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Preschool Parent-Pediatrician Consultations and Predictive Referral Patterns for Problematic Behaviors

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Abstract

Objective—The present study examined parents' reports of the frequency, nature, and outcome of pediatrician consultation and interventions about significant preschool behavior problems.

Method—Parents were asked whether they consulted or not with their pediatric providers about disruptive behavioral problems during a longitudinal study of preschool children.

Results—Eighty 4-year-old children had parents who had consulted with their pediatricians versus 90 children whose parents did not. Children who eventually met criteria for Attention Deficit/Hyperactivity Disorder (ADHD) or Oppositional Defiant Disorder (ODD) two years later, received different pediatric interventions at age 4 than children who did not have a diagnosis, χ^2 (2) = 9.28, based on parent-report. Eighty-nine percent of children who were referred for evaluation or treatment by pediatricians later met criteria for ADHD or ODD. However, 56% of children who later met criteria for ADHD or ODD were not referred by age 4.

Conclusion—Pediatricians were able to differentiate between preschool children with transient versus persistent behavioral problems significantly better than chance, though a large number of children with behavioral problems were not provided with early assistance or referrals. Additional research is needed to obtain data directly from pediatricians about their interventions and resources for this vulnerable population.

Keywords

preschool; ADHD; ODD; pediatrician consultation

Introduction

Pediatricians have recognized expertise in screening for behavioral problems in young children, yet little is known about how often they are consulted, how effective their interventions are, or whether their responses are predictive of future behavior problems.[1] Disruptive behavior disorders including Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD) are common among children and are often first manifested in early childhood.[2] ADHD is characterized by impairing levels of inattentiveness, hyperactivity, or impulsivity,[3] and approximately 50% of

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children with ADHD also have co-morbid ODD or CD.[4] ODD is characterized by negative, hostile and defiant behavior, whereas CD involves antisocial behavior that compromises other peoples' rights.[3]

Although ADHD and ODD are often not diagnosed until elementary school-age, the onset of symptoms commonly occurs prior to age 4,[5] and there is growing evidence for the validity of ADHD and ODD among preschool-aged children.[5–7] In particular, deviant levels of high activity, defiance, and aggression occur among young children and can cause significant impairment that is persistent over time, and not merely a developmental phase.[8] Fifty to eighty percent of preschool-aged children with ADHD or ODD continue to show clinically significant behavior problems when they enter elementary school.[9,10]

While there is evidence for the validity of preschool diagnoses of ADHD and ODD, as many as half of preschool-aged children will outgrow early behavior problems.[9,10] This creates a dilemma when assessing a preschool-aged child with behavior problems.[11] Diagnosing and treating children who would have outgrown the problems exposes them and their families to unnecessary cost, burden of care, and potential stigma. If treatment involves stimulant medication, there remain many unknown short-term and long-term consequences to medication use, and there is growing evidence about the increased risk of significant effects on mood and growth.[12,13] This is of particular concern given the remarkable increase in the use of stimulant medication among preschoolers in the past two decades.[14,15] However, if children are not merely experiencing a temporary developmental phase and are *not* referred for treatment during the preschool years, an opportunity for early identification and treatment may be missed.

Thus, there is a need to develop techniques for more accurately identifying those preschool-age children whose early behavior problems represent more than a transient stage, and who are most in need of early treatment. Evidence, though somewhat mixed, suggests that early treatment of these disorders can in fact be effective. In the first large-scale randomized medication trial for preschool-aged children, the Preschool ADHD Treatment Study (PATS) found that a commonly prescribed stimulant (immediate release methylphenidate) was generally tolerated by children with ADHD under age 6 and that it reduced their hyperactive and impulsive symptoms, though more modestly than was demonstrated in older school aged children.[16] Correlate findings of PATS demonstrated that preschool-aged children who had initial treatment improvement maintained their response over a 10 month period of continued medication use,[17] whereas those who had 3 or more co-morbid disorders had little identifiable response to medication at any phase of the study.[18] Though it represents the largest psychotropic medication study conducted to date with preschool children and further validates ADHD as a diagnosis in preschool youth, several design issues in PATS limit its interpretability for pediatric providers.[19] For example, the complex study design made retention difficult, which reduced power and decreased the internal validity of this study.[12,16]

Few studies have evaluated the effectiveness of early psychosocial treatment for ADHD.[20, 21] The details about the parent training intervention offered over 10 weeks in PATS are not yet available, but references to this lead-in sequence of the medication study note that only 7% showed substantial improvement.[12] However, Kern and colleagues found that their behavioral treatments and consultations in school settings were effective in improving functional impairments for preschool children at risk for ADHD, with benefits lasting for as much as one year post-intervention.[20] While the extent to which psychosocial treatments improve functioning among preschool-aged children with ADHD has not yet been well-established, there is more extensive documentation of the effectiveness of parent training programs for preschool-age children with oppositional-defiant behavior.[22,23] It is reasonable to hypothesize that psychosocial treatment for children with ADHD would provide benefits with respect to reduced co-morbid ODD and CD problems.[20] However, few psychosocial treatment studies

have examined efficacy for preschool ADHD co-morbid with ODD, though there is evidence that these disorders frequently co-occur.[24,25] Thus, although there remain gaps in the preschool intervention literature, the existing evidence supports the need to identify preschool-aged children who may benefit most from these and similar treatments.

Though pediatricians are regarded as experts in behavioral health screening and assessing the need for interventions in young developing children, only a handful of studies have examined pediatricians' responses to preschool-aged children presenting with behavioral problems.[26–28] Pediatric providers are likely to be the first health professional with whom parents will discuss concerns regarding their preschool-aged children's behaviors, and they are capable of playing a key role in deciding whether or not to take early action.[26] However, there is little research guiding pediatric providers with decision-making, and there is some ambiguity regarding the role that pediatric providers should play in this process. Lavigne et al. (1993) found that pediatricians were less likely to indicate that preschool-aged children had emotional/behavior problems, compared to psychologists who conducted thorough psychological assessments of the children.[27] This same study found that more than 50% of preschool-aged children who had an emotional/behavior problem based on a psychologist's evaluation did not receive counseling, medication, or a mental health referral from the pediatrician. These results are consistent with the finding that when asked who first suggests a diagnosis of ADHD, only 11% of physicians and psychiatrists responded that primary care physicians do.[28] There is some evidence that rates of identification of problems may vary among pediatricians, such that those who receive advanced training in psychosocial issues are more likely to recognize children's behavior problems and treat the children with several management approaches.[29]

The Present Study

Parents of preschoolers with significant behavior problems were surveyed about how often they were referred for treatment by pediatric providers, and whether providers were more likely to take action with children who continue to have problems during early childhood. Toward that end, the following questions were examined:

1. What is the frequency with which parents of 4-year-old children with behavior problems report consulting with their pediatricians about their children's behaviors?
2. When parents do consult with their pediatricians, what do parents report regarding the advice that pediatric providers give during these discussions?
3. Are consultations and referrals more likely among those children who continue to show behavior problems?

METHOD

Participants

Participants were 170 children and their families who participated in a 4-year longitudinal research study examining the development of ADHD and ODD among young children.[30] Eighty-eight children were European American (51.8%), 20 were African American (11.8%), 33 were Latino (19.4%), and 29 were multi-ethnic (17.1%). Ninety-three children were male (54.7%), 77 were female (45.3%), and the maternal education mean was 13.4 years (SD = 2.8). Most children (n=120, 70.6%) lived with their primary caregiver and their spouses or partners, with 163 (95.9%) living with their biological mother (4 with adoptive mother, 3 with their grandmother). Over 65% attended preschool for an average of almost 16 hours a week at age 4. The present study focused on data collected during the 1st, 2nd, and 4th year assessments. Children were between the ages of 36 and 50 months (M = 44.27, SD = 3.33) at the first assessment, between the ages of 49 and 65 months at the second year assessment (M = 56.74,

SD = 3.73), and between the ages of 69 and 104 months at the fourth year assessment (M= 80.8, SD = 5.12).

Procedure

All participants were recruited through local pediatricians' offices, childcare centers, community centers, and birth record listings in western Massachusetts when they were 3 years old. Parents of 1752 children completed a screening packet containing the Behavior Assessment System for Children – Parent Report Scale (BASC)[31] and a questionnaire assessing exclusion criteria, parental concern about externalizing symptoms, and demographic information. The initial sample included 199 children with significant externalizing (hyperactivity and/or aggression) problems. 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 Hyperactivity and/or Aggression subscale *T* scores fell at or above 65 (approximately 92nd percentile). Exclusion criteria included diagnoses of mental retardation, deafness, blindness, language delay, cerebral palsy, epilepsy, autism, or psychosis. Families participated in assessments during home visits when their children were 3 years old (Time 1), at 1-year (Time 2; n = 185), 2-year (Time 3; n = 162) and 3-year (Time 4; n = 168) follow-up. At Time 2, parents were surveyed regarding discussions they had with their pediatricians about their children’s behaviors, and what, if any, information was provided to them. At Time 4, diagnostic assessments were completed to determine whether children met criteria for any behavioral or emotional disorders. Of the 185 children who had Time 2 assessments, consultation information was available for 170. Of those who had consultation at Time 2, Time 4 assessments were completed on 154 children.

Measures

Parent-Pediatrician Consultations—At Time 2, parents took part in a semi-structured interview in which they were asked the following: “Have you ever talked with your pediatrician about any behavioral concerns you might have had about your child?” Positive responses were followed by queries about what concerns they raised and what the pediatrician’s response was. Some discussions concerned other developmental issues (e.g., eating problems) rather than externalizing behavior problems, so they were coded as having not discussed behavioral concerns. Responses were coded by two independent raters into the following categories: (a) the parent was told the behavior is just a phase/not a problem/typical behavior, (b) the pediatrician told the parent to wait and see how the child’s behavior progresses, (c) the parent was given literature by the pediatrician, (d) the pediatrician gave verbal parenting advice, (e) the pediatrician gave the child a referral for evaluation or treatment or was supportive of the parent’s initiative to take the child to a mental health professional for evaluation or treatment, or (f) the pediatrician recommended medication. Disagreements between raters were discussed and a consensus decision was made. Interrater reliability was calculated for each code using Cohen’s kappa. Kappa ranged from .82 to 1.0 for the six codes describing providers' responses. Interventions, including those for children who received more than one intervention, were classified into one of three categories: a) ‘Active’ intervention which included referred for evaluation/treatment or recommended medication b) ‘Education’ which included giving parenting advice or literature, and c) ‘Reassurance’ which included taking a wait and see approach or telling the parents the behavior was not problem. For the 14 families who reported multiple types of advice, an algorithm was used that prioritized ‘Active’ over ‘Education’ over ‘Reassurance’ interventions.

Treatment history—Parents were also asked annually whether or not their children had received medication or psychosocial treatment. At Time 1, parents were asked if children had ever received treatment, and at Time 2, 3, and 4, parents were asked if children had received treatment in the past year.

Time 4 diagnoses—Doctoral students in clinical or school psychology conducted home visits and made diagnoses using DSM-IV criteria, based on a psychosocial interview, the NIMH Diagnostic Interview Schedule for Children-IV,[32] and parents and teachers completed BASC and Disruptive Behavior Rating Scales.[4] For children who were on stimulant medication, the clinician considered parents' reports of the children's behavior off-medication. A licensed clinical psychologist actively supervised this process, reviewing all materials and the diagnoses given. A second clinician, an independent rater who did not conduct the home visit, then reviewed all materials for each participant and made an independent diagnosis as well. For each participant, the second clinician reviewed all Time 4 materials (rating scales and interview responses) and made an independent diagnosis. Discrepancies were discussed and a consensus diagnosis was reached. Kappa was .78 for ADHD, .75 for ODD, and 1.00 for CD, suggesting good inter-rater reliability. The four children who met criteria for CD were combined with the ODD children for analyses, and this group is referred to as ODD/CD.

Although DSM-IV criteria require that ADHD symptoms be present in at least two settings, there were some children who showed clinically significant symptoms at home, but not at school (there were no children who displayed clinically significant symptoms at school but not at home). To be consistent with the approach used by Lahey et al. (1998) and in the DSM-IV field trials (Lahey et al., 1994),[33,34] children who showed clinically significant symptoms at home or at school were classified as having ADHD. Given the age of the children, it seemed likely that for some children with ADHD, symptoms may not yet be evident at preschool, daycare, or an elementary school setting since for some children it may not be until school becomes more challenging that symptoms will become clinically significant at school. Some kindergarten and first grade teachers may also be hesitant to endorse ADHD symptoms because they may interpret these as still being developmentally normal or fear labeling young children.

Diagnostic interview—The NIMH-Diagnostic Interview Schedule for Children-IV (NIHM-DISC-IV) is a structured interview that assesses DSM-IV disorders in children ages 6 and up with adequate reliability.[32] The interview was administered to the primary caregiver (secondary caregivers were allowed to provide input during the interview also; however, when different responses are given, the primary caregiver's responses were used). A supplemental interview was also used to administer to parents of children who were on short-acting medication for ADHD. This supplemental interview consisted of asking parents if there was any time in the past year when they were able to observe the child off medication. If so, then the NIMH DISC-IV ADHD symptoms that were not endorsed initially were reviewed again and parents were asked to indicate whether the symptoms often occurred when the child was off medication. Behavior Assessment Scale for Children (BASC). The BASC is a scale that measures a number of dimensions of child psychopathology in children who are 2 years 6 months or older.[31] Both teachers and parents were administered this scale at Time 1 and 4. Internal consistency coefficients for Aggression and Hyperactivity subscales for children ages 3 to 7 ranged between .74 and .83, and test-retest coefficients of the same subscales for children ages 4 to 7 have been between .84 and .88 (test-retest data not available on 3 year old children).[31] The BASC has been found to differentiate ADHD from non-ADHD school-aged children.[35]

Disruptive Behavior Rating Scale (DBRS).[4]—The ADHD and ODD sections of the DBRS were administered to both parents and teachers at Time 4. This scale, which has shown good reliability and validity, presents the 18 DSM-IV symptoms of ADHD and 8 DSM-IV symptoms for ODD and asks parents/teachers to specify how often these symptoms occurred in their children in the past 6 months using a 4-point Likert Scale.[36] Internal consistency coefficients for parents and teachers on ADHD symptoms were found to be .94 and .95, and .90 and .94 for ODD symptoms respectively.

Statistical Methods

Descriptive information about the number of families enrolled, how many consulted with their pediatric providers, how many responded to the survey, demographic information, what interventions were offered and how many children had clinical diagnoses are described in text and Table 1, Table 2 and Table 3. To examine whether parents who reported discussing their children's problems with their pediatricians by age 4 were significantly more likely to have children who later met criteria for ADHD or ODD/CD at age 6 than were parents who had not discussed their children's behavior, a chi-square test was conducted between a dummy-coded "*talked*" variable (coded 'yes' or 'no') and a dummy-coded *Time 4 diagnosis* variable (1 = diagnosed with ADHD and/or ODD/CD at Time 4; 0 = not diagnosed with ADHD or ODD/CD at Time 4), correcting for continuity.[37] Positive and negative predictive power, as well as sensitivity and specificity were calculated comparing consultation or not at age 4 with presence or not of Time 4 diagnoses.

To examine whether children in the 3 intervention groups (types of advice given = 'Active', 'Education', or 'Reassurance') were differentially likely to ultimately receive diagnoses, we created a dummy-coded variable indicating whether each child met criteria for ADHD or ODD/CD at age 6 and a dummy-coded variable indicating to which of the 3 intervention groups the child belonged. Chi-square tests corrected for continuity were conducted between diagnostic status and intervention group.

We also explored, using chi-square tests whether intervention groups were associated with subsequent treatment. A dummy-coded variable was created indicating whether or not the each child had ever taken medication for ADHD, and another dummy-coded variable indicating whether each child had ever received psychosocial treatment. We explored whether children in these three intervention groups differed on initial symptomatology and whether they ultimately followed different treatment paths. To assess whether initial symptom severity was associated with interventions reported, a one-way analysis of variance (ANOVA) was performed to compare children in the 3 categories of consultations, 'Reassurance', 'Education', and 'Active', on the BASC Hyperactivity and Aggression scales obtained at the age 3 (Time 1) screening, with the hypothesis that symptom severity may have been associated with certain interventions. Chi-square tests were also used to examine the association between the medication status and psychosocial treatment respectively to the *talked* variable for each intervention. Finally, chi-square tests were conducted to examine the relationship between Time 4 medication status and psychosocial treatment status respectively with the diagnostic status associated with each intervention.

RESULTS

Of the 199 families initially enrolled in the study, 170 indicated whether or not they had consulted with their pediatricians at Time 2 (data were missing on this variable for 15 of the 185 families who participated at Time 2). Of the 162 parents who responded to the survey, 97% were biological mothers (2 were adoptive mothers, 3 were grandparents). At Time 4, teachers provided BASC scores on 117 children for Hyperactivity and on 118 children for Aggression subscales, whereas they provided DBRS scores on 116 children. Table 1 provides a summary of the children's participation and diagnostic categorization.

(1) What is the frequency with which parents of 3-year-old children with behavior problems report talking to their pediatricians by age 4?

Of the 170 families whose children had shown behavior problems at age 3 and who provided information regarding pediatrician consultation at age 4, 80 (47%) reported that they consulted

with their pediatricians concerning their children's behavior by age 4, and 90 (53%) did not consult with their providers.

(2) When parents do talk with their pediatrician, what do parents report regarding the advice given during these discussions?

Of the 80 parents who reported talking with their pediatricians, 77 provided information regarding the advice that pediatricians gave, and Time 4 diagnostic information was available for 74. Table 2 presents the frequencies of the six types of interventions given. Note that 14 families reported receiving multiple types of intervention. Parents reported being told that their concerns were "not a problem" most frequently (32 times), followed by receiving a referral (27). Receiving advice (13) and literature (8) were relatively less common, as was being told to "wait and see" (9). Just three parents stated that their pediatricians suggested medication (at the Time 2 visit), though 13 had taken medication by Time 4. Note that 52% of children whose parents consulted with their pediatrician eventually had some form of counseling or therapy by Time 4.

(3) Are consultations and referrals more likely among those children who continue to show behavior problems?

Parents who consulted with pediatricians were more likely to have children who later met criteria for ADHD and/or ODD/CD than were parents who did not consult, χ^2 (1) = 20.41, p < .001. Of the 74 children whose parents had consulted with the pediatrician by age 4, 58 (78%) were later diagnosed at age 6 with ADHD or ODD/CD. Of the 80 children whose parents had *not* consulted with the pediatrician by age 4, only 33 (41%) later met criteria for ADHD or ODD/CD. Classification analysis (see Table 1) indicated that the positive predictive power of parents having received consultation was 78% (58 children had a Time 4 diagnosis out of the 74 families who had a Time 2 consultation), while specificity was 75% (47 children had not received consultation at Time 2 out of 63 who had no Time 4 diagnosis), and sensitivity was 64% (58 children had parents who consulted at Time 2 out of 91 who had a Time 4 diagnosis), with negative predictive power being 59% (47 children had no Time 4 diagnosis out of 80 who never consulted at Time 2).

As expected, parents of children who later received a diagnosis of ADHD and/or ODD/CD received different types of pediatric provider interventions than parents of children who did not later receive diagnoses, χ^2 (2) = 5.11, p < .01 (see Table 3). Of the 16 children who did not meet criteria for ADHD or ODD/CD at age 6 but whose parents consulted with the pediatrician by age 4 (details regarding the advice given was not available for 2 children in this group), only 3 (19%) were referred for an evaluation or treatment by age 4, 8 (50%) were provided with education, and 5 (31%) were provided reassurance with no intervention. In contrast, of the 55 children who did later meet criteria for ADHD and/or ODD/CD and whose parents consulted with a pediatrician, 24 (44%) had been referred by age 4, 8 (15%) were provided with education, and 23 (42%) were provided reassurance with no other intervention. Classification analyses comparing children who were referred for evaluation, treatment, or medication (Active) to children who were not referred (Education and Reassurance; see Table 3) indicated sensitivity of 44% (24 referred out of 55 with diagnoses), specificity of 81% (13 not referred out of 16 without diagnoses), positive predictive power of 89% (24 with diagnoses out of 27 who were referred), and negative predictive power of 30% (13 without diagnoses out of 44 who were not referred).

Associations between pediatric consultations, past symptom severity, and subsequent interventions

Children who received different types of interventions from their pediatricians did not in fact differ from one another on age 3 symptom severity as measured by the BASC (Table 3). Chi-square tests indicated that Time 4 diagnosis was not significantly associated with medication history, χ^2 (2) = 4.49, p >.05, but was significantly associated with psychosocial treatment history, χ^2 (2) = 6.09, p < .05.

A one-way ANOVA also indicated no significant difference on the age 3 BASC Aggression subscale between children whose parents consulted with their pediatricians by age 4 versus those who did not (M = 73.99, SD = 16.88 and M = 70.23, SD = 14.04, respectively), *F* (1, 168) = 2.50, *p* > .10, but did differ significantly on the BASC Hyperactivity subscale (M = 73.03, SD = 10.73 and M = 68.41, SD = 10.32, respectively), *F* (1, 168) = 8.15, *p* < .01. Children of parents who consulted with their pediatricians were also more likely to ultimately receive medication (18%) and psychosocial treatment (53%) than were children whose parents did not consult with their pediatricians (7% for medication and 13% psychosocial treatment, χ^2 (1) = 4.79, p < .05 for medication and χ^2 (1) = 29.98, p < .001 for psychosocial treatment).

Chi-square tests indicated that children who later met criteria for ADHD and/or ODD were much more likely to have received psychosocial treatment (50%) and medication (20%) by age 6 than were children who did not later meet criteria for ADHD and/or ODD (13% for psychosocial treatment and 3% for medication), correcting for continuity χ^2 (1) = 21.79, *p* < .001 for medication and χ^2 (1) = 7.67, *p* < .01.

DISCUSSION

We examined the frequency, nature, and predictive power of parental report about parent-pediatrician consultation regarding preschoolers with significant behavior problems. Approximately half of families with children with behavior problems reported consulting about their children's behavior by age 4. Parents whose children's problems persisted were more likely to have consulted with their pediatric providers (63%) than were parents whose children eventually improved (25%). We found a high degree of positive predictive power and specificity for preschool pediatrician consultation (78% and 75% respectively) but even higher rates for pediatrician referrals (89% and 81% respectively) in predicting which children ultimately met criteria for ADHD and/or ODD/CD. However, lower sensitivity (44%) was found for referral amongst those later diagnosed. Pediatricians could refer more often since parental reports about early behavioral concerns appear to be a signal for persistent behavioral problems. Providers may be concerned about a decrease in positive predictive power when making more referrals, given data that suggests roughly half of preschool-aged children later outgrow their difficulties[10]. Further research is needed to enable pediatricians to discriminate transient from persistent behavior problems with acceptable levels of both positive predictive power and sensitivity.

Only 22% of children whose parents consulted with their pediatricians later outgrew their problems, whereas 59% of children whose parents did not consult with their pediatrician later improved, suggesting that parents are able to discriminate problems that were likely to persist from those that were transient when their children were very young. Parental reports indicated that pediatricians were also able to identify children most at risk; 44% of children who were diagnosed with a behavior problem at age 6 were referred for an evaluation or treatment at age 4, as compared to 19% who did not later receive a diagnosis.

Of those diagnosed with a behavior disorder at age 6 who were not referred at age 4, we found similar rates (56%) as those previously reported in Lavigne's work (50%).[27] Since very few

children with transient problems received unnecessary referrals as preschoolers, providers in the present study did not appear to be over-referring children at age 4. Whether providers were under-referring based on a perceived or real lack of quality services, training, or other factors is beyond the scope of this study, and should be examined. Pediatricians may have refrained from referring due to concern about negative effects (e.g., stigma, or medication side effects) [16] or ineffectiveness of early treatments. There is little evidence regarding the long term impact of early intervention for ADHD, however, contributions made by the PATS study group and behavioral specialists such as Kern and colleagues are promising.[16,20] Moreover, a larger body of research points to the effectiveness of early psychosocial treatment for oppositional-defiant behavior.[22, 23, 38] with some evidence for long-term effectiveness.[39] However, more research is needed on the long-term effectiveness of early treatment for ADHD and ODD.[40]

Symptom severity at Time 1 was not related to pediatricians' recommendations, but was associated with parents consulting with pediatricians at age 3. Furthermore, certain interventions (referrals, literature and advice) were associated with higher rates of psychosocial treatment by age 6, although no interventions were associated with subsequent ADHD medication use. Children of parents who consulted with pediatricians were much more likely to ultimately receive medication or psychosocial treatment compared to children of parents who did not consult with pediatricians.

Several limitations are noted. Parental reports of consultations may not be accurate. Parental perceptions are important, but simultaneous provider reports and their recommendations are needed in future studies. Similarly, data were not collected regarding parent adherence to pediatrician recommendations. We have no data about the adequacy and access to quality community behavioral health services for children this young, which may be an important reason why referrals were not made at a higher rate. We cannot provide information about provider professional status and training background which limits the interpretability and generalization of these findings to other areas of the country, especially rural areas where family practioners provide more pediatric care than in urban and semi-urban settings.[41] Consequently, this sample may not be representative of the general population. Similarly, we do not have the precise age at which consultation occurred; consultation at 2 years old is likely to be different than at 4 years old. Another limitation is that children who met criteria for ADHD and ODD/CD at the end of this study may also still be in the process of outgrowing their problems,[42] and providers may still prove to be correct if typical behaviors found at Time 2 no longer become clinically significant problems after age 6. Furthermore, ADHD and ODD/CD symptoms are thought to fall along a continuum and there may have been a number of children who did not meet criteria for ADHD or ODD/CD but continued to show sub-clinical behavior difficulties. Finally, causality cannot be established between early actions and persistent versus transient behavior problems. Taking early action may help children outgrow their early problems, but at the same time, children whose problems reflect underlying disorders may be more likely to elicit early action on the part of pediatricians, parents and teachers.

Despite these limitations, this study suggests that pediatricians are not over-referring preschool children to behavioral services who do not need them. While there was some evidence that parents and providers could discriminate between children with transient versus persistent behavior problems, more research is needed to develop early assessment tools to guide both. Moreover, if persistent behavior problems can be identified with increased accuracy at an early age, there is a critical need for more research to develop appropriate early treatments for this population and to investigate the short-term and long-term cost-benefit.[38] Future research should be conducted in order to better understand the link between children with behavior problems at preschool-age, diagnoses at school age, and the role that pediatric providers play when responding to parents' concerns.

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Table 1

Cross Tabs of Consultation and Diagnoses

	Time 4 Diagnoses					
Consulted	**DNC**	**ADHD**	**ADHD/ODD**	**ODD/CD**	**No Diag**	**Totals:**
Yes	6	19 (12.3)	26 (16.9)	13 (8.4)	16 (10.4)	80
No	10	12 (7.8)	12 (7.8)	9 (5.8)	47 (30.5)	90
NDA	15	4	2	0	8	29
Total:	31	35	40	22	71	199

Consulted= discussed concerns with pediatric provider; DNC= did not complete Time 4 assessment; No Diag= no diagnosis; NDA- no data available (ie. excluded from analyses) (% = percentages of consultations + Time 4 assessments, n = 154)

Table 2

Frequencies of Multiple Interventions

Intervention Type	Totals	Not a Problem	Wait and See	Advice	Literature	Referred	Medication
Not a Problem	32	-	0	3	3	2	0
Wait and See	9	0	-	0	0	1	0
Advice	13	3	0	-	3	2	0
Literature	8	3	0	3	-	0	0
Referred	27	3	1	2	0	-	0
Medication	3	0	0	0	0	0	-
Multiple Interventions Totals	14	8	1	8	6	5	0

Table 3

Consultation Categories Compared with Screening Symptom Severity and Treatment History

	Reassurance	Education	Active	*F* or χ^2	df
	Mean(SD) or N(%)	Mean(SD) or N(%)	Mean(SD) or N(%)		
Time 4 diagnosis				9.28**	2
ADHD and/or ODD/CD	23	8	24		
No Diagnosis	5	8	3	-	
Time 1 behavior ratings					
BASC Hyp	76.7 (17.4)	71.4 (13.6)	72.4 (18.4)	.72	2
BASC Agg	71.1 (10.7)	72.7 (9.0)	74.5 (11.5)	.79	2
Treatment history					
Ever taken medication for ADHD	2 (6.5)	3 (18.6)	8 (26.7)	4.49	2
Ever received psychosocial intervention	11 (35.5)	9 (56.3)	20 (66.7)	6.09*	2

* $p < .05$

** $p < .01$

Legend: Reassurance = “not a problem” or “wait and see”, Education = “literature” or “advice”, Active = “referred” or “medication”; BASC Hyp= Behavioral Assessment Schedule for Children, Hyperactivity score at Time 0 (intake); BASC Agg= Behavioral Assessment Schedule for Children, Aggression score at Time 0 (intake); Ever Med= ever on medication between baseline and age 6; Ever Ther= ever in therapy between baseline and age 6