcomes to assess if school-based treatment is more effective at preventing future escalation of SU-related problems for adolescents. Finally, although there is preliminary support for A-CRA to reduce both SU and emotional problems for adolescents with co-occurring mental health problems (Godley et al., *in press*), future research is needed to examine its effectiveness as an integrated treatment for both problem areas in school settings since many adolescents present with both SU and psychiatric problems.

### Acknowledgments

The authors wish to thank the SAMHSA Center for Substance Abuse Treatment grantees and their patients, and Stephanie Merkle for manuscript preparation. The opinions are those of the authors and do not reflect official positions of the contributing grantees' project directors or the federal government.

### Funding

Support for this study was provided by the Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment [HHSS270201200001C, No. 270-12-0397] and by the National Institute on Alcohol Abuse and Alcoholism [R01 AA021118].

### References

- Anglin, T. M., Naylor, K. E., & Kaplan, D. W. (1996). Comprehensive school-based health care: High school students' use of medical, mental health, and substance abuse services. *Pediatrics*, *97*, 318–330.
- Azrin, N. H. (1976). Improvements in the community reinforcement approach to alcoholism. *Behavior Research and Therapy*, *14*, 339–348. doi:10.1016/0005-7967(76)90021-8
- Azrin, N. H., Sisson, R. W., Meyers, R., & Godley, M. (1982). Alcoholism treatment by disulfiram and community reinforcement therapy. *Journal of Behavior Therapy and Experimental Psychiatry*, *13*, 105–112. doi:10.1016/0005-7916(82)90050-7
- Botvin, G. J., Schinke, S. P., Epstein, J. A., & Diaz, T. (1994). The effectiveness of culturally focused and generic skills training approaches to alcohol and drug abuse prevention among minority youths. *Psychology of Addictive Behaviors*, *8*, 116–127. doi:10.1037/0893-164X.8.2.116
- Bray, J. W., Zarkin, G. A., Ringwalt, C., & Qi, J. (2000). The relationship between marijuana initiation and dropping out of high school. *Health Economics*, *9*, 1–18. doi:10.1002/(SICI)1099-1050(200001)9:1<9:AID-HEC471>3.0.CO;2-Z
- Chan, Y. -F., Dennis, M. L., & Funk, R. R. (2008). Prevalence and comorbidity of major internalizing and externalizing problems among adolescents and adults presenting to substance abuse treatment. *Journal of Substance Abuse Treatment*, *34*, 14–24. doi:10.1016/j.jsat.2006.12.031
- Chan, Y. -F., Passetti, L. L., Garner, B. R., Lloyd, J. J., & Dennis, M. L. (2011). HIV risk behaviors: Risky sexual activities and needle use among adolescents in substance abuse treatment. *AIDS and Behavior*, *15*, 114–124. doi:10.1007/s10461-010-9702-3
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155–159. doi:10.1037/0033-2909.112.1.155

- Dennis, M. L., Chan, Y. -F., & Funk, R. (2006). Development and validation of the GAIN Short Screener (GSS) for internalizing, externalizing, and substance use disorders and crime/violence problems among adolescents and adults. *American Journal on Addictions, 15*, S80–S91. doi:10.1080/1055049061006055
- Dennis, M. L., Dawud-Noursi, S., Muck, R. D., & McDermeit, M. (2003). The need for developing and evaluating adolescent treatment models. In S. J. Stevens & A. R. Morral (Eds.), *Adolescent substance abuse treatment in the United States: Exemplary models from a National Evaluation Study* (pp. 3–34). Binghamton, NY: Haworth Press.
- Dennis, M. L., Godley, S. H., Diamond, G., Tims, F. M., Babor, T., Donaldson, J., . . . Funk, R. R. (2004). The Cannabis Youth Treatment (CYT) Study: Main findings from two randomized trials. *Journal of Substance Abuse Treatment, 27*, 197–213. doi:10.1016/j.jsat.2003.09.005
- Dennis, M. L., Godley, S. H., & Godley, M. D. (2012). The effect of A-CRA treatment on subsequent health care utilization. Unpublished analyses.
- Dennis, M. L., Scott, C. K., & Funk, R. (2003). An experimental evaluation of recovery management checkups (RMC) for people with chronic substance use disorders. *Evaluation and Program Planning, 26*, 339–352. doi:10.1016/S0149-7189(03)00037-5
- Dennis, M. L., Titus, J. C., White, M., Unsicker, J., & Hodgkins, D. (2003). *Global Appraisal of Individual Needs (GAIN): Administration guide for the GAIN and related measures*. Bloomington, IL: Chestnut Health Systems.
- Fergusson, D. M., Horwood, L. J., & Beautais, A. L. (2003). Cannabis and educational achievement. *Addiction, 98*, 1681–1692. doi:10.1111/j.1360-0443.2003.00573.x
- Garner, B. R., Barnes, B., & Godley, S. H. (2009). Monitoring fidelity in the Adolescent Community Reinforcement Approach (A-CRA): The training process for A-CRA raters. *Journal of Behavior Analysis in Health, Sports, Fitness, and Medicine, 2*, 43–54.
- Garner, B. R., Godley, S. H., Funk, R. R., Dennis, M. L., Smith, J. E., & Godley, M. D. (2009). Exposure to Adolescent-Community Reinforcement Approach treatment procedures as a mediator of the relationship between adolescent substance abuse treatment retention and outcome. *Journal of Substance Abuse Treatment, 36*, 252–264. doi:10.1016/j.jsat.2008.06.007
- the Washington Circle Public Sector Workgroup, Garnick, D. W., Lee, M. T., Horgan, C. M., & Acevedo, A. (2009). Adapting Washington Circle performance measures for public sector substance abuse treatment systems. *Journal of Substance Abuse Treatment, 36*, 265–277. doi:10.1016/j.jsat.2008.06.008
- Godley, S. H. (2006). Substance use, academic performance and the village school. *Addiction, 101*, 1685–1688. doi:10.1111/j.1360-0443.2006.01679.x
- Godley, S. H., Garner, B. R., Smith, J. E., Meyers, R. J., & Godley, M. D. (2011). A large-scale dissemination and implementation model for evidence-based treatment and continuing care. *Clinical Psychology: Science and Practice, 18*, 67–83. doi:10.1111/j.1468-2850.2011.01236.x
- Godley, M. D., Godley, S. H., Dennis, M. L., Funk, R., & Passetti, L. (2002). Preliminary outcomes from the assertive continuing care experiment for adolescents discharged from residential treatment. *Journal of Substance Abuse Treatment, 23*, 21–32. doi:10.1016/S0740-5472(02)00230-1
- Godley, M. D., Godley, S. H., Dennis, M. L., Funk, R. R., & Passetti, L. L. (2007). The effect of assertive continuing care on continuing care linkage, adherence and abstinence following residential treatment for adolescents with substance use disorders. *Addiction, 102*, 81–93. doi:10.1111/j.1360-0443.2006.01648.x
- Godley, S. H., Hedges, K., & Hunter, B. (2011). Gender and racial differences in treatment process and outcome among participants in the Adolescent Community Reinforcement Approach. *Psychology of Addictive Behaviors, 25*, 143–154. doi:10.1037/a0022179
- Godley, S. H., Hunter, B. D., Fernández-Artamendi, S., Smith, J. E., Meyers, R. J., & Godley, M. D. (in press). A comparison of treatment outcomes for Adolescent Community Reinforcement Approach participants with and without co-occurring problems. *Journal of Substance Abuse Treatment*.
- Godley, S. H., Jones, N., Funk, R., Ives, M., & Passetti, L. L. (2004). Comparing outcomes of best-practice and research-based outpatient treatment protocols for adolescents. *Journal of Psychoactive Drugs, 36*, 35–48. doi:10.1080/02791072.2004.10399722
- Godley, S. H., Meyers, R. J., Smith, J. E., Godley, M. D., Titus, J. C., Karvinen, T., . . . Kelberg, P. (2001). *The Adolescent Community Reinforcement Approach (ACRA) for adolescent cannabis users*, Cannabis Youth Treatment Manual Series Vol. 4 (DHHS Publication No. (SMA) 01-

- 3489) Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration.
- Godley, S. H., & White, W. L. (2006). Student assistance programs: A valuable resource for substance-involved adolescents. *Counselor*, 7, 66–70.
- Grella, C. E., Hser, Y.-I., Joshi, V., & Rounds-Bryant, J. (2001). Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. *Journal of Nervous and Mental Disease*, 189, 384–392.
- Grella, C. E., Joshi, V., & Hser, Y. -I. (2004). Effects of comorbidity on treatment processes and outcomes among adolescents in drug treatment programs. *Journal of Child and Adolescent Substance Abuse*, 13, 13–31. doi:10.1300/J029v13n04\_02
- Grenard, J. L., Ames, S. L., Wiers, R. W., Thush, C., Stacy, A. W., & Sussman, S. (2007). Brief intervention for substance use among at-risk adolescents: A pilot study. *Journal of Adolescent Health*, 40, 188–191. doi:10.1016/j.jadohealth.2006.08.008
- Hostetler, M. L., & Fisher, K. (1997). Project C.A.R.E. substance abuse prevention program for high-risk youth: A longitudinal evaluation of program effectiveness. *Journal of Community Psychology*, 25, 397–419. doi:10.1002/(SICI)1520-6629(199709)25:5<397:AID-JCOP3>3.0.CO;2-Q
- Hser, Y. I., Grella, C. E., Hubbard, R. L., Hsieh, S. C., Fletcher, B. W., Brown, B. S., & Anglin, M. D. (2001). An evaluation of drug treatments for adolescents in four US cities. *Archives of General Psychiatry*, 58, 689–695. doi:10.1001/archpsyc.58.7.689
- Hunt, G. M., & Azrin, N. H. (1973). A community-reinforcement approach to alcoholism. *Behavior Research and Therapy*, 11, 91–104. doi:10.1016/0005-7967(73)90072-7
- Hunter, S. (2012). *Effectiveness of technology-assisted diffusion for evidence-based treatment*. Grant number R01AA021217 National Institute on Alcohol Abuse and Alcoholism.
- Hunter, B. D., Godley, S. H., Hesson-McInnis, M. S., & Roozen, H. G. (2013). Longitudinal change mechanisms for substance use and illegal activity for adolescents in treatment. *Psychology of Addictive Behaviors*. Advance online publication. doi:10.1037/a0034199
- Ives, M. L., Chan, Y., Modisette, K. C., & Dennis, M. L. (2010). Characteristics, needs, services, and outcomes of youths in juvenile treatment drug courts as compared to adolescent outpatient treatment. *Drug Court Review*, 7, 10–56.
- Kaplan, D. W., Calonge, B. N., Guernsey, B. P., & Hanrahan, M. B. (1998). Managed care and school-based health centers. *Archives of Pediatric and Adolescent Medicine*, 152, 25–33. doi:10.1001/archpedi.152.1.25
- Lennox, R., Dennis, M. L., Ives, M., & White, M. K. (2006). The construct and predictive validity of different approaches to combining urine and self-reported drug use measures among older adolescents after substance abuse treatment. *American Journal on Addictions*, 15, 92–101.
- Lennox, R. D., Dennis, M. L., Scott, C. K., & Funk, R. R. (2006). Combining psychometric and biometric measures of substance use. *Drug and Alcohol Dependence*, 83, 95–103. doi:10.1016/j.drugalcdep.2005.10.016
- Lofink, H., Kuebler, J., Juszczyk, L., Schlitt, J., Even, M., Rosenberg, J., & White, I. (2013). *2010–2011 School-Based Health Alliance census report*. Washington, DC: School-Based Health Alliance.
- McClelland, G. M., Elkington, K. S., Teplin, L. A., & Abram, K. M. (2004). Multiple substance use disorders in juvenile detainees. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43, 1215–1224.
- Meyers, R. J., & Smith, J. E. (1995). *Clinical guide to alcohol treatment: The community reinforcement approach*. New York: Guilford Press.
- Perepletchikova, F., & Kazdin, A. E. (2005). Treatment integrity and therapeutic change: Issues and research recommendations. *Clinical Psychology: Science and Practice*, 12, 365–383. doi:10.1093/clipsy.bpi045
- Perepletchikova, F., Treat, T. A., & Kazdin, A. E. (2007). Treatment integrity in psychotherapy research: Analysis of the studies and examination of the associated factors. *Journal of Consulting and Clinical Psychology*, 75, 829–841. doi:10.1037/0022-006X.75.6.829
- Rogers, J. L., Howard, K. I., & Vessey, J. T. (1993). Using significance tests to evaluate equivalence between two experimental groups. *Psychological Bulletin*, 113, 553–565. doi:10.1037/0033-2909.113.3.553
- Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology Review*, 3, 223–241. doi:10.1023/A:1026425104386

- SAMHSA. (2011). *Results from the 2010 National Survey on Drug Use and Health: Summary of national findings*. (NSDUH Series 4-41, HHS Publication No. (SMA) 11-4658) Rockville, MD: Author.
- SAMHSA, Office of Applied Studies. (2013). National Survey on Drug Use and Health, 2011 & 2012. Retrieved December 31 from <http://www.samhsa.gov/data/NSDUH/2012SummNatFindDetTables/DefTabs/NSDUH-DefTabsSect5peTabs1to56-2012.htm#Tab5.3A>
- Slesnick, N., Prestopnik, J. L., Meyers, R. J., & Glassman, M. (2007). Treatment outcome for street-living, homeless youth. *Addictive Behaviors*, 32, 1237–1251. doi:10.1016/j.addbeh.2006.08.010
- Smith, J. E., Gianini, L. M., Garner, B. R., Krall, K. L., & Godley, S. H. (in press). A behaviorally-anchored rating system to monitor treatment integrity for community clinicians using the Adolescent Community Reinforcement Approach. *Journal of Child and Adolescent Substance Abuse*.
- Smith, D. C., Godley, S. H., Godley, M. D., & Dennis, M. L. (2010). Community reinforcement approach outcomes among emerging adults and adolescents. *Alcoholism: Clinical and Experimental Research*, 34(Supplement 2), 288A.
- Smith, J. E., Lundy, S. L., & Gianini, L. (2007). *Community Reinforcement Approach (CRA) and Adolescent Community Reinforcement Approach (A-CRA) coding manual*. Albuquerque: University of New Mexico.
- Sterling, S., Valkanoff, T., Hinman, A., & Weisner, C. (2012). Integrating substance use treatment into adolescent health care. *Current Psychiatry Reports*, 14, 453–461. doi:10.1007/s11920-012-0304-9
- Sterling, S., & Weisner, C. (2005). Chemical dependency and psychiatric services for adolescents in private managed care: Implications for outcomes. *Alcoholism: Clinical and Experimental Research*, 25, 801–809. doi:10.1097/01.ALC.0000164373.89061.2
- Subramaniam, G., Ives, M. L., Stitzer, M. L., & Dennis, M. L. (2010). The added risk of opioid problem use among treatment-seeking youth with marijuana and/or alcohol problem use. *Addiction*, 105, 686–698. doi:10.1111/j.1360-0443.2009.02829.x
- Titus, J. C. (2010). The nature of victimization among youths with hearing loss in substance abuse treatment. *American Annals of the Deaf*, 155(1), 19–30. doi:10.1353/aad.0.0127
- United States Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. Center for Behavioral Health Statistics and Quality. (2009). *Treatment Episode Data Set – Discharges (TEDS-D)*, ICPSR1-v1. Ann Arbor, MI. Inter-University Consortium for Political and Social Research [distributor], 2012-10-25. doi:10.3886/ICPSR33621.v1
- Wagner, E. F., Tubman, J. G., & Gil, A. G. (2004). Implementing school-based substance abuse interventions: Methodological dilemmas and recommended solutions. *Addiction*, 2, 106–119. doi:10.1111/j.1360-0443.2004.00858.x
- Weist, M. D., Myers, C. P., Hastings, E., Ghuman, H., & Han, Y. L. (1999). Psychosocial functioning of youth receiving mental health services in the schools versus community mental health centers. *Community Mental Health Journal*, 35(1), 69–81. doi:10.1023/A:1018700126364
- Winters, K. C., Fahnhorst, T., Botzet, A., Lee, S., & Lalone, B. (2012). Brief intervention for drug-abusing adolescents in a school setting: Outcomes and mediating factors. *Journal of Substance Abuse Treatment*, 42, 279–288. doi:10.1016/j.jsat.2011.08.005
- Winters, K. C., Leitten, W., Wagner, E., & O’Leary, T. (2007). Use of brief interventions for drug abusing teenagers within a middle and high school setting. *Journal of School Health*, 77, 196–206. doi:10.1111/j.1746-1561.2007.00191.x