A one year study of Mode Deactivation Therapy: Adolescent Residential Patients with Conduct and Personality Disorders

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Abstract

This case study is to evaluate the effectiveness of Mode Deactivation Therapy (MDT) implementation in a child and adolescent residential treatment unit and provide preliminary effectiveness data on MDT versus treatment as usual (TAU). This case study compared the efficacy of two treatment methodologies for adolescent males in residential treatment with conduct disorders and/or personality dysfunctions with physically or sexually aggressive behaviors over one year. The twenty patients were admitted to the same residential treatment unit, ten were given the MDT protocol and the other relied on TAU. Assessments of depressive symptoms, suicidal ideation, along with monitoring of aggressive behaviors with the evaluations conducted after one year of treatment. The results showed MDT to be more effective then TAU in reducing both physical aggression and therapeutic restraints. The promising results of this study suggest that further evaluation of MDT for the treatment of adolescent's residential patients is warranted.

Keywords: *MDT, Adolescents, Conduct Disorder, Personality Disorders, Aggression.*

Introduction

The aim of this study was to replicate previous findings which laud the effectiveness of Mode Deactivation Therapy (MDT). This study attempted to investigate this finding within a "real world setting": a child and adolescent residential treatment setting over the course of one year. The effectiveness of MDT was examined through the comparison of pre- and post treatment measures through a within group design. For this study, thirty adolescents with physically and/or sexually aggressive behaviors who were admitted into a residential treatment unit, fifteen were given the MDT protocol and the other relied on Treatment as Usual (TAU). Assessments of depressive symptoms were measured with the Beck Depression Inventory II (BDI-II), suicidal ideation was measured with the Reynolds Suicidal Ideation Questionnaire (SIQ), and Child Behavioral Checklist (CBCL) was completed for both groups. Daily monitoring of aggressive behaviors and therapeutic holds were recorded and compiled with the evaluations conducted after one year after treatment. The assessments were utilized as pre- and post measures for each area (depression, suicidal ideations, behavioral interactions, and therapeutic holds & aggressive behaviors) for each of the participants.

Sample size for each group (MDT and TAU) was calculated based on the number of patient availability for the length of the study of one year, and from a group of 32 participants, twenty were independently randomly selected ten for each group, for this review by an independent agent outside the residential program. The participants all had written informed consent obtained from the patients and their legal guardians. The sample composed of twenty adolescent males ten for each group with ages ranging from 13 to 18 (mean = 15.7 MDT, 14.8 TAU).

MDT was developed in response to the difficulty in treating adolescents with high co-morbidity, which resulted in ongoing resistance to current treatments modalities as well as being

considered treatment failures in both the outpatient and residential settings. Apsche et al (2004) have demonstrated that MDT is effective in reducing aggression and suicidal ideations within this population. Apsche began to formulate MDT as a response to the need for a more efficacious treatment for this specific adolescent typology. Through the synthesizing of an applied CBT methodology as well as Linehan's work with Dialectical Behavior Therapy (DBT) MDT was developed for adolescents who displayed a reactive conduct disorder, personality disorders/ traits, and Post Traumatic Stress Disorder symptomology. Apsche and his colleagues have demonstrated the effectiveness of MDT in reducing aggression, specifically with adolescents who display the aforementioned diagnostic traits (Apsche, Bass, Murphy 2004; Apsche & Ward 2004). Apsche & Siv (2005) further emphasize the need for an efficacious methodology by positing the development of personality disorder traits/features as a coping mechanism by these adolescents. This methodology encapsulates the needs of these adolescents who present with a complicated neglect, multi-axial diagnoses, as well as often being the victims of sexual, physical, and/ or emotional abuse.

MDT also includes a series of mindfulness exercises that are specifically designed for these adolescents. Exercises incorporated within the client workbook designed to allow the youth to practice the technique which helps ensure trust, reduce anxiety and increase commitment to treatment as it helps develop mindfulness skills for the youth. The mindfulness skills result in development of the youths heightened awareness of their fears, triggers and beliefs which helps, them to use this new coping strategies in place of the aggressive behaviors.

Several descriptive studies indicate that MDT has been more effective than standardized CBT in the treatment of this population of adolescents (Apsche & Ward, 2002). MDT has also been demonstrated as effective in a series of case studies (Apsche, Ward, Evile, 2002 a & b; Apsche & Ward Bailey, 2003) and an empirical study which shows that it was more effective then standard CBT and Social skills training (Apsche, Bass, Siv, 2005). Preliminary results of several recent case studies has shown MDT to be effective in reducing suicidal ideation and in reducing fire setting behaviors (Apsche & Siv, 2005, Apsche, Siv, Bass, 2005). The study of this methodology is important on several levels. The first level being the need to provide evidence based therapy for adolescents with deficits in multiple areas regarding their mental health issues. Kazdin and Weisz (2003) indicate how aggressive behaviors have an adverse effect not only on the adolescent but also in a variety of social settings such as academics, peer relations, and an increased contact with the juvenile justice system. Providing a methodology which allows increased progress with this difficult population as well as offering hope to both providers and clients is paramount for the benefit of both parties.

Method

Participants

The sample comprised of 20 male adolescents residential patients who participated in the study. All subjects were referred to the same residential treatment facility for the treatment of aggression. In this study, subjects were randomly assigned to one of the two treatment conditions at the time of admission based on available openings in the caseload of the participating clinicians. The two treatment conditions showed similarity in terms of the frequency of Axis I and Axis II diagnoses, age, and racial background. To ensure consistency in the delivery of the two respective treatments, therapists were specifically trained in the one of the three treatment curriculums/methods. The average length of residential treatment across all conditions was one year.

Treatment As Usual (TAU): A total of ten male adolescents were assigned to the TAU condition. The group was comprised of 4 African Americans, 4 European Americans and 2 Hispanic American with an average age of 14.8. The principal Axis I diagnoses for this group included Conduct Disorder (4), Oppositional Defiant Disorder (4), and Post Traumatic Stress Disorder (7). Axis II diagnoses for the group included Mixed Personality Disorder (4), Borderline Personality Disorder (2), Narcissistic Personality Disorder (1) and Dependent Personality Disorder (1).

TAU consisted of a daily psychodynamic psychotherapy group, individual psychodynamic psychotherapy at least once per week, Psychoeducational oriented milieu based on The Boys and Girls Town's Psychoeducational Model. Components of this psychoeducational treatment curriculum included daily recording teaching social skills on point card sheets. All clinicians are trained in adolescent psychodynamic, the TAU team met regularly for to discuss treatment concerns.

Mode Deactivation Therapy (MDT): A total of ten male adolescents were assigned to the MDT condition. The group was comprised of 5 African Americans, 3 European Americans and 2 Hispanic American with an average age of 15.7. The principal Axis I diagnoses for this group included Conduct Disorder (5), Oppositional Defiant Disorder (3), Post Traumatic Stress Disorder (7), and Major Depressive Disorder, primary or secondary (2). Axis II diagnoses for the group included Mixed Personality Disorder (6), Borderline Personality Traits (3), and Narcissistic Personality Traits (2). The MDT condition used the methodology described earlier in this paper.

Table 1. Composition of both treatment groups

Axis I	TAU	MDT
Conduct Disorder	**4**	**5**
Oppositional Defiant Disorder	**4**	**3**
Post Traumatic Stress Disorder	**7**	**7**
Major Depression	**0**	**2**
Axis II		
Mixed Personality Disorder	**4**	**6**
Borderline Personality Traits	**2**	**3**
Narcissistic Personality Traits	**2**	**2**
Dependent Personality Traits	**1**	**0**
Avoidant Personality Traits	**0**	**0**
Race		
African American	**4**	**5**
European American	**4**	**3**
Hispanic/Latino American	**2**	**2**
Total	**10**	**10**
Average Age	**14.8**	**15.7**

Instruments

Pretreatment and Posttreatment assessments involved a battery of self-report measures targeting multiple risk factors. The baseline ("pre-treatment") measure of physical aggression consisted of the average number of incidents that occurred during the first 60 days following admission and the post-treatment measure was the rate of occurrence during the 60 day period prior to discharge. In addition, a key measures of physical aggression used in this study consisted of Daily Behavior Reports and Behavior Incident Reports. The Daily Behavior Reports and Behavior Incident Reports were completed by all levels of staff, both professional and paraprofessional, across all settings of the residential treatment program (e.g., schoolroom, psychoeducational classes, treatment activities, residential dormitories, etc.). The Behavior Incident Reports were only completed by staff following the occurrence of serious or critical incidents, namely, acts of physical aggression and/ or therapeutic holds. Inter-rater reliability in the use of the measures was determined by independently totaling the number of physical aggression incidents on both the Daily Behavior Report cards and the Behavior Incident Report forms and calculating the percentage of agreement. The agreement for this study was at the 93% level.

The self-report measures consisted of the following assessments which were used to measure the residents pretreatment and posttreatment, which included the Child Behavior Checklist (CBCL; Achenbach, 1991, 2001). The CBCL is a multiaxial assessment designed to obtain reports regarding the behaviors and competencies of 6 – to – 18 year olds. The means and standards are divided into three categories: internalizing (which measures withdrawn behaviors, somatic complaints, anxiety and depression), externalizing (which measures delinquent behavior and aggressive behavior), and total problems (which represent the conglomerate of total problems and symptoms, both internal and external). Beck Depression Inventory (BDI) (Beck and Beck, 1972; Beck et al., 1961) which is designed to measure depression, and the Reynolds' Suicidal Ideation Questionnaire (SIQ) (Reynolds, 1988) to assess the change in suicidal ideation pre and posttreament. Subjects completed these measures at admission and at discharge.

Following completion of one year of treatment, the number of incidents reports filed by the staff was calculated for both MDT and TAU groups.

TABLE 2. Descriptive Statistics of Measures for MDT and TAU Groups For Baseline and Post-treatment Results.

Descriptive Statistics

Measure	Tx Type	N	Mean	Std. Dev.	Std. Error	Range Min	Range Max
Baseline Physical Aggression	**TAU**	**10**	**9.52**	**2.41**	**.118**	**1**	**14**
	MDT	**10**	**7.96**	**2.21**	**.114**	**1**	**14**
	Total	**20**	**8.73**	**2.31**	**.116**	**1**	**14**

Baseline Therapeutic Holds	TAU	10	7.04	.113	.110	1	14
	MDT	10	7.13	.117	.109	1	14
	Total	20	7.09	.115	.1095	1	14
Post-Treatment Physical Aggression	TAU	10	6.85	3.77	.116	1	12
	MDT	10	2.65	2.36	.105	0	5
	Total	20	4.75	3.07	.110	0	8.5
Post-Treatment Therapeutic Holds	TAU	10	5.35	1.36	.118	1	12
	MDT	10	2.09	3.42	.099	0	3
	Total	20	3.72	2.36	.108	0	7.5

Thus, this first analysis shows that all types of treatment – Mode Deactivation Therapy and Treatment as Usual – had a positive effect of reducing rates of physical aggression and therapeutic holds over the course of treatment (see Figure 1).

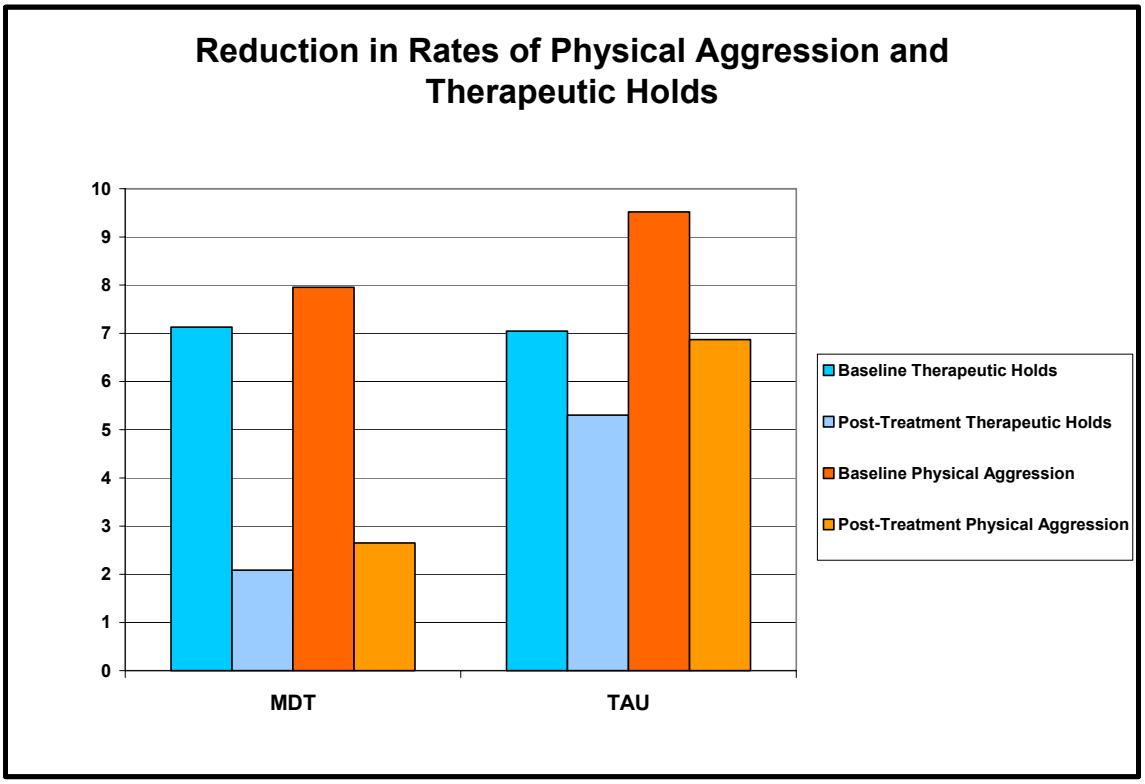

Figure 1. Reduction in Rates of Physical Aggression and Therapeutic Holds of MDT= Mode Deactivation Therapy Compared to TAU=Treatment as Usual Groups.

To better elucidate the differences between groups in magnitude of effect, independent factorial analyses on treatment model and variable were conducted.

With an overall percent reduction of 70.7% in rates of post-treatment therapeutic holds, Mode Deactivation Therapy was found to be superior to the Treatment As Usual which had a 24.7% reduction rate. The most dramatic difference between treatment groups was found in reduction of post-treatment rates of physical aggression and therapeutic holds. In this instance, Mode Deactivation Therapy showed a statistically significant reduction in rates of physical aggression from baseline to post-treatment. MDT showed a reduction of 66.8% in Physical aggression compared to TAU at 27.9%. Post-treatment rates of physical aggression were 2.7 (incidents per month) for MDT and 6.9 (incidents per month) for TAU. The results clearly show that MDT produced significantly superior results when compared to TAU. These differences in magnitude of effect are graphically represented in Figure 2.

TABLE 3. Comparison of Post-Treatment Incident Avg. of Holds and Aggressive Incidents for Both Treatment Groups.

	MDT		TAU	
	Post-Treatment Monthly Avg.	Percent reduction	Post-Treatment Monthly Avg.	Percent reduction
Physical Aggression	2.7	66.7%	6.9	27.9%
Therapeutic Holds	2.1	70.7%	5.3	24.7%

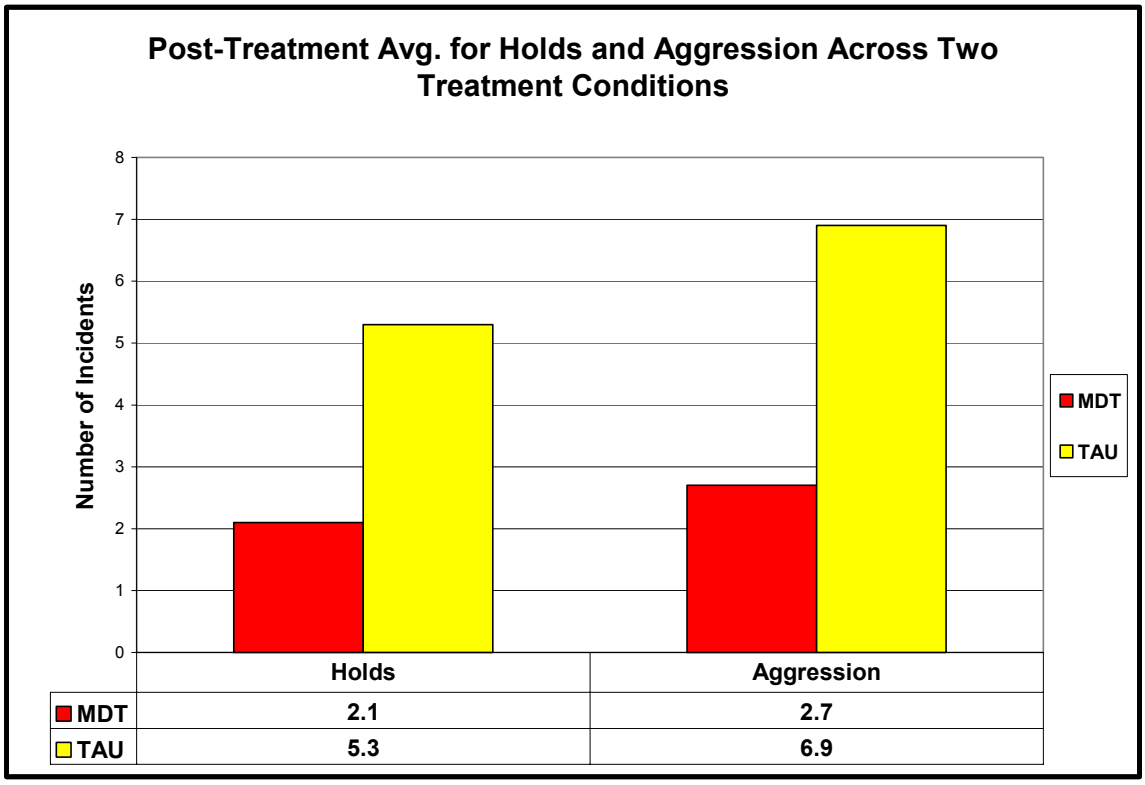

Figure 2. Post-Treatment Reduction Rates for Aggression and Therapeutic Holds for MDT and TAU Treatment Groups

The CBCL is a multiaxial assessment designed to obtain reports regarding the behaviors and competencies of 6 – to – 18 year olds. The means and standards are divided into three categories: internalizing (which measures withdrawn behaviors, somatic complaints, anxiety and depression), externalizing (which measures delinquent behavior and aggressive behavior), and total problems (which represent the conglomerate of total problems and symptoms, both internal and external).

TABLE 4. CBCL Scores, Ranges, and Standard Deviations for Baseline and Post-Treatment Measures for Both Treatment Groups

Measure	Scale	TAU	MDT
Child Behavior Checklist (CBCL) Pre-Treatment	Internal	71.43 (Range = 66 - 84)	74.57 (Range = 68 - 86)
	External	73.74 (Range = 66 - 86)	74.94 (Range = 64 - 86)
	Total	72.67	74.74
Child Behavior Checklist (CBCL) Post-Treatment	Internal	63.66 (Range = 55 - 80) SD = 10.04	51.75 (Range = 39 - 71) SD = 12.10
	External	65.63 (Range = 52 - 82) SD = 10.76	50.04 (Range = 37 - 69) SD =11.74
	Total	64 (Range = 52 – 84) SD = 9.24	51.00 (Range = 40 – 61) SD =10.28

MDT's mean CBCL scores are at least one standard deviation less then the TAU mean scores. Even with the CBCL assessment the two groups differed significantly. Residents who participated in MDT had lower scores on all measures then did residents who engaged in TAU.

The results indicate that the mean scores the internalizing factor, externalizing factor, and total scores for the MDT group is at or near one standard deviation below the TAU group.

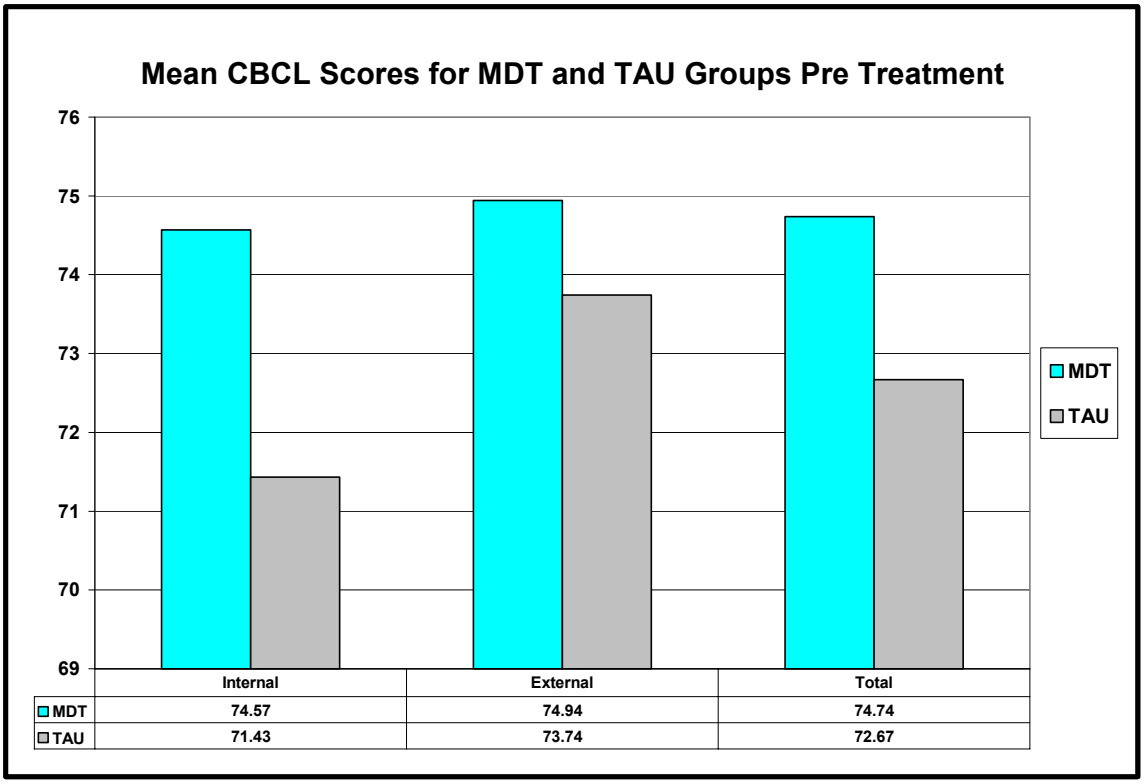

Figure 3. Mean CBCL Scores for MDT and TAU Groups Pre-Treatment

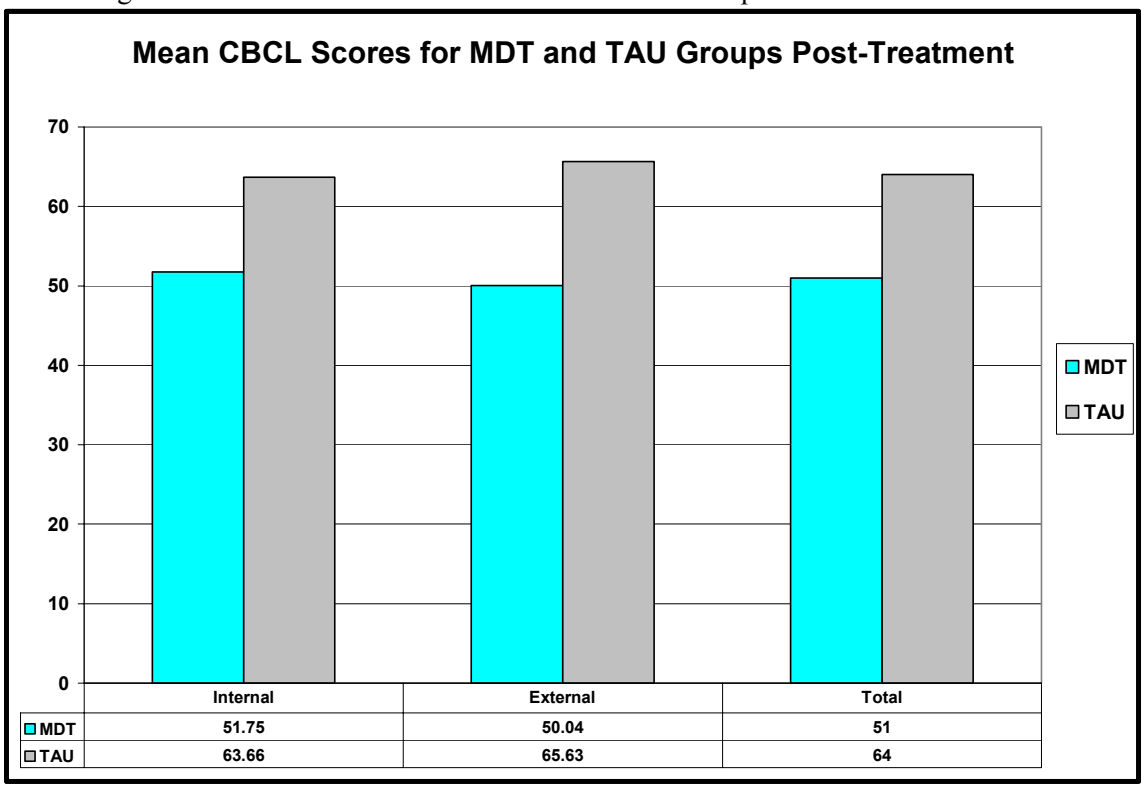

Figure 4. Mean CBCL= (Child Behavioral Checklist) Scores for MDT= (Mode Deactivation Therapy, and TAU= (Treatment as Usual) Post-Treatment

Beck Depression Inventory (BDI) (Beck and Beck, 1972; Beck et al., 1961) which is designed to measure depression, and the Reynolds' Suicidal Ideation Questionnaire (SIQ) (Reynolds, 1988) to assess the change in suicidal ideation pre and post-treatment. Subjects completed these measures at three time points results shown in Table 4 and Table 5 and the mean scores shown graphically in figures 5 and 6.

TABLE 4. Means and Standard Deviations on Assessment Measures at Three Time Points By Treatment Groups

	MDT						TAU					
	Baseline		3 Months		6 Months		Baseline		3 Months		6 Months	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
BDI-II	34.2	**14.65**	**14.6**	**9.54**	**9.9**	**6.18**	**26.8**	**20.62**	**17.5**	**14.37**	**12.7**	**12.91**
SIQ-HS	**57.2**	**29.29**	**10.9**	**14.43**	**7.2**	**7.37**	**55.4**	**49.34**	**18.6**	**18.90**	**12.9**	**13.66**

Note: All baseline comparisons between groups were non-significant (p> .05)
BDI-II = Beck Depression Inventory 2nd Edition; SIQ-HS= Suicidal Ideation Questionnaire High School Form; MDT= Mode Deactivation Therapy; TAU= Treatment as usual.

TABLE 5. Means, Standard Deviation, Max and Min for Assessment Measure at Three Time Points by Treatment Groups

		BDI-II					SIQ-HS			
		N	Min	Max	Mean	SD	Min	Max	Mean	SD
MDT	**Baseline**	**10**	**29**	**39**	**34.2**	**14.65**	**47**	**66**	**57.2**	**29.69**
TAU	**Baseline**	**10**	**19**	**31**	**26.8**	**20.62**	**47**	**64**	**55.4**	**49.34**
MDT	**3 Months**	**10**	**11**	**17**	**14.6**	**9.54**	**0**	**30**	**10.9**	**14.43**
TAU	**3 Months**	**10**	**10**	**22**	**17.5**	**14.37**	**6**	**32**	**19.6**	**18.90**
MDT	**6 Months**	**10**	**9**	**11**	**9.9**	**6.18**	**0**	**12**	**7.2**	**7.37**
TAU	**6 Months**	**10**	**8**	**16**	**12.7**	**12.91**	**5**	**22**	**12.9**	**13.66**

Note: All baseline comparisons between groups were non-significant (p> .05)
BDI-II = Beck Depression Inventory 2nd Edition; SIQ-HS= Suicidal Ideation Questionnaire High School Form; MDT= Mode Deactivation Therapy; TAU= Treatment as usual

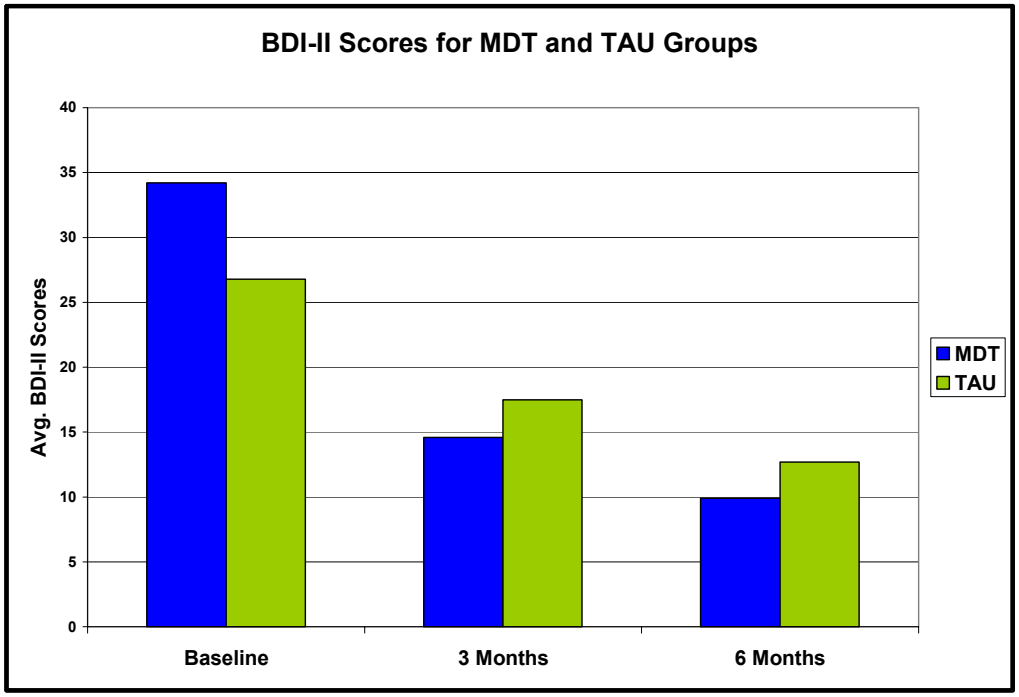

Figure 5: Means scores for BDI- II at three time points. Note: All baseline comparisons between groups were non-significant (p> .05) BDI-II = Beck Depression Inventory 2nd Edition; MDT= Mode Deactivation Therapy; TAU= Treatment as usual

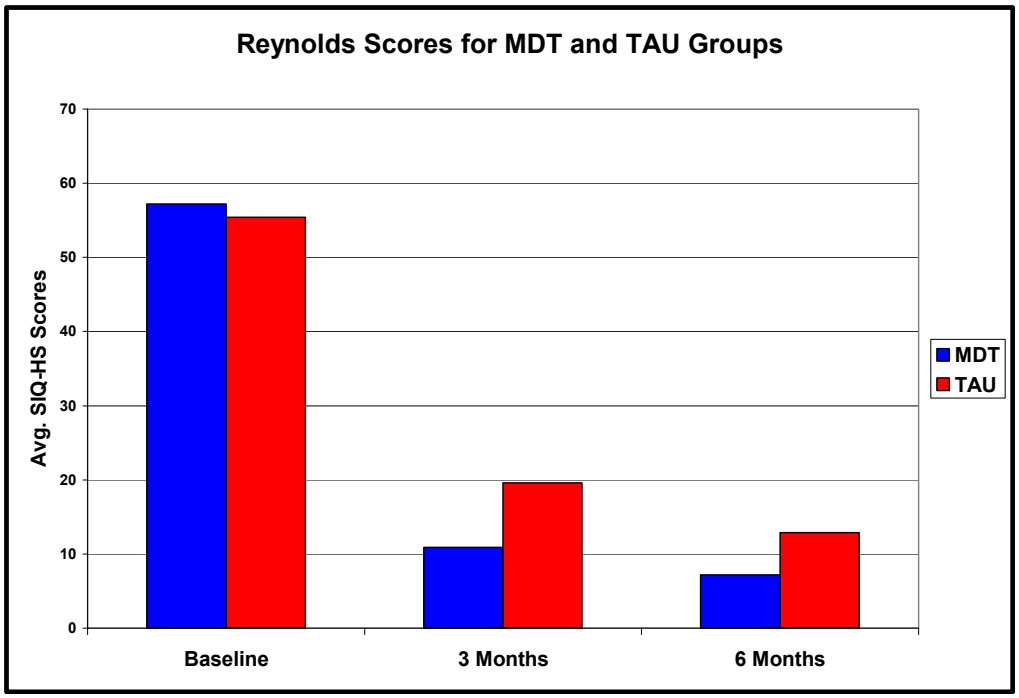

Figure 6: Mean Scores for SIQ-HS at three time points. Note: All baseline comparisons between groups were non-significant (p> .05) SIQ-HS= Suicidal Ideation Questionnaire High School Form; MDT= Mode Deactivation Therapy; TAU= Treatment as usual

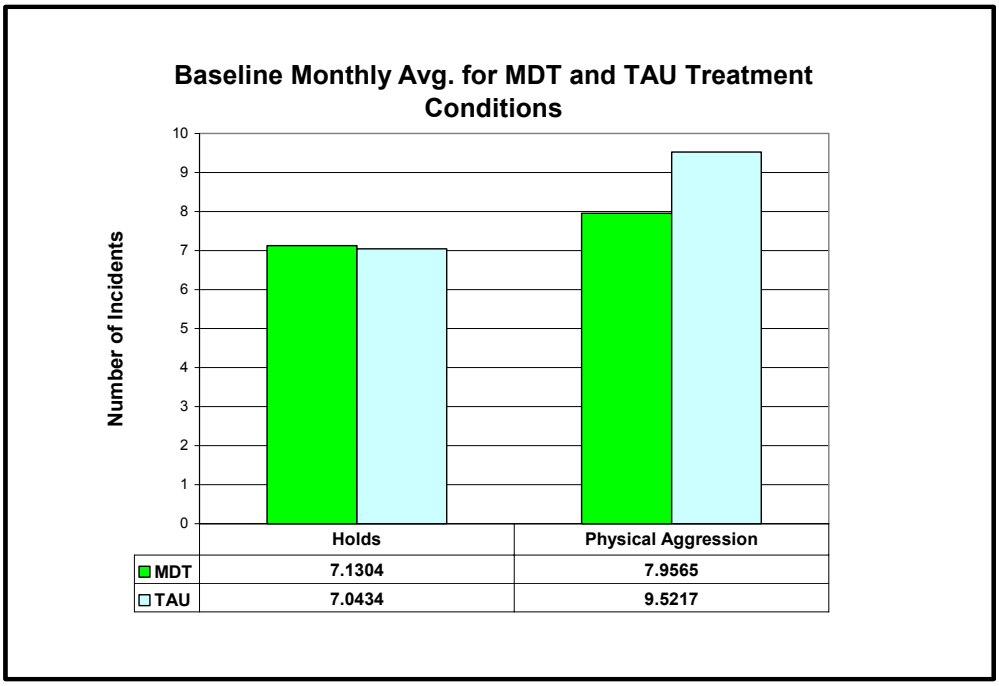

Figure 7. Baseline Avg. of Physical Aggression and Therapeutic Holds for MDT vs. TAU

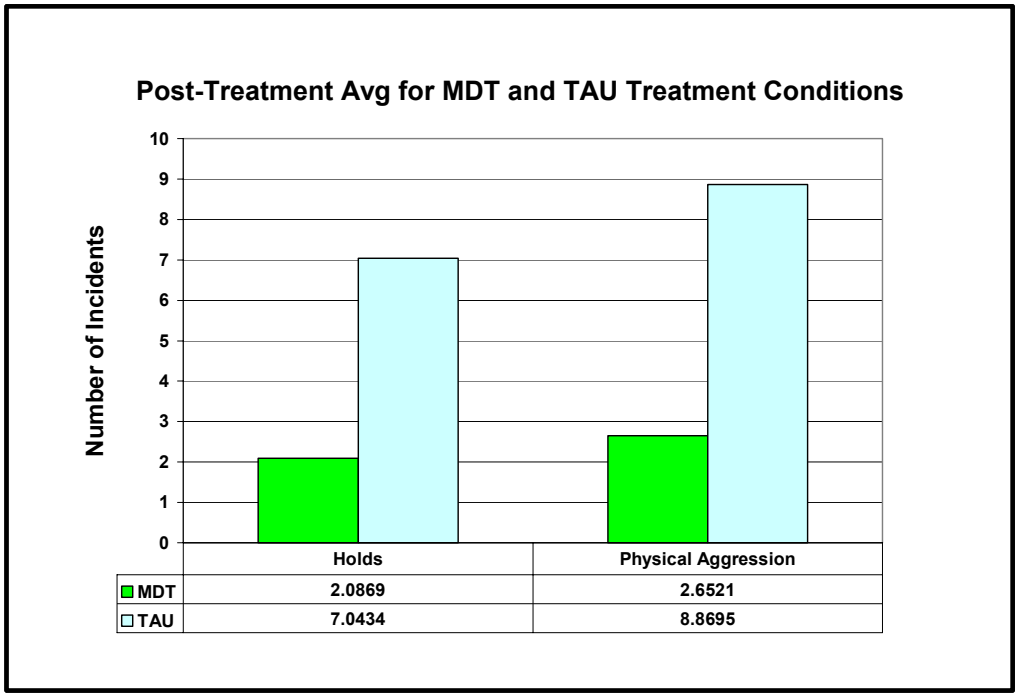

Figure 8. Post-Treatment Avg. for Physical Aggression and Therapeutic Holds for MDT vs. TAU

Results

This study was initiated to compare the efficacy of Mode Deactivation Therapy (MDT) to the current treatment as usual (TAU) in the treatment of aggressive adolescent males in residential treatment. The analysis of the Daily Behavioral reports, which indicated a number of observed aggressive acts, were compiled, statistical analysis of the results ensued. It was found that all participants benefited from treatment regardless of theoretical orientation (see Figure 1).

The baseline average rate of aggression across all groups was 8.73 with a total standard deviation of 2.31 and standard error of .116. The MDT group had a 66.7% reduction in rate of aggression, with a posttreatment mean of 2.65, with a standard deviation of 2.36 and standard error of .105. Added to the results performed on the difference between baseline and posttreatment rates of therapeutic holds. The baseline mean across both groups was 7.09 with a total standard deviation of .115 and standard error of .109. The MDT group had a 70.7% reduction in the rate of therapeutic holds to the post-treatment mean of 2.09 with a standard deviation of 3.42 and standard error of .099.

On the CBCL both TAU and MDT reduced both internal and external scores. MDT scores on 1 SD or more significance then the TAU scores. With MDT's CBCL t-scores reducing from 74.74 pretreatment to 51.00 posttreatment which is a 31.7 % reduction, compared to TAU's CBCL posttreatment percent reduction at 11.9%. These results suggest that MDT is effective in reducing symptoms of Axis I pathology.

On the BDI-II both TAU and MDT performed well in measures of the difference between baseline and post-treatment rates of depression. The baseline mean BDI-II scores of 26.8 TAU and 34.2 MDT, and post-treatment scores of 12.7 and 9.9, with standard deviation of 6.18 and 12.91 respectfully. These suggest that MDT is effective in reducing symptoms of Depression.

On the SIQ both TAU and MDT performed well in measures of the difference between baseline and post-treatment rates of depression and suicidal ideation. The baseline mean SIQ scores of 55.4 TAU and 57.2 MDT, and post-treatment scores of 12.97 and 7.20 and standard deviations of 13.66 and 7.93 respectfully. These suggest that MDT is effective in reducing symptoms of depression and suicidal ideation.

DISCUSSION

The data indicates that Mode Deactivation Therapy (MDT) may achieve superior results in reducing both physical aggression and therapeutic holds, in conduct-disordered and personality-disordered youth in a long-term residential treatment setting. Moreover, while both treatments were effective in reducing physical aggression, only (MDT) demonstrated a significant reduction in rates of therapeutic holds. These finding also suggests supports earlier studies that MDT could be an effective treatment for reducing depression and suicidal ideation from BDI and SIQ results.

As in any real world study, it is always difficult to control for the levels of competence of the participating therapists and their adherence to the "purity" of both treatment methods. Best efforts were made to control for this common problem by ensuring that therapists shared the same professional degree and level of clinical experience in each of the two methodologies and by providing training in the delivery of each model prior to the study. Training and supervision was provided by a doctorate level psychologist in both groups. The MDT group was trained by the

developer of MDT, in order to reduce confounds that may have been produced by additional trainers.

The strength of the outcomes could be further enhanced with the inclusion of additional outcome measures and, ideally, long-term follow-up of the youth who participated in the study. This study measured levels of psychological distress, including internal and external, as measured by the CBCL, depression with the BDI, and suicide ideation with the SIQ. MDT demonstrated a significant decrease in all levels of behavior and psychological distress.

It is important to note that the authors do not purport that MDT will generalize to any groups other than adolescents with conduct and personality disorders.

The authors hope that future research may use randomized trials in residential, impatient hospital, and outpatient clinics with an attempt to replicate these findings in other residential treatment facilities and with other relevant adult and adolescent populations, particularly with those identified with severe aberrant behaviors including personality disorders, conduct disorder and aggression.

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