

## Treatment of Impulsive Aggression in Correctional Settings

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**Purpose.** This article reports the implementation of Dialectical Behavioral Therapy—Corrections Modified (DBT-CM) for difficult to manage, impulsive and/or aggressive correctional populations. **Methods.** Participants were English-speaking women ( $n=18$ ) and men ( $n=45$ ) of diverse cultural backgrounds between the ages of 16 and 59 years old retained in state-run prisons in Connecticut. Following consent, and a psychological assessment battery, twice-weekly DBT-CM groups were held over 16 weeks followed by random assignment to DBT coaching or case management condition, with sessions taking place individually for eight weeks. **Data analysis.** A mixed effects regression model was used to test the hypotheses: participants will show decreased aggression, impulsivity, and psychopathology, as well as improved coping, after completing the DBT-CM groups; and will show greater reduction in targeted behaviors than those receiving case management at the six month and 12 month follow-up assessment periods. **Results.** Significant reduction in targeted behavior was found from baseline to following the 16 week DBT-CM skills treatment groups. Both case management and DBT coaching were significant at 12 month follow-up. A significant difference was found for adult men and women. **Conclusions.** The study supports the value of DBT-CM for management of aggressive behaviors in prison settings. Copyright © 2009 John Wiley & Sons, Ltd.

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The management of mentally ill and behaviorally disturbed offenders is a major public safety issue, involving not just correctional facilities, but the community at large. By midyear 2000, there were over 300,000 mentally ill offenders in prisons and jails throughout the nation (BJS, 2006). More than twice this number was estimated to be either on probation or parole in the community (BJS, 1999). The Bureau of Justice Statistics (2006) reported that, at midyear 2005, mental health problems, as indicated by recent history or symptoms, were present in more than half of all prison and jail inmates.

Inmates with mental illness who express impulsive aggressive behaviors can be a management challenge in correctional settings. Current literature views aggressive behavior as a dichotomous construct, conceptually defined as premeditated aggression (often referred to as instrumental, predatory, or callous and unemotional) or impulsive aggression (often referred to as affective, reactive, expressive, emotional, or hostile). Those individuals who fall under the second category express impulsive aggressive behaviors involuntarily, in a burst of rage, with no weighing of potential consequences (Wakai & Trestman, 2008). These individuals have been found to have lower verbal scores and executive cognitive functioning impairments based upon neuropsychological testing (Villemarette-Pittman, Stanford, & Greve, 2003), which allows them to become easily overwhelmed by competing stimuli of the correctional environment.

Compared with prison and jail inmates without mental health problems, those with mental health problems have substantially higher rates of being injured in a fight or being charged with a physical assault, verbal assault, or violation of facility rules during incarceration (BJS, 2006). Additionally, state prison inmates with mental health problems spend on average a maximum sentence that is five months longer (based upon total maximum sentence for all consecutive sentences) than state prisoners without such problems (BJS, 2006).

Offenders with mental health disorders, whether incarcerated or in the community, are at an increased risk for behavior problems that may cause harm to self and others. In a study of 505 randomly selected male and female new admissions to CT jails, Trestman, Ford, Zhang, and Weisbrock (2007) found a high prevalence of mental illness, with 74.1% of females ( $N = 199$ ) and 47.0% of males ( $N = 306$ ) diagnosed with a least one Axis I disorder during their lifetimes. This sample showed a high lifetime prevalence of personality disorders, particularly for antisocial personality disorder (39.5% of males, 27.0% of females) and borderline personality disorder (12.9% of males, 23.2% of females). Borderline personality disorder is among a group of disorders affecting inmates that are the most difficult to manage. Individuals with this disorder exhibit behavior marked by emotional impulsivity and self-injury, and often have limited responsiveness to treatment with medications. There have been few therapeutic programs available to target these behaviors in prison environments.

## REVIEW OF LITERATURE

Cognitive-behavioral approaches for offenders have received empirical support for effecting reduced behavioral problems and improved coping in diverse correctional populations, including substance abusers, sex offenders, and juvenile offenders

(Milkman & Wanberg, 2007; Shingler, 2004; Trupin, Stewart, Beach, & Boesky, 2002). Cognitive Behavior Therapy (CBT) initiates changes in cognitions that affect behavior and can reduce the risk of recidivism (Allen, Mackenzie, & Hickman, 2001; Henning & Frueh, 1996; Husband & Platt, 1993; Scott, 1993; Valliant & Antonowicz, 1991).

A version of CBT known as Dialectical Behavior Therapy (DBT) was originally developed to treat women in the community diagnosed with borderline personality disorder (Linehan, 1993a; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). DBT is similar to CBT with its use of core therapeutic procedures such as problem solving, exposure, skill training, contingency management, and behavior therapy. DBT departs from standard CBT in its emphasis of a “dialectical” approach to behavior change, encouraging individuals to accept themselves as they are in the present within the context of reshaping their cognitions and changing their future behavior (Linehan, 1993b). As a general therapeutic framework, DBT attempts to address maladaptive behaviors by teaching emotional regulation, interpersonal effectiveness, distress tolerance, core mindfulness, and self-management skills. DBT seeks to engage the individual in therapy, providing motivation and support for change by emphasizing the management of therapy-interfering behaviors and the relationship between the therapist and the client. DBT has been shown to significantly reshape maladaptive cognitions and reduce the incidence of self-destructive behaviors (i.e. self-mutilation, suicide, and parasuicidal behaviors), and has become the first empirically supported treatment for borderline personality disorder (Linehan et al., 1991; Linehan, Tutek, Heard, & Armstrong, 1994; Rathus & Miller, 2000).

DBT has been recognized as a promising treatment for criminal justice populations.

Studies (six of which involve randomized controlled trials) published on the treatment of bipolar disorder using DBT in low security in-patient and out-patient settings involved female samples (sizes ranged from 20 to 58) demonstrating significant improvements in parasuicidal behavior, with significantly fewer in-patient days and lower attrition in the DBT group than the treatment as usual group (Bohus et al., 2000; Koons et al., 2001; Linehan et al., 1991; Linehan, Heard, & Armstrong, 1993; Linehan et al., 1999, 1994; Verheul et al., 2003).

Studies of inmates with more challenging behaviors are those studies in high secure settings. Low, Jones, Duggan, Power, and MacLeod (2001) studied the use of DBT with ten women offenders in a high security setting and found at six month follow-up a sustained reduction in deliberate self-harm and dissociative experiences, an increase in survival and coping beliefs, and improvements in depression, suicide ideation, and impulsiveness. Nee and Farman (2005) tested the use of DBT in a one year and 16 week program with a waiting list control group for 16 female completers with BPD in high secure prisons. Despite small sample sizes, positive outcomes are reported and sustained at the six month follow-up, demonstrating improved emotional control and reduced impulsivity, with smaller improvements on self-esteem and anger measures.

Evershed et al. (2003) conducted a study of 17 male inmates assigned to an 18 month adapted version of DBT or a treatment as usual comparison group. Outcome measures reported from pre- to post-test demonstrated a non-significant decrease in the frequency of violence-related behavior for both groups over time and

a significant reduction in the seriousness of violence-related behaviors among the DBT group. When changes between pre- and post-treatment were considered, patients receiving DBT treatment were better able to reduce the cognitive, covert and dispositional aspects of hostility and anger and were significantly better at managing their overt or outward expression of anger and hostility.

In a study of female adolescent offenders, Trupin *et al.* (2002) adapted DBT for those with the most difficult emotional and behavioral problems. In a pre-post-test comparison of intervention group with treatment as usual, youth in the DBT group demonstrated a significant reduction in behavior problems, and there was a lower number of staff punitive responses than for a comparative period of time in the previous year. Berzins and Trestman (2004) described early DBT implementations at six forensic facilities. The teams at each of those facilities modified DBT for use in a correctional setting. As a result of these trials, modifications in DBT specific to the correctional setting included reducing the extent of the individual therapy sessions, adding and modifying current content of skill training to address criminal behaviors and correctional situations, and modifying treatment parameters to include inclusion/exclusion criteria for the group setting to increase safety and security.

As reflected by this review of literature, there is an accumulation of evidence demonstrating the value of the use of DBT in correctional settings. This article reports the outcomes of a study to test the correction-modified version of DBT within three difficult to manage, impulsive and/or aggressive correctional populations in Connecticut: adults in special management facilities, impulsive and aggressive adolescents, and adult women. This study was approved by the University of Connecticut Health Center IRB (three IRB approvals were required, one for each facility: 04-156-2, 04-232-2, and 05-215-2).

## METHODS

A non-equivalent control group design (Figure 1) was used to test the two hypotheses: (1) participants will show reduced aggression, impulsivity, and psychopathology, as well as improved coping, after completing the DBT-CM groups, and (2) participants randomly assigned to receive DBT-CM coaching (DBT group) will show greater reductions in aggression, impulsivity, and psychopathology than those receiving case management (CM group) at the 6 month and 12 month follow-up. Descriptive analyses were conducted using SPSS version 15.0. A mixed effects regression model approach (Bryk & Raudenbush, 1992; this is a useful methodology for dealing with missing data) by SAS PROC MIXED (Singer, 1998) was utilized for multiple univariate analyses. An alpha of .05 was set as the level of significance for the statistical analyses.

### Sample

Participants with impulsive behavior problems were recruited for participation from three facilities through a process of being recommended by correctional facility unit majors and correctional mental health personnel. Impulsive behavior problems are defined as affective, reactive, emotional, hostile, or expressive (Stanford *et al.*, 2003;

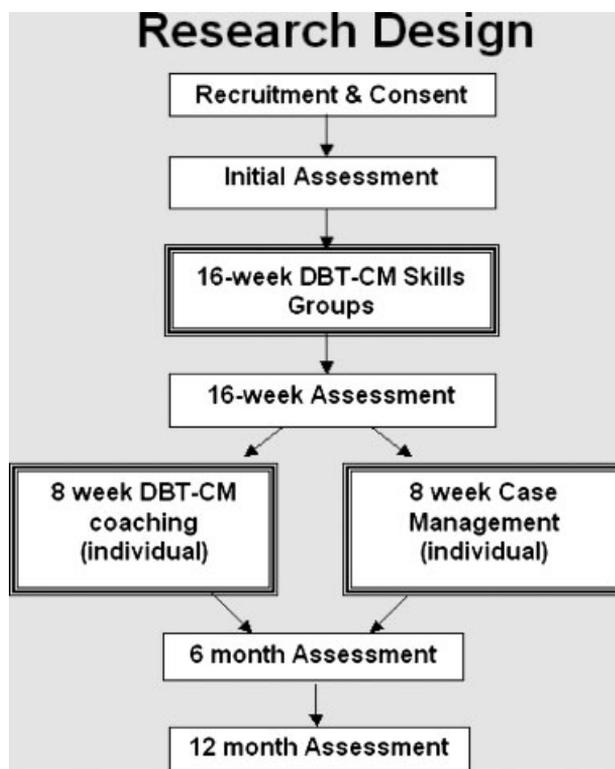


Figure 1. The research design highlights elements of subject selection and treatment comparisons between index and control groups.

Cornell et al., 1996). The aggressive behavior associated with this impulsivity is typically a response to a perceived provocation with immediate and destructive violence. Inmates who display these behaviors are perceived to be unpredictable and short fused by corrections staff and were those inmates who were difficult to manage as indicated by the high number of behavioral tickets they received.

Once voluntary participants were identified, a screening visit was conducted to discuss eligibility for participation in the study protocol. Individuals were excluded from participation if any of the following factors were evidenced: presence of any unstable medical or neurological disorder that would interfere with participation in the protocol or cause additional risk; non-English speaking; less than one year from end of sentence; appearing not to understand the procedures and aims of the study as described on the informed consent form; screening positive for psychopathy, as evidenced by a score of more than 30 on the Hare Psychopathy Checklist—Screening Version (PCL-SV) (Hare, 1991). Prior to participation in the DBT-CM intervention, a psychological assessment of the participant's current mental, physical, and emotional state was conducted.

The sample enrolled during the study period (2004–2006) included 52 adult males, 34 adult females, and 38 adolescent males, for a total of 124 participants. Over the two year period, 61 participants were lost to the study. Reasons for attrition are reflected in Table 1. A chi-square analysis was conducted to assess whether there

Table 1. Retention, exclusion and attrition of study participants

	<i>N</i>
Screened, consented, & completed baseline assessment	124
Not available for treatment due to	
Release from incarceration	20
Never started group	10
Transfer to another facility	4
P-SCAN score > 30	1
Death (medical illness)	1
Never returned from hospitalization	1
Available for treatment	87
Did not complete treatment* due to	
Dropped out	18
Transferred out of special treatment unit due to behavior	3
In segregation	2
Completed treatment & 1 or more follow-up interview	64
Completed treatment, but no follow-ups	1
Completed treatment & follow-up	63

\*Completed treatment = attended half or more group sessions.

were any differences between those who remained in the study and those who did not based on demographic variables, and there were no significant differences. Five of those lost to study were removed by correctional officers for safety and security reasons, which took precedence over research protocol. The inferential statistical analyses focused on the 63 participants who completed 50% or more of the skill training group sessions, and who also completed one or more follow-up assessments.

### DBT Intervention

Highly structured DBT-CM groups (16 weeks) were co-led by a team of two research clinicians. If an individual discontinued participation in the DBT-CM protocol for any reason, they could still choose to continue with the research interview sessions (at week 16 and again 6 and 12 months later). An individual had the choice to drop out of DBT-CM and/or the interview sessions at any point without penalty or effect on their current status within Connecticut Department of Correction or medical or mental health care in that facility. As reflected in Figure 1, upon completion of DBT skill training group sessions, participants had an equal chance of being randomly assigned to one of two follow-up conditions: DBT-CM coaching or case management, each of which was provided in weekly 30 minute individual sessions. Each of these conditions was provided by one of the clinicians who had provided the skill training groups (Trestman, Gonillo, & Davis, unpublished treatment manual).

Measurements available for use in correctional settings are challenged by limited validation studies on inmate populations. Those selected for this study included the Life History of Aggression Scale (LHAS): assessed at baseline to measure life history of aggressive behavior and trait aggression (Coccaro *et al.*, 1989). Psychological assessment interviews conducted by two researchers included use of the following instruments and were completed at four points: week 0 (intake), week 16 (after completing the DBT-CM skill training group sessions), six months and 12 months.

The outcome of reduced impulsive aggression was measured by (1) the Buss–Perry Aggression Questionnaire (BPAQ), to assess four dimensions including physical aggression, verbal aggression, anger, and hostility (Buss & Perry, 1992), (2) the Overt Aggression Scale—Modified (OAS-M), to assess the severity, type, and frequency of aggressive behavior (Coccaro, Harvey, Kupsaw-Lawrence, Herbert, & Bernstein, 1991); (3) the Brief Psychiatric Rating Scale (BPRS), to assess change in severity of psychopathology (Overall & Gorham, 1962); (4) disciplinary ticket information collected on participants 12 months prior to starting groups and six months after completing groups (disciplinary tickets are given to inmates when an offense has been made within the prison facility; disciplinary tickets are classified as Class A—assault, fighting, destruction of property, Class B—causing a disruption, disobeying a direct order, theft, and Class C—disorderly conduct, malingering); (5) a basic demographic questionnaire containing questions about age, ethnicity, and socio-economic status; (6) the Ways of Coping Checklist (WCCL), to measure eight different coping styles—confrontational coping, seeking social support, planful problem solving, self-control, distancing, positive reappraisal, accepting responsibility, and escape/avoidance (Folkman & Lazarus, 1988); (7) Positive and Negative Affect Scales (PANAS), to measure general positive and negative affect states (Watson, Clark, & Tellegen, 1988).

## RESULTS

There were 63 participants (ages 16–59 years old, mean = 28 (SD = 10.29), median = 27 years old). Males ( $n = 45$ ) were recruited in two correctional facilities, one adult facility and one youth facility for male prisoners in the state correction system, and women ( $n = 18$ ) were recruited in the one correctional institution for female prisoners in the state correction system. Participants' self-reported races included African-American (33.18%), Hispanic (20.54%), Caucasian (42.60%), Asian (1.58%), and other (1.58%); Education level ranged from 6 to 14 years of school (mean = 11.4 years, SD = 2.319). Seventy-four percent of participants reported being never married, 2% married, 6% cohabitating, 4.7% separated or divorced, and 11% widowed. The demographic distributions are provided for review in Table 2. The primary types of crime (offense classification) with which participants were charged were violent, 72.16% (e.g., use of weapon, physical or sexual assault, manslaughter, or murder), and nonviolent, 27.84% (e.g., drug possession, larceny, probation violation, or breach of peace).

Hypothesis 1 sought to test whether *Participants will show reduced aggression, impulsivity, and psychopathology, as well as improved coping, after completing the DBT-CM groups*. The analysis included the BPA and OAS-M measures of aggression and hostility, BPRS total score and Question 5 (for hostility), WCCL measures of coping, and affect as measured by the PANAS as dependent variables. To control for differences among the three facilities at which the research was conducted, the main effect of “facility” was included in the analysis, as well as its interaction with the time variable.

Of particular interest were the significant changes in behavior as measured by number of disciplinary tickets from baseline ( $M = .2653$ ,  $SD = .52078$ ) to following the 16-week DBT-CM skills treatment groups ( $M = .1349$ ,  $SD = .22313$ )

Table 2. Demographics of participants and non-participants\*

Gender	Participants			Non-participants		
	Adult male	Adult female	Male youth	Adult male	Adult female	Male youth
Race						
African Am./Black	8	4	9	7	5	4
Hispanic	5	2	6	13	3	6
Native Hawaiian/ Pacific Is.	10	11	6	9	8	2
Cauc./White		1	1			3
Asian						1
Other						
Age	<i>M</i> = 29.78 ( <i>SD</i> = 7.804)	<i>M</i> = 36.17 ( <i>SD</i> = 8.939)	<i>M</i> = 17.86 ( <i>SD</i> = .834)	<i>M</i> = 31.28 ( <i>SD</i> = 9.896)	<i>M</i> = 36.06 ( <i>SD</i> = 8.729)	<i>M</i> = 18.19 ( <i>SD</i> = .750)
Education	<i>M</i> = 11.71 ( <i>SD</i> = 2.327)	<i>M</i> = 12.33 ( <i>SD</i> = 2.870)	<i>M</i> = 10.36 ( <i>SD</i> = 1.255)	<i>M</i> = 10.78 ( <i>SD</i> = 2.063)	<i>M</i> = 11.19 ( <i>SD</i> = 2.136)	<i>M</i> = 10.33 ( <i>SD</i> = 1.291)
Marital status						
Never married	18	11	18	20	5	15
Married	1				5	
Cohabiting						
Separated		1	1	2	2	4
Divorced	1	6		3	1	
Widowed	2			2	2	
Prefer not to	1			2		
Respond						
Employment						
Unemployed	10	4	12	12	9	13
Part-time ( <i>&lt;</i> 35 hrs)	2	3	8	3	3	1
Full-time (35+ hrs)	10	10	2	14	4	2
Disability/SSI	1	1				
Offense classification						
Violent	3	12	9	18	10	8
Non-violent	20	5	12	11	6	8

\*Self-report.

( $t = 2.292, p = .025$ ). At the six-month follow-up, the change in scores ( $M = .1568, SD = .29370$ ) was not significant ( $t = 1.758, p = .084$ ), but of particular importance is the fact that there was no regression in the number of disciplinary tickets back toward the higher number of tickets at the baseline.

No significant differences in standardized instrument scores were found when examining all facilities included together. An examination of the main effects for follow-up, however, found psychopathology significantly influenced as measured by the PANAS negative symptom scale ( $F = 11.86, p = .001$ ) and PANAS positive symptom scale ( $F = 5.29, p = .026$ ). The PANAS negative symptom scale was also significant for the adult male facility ( $F = 4.71, p = .014$ ). Main effects at follow-up found BPRS mean scores significant ( $F = 3.89, p = .05$ ) and significant for the adult facility specifically ( $F = 6.07, p = .004$ ). Additional main effects were found on BPA sub-scales. BPA physical aggression demonstrated a significant change from baseline to follow-up ( $F = 13.46, p = .0005$ ) and was significant for adult male ( $t = 3.41, p = .001$ ) and young male ( $t = 3.72, p = .0004$ ) facilities specifically. The main effect for BPA anger management was significant at follow-up ( $F = 4.73, p = .033$ ) as well.

Ways of coping subscales demonstrated some changes for main effects on four of the eight subscales. Seeking social support demonstrated a significant change from baseline to follow-up ( $F=4.62, p=.037$ ). Accepting responsibility also showed a significant change at follow-up ( $F=5.41, p=.024$ ) and specifically for the youth ( $t=-3.02, p=.013$ ). The main effect for Planful problem solving ( $F=5.52, p=.023$ ) and Escape-avoidance ( $F=4.51, p=.039$ ) were also significant.

Hypothesis 2 sought to test whether *Participants randomly assigned to receive DBT-CM coaching (DBT group) will show greater reductions in aggression, impulsivity, and psychopathology versus those receiving case management (CM group) at the six-month and 12-month follow-up*. This analysis was conducted using the same dependent measures as employed in the analysis of Hypothesis 1, and in addition the following interactions: time  $\times$  facility, time  $\times$  group, facility  $\times$  group, and time  $\times$  facility  $\times$  group. Also, participants' baseline dependent measure scores were included as a covariate in the model to control for baseline differences between the DBT-CM and case management groups.

The mean scores on BPRS as a measure of psychopathology were significant at follow-up ( $F=5.27, p=.008$ ). An examination of the differences of least squares showed a significant follow-up by group effect at six months ( $t=2.16, p=.0347$ ), but not at 12 months ( $t=-1.88, p=.0652$ ). A significant finding was found at follow-up for group by facility ( $F=2.99, p=.0263$ ) as well, and a more detailed examination of this finding revealed that a difference between groups was found between the adult men's and women's facilities ( $t=2.23, p=.0298$ ). A main effect was also found for facility ( $F=2.96, p=.05$ ). Both the adolescent male facility ( $t=2.06, p=.0445$ ) and the women's facility ( $t=2.19, p=.0327$ ) were found to have significant tests.

Significant differences in total scores for positive symptoms on the PANAS were noted between the DBT-CM coaching group and case management at follow-up ( $F=3.07, p=.05$ ). This difference was significant at six months ( $t=2.75, p=.0090$ ). However, case management was found to be significant at both six ( $t=2.36, p=.0236$ ) and 12 month follow-up points ( $t=-2.76, p=.0088$ ), and DBT-CM was found to be significant at 12 months ( $t=2.08, p=.0493$ ). A main effect was found for follow-up ( $F=3.64, p=.0355$ ) with the difference being between time one and time two ( $t=2.66, p=.0113$ ).

## DISCUSSION

The results of this study provide beginning support for the usefulness of DBT-CM skill training for aggressive and impulsive offenders in Connecticut. Aggressive and impulsive inmates showed trends toward improvement following the 16-week skill training groups as measured by disciplinary tickets, which are a system-wide measure of behavior. Although the global hypotheses were not supported, exploration of main effects indicate improvements through improved affect, reduced aggression, and improved coping, particularly for adult males. These encouraging findings suggest that program implementation would contribute to a decrease in problematic behavior and improvement in quality of life for participating inmates. Decreasing this risk factor may directly impact manageability within the prison environment and also recidivism.

With the added interventions (case management and DBT-CM coaching), some additional improvements primarily in psychopathology were seen. Adolescent males and females appeared to have made the most improvements over time. The small improvements demonstrated statistically may be explained by the level of severity of aggressive behaviors these individuals exhibited prior to their involvement in the program. In addition, implementation of programming in correctional environments is challenging, and outcomes are expected to improve as experience with the program increases.

In addition to these statistical findings, there was much anecdotal evidence for the beneficial effect of the DBT-CM intervention, both for the inmate participants and for the correctional system as a whole. These benefits evolved from the collaborative communication entailed in each step of the research implementation. It began with the first step of asking administrators within each facility to conduct the study, conveying a great deal of information to them about the research process, the study intervention, and its likely benefits. Researchers and academic professionals have been less likely to be active within the prison environment compared with non-forensic settings; this is understandable given the additional safety and security concerns raised by their presence. Yet academic–correctional partnerships have been shown to facilitate improved treatment services and outcomes in corrections (Raimer & Stobo, 2004). The study described here also appeared to result in such benefits. Correctional officers and mental health staff reported that the training provided by the research team was enjoyable and gave them additional skills for their work with inmates. This benefit then translated to the inmates when the groups began. Many of the incarcerated participants reported that they enjoyed attending the groups. Correctional staff members commented about the positive changes they observed in the behaviors of participating inmates. They described having a better understanding of negative behaviors and were pleased to have alternative ways to help de-escalate a frustrated inmate instead of using punitive measures.

Costs associated with implementation of this program include extensive up-front training and fidelity monitoring of the quality of the curriculum, process evaluation, and evaluation of clinical and program outcomes. Continued attention is needed to address therapeutic challenges presented by the environment. These can be addressed through quality improvement systems and supervision by unit managers. The costs of programming are offset by the reduced assaults, potential reduced workers compensatory time, and costs associated with physical injuries. Administrative support over time of the importance of such programming is important to sustainability given the competing demands of these systems.

McCann, Ball, and Ivanoff (2000) aptly listed five arguments for the use of dialectic behavior therapy approaches in forensic settings which justify the costs associated with provision of these programs. First, the incidence of personality disorder is high among the populations, and DBT for bipolar disorder and associated symptoms is effective. Second, structured behavioral programs are more effective in reducing recidivism than less structured programs. Third, there is a critical need to manage aggressive or life threatening patient behaviors. Fourth, providing a systematic and organized approach to treatment addresses staff burnout and behavior that interferes with the conduct of effective treatment. Last, implementing DBT-CM in a forensic setting assists in achieving and maintain accreditation by accreditors (Joint Commission on Accreditation of Healthcare Organizations,

National Commission on Correctional Health Care) that value systematic and empirically validated behavioral interventions. We are currently accredited by NCCHC at one of the facilities where this program is provided.

In terms of limitations, there were many challenges encountered during the implementation of this study, and these contributed to the limitations of carrying out the research. Obtaining approvals from administrative Connecticut Department of Correction personnel and gaining accessibility into the prison facilities were lengthy processes that delayed the initiation of groups. This, in turn, resulted in fewer groups being conducted overall, and a smaller *n* than originally anticipated. Other challenges inherent to the correctional system were encountered, including lockdowns, unanticipated early releases or transfers of the inmates, participants removed from the study due to security risks by security personnel, and greater rates of staff turnover. Researchers conducting previous comparable studies with this population have reported similar challenges. For example, issues such as time constraints during the funding period and staffing changes affected retention rates and the ability to create a large sample size for the study by Nee and Farman (2005) on female borderline personality disordered prisoners in Great Britain. It is worthwhile, however, to discover some practical limitations of providing a structured clinical intervention in a correctional environment, so that related plans and modifications can be made. Offering a skills-based program that can be suited for corrections will increase the likelihood that it is accepted and supported by those that make programmatic decisions. Like the study by Nee and Farman (2005), a pilot implementation with a small sample size is a preliminary step in program development. They too had positive verbal responses by participants and prison officers.

The results of this study will need to be replicated and extended. Random assignment occurred following the DBT-CM skill training group, so there was no randomization with the initial group nor was there a control for the group condition. A more rigorous design with a larger sample may yield different outcomes. Recruitment and retention of samples is always challenging in correction environments. Implementation of the initial skill DBT-CM group with a single targeted sub-population might have yielded stronger outcomes. Gender specific or age specific testing and adaptations may be appropriate. Dosing (number of groups, or length of time) may also have influenced outcomes. Continued study of these modifications is needed to determine the effects.

The significant finding of case management compared with DBT-CM was interesting. Case-management models vary, and this would need to be studied more carefully. These findings indicate that the individual intervention was more effective, but this may be an effect of these participants having had the benefit of the DBT-CM skill training first, which prepared them, or made them ready and receptive to treatment. This may explain why the improvement in psychopathology was seen. Further, given the prison environment, advocacy, which is a strong component of case management, may have a very useful function within prison environments where inmates are provided little personal control.

Although outside the scope of this study, upon release, most of the released inmates return to the same environments that contributed to their criminogenic life choices. Maintenance of DBT-CM skills, like any program taught skills for individuals with limited cognitive functioning or impairments, will need

reinforcement. The literature supports maintenance of reduced aggressive or self-harmful behaviors as targeted by the intervention while incarcerated (Eccleston & Sorbello, 2002; Robins & Chapman, 2004); however, longitudinal studies on the effects of DBT from the prison environment to the community are limited (Nee & Farman, 2007). Given the known rates of reincarceration, although the causes of reincarceration are complex, it would support common sense that these skills would need ongoing supportive programming. The need for consistency across behavioral programs and across environments has been a well known fact for many years.

In sum, additional testing of this promising intervention is needed to refine the adaptation of this community-derived evidence-based practice for use in uniquely demanding correctional environments. Refinements in the interventions we would make at this point would include simplified language (fifth grade level or below); expanded use of imagery (to enhance non-verbal learning and retention); repetitive structure to support knowledge retention; close collaboration with all stakeholders (most notably custody officials and staff in the implementation; recognition of the resource-limited (both staff and fiscal) nature of correctional settings; the need for ongoing support and supervision of the clinicians consistent with a correctional environment and the need to incorporate correctional-setting-specific fidelity and outcome monitoring.

## CONCLUSION

The opportunities for advancing the field, and for improving the function and quality of life for the participating inmates, are evident. As the program is further refined and additional testing is conducted, we shall be better able to make informed decisions regarding the dosing of DBT-CM, and which sub-populations within the prison population to target, as well as the best time to deliver such services within the course of incarceration. The positive benefits identified by staff were felt to be just as important as the clinical benefits to inmates. The program provided a common ground to focus clinical and correctional staff energies toward a mutually beneficial outcome.

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