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The Predictive Utility of Conduct Disorder Symptoms in Preschool Children: A 3-Year Follow-Up Study

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Abstract

Conduct disorder (CD) symptoms often emerge during the preschool years, but it is not clear whether they predict later symptoms. The present study examined whether age 3 CD symptoms predict age 6 CD symptoms beyond oppositional defiant disorder (ODD) and attention-deficit/hyperactivity disorder—hyperactive/impulsive (ADHD HI) symptoms. Participants were 216 preschool children (M_{Age} = 44.19 months), including an externalizing sample (n = 161) and a comparison group (n = 55). Parents were administered a diagnostic interview when children were 3 years old and again three years later. The externalizing sample exhibited more CD symptoms than the comparison sample. In the externalizing sample, initial CD symptoms predicted later CD symptoms above and beyond ODD and ADHD HI symptoms; this relation was stronger for boys than girls. Stealing, property destruction, and fighting independently predicted later CD symptoms. CD symptoms also predicted subsequent ADHD HI symptoms and predicted ODD symptoms at level that approached significance. Results support the predictive validity of CD symptoms in preschool.

Keywords

conduct disorder; attention-deficit/hyperactivity disorder; oppositional defiant disorder; predictive validity; preschool

Conduct disorder (CD) is characterized by behavior that violates the rights of others or major age-appropriate societal norms [1], and is estimated to affect approximately 10% of youth [2]. Childhood onset of CD begins before the age of 10 and is of particular concern because it is associated with worse clinical outcomes [3–4] and higher stability of symptoms than the adolescent-onset form of the disorder [5–6]. However, it is unclear how early this disorder can be identified in children. Although some of the symptoms of CD are not relevant for very young children, many symptoms, including those involving physical aggression, can occur in preschool-aged children [7–8]. At the same time, these behaviors are thought to be common in typically developing children, and may simply represent normal developmental phases. Characterizing preschool aggression and norm violation as

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CD symptoms may pathologize developmentally normative behaviors [9–10]. This therefore poses a conundrum. Identifying and treating this disorder as early as possible may help in halting or slowing the progression of CD symptoms [11], which may be particularly important for children with early onset of the disorder. There is therefore a critical need for research to determine whether the emergence of CD symptoms in preschool-age children is of clinical concern. In particular, longitudinal research is needed to examine whether preschool symptoms of CD predict later symptoms. To the extent that preschool CD symptoms presage later CD symptoms, they could help identify the children at highest risk for continued problems and, in turn, guide the allocation of early intervention resources.

CD in Early Childhood

Approximately 3–7% of preschool children meet criteria for CD [12–13]. Cross-sectional research suggests that CD in preschool children can be readily assessed [7] with concurrent validity [8]. Although studies have clearly documented the stability of early externalizing behaviors measured broadly [14], less is known about the stability of CD symptoms over time. In the Environmental Risk Longitudinal Twin Study, children diagnosed with CD at age 5 were significantly more likely to meet CD diagnosis two and again three years later, and to exhibit more behavioral, social, and educational difficulties than children with no diagnosis [13,15]. More recently, 26% of 3- to 5-year-old children initially diagnosed with CD maintained the diagnosis three years later, even controlling for initial ODD diagnosis [16]. However, because these studies either focused on older preschoolers or on a broad range of ages, it is not yet clear just how early in preschool these symptoms emerge with stability.

Comorbidity Among Externalizing Disorders

One complication in understanding the unfolding of CD is its significant relation with other behavior problems, including oppositional defiant disorder (ODD) and attention-deficit/hyperactivity disorder (ADHD). In fact, these disorders are so highly comorbid that researchers have questioned whether they represent different disorders or perhaps alternate manifestations of one underlying externalizing dimension [17–18]. However, the preponderance of evidence suggests that they are related but separate disorders. Factor analyses have generally indicated that CD, ODD, and ADHD load on distinct, though correlated factors [19]. These disorders have also been found to have different risk factors and correlates [20–22]. Thus, it is important to consider these disorders separately, but also to take into account their overlap. The few studies that have examined the stability of CD in preschoolers have not fully taken into account its comorbidity with ODD and ADHD. Although one study controlled for ODD diagnosis [16], none controlled for ADHD diagnosis or symptoms, leaving it unclear whether these associated problems might account for stability rates.

Precursors to CD

Not only are ADHD and ODD closely linked with CD cross-sectionally, they have also been hypothesized to be precursors of CD [3, 23–24]. Diagnostically, the presence of CD precludes an ODD diagnosis, reflecting the idea that CD may represent a progression from

ODD. Retrospective research suggests that the majority of CD cases in school-age children exhibited earlier ODD [2]. Prospectively, ODD has been found to predict CD in both community and externalizing samples [25–26]. However, recent evidence suggests that ODD symptoms in school-age children may not predict later CD symptoms when controlling for early CD symptoms [27]. Similarly, CD diagnoses during preschool years have been found to predict later CD and ODD diagnoses, but ODD diagnoses only predicted ODD [16].

There is also evidence that ADHD is predictive of later CD, though not as strongly as ODD [26, 28–29]. Prospectively, about a third of school-age boys diagnosed with ADHD progress to CD [30–31]. However, it is unclear whether these findings are accounted for by concurrent CD symptoms. Although Mannuzza et al. [24] found that even ADHD school-age boys with low or no CD behaviors are still at significantly higher risk for CD in adolescence, Burke et al. [28] reported that early ADHD no longer predicted later CD when early CD symptoms were controlled.

In sum, ADHD and ODD have been found to predict later CD, but less so when CD symptoms have been accounted for. Recent research suggests that ODD and CD symptoms may develop in parallel to each other rather than sequentially [32]. Few studies have prospectively examined how CD is related to ODD and ADHD in the preschool years, making it difficult to determine whether observed relations could be accounted for by co-occurring symptoms.

Categorical versus Dimensional Approaches

Most studies of the stability of CD have focused on CD diagnosis, despite the absence of empirical evidence establishing a diagnostic symptom cut-off for CD [33]. Although diagnoses have some advantages, continuous measures of CD symptoms may be better predictors [34–35]. In a one-year prospective study, the number of CD symptoms in school-age children better predicted substance use, juvenile offending, and school dropout than CD diagnosis [34]. In a similar study, the number of antisocial behaviors better predicted a wide range of adult outcomes than did diagnosis [35]. This is perhaps not surprising given that diagnoses are derived from symptom counts [36–37]; transforming a continuous measure into a categorical one can result in loss of information.

The assessment of CD symptoms on a continuum may also be of greater utility for preschoolers. Keenan et al. [16] found that very few children diagnosed at baseline were symptom free at 3-year follow-up, even when they no longer met diagnostic criteria. In these instances of diagnostic remission, a categorical approach may give a false or incomplete sense of improvement—many of these children continued to experience clinically significant difficulties. Similarly, Keenan et al. reported that nearly all new cases of CD at follow-up had at least some CD symptoms at baseline. Using a continuous approach to measuring CD may therefore provide a more sensitive method of assessing risk.

Specific Symptoms

There has been some concern that classifying certain preschool behaviors as CD symptoms may potentially pathologize age-normative behaviors [9–10]. Currently, to our knowledge, no research with preschool children has assessed the predictive validity of individual CD symptoms. However, some research with older children suggests that certain symptoms may have a stronger influence on the progression of CD than others. For example, in a prospective study, of all possible CD symptoms, only physical fighting in school-age children predicted later CD onset [38]. Examining individual CD symptoms may inform theory and begin to tease apart symptoms that represent age-normative behaviors versus emerging psychopathology.

Sex

Most research on CD and disruptive behaviors has focused on males [22]. In both prospective studies of CD in preschool-age children, boys were significantly more likely to maintain a CD diagnosis than girls [13,16]. To our knowledge, these are the only studies that examined the stability of CD as a function of sex in preschoolers, and we do not know if similar findings would hold in samples of younger preschoolers.

Present Study

In sum, a small body of research suggests that CD symptoms may emerge during the preschool years [7–8], but it is not yet clear whether these symptoms are clinically meaningful in the early preschool years. Given the poor prognosis of children with early-onset CD [3–4], the earlier children can be identified and treated, the better. The primary goal of the present study was to evaluate the utility of assessing CD symptoms in young preschoolers, addressing several important gaps in the literature. In particular, this study takes into account comorbid ODD and ADHD—hyperactive/impulsive (ADHD HI) symptoms, explores individual CD symptoms, and evaluates sex as a possible moderator of relations.

We evaluated the utility of CD symptoms in 3-year-old children by addressing the following questions. First, to examine the extent to which CD symptoms might simply represent normative behavior, we evaluated whether CD symptoms would distinguish children with externalizing problems from a comparison group of preschool children. Second, we evaluated whether CD symptoms at 3 years of age would predict CD symptoms three years later among children with externalizing problems, after controlling for initial ODD and ADHD HI symptoms, and whether there was evidence that ODD and ADHD HI symptoms were developmental precursors of CD. Third, we explored which specific initial CD symptoms were predictive of later CD symptoms. Fourth, the utility of assessing CD symptoms in preschoolers was examined with respect to predicting later ODD and ADHD HI symptoms. Finally, sex was examined as a possible moderator of the predictive validity of CD symptoms. Based on findings from school-age [23,26] and preschool-age children [13,16], it was expected that preschool CD symptoms would more strongly predict later CD for boys than for girls.

Method

Participants

All study procedures were approved by the University of Massachusetts Institutional Review Board. Participants were 216 children (114 boys, 102 girls). Children were 3 years old at screening. They averaged 44.19 months (*SD* = 3.34) at the first home visit (Time 1) and 80.27 months (S*D* = 4.91) at the follow-up visit three years later (Time 2). There were 161 children (M_{Age} = 44.28 months, *SD* = 3.32; 76 girls) in the externalizing sample and 55 children (M_{Age} = 43.84, *SD* = 3.39; 26 girls) in the comparison sample. Their 216 female primary caregivers and 151 male caregivers participated in a 3-year longitudinal study. The sample included European American (60.20%), Latino (16.20%; mostly Puerto Rican), African American (10.20%), and multiethnic (13.40%) children. Most mothers (88.8%) and fathers (91.7%) had high school diplomas and 34.7% of mothers and 25.0% of fathers had bachelor's degrees. The only demographic difference between the externalizing and comparison group was income. The externalizing group (*M* = $55,978, *SD* = $41,288) had a lower income than the comparison group (*M* = $72,992, *SD* = $49,622).

Procedure

Participants were recruited by distributing questionnaire packets through state birth records, pediatrician offices, childcare centers, and community centers. Children with significant externalizing problems (n = 199) and without significant behavior problems (n = 59) were recruited from 1,752 3-year-old children whose parents completed a screening packet containing the Behavior Assessment System for Children – Parent Report Scale (BASC-PRS) [39] and a questionnaire assessing for exclusion criteria (i.e., no evidence of mental retardation, deafness, blindness, language delay, cerebral palsy, epilepsy, autism, or psychosis), parental concern about disruptive behaviors, and demographic information. Criteria for the externalizing group were: (a) parent responded "yes" or "possibly" to the question, "Are you concerned about your child's activity level, defiance, aggression, or impulse control?" and (b) BASC-PRS hyperactivity and/or aggression subscale T scores at or above 65. For the comparison children, criteria were: (a) parent responded "no" to the question, "Are you concerned about your child's activity level, defiance, aggression, or impulse control?" and (b) T scores on the BASC-PRS hyperactivity, aggression, attention problems, anxiety, and depression subscales at or below a T score of 60. Eligible families were scheduled for two 3-hour home visits approximately one week apart, and each parent was paid a total of $200. The present study includes the children that completed the 3-year follow-up (*n* = 216; one child was excluded: see below). Bilingual staff conducted home visits for Spanish-speaking families, and all child behavior measures were available in Spanish.

Measures

Parent diagnostic interview—During the first home visit, the ADHD and ODD sections, and portions of the CD section of the Diagnostic Interview Schedule for Children, Fourth Edition (DISC-IV) [37], were administered to parents. Minor modifications were made to school-related questions, and seven of the CD symptoms that were judged to be age inappropriate were omitted: use of weapon, stealing while confronting a victim, sexual

assault, breaking into private property, staying out at night, running away from home, and truancy. The full DISC-IV was administered at the 3-year follow-up. Interviews were administered to mothers or jointly to both parents when available. Fathers participated in the interviews for 65% of children during the first visit and for 32% at follow-up. Mothers' responses were used in the rare case of open disagreement between mother and father. Kuder-Richardson formula 20 (KR-20), the appropriate internal consistency statistic for scales with dichotomous items, was calculated for each symptom type. For the externalizing group at Time 1, the KR-20 was .76 for ADHD HI, .79 for ODD, and .53 for CD, which was only slightly lower than at Time 2 (.82 for ADHD HI, .80 for ODD, and .63 for CD). We did not use the ADHD inattentive symptoms because theory and research suggest that it is hyperactivity/impulsivity, rather than inattention, that may be a developmental precursor to conduct problems [25,40]. Exploratory analyses were consistent with previous studies; inattention symptoms did not predict CD symptoms, and controlling for inattention did not change any of the relationships presented below.

Analyses

First, the prevalence of CD symptoms in the control and externalizing groups were compared using t-tests for independent samples. Next, regression analyses were conducted to evaluate the extent to which early symptoms predicted later symptoms among children in the externalizing group. Children in the control group were not included in regression analyses in order to maximize the clinical utility of these findings. Regression analyses included four parts. First, we regressed Time 2 CD symptoms on Time 1 CD symptoms, Time 1 ODD symptoms, Time 1 ADHD HI symptoms, Time 2 age, and socioeconomic status (SES). Second, we conducted exploratory analyses to examine the ability of individual Time 1 CD symptoms to predict later CD symptom levels. Time 2 CD symptom counts were regressed on each Time 1 CD symptom individually (using a separate equation for each symptom), as well as Time 1 ODD symptoms, Time 1 ADHD HI symptoms, age, and SES. We then ran a multiple regression that included all symptoms that were individually predictive. Third, we examined whether Time 1 CD symptoms predicted later ODD and ADHD HI symptoms, controlling for early ODD and ADHD HI symptoms, age, and SES. Finally, sex was examined as a possible moderator of the relations between symptoms in preschool and CD symptoms at Time 2; separate multiple regressions with the appropriate interaction terms for each DISC-IV subsection were conducted, always controlling for initial levels of all three symptom types, age, and SES. For example, to evaluate whether sex moderated the relation between Time 1 CD and Time 2 CD symptoms, Time 2 CD symptoms were regressed on Time 1 CD, Time 1 ADHD HI, Time 1 ODD, age, SES, sex, and a Time 1 CDxsex interaction term.

Results

Preliminary Analyses

One child in the externalizing sample was an extreme outlier, with all baseline CD symptoms (4.6 standard deviations higher than the mean), and was excluded from all analyses. To consider the possibility of differential attrition in the externalizing sample, we compared the remaining 161 children whose parents completed the DISC-IV at the baseline

and 3-year follow-up to the 37 children who dropped out on demographic and predictor variables. European American participants were significantly more likely to complete the study (90%) than non-European American participants (73%), $p < .01$. In addition, mothers of children who dropped out ($M = 29.25$, $SD = 7.50$) were younger than mothers of children who stayed in the study ($M = 32.18$, $SD = 6.74$), $t(194) = 2.32$, $p = .02$. In the comparison sample, only four children did not complete the study, so statistical comparisons could not be made to examine attrition.

Given their significant interrelationships, multicollinearity between CD, ODD, and ADHD HI symptoms was examined to ensure that these predictors were sufficiently independent to be simultaneously considered as predictors. Multicollinearity diagnostics indicate more than acceptable levels of collinearity, with variation inflation factors (VIFs) no higher than 1.3 for each of the predictors (alternatively put, all tolerances were above .76), suggesting that our regression weight standard errors would not be inflated by collinearity.

Descriptive Statistics

Table 1 presents symptom means and standard deviations for the comparison and externalizing samples. Even within the externalizing sample, substantial variability is seen in all symptom types, such that range restriction is not a concern for the predictive analyses. Table 2 presents symptom means and standard deviations for the externalizing sample by sex. Symptom counts declined by approximately half from 3 to 6 years of age. Table 3 presents intercorrelations between CD, ODD, and ADHD HI symptoms at Time 1 and Time 2. Time 1 CD symptoms correlated .48 with Time 2 CD symptoms, showing stability as strong or stronger than that of ODD (.26) and ADHD HI (.43). CD, ODD, and ADHD HI symptoms were concurrently intercorrelated with each other at both time points. The strongest associations were found between CD and ODD symptoms.

Comparison of Externalizing and Comparison Groups

The externalizing group exhibited significantly higher CD, ODD, and ADHD HI symptoms at Time 1 and Time 2; the comparison group showed very low levels of CD symptoms at both time points.

Predicting Time 2 CD Symptoms

The central question of this study was the extent to which early CD symptoms would predict symptoms three years later, controlling for early ODD and ADHD HI symptoms. As predicted, CD symptoms at Time 1 predicted CD symptoms at Time 2 ($b = .44$, $SE = .07$, $\beta = .49$, $p < .001$). ADHD HI symptoms negatively predicted CD symptoms at Time 2 controlling for other symptoms ($b = -.12$, $SE = .05$, $\beta = -.19$, $p = .012$), while Time 1 ODD symptoms did not predict Time 2 CD symptoms ($b = .04$, $SE = .05$, $\beta = .06$, $p = .43$).

Exploratory Symptom Analyses

Table 4 presents the results of the symptom analyses. First we conducted separate regression models for each of the seven symptoms endorsed at Time 1 (no children were reported to have set fires); five of these were significant predictors of Time 2 CD symptoms. Next, we simultaneously entered these five symptoms as predictors of Time 2 CD symptoms.

Breaking things, fighting, and stealing all showed unique predictive power, even when controlling for the other symptoms, Time 1 ODD, and Time 1 ADHD HI.

Relations between Time 1 Symptoms and Time 2 ADHD and ODD Symptoms

CD symptoms predicted later ODD symptoms at a level that approached significance (b = .25, SE = .13, β = .16, p = .07). Time 1 ODD symptoms (b = .20, SE = .10, β = .18, p = .04) predicted Time 2 ODD symptoms controlling for other Time 1 symptoms, but ADHD HI symptoms did not (b = .001, SE = .09, β = .001, p = .99). Time 1 CD symptoms also predicted ADHD HI symptoms at Time 2 (b = .30, SE = .14, β = .16, p = .03), as did Time 1 ADHD HI symptoms (b = .57, SE = .10, β = .41, p < .001), but ODD symptoms did not (b = −.16, SE = .10, β = −.12, p = .12).

Sex Differences in Predictive Utility

CD symptoms in preschool boys (b = .56, SE = .09, β = .62, p < .001) better predicted later CD symptoms than in girls (b = .22, SE = .11, β = .25, p = .045), interaction b = .28, SE = .13, p = .04. Sex did not moderate the relation between ODD symptoms and later CD symptoms. However, Time 1 ADHD HI symptoms were inversely related to CD symptoms at Time 2 in boys (b = −.23, SE = .06, β = −.35, p < .001), but were not predictive for girls (b = .04, SE = .07, β = .08, p = .54), interaction b = .22, SE = .09, p = .01.

Sex did not moderate the relations between early CD symptoms and later ODD symptoms (interaction, b = −.14, SE = .26, p = .60) or ADHD HI symptoms (interaction, b = .15, SE = .28, p = .60).

Discussion

Perhaps because it is relatively rare in young children, research on CD has lagged behind the literature on other disruptive behavior disorders in preschoolers [41]. The present study supported the utility of assessing CD symptoms in young children. First, CD symptoms significantly discriminated 3-year-old children with and without externalizing problems, and were quite rare among children without problems, suggesting these behaviors are not developmentally normative. Second, consistent with recent findings that early CD diagnosis predicts later diagnosis [13,16], CD symptoms at age 3 predicted CD symptoms three years later, even above baseline ODD and ADHD HI symptoms. This result further suggests that early CD symptoms may be of clinical concern and not merely a normative developmental phase. Third, results suggested that three symptoms were particularly useful in predicting later CD symptoms: breaking things, stealing, and fighting. These results are consistent with Loeber et al.'s finding that fighting is an important symptom in school-age children [38]. Fourth, CD symptoms appear to have utility not only in predicting future CD, but also in predicting subsequent ADHD HI and ODD symptoms. In contrast, children with more early symptoms of ADHD HI and ODD were not more likely to show later symptoms of CD. Finally, consistent with previous research [13,16], early CD symptoms more strongly predicted later problems for boys than for girls, though the relationship between early and later CD symptoms was also significant for girls.

The results of this study did not support existing theory and research on older children that suggest that either ODD or ADHD are developmental precursors to CD [3,23–24]. The findings in relation to ADHD HI are in line with a number of studies with younger [42] and older children [28] that suggest that hyperactivity may not predict future CD/aggression once early symptoms are controlled. In fact, for boys in this study, there was an unexpected negative relation between ADHD HI symptoms at age 3 and CD symptoms at age 6 once initial ODD and CD symptoms were controlled. We are not sure how to account for this surprising finding, but we propose two possibilities. First, this could be an instance of suppressor variables. That is, because initial ODD and CD symptoms were controlled for in this analysis, our finding estimates the relation between ADHD HI symptoms and later CD symptoms *in boys with equivalent levels of ODD and CD*. When early problem behaviors exist, perhaps it is better if these are due to impulsivity that might be somewhat outgrown, than to other, perhaps even more entrenched causes. Second, given the unexpected nature of this finding, it could simply be a Type I error. This study also does not support the notion that ODD may be a developmental precursor to CD, at least during the preschool years. Co-occurrences among these problem types may be the result of common influences, such as coercive parenting cycles or biological risk factors, rather than heterotypic continuity. If in fact ODD and CD develop in parallel, rather than sequentially, it is not clear that CD should preclude a diagnosis of ODD, as is currently specified in DSM-5 [43]. More research is needed to better understand the developmental progression of ADHD HI, ODD, and CD symptoms.

The present study points to several areas that will be important for future study. DSM-5 has added a specifier to the diagnosis of CD to note callous and unemotional interpersonal style [43]. In the present study, physical fights, stealing, and breaking things were found to be individually predictive of later CD symptoms. These symptoms seem consistent with the idea that callous behaviors may start at an early age, but more empirical data is needed to evaluate the validity and predictive utility of this trait in preschoolers. More research is also needed to better understand the distinction between ODD and CD. Results of this study suggest that ODD and CD symptoms are distinct in their patterns of predicting future outcome, but it is not clear whether ODD and CD are qualitatively or quantitatively distinct from one another. It is possible that the key distinction is in severity, and that early severe symptoms are most predictive of future severe symptoms. Preschool CD symptoms have important incremental predictive utility regardless of whether this is because they differ in type or severity from ODD symptoms.

Several limitations should be noted. First, we did not consider impairment from CD symptoms. More research is warranted on the long-term impairment associated with early CD symptoms. Second, ethnicity was not assessed as a moderator. Although the present sample was diverse, there was not enough power to examine relations separately by ethnicity. Finally, the current study relied only on parent report; additional assessment sources should be included in future work.

Despite these limitations, this study extends knowledge on the relations among different types of disruptive behavior symptoms and points to the importance of assessing early CD symptoms. This is the first longitudinal study to assess the predictive validity of CD in

preschoolers while controlling for ODD and ADHD HI, and assessing CD symptoms on a continuum. Results suggest that early CD symptoms can be more than transient problems. This appears to be especially the case for boys, but also for girls. Clinically, results suggest that including CD symptoms in assessments of children as young as 3 may add valid, unique information relevant to the future trajectory of the problems. Given the stability of these symptoms over time, it may be important to intervene early in development rather than waiting to see if children outgrow these symptoms. Future research is needed to better understand factors that contribute to the emergence of CD symptoms during the preschool years and to evaluate whether existing treatments that have been found to be successful for preschoolers with behavior problems [11] are effective in halting the progression of CD symptoms specifically.

Summary

Research suggests that CD symptoms emerge in early childhood. However, it is not clear whether these symptoms represent developmentally normative behaviors or emerging psychopathology. This issue is further complicated by high comorbidity rates with ODD and ADHD HI, as well as research suggesting that these conditions may represent CD precursors. The present study showed that CD symptoms in preschool children predict later CD symptoms above and beyond the proposed precursors. The findings are consistent with recent research [13,16] that suggests CD symptoms represent more than developmentally normative behaviors in preschool children. Moreover, there was no suggestion that either ODD or ADHD HI symptoms represented precursors to CD. Stealing, property destruction, and fighting independently predicted later CD symptoms, suggesting that certain CD symptoms in preschool children may be more meaningful than others. CD symptoms also showed utility in predicting subsequent ADHD HI and ODD symptoms, further supporting the idea that CD symptoms are important in the preschool years. Finally, consistent with the literature, initial CD symptoms in boys were better predictors of later CD symptoms than in girls, though they were significantly predictive for both sexes. Findings have clear clinical implications for early identification and could potentially guide future research on both theory and applied issues. The results suggest the importance of assessing CD symptoms in preschool children referred for behavior problems.

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Table 1

Mean Scores for Comparison and Externalizing Groups. Standard Deviations are in Parentheses.

	Comparison Group (*n* = 55)	Externalizing Group (*n* = 161)	*t*
Time 1			
CD	.35 (.67)	1.57 (1.41)	8.72***
ODD	1.56 (1.69)	4.53 (2.02)	10.70***
ADHD HI	2.20 (1.77)	5.39 (2.03)	10.35***
Time 2			
CD	.24 (.47)	.76 (1.26)	6.15***
ODD	.95 (1.43)	2.55 (2.23)	4.47***
ADHD HI	1.09 (1.51)	3.78 (2.62)	9.26***

Note: CD = conduct disorder symptoms; ODD = oppositional defiant disorder symptoms; ADHD HI = attention deficit hyperactivity disorder, hyperactive/impulsive symptoms.

** $p < .01$,

*** $p < .001$

Table 2

Mean Scores for Externalizing Group by Sex at Time 1 and Time 2. Standard Deviations are in Parentheses.

	Total	Boys (n = 85)	Girls (n = 76)	*t*
Time 1				
CD	1.57 (1.41)	1.71 (1.58)	1.42 (1.18)	1.28
ODD	4.53 (2.02)	4.62 (2.03)	4.43 (2.03)	0.59
ADHD HI	5.39 (2.03)	5.54 (2.17)	5.21 (1.87)	1.03
Time 2				
CD	0.76 (1.26)	0.89 (1.44)	0.62 (1.01)	1.42
ODD	2.55 (2.23)	2.54 (2.22)	2.57 (2.25)	−0.07
ADHD HI	3.78 (2.62)	3.94 (2.47)	3.61 (2.77)	0.80

Note: CD = conduct disorder symptoms; ODD = oppositional defiant disorder symptoms; ADHD HI = attention deficit hyperactivity disorder, hyperactive/impulsive symptoms.

** $p < .01$,

*** $p < .001$

Table 3

Intercorrelations Between Symptoms for Externalizing Group

	1	2	3	4	5	6
1. Time 1 CD	--	.43***	.24**	.48***	.23**	.20**
2. Time 1 ODD		--	.31***	.22**	.26**	.09
3. Time 1 ADHD HI			--	−.04	.10	.43***
4. Time 2 CD				--	.46***	.22**
5. Time 2 ODD					--	.42***
6. Time 2 ADHD HI						--

Note: CD = conduct disorder symptoms; ODD = oppositional defiant disorder symptoms; ADHD HI = attention deficit hyperactivity disorder, hyperactive/impulsive symptoms. n = 161.

** $p < .01$,

*** $p < .001$

Table 4

Frequency of Symptom Endorsement at Time 1 and Unstandardized and Standardized Regression Weights for Early CD Symptoms Predicting CD Symptoms at 6 Time 2, as Individual Predictors and in a Combined Multiple Regression. Standard Errors are in Parentheses.

Symptom	Percentage Endorsed at Time 1	Regression Weight When Entered Individually	Regression Weights When Entered Simultaneously
1. Lying	57.4%	.27 (.21), $\beta = .10$	
2. Bullying/threatening others	34.0%	.58 (.22), $\beta = .22^{**}$	.31 (.21), $\beta = .12$
3. Damaged others' property	28.0%	.84 (.22), $\beta = .30^{***}$	.53 (.23), $\beta = .19^{*}$
4. Initiates physical fighting	21.7%	.83 (.23), $\beta = .27^{***}$	.64 (.22), $\beta = .21^{***}$
5. Stealing without confrontation	18.0%	.89 (.25), $\beta = .27^{***}$	.77 (.25), $\beta = .24^{***}$
6. Cruelty to animals	9.9%	.77 (.32), $\beta = .18^{*}$	.48 (.31), $\beta = .11$
7. Hurting others/physically cruel	9.9%	.58 (.33), $\beta = .14$	
8. Start fires	0%	--	

Note: CD = Conduct Disorder. $n = 161$.

$^{*}p < .05$,

$^{**}p < .01$,

$^{***}p < .001$