



Treatment Response in ADHD/CP Children with Different Levels of Callous/Unemotional Traits

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Introduction

Children and adolescents with disruptive behaviors experience functional impairment such as academic underachievement, more negative adult interactions, and less positive peer interactions. Research suggests that this is especially true for children who meet criteria for both attention-deficit/hyperactivity disorder (ADHD) and conduct problems (CP; defined as either oppositional defiant disorder or conduct disorder; Hinshaw, 1987; Waschbusch, 2002). More recent work suggests that this group can be further divided based on callous-unemotional (C/U) traits (Frick et al., 1994). The distinction between ADHD/CP children with and without C/U traits provides meaningful differences on measures such as reactivity to negative emotional stimuli, levels of empathy and IQ, aggressiveness, and severity of antisocial behaviors (Frick & Ellis, 1999; Kotler & McMahon, 2005). These and other findings suggest that ADHD/CP children with and without C/U traits may also differ in their response to treatment but this question has not been well studied. The two published studies exploring this question found less favorable treatment response for those with C/U traits (Hawes & Dadds, 2005; Waschbusch et al., 2007). The purpose of this study is to examine response to treatment in ADHD/CP children with varying levels of C/U traits. Due to the exploratory nature of this research, it was hypothesized that treatment gains would be represented in a linear fashion with those low on C/U traits demonstrating the most treatment gains and those with high C/U traits demonstrating the least amount of treatment gains in the context of a Summer Treatment Program (STP). Recent findings suggest that C/U traits are inversely related with peer dislike ratings but not related with peer like ratings (Piatigorsky & Hinshaw, 2004). This study intends to replicate and extend these findings.

Methods

Participants. 93 children (ages 7 through 13) attended an 8-week Summer Treatment Program (STP) at Dalhousie University (Halifax, Nova Scotia) in 2001, 2002, or 2003. 74 participants met criteria for ADHD and Conduct Problems (CP), where Conduct Problems was defined as either CD or ODD. 20 children did not meet criteria for any diagnosis and served as control participants in the peer sociometric analyses.

Measures. *Disruptive Behavior Disorder (DBD) Rating Scale.* Symptoms of Attention-deficit/hyperactivity disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD) were assessed by parent and teacher ratings from the DBD. Responses range from Not At All (0), Just a Little (1), Pretty Much (3), and Very Much (4). The DBD ratings presented in Table 1 are the average ratings across parents and teachers.

Antisocial Process Screening Device (APSD). This 20-item questionnaire assesses symptoms of C/U traits, impulsivity, and narcissism, and has been used in a number of studies. Parents and teachers rated each item for each participant as Not At All True (0), Sometimes True (1), or Definitely True (2). Ratings were combined by including the highest rating across informants for each item. Children with conduct problems were grouped post-hoc for analyses based on C/U trait level with Low, Medium, and High C/U trait groups comprising T-scores of 0-59, 60-69, and 70-100 respectively. This was the only predictor variable used in the following analyses. Only the C/U scale of the APSD was used in the following analyses.

Outcome Measures. *Staff Improvement Rating Form.* Based on the Clinical Global Impressions (CGI), the Staff Improvement Rating Form assesses improvement of functioning in a number of domains such as peer and adult directed behavior, social skills, and sports skills (Pelham et al., 2000). This 31-item questionnaire was filled out by undergraduate counselors on the last day of camp, after they had approximately 300 contact hours with the children, and they rated each child from 1 (Very Much Worse) to 7 (Very Much Improved) on a given item. "0" (behavior was no problem from the beginning) and "4" (behavior remained unchanged) ratings are also provided. Since the current study was interested in potential beneficial and negative effects of treatment on behavior, "0" responses were recoded as "4" responses (see "Results" section for amount of "No Problem" ratings and improvement rating averages with and without recoding). After recoding each counselor rating, an overall item rating was averaged across counselors. 24 items pertaining to conduct problem behavior were analyzed individually with C/U trait level as the predictor variable in a series of one-way ANOVAs with LSD post-hoc comparisons. Only the conduct problem subgroup of participants were used in these analyses.

Peer Sociometric Ratings. During the last two days of camp, children were asked to nominate 3 children they liked the most and 3 children they liked the least. The number of positive peer nominations, negative peer nominations, social preference of a child, and overall social impact of a child within their respective C/U group was determined and analyzed across C/U trait levels (low, medium, high). Social preference for each child was computed by subtracting their number of negative nominations from their positive nominations. Social impact was computed by adding their total number of nominations (positive and negative). Children were also asked to rate every other child in the group by how much they liked the other children on a scale from 1 to 5 with "1" signifying "liked the most". A "Likert" nomination for each child was then determined by averaging these ratings. Each of these outcomes were assessed using individual one-way ANOVAs and LSD post-hoc comparisons with C/U trait level as the independent variable.

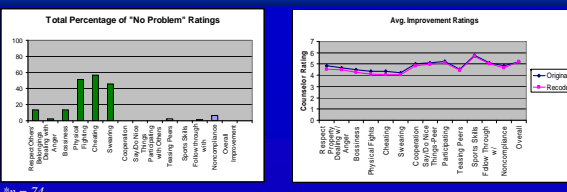
Results

Table 1. Subject Characteristics

Characteristic	Control (n=19)	Low C/U (n=21)	Medium C/U (n=35)	High C/U (n=18)
% male	58	81	80	78
% medicated ^a	0	90	74	94
Age in years (SD)	9.36 (1.47)	9.74 (1.75)	9.62 (1.69)	9.65 (1.71)
Full Scale IQ (SD)	100.68 (17.87)	96.57 (14.89)	97.00 (15.95)	100.06 (15.01)
Annual Family Income (SD)	3.94 (2.24)	5.20 (3.00)	4.14 (3.34)	4.06 (2.59)
DBD Ratings (SD)				
hyperactivity/impulsive	0.34 (0.27)	2.37 (0.51)	2.39 (0.44)	2.51 (0.50)
inattention _a	0.31 (0.41)	2.65 (0.38)	2.49 (0.52)	2.81 (0.33)
conduct problems _a	0.13 (0.14)	0.89 (0.42)	1.16 (0.34)	1.46 (0.50)
ADHD _a	0.32 (0.22)	2.51 (0.37)	2.44 (0.43)	2.66 (0.35)
ODD _a	0.31 (0.32)	1.89 (0.51)	2.23 (0.52)	2.64 (0.49)
CD _a	0.03 (0.03)	0.36 (0.28)	0.58 (0.29)	0.81 (0.60)
APSD T-scores (SD)				
callous/unemotional _a	47.74 (10.16)	55.05 (8.69)	64.37 (1.93)	74.44 (4.06)
impulsivity	38.89 (4.21)	61.00 (8.64)	64.59 (7.73)	65.67 (4.37)
narcissism	41.42 (5.87)	52.76 (6.41)	61.37 (6.90)	64.78 (6.34)

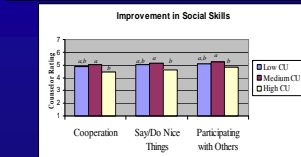
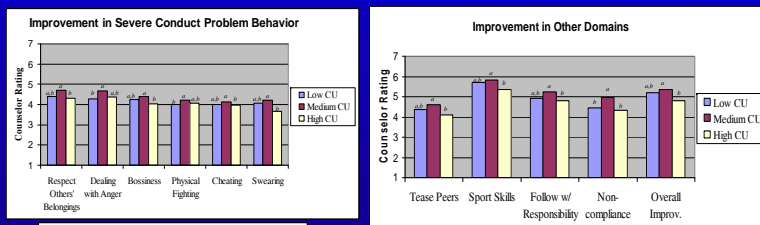
Notes: Significant differences ($p < .05$) were found using independent sample t-tests (F1 squares were used for % male and % medicated); a. between controls and low, medium, and high levels of C/U groups in expected directions; b. between low and medium and high levels of C/U groups in expected directions; c. between medium and high levels of C/U groups in expected directions; d. between groups; *Annual Income is denoted in groups of \$10,000 in which 0 refers to < \$10,000 and 10 refers to \$100,000 and up; IQ was measured using the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1992); *Medication was not systematically examined

Rate of "No Problem" and Recoding



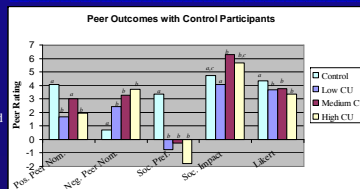
*n = 74

Staff Improvement Ratings



*n = 74, a > b. Items regarding self-esteem, happiness, morning routine, end of day routine, behavior in public settings, using good manners at mealtime, and behavior at mealtimes were not used in this study. Nonsignificant items included following program rules, following through with responsibilities, using materials and possessions appropriately, communication skills, participating with others, stealing, lying, complaining, paying attention, good sportsmanship, and problem solving abilities.

Peer Sociometric Ratings



*n = 93, a > b; c > b.

Discussion

Findings

- The Staff Improvement Ratings suggest that children with high levels of C/U traits tend to experience worse behavioral outcomes than those children who have moderate levels of C/U traits, which appears to be robust across domains such as severe conduct problems and social skills.
- Children with high levels of C/U traits appear to experience comparable outcomes to children with low levels of C/U traits. It is unclear why children with low C/U traits experience a lower response to behavioral treatment, as this was an unexpected finding that should be addressed in future research.
- Children with high C/U traits have been theorized to be less responsive to behavioral treatment, and this study provides additional evidence that children with high levels of C/U traits experience lower responses to behavioral treatments. This suggests that these children in particular may require more specialized intervention components.
- The Peer Sociometric Ratings suggest that children without conduct problems or disruptive behavioral disorders are more well-liked than those with moderate and high levels of C/U traits and are less disliked than children with conduct problems.
- Taken together, C/U groups were divided on ratings based on pre-camp ratings by parents and teachers, but differed on during-camp behavior as reported by staff and peers. Differences that emerged are robust with respect to method and time factors.
- Children with moderate levels of C/U traits appear to experience more favorable outcomes behaviorally and are among the most well-liked among their peers and exhibit a large social impact among their peers.
- Children with high levels of C/U traits demonstrate the least favorable behavioral outcomes and are among the most disliked children based on peer ratings.

Future Directions

- When included as a covariate, medication use was not a significant covariate in significant outcomes regarding staff and peer ratings. Future research should examine the behavioral outcomes and peer likeability of children when medication is systematically assessed.
- Larger sample sizes overall are always beneficial. Future research should include more children in all C/U groups, but more specifically they should include more participants within the low and high trait groups.
- Although the APSD has been used in other studies, multiple forms of measuring C/U traits may be beneficial. Similarly, examining outcome ratings from multiple informants may be helpful in determining if these effects are demonstrated across different domains. More objective outcome measures, such as rates of behaviors, may also be beneficial in determining the effect of treatment on behavior.

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