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Callous–Unemotional Traits and Response to Functional Family Therapy in Adolescent Offenders

Stuart F. White, Ph.D.*, Paul J. Frick, Ph.D.†, Kathryn Lawing, Ph.D.† and Daliah Bauer, Ph.D.‡

OBJECTIVE

The current study examined whether callous–unemotional (CU) traits moderated the effectiveness of Functional Family Therapy for juvenile justice involved adolescents.

METHOD

Participants were all youths ($n = 134$) who had been arrested and participated in an FFT program provided in a community mental health center over a 20-month period (mean age 15.34, 71.6% males, 59% African-American). Parent and self-report ratings of emotional, behavioral, and social functioning, multi-informant ratings of treatment progress, and probation/arrest records were used as outcome indicators.

RESULTS

CU traits were associated with poorer behavioral, emotional, and social adjustment prior to treatment but they were also associated with greater improvements in adjustment over the course of treatment. CU traits were not associated with significantly lower rates of participation or higher rates of treatment dropout, and the association between CU traits and risk for violent charges decreased after treatment at 6- and 12-month follow-ups. However, CU traits were still correlated with poorer levels of adjustment post-treatment, less perceived change over treatment by youth and their parents, and increased likelihood of violent offending during treatment.

CONCLUSIONS

The results of this study indicate that FFT can lead to improvements in youth with CU traits; however, they enter treatment with a greater number of symptoms and are at

*Correspondence to: Stuart F. White, Ph.D., The National Institute of Mental Health, 9000 Rockville Pike, Bldg. 15k, Room 300-C, Bethesda, MD 20892, U.S.A. E-mail: whitesf@mail.nih.gov
†University of New Orleans
‡Jefferson Parish Health and Human Services Authority
§The National Institute of Mental Health, 9000 Rockville Pike, Bldg. 15k, Room 300-C, Bethesda, MD 20892, U.S.A.

higher risk for committing violence during treatment than other youth.

INTRODUCTION

The cost of juvenile delinquency is enormous and includes educating, treating, and incarcerating the youth who have committed the crime, as well as the emotional and monetary costs to the victims of crime and the costs to society associated with a decreased standard living in areas with high concentrations of juvenile crime (Welsh et al., 2008). Given the high costs of juvenile crime, significant effort has focused on combating juvenile crime and treating juvenile offenders (Frick, 2006; Lipsey, 1995). Unfortunately, while treating mild conduct problems in young children has proven to be successful with several types of intervention, treating older adolescents with severe antisocial behavior has proven to be more difficult (Holmbeck, Greenley, & Franks, 2003). One critical reason for this lack of treatment effectiveness is the fact that antisocial youth do not comprise a homogenous group, and subgroups of antisocial youth may differ in the severity of their antisocial behavior and the causal processes leading to their aggressive and delinquent behaviors, both of which may result in differential treatment needs across groups of antisocial youths (Frick, 2006; Moffitt, 1993).

One subgroup of antisocial youths that has proven to be particularly important is a group who show callous and unemotional (CU) traits (e.g., lack of empathy and guilt; deficient or shallow emotions). Antisocial youth with these traits appear to show a more severe, stable, and aggressive pattern of antisocial behavior (Edens, Campbell, & Weir, 2007; Frick & Dickens, 2006; Frick & White, 2008; Leistico, Salekin, DeCoster, & Rogers, 2008). For example, within samples of adolescents involved in the juvenile justice system, CU traits designate a distinct group who are more severely aggressive and violent (Kruh, Frick, & Clements, 2005; Lawing, Frick, & Cruise, 2010), initiate their delinquency at an earlier age (Silverthorn, Frick, & Reynolds, 2001), and are at increased risk for future offending, even controlling for their early age of initiation of delinquent behavior (Loeber et al., 2005).

In addition, Frick and White (2008) provided a comprehensive review of research showing that youth with CU traits show a number of distinct social, cognitive, and emotional characteristics compared with other antisocial youth. Specifically, they reviewed four studies showing that conduct problems in youth with CU traits are less strongly related to dysfunctional parenting practices (see also Edens, Skopp, & Cahill, 2008, for similar findings in a detained, adolescent sample). Further, they reviewed 10 studies showing differences in how antisocial youth with and without CU traits process emotional stimuli, with youth high on CU traits showing deficits in the processing of negative emotional stimuli and, even more specifically, deficits to signs of fear and distress in others. Third, another 10 studies were reviewed showing distinct cognitive characteristics of antisocial youth with CU traits, such as less sensitivity to punishment cues, especially when a reward oriented response set is primed, showing more positive outcome expectancies in aggressive situations with peers, and being more likely to exhibit verbal deficits than other antisocial youth. Fourth, they reviewed seven studies showing that youth with CU traits show unique personality characteristics, such as showing more fearless or thrill seeking behaviors and less trait anxiety or neuroticism when controlling for their level of antisocial behavior.

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Thus, antisocial youth with CU traits seem to be a clinically important group who show distinct characteristics that could influence their response to treatment. Consistent with this possibility, several studies have shown that adolescent offenders with CU traits show poorer response to typical treatment programs (Falkenbach, Poythress, & Heide, 2003; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; O'Neill, Lidz, & Heilbrun, 2003; Spain, Douglas, Poythress, & Epstein, 2004). For example, O'Neill et al. (2003) reported that CU traits were positively correlated with greater attrition rates, poorer quality participation, increased substance abuse, and decreased overall clinical improvement in adolescent juvenile offenders. Similar results have been reported in younger samples, with children who show CU traits responding more poorly to many types of behavioral intervention than other children with conduct problems (Hawes & Dadds, 2005; Waschbusch, Carrey, Willoughby, King, & Andrade, 2007).

Despite this somewhat pessimistic view of the treatment response for youth with CU traits, there are a few indications that some interventions may be effective, especially when they are comprehensive and tailored to the unique cognitive, emotional, and social characteristics of these youth. For example, Hawes and Dadds (2005) reported that, although a time-out intervention was less effective for youth high on CU traits in a behavioral parenting program, reward-based strategies were equally effective for all youth with conduct problems. Further, Kolko and Pardini (2010) reported that clinic-referred children with CU traits who received an individualized and comprehensive modular intervention involving medication for Attention Deficit Hyperactivity Disorder, cognitive–behavioral treatment, parent management training, school consultation, peer relationship development, and crisis management showed similar rates of improvement to other children with severe conduct problems. Finally, Caldwell and colleagues (Caldwell, Skeem, Salekin, & Van Rybroek, 2006) demonstrated that adolescent offenders high on CU traits improved when they participated in an intensive treatment program that utilized reward-oriented approaches, targeted the interests of the adolescent, and taught empathy skills. Specifically, they reported that adolescent offenders high on CU traits who received the intensive treatment were less likely to recidivate in a 2-year follow-up period than offenders high on CU traits in a treatment-as-usual program in the same correctional facility.

Thus, there appears to be some indication that, if treatments can be tailored to meet the unique needs of this group of antisocial youth, some success is possible. There are several treatment modalities that (a) have proven to be effective for antisocial adolescents and (b) provide a structure for individualizing treatment for youths who have different causal processes leading to their behavior problems (Henggeler & Lee, 2003). One such treatment is Functional Family Therapy (FFT; Sexton & Alexander, 1999). FFT has been used with adolescents aged 11–18, including youth involved in the juvenile justice system. It is a comprehensive program that is individualized to meet the specific needs of each adolescent and family. FFT has shown success in treating several different types of justice-involved youth in several controlled treatment trials. For example, Klein, Alexander, and Parsons (1977) studied 86 families of juvenile offenders who were randomly assigned to the FFT intervention, another family intervention, a psychodynamic individual intervention, or a no-treatment control group. They reported that recidivism rates were lower in the FFT intervention. Similarly, Barton and colleagues (Barton, Alexander, Waldron, Turner, & Warburton, 1985) compared the effectiveness of FFT for a group of serious adolescent offenders to a group-home placement with a token economy. The FFT group had a significantly lower rate of recidivism at 15- through

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36-month follow-up (Barton et al., 1985; Gordon, Graves, & Arbuthnot, 1995). Finally, Barnowski (2002; 2004) reported that FFT was successful in reducing recidivism in a study of 400 families involved in a statewide implementation of FFT administered through juvenile courts. Specifically, recidivism rates for felony crimes at 12- and 18-month follow-up were 40% and 38% lower respectively for youth placed in FFT compared with a treatment-as-usual control group.

Thus, FFT is considered an evidence-based treatment for juvenile offenders. Further, its structure allows it to be tailored to the different characteristics of antisocial youths. Vitally, a critical part to the FFT approach to treatment is to explore the functions of children and families' behavior within the family context and to find more adaptive ways of meeting the family's needs (Sexton & Alexander, 1999). This focus is consistent with treatment approaches used for adults with psychopathy that emphasize the need to find the sources of motivation for change that may be unique for those high on psychopathic traits (e.g., self-interest; Wong & Hare, 2005). However, despite the promise of FFT as a treatment for juvenile offenders high on CU traits, the effectiveness of FFT for this group has not been tested.

Thus, the current study sought to determine if level of CU traits moderated treatment effectiveness of an FFT program administered in a community mental health system for a large ($n = 134$) sample of adolescent juvenile offenders. Importantly, this study was not a controlled trial of the effectiveness of FFT, since all eligible offenders were provided the treatment. Instead, this study focused solely on the issue of whether offenders with and without CU traits showed differential treatment response using several different outcome indices. First, we tested whether CU traits were related to changes from pre- to post-treatment scores on measures of social, emotional, and behavioral functioning. Second, we tested whether CU traits were related to parent, youth, and therapist impressions of an adolescent's treatment response. Assessing these subjective ratings of treatment response, in addition to more objective measures, is important because some research suggests that adults with CU traits appear to be more engaged in treatment compared with other antisocial individuals, possibly because of their ability to manipulate others though impression management, even if objective indicators of treatment success do not support these subjective impressions (Looman, Abracen, Serin, & Marquis, 2005; Seto & Barbaree, 1999). Third, we tested whether CU traits were related to rates of recidivism, especially violent recidivism, both during and after treatment. Testing risk for recidivism during treatment is an important indicator of whether youth with CU traits can be safely managed in an outpatient treatment program. Testing risk for recidivism 6 months and 1 year after treatment is important to determine if any success experienced during treatment leads to reductions in the risk for later criminal behavior.

METHOD

Participants

Participants were youth and their families referred to an FFT program through a juvenile court diversion program. The FFT provider was a publically funded community mental health center. All participating youth had been arrested and the FFT services were provided as a part of the adjudicated youth's court-mandated post-dispositional interventions. If the youth of the family refused treatment, the parole officer was notified and other

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post-dispositional alternatives, including detention, were considered. The sample consisted of all youth who participated in the FFT program over a 20-month period ($n = 134$). The participants were all between the ages of 11 and 17 (mean = 15.34; SD = 1.34) and 71.6% ($n = 96$) of the sample were boys. The majority of the youth (59.0%; $n = 79$) were African-American. European-Americans made up 35.1% ($n = 47$) of the sample and 4.5% ($n = 6$) of the youth self-identified as Hispanic. The remaining 1.4% ($n = 2$) of the sample did not report their ethnicities. Status offenses made up the index offense for nearly half of the sample (47.8%, $n = 64$), while 22.4% ($n = 30$) of the sample committed violent offenses, 19.4% ($n = 26$) committed property offenses and 6.0% ($n = 8$) of youth committed drug offenses. Six (4.5%) youth did not have data regarding the offense leading to their current referral for treatment.

Procedures

Active parental consent and youth assent for their information to be used in research was obtained by the mental health service provider at the outset of treatment. The FFT program therapists, who were blind to the study's hypotheses, collected all pre- and post-treatment data as a routine part of their clinical services, which included a clinical outcome evaluation. All data entry and analysis were conducted by independent research staff. Five therapists provided FFT, all of whom were trained by the developers of FFT and followed all of the required procedures designed by the developers to ensure standard administration of the intervention. Specifically, the treatment developers continuously monitored fidelity to the FFT program and appropriate tailoring of the program to fit the needs of specific families. Fidelity to the model was rated on a seven-point scale and was considered acceptable by the developers of FFT for the therapists delivering the program over this study's duration.

The length of FFT is not set but is tailored to the needs of the youth and family. It is typically three to five months. Participants in the current sample attended between 1 and 19 sessions (mean = 9.60; SD = 4.12). Further, 23% of youth and families dropped out of treatment prior to mutually agreed upon termination with the therapist. Records of arrests, parole violations, and positive drug screens for the participants before, during, and after treatment were compiled from official records provided by the juvenile services office. The University of New Orleans Institutional Review Board approved all data collection procedures.

Measures

Inventory of Callous–Unemotional Traits (ICU; Frick, unpublished ratings scale)

The ICU is a 24-item self-report scale designed to assess callous and unemotional traits in youth. The ICU was derived from the callous–unemotional (CU) scale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), which has been widely used in various samples of youth. The construct validity of the ICU was supported in a large community sample ($n = 1443$) of 13- to 18-year-old non-referred German adolescents (Essau, Sasagawa, & Frick, 2006), as well as an American sample

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($n = 248$) of juvenile offenders between the ages of 12 and 20 (Kimonis et al., 2008). In both samples, the total scale showed adequate internal consistency (α of .77 and .81) and expected associations with aggression, delinquency, personality traits (e.g., sensation seeking, Big Five dimensions), emotional reactivity, and psychosocial impairment. Further, in a study of adolescent sex offenders, the ICU scale was related to greater number of sexual offense victims, use of more violence with victims, and more planning in the sexual offense than those low on these traits (Lawing et al., 2010). Internal consistency of the ICU was acceptable in the current sample (Cronbach's $\alpha = .853$).

Behavior Assessment Scale for Children, 2nd edition (BASC-2; Reynolds & Kamphaus, 2004)

The BASC-2 is a standardized and norm-referenced rating scale that is widely used to assess the emotional and behavioral functioning and self-perceptions of children and adolescents. There are separate forms for parent and youth ratings. There is extensive evidence to support the reliability of these scales in adolescent samples (Frick, Barry, & Kamphaus, 2010). Although the full BASC- 2 was administered as a standard part of the FFT treatment, five scales were chosen to test pre- and post-treatment changes because of their coverage of social, emotional, and behavioral domains and using the informant judged to be the best reporter of each domain (Frick et al., 2010). Specifically, the Emotional Symptoms Index (ESI), the Interpersonal Relations (IR), and Relations with Parents (RP) subscales were used from the youth self-report form, while the Conduct Problems (CP) and Aggression (AG) subscales were used from the parent report form.

FFT Treatment Forms (Sexton & Alexander, 1999)

Data from two questionnaires developed for use specifically in the FFT program were used to assess children's, parents', and therapists' subjective impressions of treatment success. First, the Client Outcome Measure (COM) was filled out by the clients at the end of treatment to assess the degree to which they viewed that change had occurred since the beginning of treatment. Both youth and parental impressions of the effectiveness of the treatment were solicited on a six-point Likert scale. Additionally, parents were asked to report on several behavioral markers of treatment progress, including reductions in school problems, substance abuse, and general delinquency. For this study, the five treatment progress items were summed to provide a composite measure of client-reported improvement. Internal consistency for this scale was adequate for the youth-reported COM ($\alpha = .864$), but somewhat low for the parent-reported COM ($\alpha = .638$). Second, an analogous Therapist Outcome Measure (TOM) was filled out by the clinician at the end of treatment to assess the degree to which he or she viewed change as having occurred since the beginning of treatment with the family. Again, all items were answered on a series of Likert scales and are designed to assess both level of improvement in family functioning and current actual level of family functioning. For this study, the five treatment progress items were summed to provide a composite measure of therapist-reported family functioning improvement. Internal consistency for this scale was acceptable ($\alpha = .849$).

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Parole Record

Data on arrests during and after treatment were gathered from official records provided by the juvenile services office, which is legally mandated to keep juvenile arrest records. This information included all charges made against the participants, including all probation violations. From these data, the total number of charges, probation violations, and violent offenses were compiled for three distinct time periods: during FFT, from the participants' treatment end date until six months after the end date, and from the participants' treatment end date until one year after the end date.

Data Analysis Plan

To test whether CU traits were related to changes in pre- to post-treatment scores on measures of social, emotional, and behavioral functioning, change scores on the BASC subscales were calculated and correlated with CU traits. To test whether CU traits were related to parent, youth, and therapist impressions of an adolescent's treatment response, another series of correlations was conducted using change scores on the FFT outcome scales. As another indicator of change, a reliable change index was also calculated and used to assess the relative proportions of participants with high and low levels (median split) of CU traits who reliably improved or reliably worsened (i.e., showing more change than would be expected based on the standard error of measurement for the scale) over the course of treatment (Jacobson & Truax, 1991). Finally, to test whether CU traits were related to rates of recidivism, a series of logistic regressions was conducted to determine if CU traits predicted rates of reoffending during and after treatment, after controlling for number of prior offenses and level of parent-reported conduct problems at pre-treatment. Importantly, these analyses testing treatment effects on recidivism included all youth in the sample, including those who dropped out of treatment.

RESULTS

Preliminary Analyses

The demographic characteristics of the sample, as well as means and standard deviations for pre- and post-treatment scores on outcomes measures, are presented in Table 1. Prior to conducting the main analyses of the study, a series of correlations was run to investigate the association of CU traits and a number of demographic variables. CU traits were not significantly associated with gender, race, or family income (r ranging from $-.082$ to .003) of the participants. CU traits approached significance in their associations with prior charges ($r = .154$, $p = .087$), age ($r = -.154$, $p = .086$), and age at first offence ($r = -.181$, $p = .055$). Also, at pre-treatment, CU traits were moderately to strongly (r ranging from $-.41$ to .64) associated with greater emotional, behavioral, and social maladjustment as measured by the BASC-2 subscales of Emotional Symptoms Index (ESI), Relations with Parents (RP), Interpersonal Relationships (IR), Aggression (AG), and Conduct Problems (CP) (see Table 2).

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Table 1. Sample characteristics pre- and post-treatment

		Pre-treatment Mean (std deviation)	Post-treatment Mean (std deviation)	*t*(df)	*p*	η^2
Gender (% male)		71.6%				
Race (% European-Am.)		35.1%				
ICU		41.64 (10.11)				
Age at first offense		13.75 (1.78)				
Number of prior charges		5.57 (4.41)				
Age		15.34 (1.34)				
CP	($N = 77$)	74.19 (19.73)	67.08 (14.75)	$t(76) = 2.912$	.005	.100
AGG	($N = 78$)	64.81 (18.16)	60.49 (14.26)	$t(77) = 2.158$	.034	.057
ESI	($N = 79$)	50.92 (10.69)	50.43 (10.89)	$t(78) = .761$	.449	.007
Rel. parents	($N = 78$)	43.64 (12.34)	44.84 (10.45)	$t(77) = -.364$	.717	.002
Interper.	($N = 79$)	52.30 (8.70)	50.53 (9.86)	$t(78) = 1.601$	.113	.032
Youth COM	($N = 96$)		18.07 (5.26)			
Parent COM	($N = 93$)		18.32 (5.39)			
Therapist COM	($N = 107$)		16.62 (4.28)			

ICU, Inventory of Callous–Unemotional Traits; CP, BASC-2 Conduct Problems; AGG, BASC-2 Aggression; ESI, BASC-2 Emotional Symptoms Index; Rel. parents, BASC-2 Parent–Child Relations; Interper., BASC-2 Interpersonal Relations; COM, Client Outcome Measure.

Table 2. CU trait association with measures of treatment success

Treatment phase	*r* (partial *r*)	*r* (partial *r*)	*r* (partial *r*)	*r* (partial *r*)	*r* (partial *r*)
Pre-test BASC	ESI ($N = 112$) .41**	RP ($N = 112$) −.41**	IR ($N = 112$) −.34**	AG ($N = 111$) .62**	CP ($N = 111$) .64**
Post-test BASC	ESI ($N = 83$) .23*	RP ($N = 83$) −.38**	IR ($N = 83$) −.31**	AG ($N = 85$) .45**	CP ($N = 85$) .36**
Treatment ΔBASC	ΔESI ($N = 79$)	ΔRP ($N = 78$)	ΔIR ($N = 79$)	ΔAG ($N = 78$)	ΔCP ($N = 77$)
	−.24* (−.09)	.07 (−.16)	−.02 (−.17)	−.40** (.15)	−.27** (.02)
Treatment	yCOM ($N = 96$) −.21*	pCOM ($N = 93$) −.28**	tCOM ($N = 107$) −.16	Sessions ($N = 122$) −.08	DO ($N = 125$) .13

*= $p < .05$, **= $p < .01$
Δ = change score, post-treatment score – pre-treatment score
CU = Callous-Unemotional, AG = BASC-2 Aggression, CP = BASC-2 Conduct Problems, ESI = BASC-2 Emotional Symptoms Index, RP = BASC-2 Parent-Child Relations, IR = BASC-2 Interpersonal Relations, BASC-2 CP = Conduct Problems. yCOM = Youth Client Outcome Measure, pCOM = Parent Client Outcome Measure, tCOM = Therapist Client Outcome Measure, DO = drop-out

Additionally, change in behavioral and emotional functioning as measured by BASC subscale scores from pre-test to post-test was examined in order to determine if there was an effect of the treatment on the group as a whole. These results can be found in Table 1. While no significant improvements were found for the indicators of emotional or social adjustment (Emotional Symptoms Index, Relationship with Parents, and Interpersonal Relations), significant improvements were found over treatment in both the parent reported BASC Aggression subscale ($t(77) = 2.158$, $p = .034$, $\eta^2 = .057$) and the Conduct Problems subscale ($t(76) = 2.912$, $p = .005$, $\eta^2 = .100$).

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Callous–Unemotional Traits and Treatment Progress in Functional Family Therapy

To assess change over treatment, change scores (pre-test *t*-score minus post-test *t*-score) were created using the five scales from the BASC-2. The correlations between these change scores and levels of CU traits are reported in Table 2. Change over the course of treatment was significantly related to CU traits for ESI, AG, and CP. Specifically, CU traits were positively correlated with changes in child-reported emotional symptoms ($r = .24$, $p < .05$), parent-reported aggression ($r = .40$, $p < .001$), and parent-reported conduct problems ($r = .27$, $p < .01$). These findings indicate that higher levels of CU traits were associated with greater decreases in emotional and behavioral problems over treatment. However, CU traits were not related to changes in child-reported relations with parents or interpersonal relations ($r = -.07$ and .02, respectively).

Given that children with CU traits scores had higher pre-test scores, the associations between CU traits and pre-post treatment change scores were also calculated controlling for pretreatment scores. These partial correlations are also provided in Table 2. When controlling for pre-treatment scores, the associations between CU traits and treatment change were no longer significant, suggesting that youth with higher pre-treatment levels of emotional and behavioral problems showed greater change over treatment than youth with more moderate pre-treatment levels of dysfunction. Further, at post-test, CU traits were still significantly correlated with all five measures of emotional, behavioral, and social problems (*r* ranging from $-.38$ to .45, all $p < .05$), indicating that, despite showing the greatest change in treatment, those high on CU traits continued to show the highest level of maladjustment after treatment.

Correlations between CU traits and several additional measures of treatment progress are also provided in Table 2. Specifically, CU traits were not significantly associated with number of sessions attended ($r = -.08$, $p = .378$) or with dropping out of treatment ($r = .13$, $p = .154$). However, CU traits were negatively associated with youth- ($r = -.21$, $p < .05$) and parent-reported ($r = -.28$, $p < .01$) improvement over the course of treatment as measured by the Client Outcome Measure (see Table 2). Thus, higher CU traits were associated with less perceived improvement in treatment by parents and youths. The correlation with therapist-rated measure of improvement was also negative ($r = -.16$, $p = .121$), but this association did not reach significance.

Given the limitations of change score analysis in providing information about the degree of change relative to the standard error of measurement (SEM) of the scale, the relative proportions of youth with high and low levels of CU traits who showed reliable changes (i.e., changing more than would be predicted by the SEM of the measure) over the course of treatment was examined (see Table 3). Chi square analyses were conducted to determine any differences in proportions of youth reliably changing in the high CU trait group relative to the low CU trait group. Significant differences in proportions of youth reliably changing relative to not reliably changing in the high versus low CU trait group were observed for CP ($\chi^2 = 6.388$, $p = .041$) and RP ($\chi^2 = 17.149$, $p = <.001$). For CP, over half of the low CU trait group showed no reliable change in conduct problems, while over 70% showed reliable change in the high CU trait group. For the low CU trait group the proportion of youth showing reliable improvement was 1.8 times the proportion showing reliable worsening, while in the high group 2.12 times as many youth reliably improved as reliably worsened. For RP, over 95% of youth in the low CU trait group did not reliably change in their

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Table 3. Estimates of reliable change for all outcome measures showing significant treatment effects

BASC subscale		% reliably improving	% reliably worsening	% not reliably changing	χ^2	*p*
ESI					1.886	.389
	Low CU ($n = 44$)	22.73% ($n = 10$)	18.19% ($n = 08$)	59.10% ($n = 26$)		
	High CU ($n = 33$)	36.36% ($n = 12$)	12.12% ($n = 06$)	45.45% ($n = 15$)		
RP					17.149	<.001
	Low CU ($n = 44$)	02.38% ($n = 01$)	02.38% ($n = 01$)	95.45% ($n = 42$)		
	High CU ($n = 32$)	25.00% ($n = 08$)	18.75% ($n = 06$)	56.25% ($n = 18$)		
INTER					1.651	.438
	Low CU ($n = 43$)	02.33% ($n = 01$)	04.65% ($n = 02$)	93.02% ($n = 40$)		
	High CU ($n = 33$)	12.12% ($n = 04$)	06.06% ($n = 02$)	81.81% ($n = 27$)		
CP					6.388	.041
	Low CU ($n = 40$)	27.50% ($n = 11$)	15.00% ($n = 06$)	57.50% ($n = 23$)		
	High CU ($n = 35$)	48.57% ($n = 17$)	22.86% ($n = 08$)	28.57% ($n = 10$)		
AGG					1.068	.586
	Low CU ($n = 41$)	21.95% ($n = 09$)	12.20% ($n = 05$)	65.85% ($n = 27$)		
	High CU ($n = 35$)	28.57% ($n = 10$)	17.14% ($n = 06$)	54.29% ($n = 19$)		

BASC, Behavioral Assessment System for Children—Second Edition; ESI, BASC Emotional Symptoms Index; CU, Callous–Unemotional; RP, BASC Relations with Parents; INTER, BASC Interpersonal Relations; CP, BASC Conduct Problems; AGG, BASC Aggression.

relations with parents, whereas 44.75% of the high CU trait group reliably changed. In the high CU trait group, eight youth reliably improved, while six youth reliably worsened, compared with one youth reliably changing in each direction in the low CU trait group.

Callous–Unemotional Traits and Risk for Reoffending

As noted above, the number of new charges, both overall and for violent offenses only, was assessed during treatment, at six-month follow-up, and at 12-month follow-up. In Table 4, we provide the rate of new charges at each of these time points. Specifically, 47.8% of the sample had at least one new charge or probation violation during treatment and 14.9% of the sample had at least one violent offense during treatment. At follow-up, the base rates for new charges/probation violations and new violent charges were at six months 41.8% and 14.2% respectively and at one year 62.7% and 21.6% respectively.

Table 4 also reports the results of a series of logistic regressions testing the ability of CU traits to predict the likelihood of new charges during treatment, at six-month follow-up, and at 12-month follow-up. These regressions were conducted controlling for prior charges and initial levels of conduct problems. In these analyses, CU traits were not a predictor of new charges overall during treatment or at either follow-up time point. However, CU traits were related to a higher likelihood of having a new violent charge during treatment (odds ratio = 1.165, $p < .01$). CU traits also approached significance in predicting new violent charges over the six-month period (odds ratio = 1.082, $p = .057$) but not at the 12-month follow-up (odds ratio = 1.032, $p = .342$). Overall, the best predictor of new charges was number of prior arrests, which was a significant predictor in five of the six logistic regressions. When controlling for prior charges and CU traits, level of pre-treatment conduct problems did not significantly predict more charges at any time point. However, they were significantly related to number of violent charges, but in predicting *fewer* violent charges (odds ratio = .949, $p < .05$), when in a logistic regression model with prior charges and CU traits.

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Table 4. Logistic regression analysis to estimate the effect of charges and probation violations prior to treatment, conduct problems at pre-treatment, and CU traits in predicting delinquent outcomes

Dependent variable	(% positive)	Priors odds ratio (Cohen's *d*)	CP odds ratio (Cohen's *d*)	CU odds ratio (Cohen's *d*)	Model R^2 (Naglekerke)
During treatment					
Charges/probation	47.8%	1.238** (.12)	.995 (.003)	1.029 (.02)	.221**
Violent charges	14.9%	1.221** (.11)	.949* (.03)	1.165** (.08)	.337**
Six month follow-up					
Charges/probation	41.8%	1.100* (.05)	1.004 (.002)	1.035 (.02)	.117*
Violent charges	14.2%	1.118* (.06)	.997 (.002)	1.082[a] (.04)	.185**
Twelve month follow-up					
Charges/probation	62.7%	1.072 (.04)	1.005 (.003)	1.013 (.007)	.045
Violent charges	21.6%	1.134* (.07)	.998 (.001)	1.032 (.02)	.123*

*$p < .05$,
**$p < .01$,
[a]$p < .057$,
CP, Conduct Problems; CU, Callous–Unemotional.

DISCUSSION

Past research suggests that the presence of CU traits seems to designate an important subgroup of antisocial and delinquent youths. Specifically, CU traits have been associated with more severe and chronic antisocial behavior (Frick & Dickens, 2006) and with a number of distinct social, emotional, and cognitive correlates (Frick & White, 2008). Importantly, CU traits have been associated with poor treatment outcomes for justice-involved adolescents in several studies (Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003; Spain et al., 2004). FFT is a multi-component treatment which has proven successful in treating juvenile offenders and which purports to adjust treatment approaches based on the unique needs of the youth and family (Sexton & Alexander, 1999). Thus, FFT could be an effective treatment for antisocial behavior in youth with and without CU traits by tailoring treatment to fit the distinct characteristics of youths and their families in the two groups. Unfortunately, this possibility has not been tested previously.

The evidence for the effectiveness of FFT for youth with high levels of CU traits in our current study was mixed. Consistent with previous research (see Frick & White, 2008), CU traits were related to more severe emotional, social, and behavioral adjustment prior to treatment. Importantly, however, CU traits were related to greater changes on these measures across treatment. Thus, FFT did lead to greater improvements in functioning for youths with CU traits relative to children without these traits. This was also indicated in reliable change analyses, which takes into account the standard error of measure, and these findings also indicated that those higher on CU traits showed greater improvement in their relations with parents and conduct problems.

Also supporting the effectiveness of FFT for those high on CU traits, CU traits were not associated with significantly lower rates of participation or higher rates of treatment dropout, unlike several past studies (Falkenbach et al., 2003; Gretton et al., 2001; O'Neill et al., 2003). This could be due to the strong emphasis in FFT on engaging the youth and family utilizing motivation techniques tailored to the specific individuals (Sexton & Alexander, 1999). Finally, the association between CU traits and risk for violent charges

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decreased after treatment. Thus, taken together, these results are promising and they support the findings of a few other studies suggesting that certain types of intervention may be effective for children (Hawes & Dadds, 2005; Kolko & Pardini, 2010; Waschbusch et al., 2007) and adolescents (Caldwell et al., 2006) with these traits.

However, these positive findings need to be interpreted in light of several findings showing limitations in the effectiveness of FFT for juvenile offenders with CU traits. First, although CU traits were associated with greater changes in treatment, this appeared largely due to the fact that they started at a much higher level of maladjustment prior to treatment. Thus, given the absence of a no-treatment control group, the effects of regression to the mean cannot be ruled out, although the possibility that this completely accounts for the findings is minimized by the use of the reliable change analyses. Further, CU traits were still positively related to scores on the measures of emotional, social, and behavioral problems after treatment. Thus, although youth with CU traits changed the most over treatment, they still ended treatment with more severe problems in adjustment. Finally, CU traits were negatively associated with both parents' and youths' subjective ratings of response to treatment. All of these findings together suggest that youths with CU traits did show improvements across treatment, but they still tended to show the highest level of emotional, social, and behavioral problems after treatment.

Importantly, CU traits were related to risk for violent reoffending during treatment. This is consistent with past research indicating that adolescent offenders with these traits are at increased risk for violent reoffending (Gretton et al., 2001). Also, this is also consistent with meta-analytic reviews showing that psychopathic traits, which include CU traits, are related to aggressive and violent incidents in institutions for incarcerated adults (Guy, Edens, Anthony, & Douglas, 2005) and adolescents (Edens & Campbell, 2007). Thus, decisions on treatment of youth with CU traits must be made in the context of this violence risk. However, the level of risk should be appropriately considered. For example, in the Edens and Campbell (2007) meta-analyses of 15 samples with 1320 adolescent participants, the weighted mean effect size between the measure of psychopathy, which included CU traits, and physical violence in institutions was $r = .28$. Further, in the current sample, the odds ratio for CU traits predicting violent reoffending, controlling for previous offenses and pre-treatment conduct problems, indicates that for each increase of 1 unit on the measure of CU traits there was a corresponding increase of 1.165 in the odds for violent reoffending during treatment. This odds ratio is equivalent to a Cohen's d of .08 (Chinn, 2000), which is generally considered a small effect. Thus, justice-involved adolescents high on CU traits appear to be at modest increased risk for violence, whether treated in an institution or in the community.

There are several important limitations to the current study. First, as noted above, the focus of the current study was solely on whether CU traits moderated the effectiveness of FFT for adolescent offenders and was not designed to provide a further test of the overall effectiveness of FFT. As a result, there was neither a no-treatment or treatment-as-usual control group. This leads to a number of limitations in interpreting the results. As already mentioned, youth with high levels of CU traits showed the highest scores on the measures of emotional, social, and behavioral maladjustment pre-treatment. Thus, without a control group for comparison, some of the improvement in adolescents with CU traits could be due to regression to the mean. Second, the follow-up data in this study consisted entirely of official re-arrest data. As a result, any delinquency that did not come to the attention of authorities would not be included in these rates. Thus, these rates of reoffending may have been underestimates of the actual rate of delinquent behavior during and after

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treatment. Third, adolescents were referred to the FFT program simply based on their offenses, without considering their mental health needs. The average BASC scores for the sample at pretreatment were well above a normative range for conduct problems and moderately elevated on aggression, but within the normative range for emotional and social functioning (see Table 1). This is appropriate for FFT, which is designed to treat youth at risk for delinquency (Sexton & Alexander, 1999). However, as some adolescents may not have shown significant mental health problems at pre-treatment, the overall effectiveness of FFT in treating emotional and social problems may appear to be less robust than it might in a more psychiatrically impaired sample. Fourth, the sample came from a diversion program and was therefore a lower risk sample than many other juvenile justice samples, which may limit the generalizability of the findings to more severe samples of offending youths.

Within the context of these limitations, our results do suggest that FFT is a promising treatment for adolescent offenders with CU traits. It adds further support to the contention that such youths are not "untreatable", but require a certain type of individualized intervention (Frick, 2009; Salekin, 2010). However, our results also suggest that treatment must be made considering the propensity for violence displayed by these youth. Also, our results suggest that individualized programs such as FFT could improve in their effectiveness for treating these youth. Specifically, FFT therapists are trained to consider the multiple factors that may lead to antisocial behavior. However, they are not explicitly exposed to research on youths with CU traits and their unique characteristics, such as a lack of responsiveness to the distress in others, an overestimation of the potential gains associated with aggression, and a tendency to focus on rewards over punishments. Training on these characteristics and treatment components that have considered these characteristics in their intervention approach (Caldwell et al., 2006) may allow FFT therapists to enhance their ability to tailor interventions to the needs of this clinically important group of antisocial youths.

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