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EVALUATING EXTERNALIZING BEHAVIOR IN PRESCHOOLERS: THE
PREDICTIVE UTILITY OF PARENT REPORT, TEACHER REPORT, AND
OBSERVATION

A Master's Thesis Presented

by

GRETA L. DOCTOROFF

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE

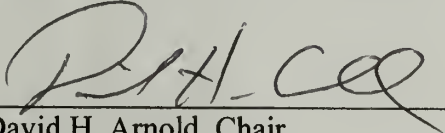
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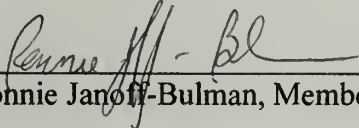
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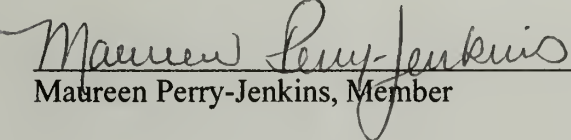
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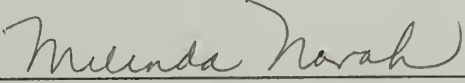
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ABSTRACT

EVALUATING EXTERNALIZING BEHAVIOR IN PRESCHOOLERS: THE PREDICTIVE UTILITY OF PARENT REPORT, TEACHER REPORT, AND OBSERVATION

SEPTEMBER 2001

GRETA L. DOCTOROFF, B.A., HAVERFORD COLLEGE

Directed by: Professor David H. Arnold

This study investigated the use of a parental structured interview, teacher report, and observational data to predict parent reported behavior problems across a year of preschool. Participants were 81 preschool children, their parents, and their teachers. Parental report of behavior problems was obtained towards the beginning of the school year and approximately 6 months later. In addition, externalizing difficulties were assessed towards the beginning of the school year through a structured interview with parents, and with teacher report. Children were also observed through classroom videotapes to examine externalizing behavior and prosocial behavior. It was hypothesized that the inclusion of parental structured interviews, teacher ratings, and direct observation in the classroom would each improve the prediction of the short-term trajectory of child behavior problems. The parental structured interviews and teacher reports predicted the trajectory of children's behavior problems over time. Children identified with behavior problems by multiple informants were more likely to display behavior problems across the school year.

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CHAPTER I

INTRODUCTION

Despite the large literature investigating the prevalence and stability of externalizing symptoms across childhood, there is a surprising lack of research to guide early treatment decisions for an individual child. When a preschool child displays behavior problems, the research literature provides little assistance in determining whether these symptoms are a temporary developmental phase or the first sign of an enduring problem. Research and practice have most often relied on maternal report alone to assess externalizing problems in young children, but the integration of multiple informants and methods of assessment may improve our ability to predict a child's risk across time (Achenbach, McConaughy, & Howell, 1987; McConaughy, Achenbach, & Gent, 1988).

Due to the common occurrence of behavioral and emotional problems in preschool aged children, parents and clinicians are often faced with the challenge of assessing these difficulties and making treatment decisions. Externalizing behaviors like aggression, overactivity, and noncompliance occur in approximately one out of every six children, and retrospective studies suggest that persistent problems often begin during preschool (Applegate et al., 1997; Earls, 1980; Keenan, Shaw, Walsh, Giovanelli, & Delliquadri, 1997; Lahey, Loeber, Quay, Frick, & Grimm, 1992; Pianta & Caldwell, 1990). Furthermore, the behavioral and emotional problems of preschool age children show moderate stability through elementary school, and children rated as having behavioral disturbances as preschoolers are more likely to experience psychiatric problems as adolescents (Campbell, Breaux, Ewing, & Szumowski, 1986; Lerner, Inui, Trupin, & Douglas, 1985; Lipman, Bennett, Racine, Mazumdar, & Offord, 1998;

Verhulst, Koot, & Van der Ende, 1994). On the other hand, many problematic behaviors are normative during the preschool years due to the developmental challenges typical of this period (Campbell, 1995). In order for children to receive appropriate interventions before problems become intractable, it is critical to determine which children are most likely to continue to show persistent externalizing problems during preschool.

Prospective studies of preschool children have demonstrated that approximately half of all children identified with externalizing difficulties in preschool continue to exhibit problems through elementary school (Campbell, 1995; Campbell, Ewing, Breaux, & Szumowski, 1986). Parents often first report behavior difficulties to pediatricians or mental health professionals when children are in preschool. Given the lack of empirical guidance to help determine whether parents' concerns will persist over time, and the possibility that the problems are normative and transient, professionals often recommend waiting and reevaluating children's behavior at a later point. Clinically, the presentation of parental concerns at the preschool age creates a dilemma. If we provide unnecessary interventions, we may stigmatize children and waste valuable resources, however, if we fail to intervene with children on a course to serious problems, we may lose an opportunity to improve children's chances for healthy development. Although the clinician may avoid the danger of stigmatizing a child, waiting without treating a problem may be harmful. A better understanding of how to identify which children will outgrow these problems and which will continue to have difficulties could increase understanding of behavior problems and allow clinicians to make more informed treatment decisions for children. Early intervention can help prevent the development of serious behavioral and academic problems, but treatment tends to be less effective once conduct problems and antisocial behavior become established (Kazdin, 1995; Reid, 1993; Zigler, Taussig, &

Black, 1992). More accurate assessment methods are needed to identify at-risk children, facilitate understanding of these problems, and improve the efficacy of problem-focused and environmentally targeted interventions.

The transition from preschool to kindergarten represents a major developmental challenge for children due to an increased focus on academic learning, a more structured classroom environment, and greater social expectations. When children leave preschool with social and self-regulatory deficits, they may enter kindergarten with a predisposition to fail interpersonally and academically (Entwisle & Alexander, 1993; Kingston & Prior, 1995). If multimodal assessment strategies improve prediction of the short-term course of children's behavior problems across the years before this transition, we may be able to provide needed interventions for at-risk children before they begin formal schooling.

Although researchers agree that high-risk children should be targeted for early treatment, it is unclear how to establish the risk status of children for prevention or early intervention efforts. One option when faced with early parental concern is to collect more extensive and specific information from parents. In particular, the inclusion of a structured interview with parents may improve the accuracy and utility of the information obtained from brief rating scales, but at present, there is no research evidence to determine whether this information is helpful for predicting problems across time.

Another option in evaluating parents' concerns about children's behavior is to obtain information from the preschool, either through teachers or direct observation. Teachers have more opportunity than parents to make comparisons to peers at a similar developmental level and children's behavior may vary within the school setting. In a meta-analysis of 119 studies of child behavior problems, Achenbach et al. (1987) found that only modest correlation coefficients exist between different types of informants (e.g.,

parents and teachers, $r = .28$), and raters with similar roles tend to provide more consistent ratings ($r = .60$). Although discrepancies between parents' and teachers' or parents' and observers' ratings of children are often interpreted as evidence of unreliability (e.g., Garrison & Earls, 1985), other researchers have suggested that these differences can provide complementary information (Achenbach et al., 1987; Touliatos & Lindholm, 1981). Since children's behavior is influenced by context, and informants interact in different ways with children, multiple informants may each contribute unique, yet valid information about children's functioning. In sum, it is unclear the extent to which low correlations between raters represent error and uncertainty versus complementary information about the child from different contexts.

Some studies have indirectly suggested that the integration of information from multiple informants can enhance predictions of child behavior problems. For instance, in a study of inpatient elementary school children, teacher and observer ratings of behavior were not highly correlated, but ratings from different informants could be used to independently identify children with subtypes of behavior problems (Kazdin, Esveltd-Dawson, & Loar, 1983). Another study found that 94% of preschool children classified as having significant difficulties according to both maternal and teacher reports during preschool were still showing evidence of pervasive problematic behavior when children were in first grade (Heller, Baker, Henker, & Hinshaw, 1996). In a study of hard-to-manage preschool boys, Campbell, Pierce, March, Ewing, & Szumowski (1994) found that boys with behavior problems demonstrated more difficult behavior at home, in preschool, and in the lab in comparison to boys from a control group. Children from this study with severe and pervasive problems in home and lab assessments demonstrated more disorganized and defiant behavior in a variety of laboratory assessments 2 years

later than children who had showed less severe problems in only one setting. These data suggest that both the severity and consistency of behavior problems across settings may provide valuable information about current and future adjustment that could not be obtained through measurements limited to one context.

However, only two studies have directly examined whether the combination of information from parents and teachers in comparison to information from one informant improves the prediction of behavior problems over time. First, Verhulst et al. (1994) reported in a study of 4- to 11-year-old Dutch children that the combination of parent and teacher report of behavior problems versus parent report alone improved the prediction of behavior problems measured by parent interview 6 years later, with 47% of children identified with severe behavior problems by both parent and teacher report showing significant maladjustment 6 years later. The improvement in prediction was particularly strong for girls. In addition, teacher scores were more predictive of parental concern over time than parent ratings of behavior problems. Although this study is informative, it is limited in its ability to expand our understanding of assessment in preschool children due to its focus on a broad age range and a homogeneous sample. Second, Lochman (1995) evaluated the use of a multiple-gating approach to screen kindergarten children for behavior problems. This study suggested that the optimal screening method for the most accurate prediction of behavior problems in first-grade included both teacher and parent assessment measures rather than teacher or parent report alone. The children in this study had already left preschool, so it is unclear how effective this screening procedure would be with younger children. Although the sample included socioeconomic diversity, over half the children in the study were Caucasian.

In addition to collecting parent and teacher report of behavior problems, observation of child behavior may provide another perspective on children's adjustment. One study of toddlers reported on the incremental predictive ability of observations, and found that the inclusion of observational data and parent ratings of children's behavior allowed researchers to better discriminate between toddlers identified with behavior problems and well-adjusted children than on the basis of parent ratings or observation alone (Campbell, Szumowski, Ewing, Gluck, & Breaux, 1982). This study focused on high-risk children referred for behavior problems rather than a community sample and is limited by lack of diversity within the sample. No studies have examined the incremental predictive power of structured parent interviews in predicting changes in behavior problems on brief rating scales.

Despite the knowledge that multi-informant assessments may provide the most complete information, assessments typically involve parent report without integrating information from different types of informants. Even direct observation does not provide a complete account of children's behavior because observers, like other informants, are influenced by their specific interactions with children and by context. Nevertheless, utilizing ratings from multiple informants across settings may provide a global assessment of child functioning that can be used to predict behavior problems over time.

The present investigation is a short-term longitudinal study designed to determine whether the use of multiple assessment methods and informants improve the prediction of children's behavior problems over a year of preschool. This study will focus on parent report of behavior problems as the outcome of interest, since it is the most commonly used index, though future studies should also evaluate predictors of behavior measured in other ways. Since assessments in research and practice often include parent report alone,

this study will contribute to the literature by evaluating the utility of adding multiple methods of assessment and informants across the contexts of home and school.

Consistent with previous findings, it is expected that parent ratings of child behavior problems will show modest levels of agreement with teacher and observer ratings, while teacher ratings will show higher levels of agreement with classroom observations based on the same setting. It is predicted that obtaining a structured interview with parents concerning externalizing symptoms, teacher report of behavior problems, and direct observation within the classroom of children's externalizing and prosocial behavior will improve the prediction of behavior problems reported by parents towards the end of the school year. Children showing pervasive problems across reporters are hypothesized to be more likely to display persistent behavioral problems over time.

Ethnicity, socioeconomic status, and gender will be explored as potential moderators of these relationships, but no specific hypotheses will be posited due to the lack of previous research in this area. In addition, exploratory analyses will be conducted to examine the following possible influences on interrater agreement: correspondence of ethnicity of the parent and teacher, level of parent involvement in school, child birth order, and child sex. The only factor that has been examined in multiple studies as a possible influence on agreement is child sex. In a study of elementary school children, Kolko and Kazdin (1993) found that the sex of the child did not significantly affect agreement. Achenbach et al. (1987) also reported that sex of the child does not influence correspondence, but the majority of the studies used for this portion of the meta-analysis included school age rather than preschool age children. Further research with young children is needed to understand how sex of the child and other factors may impact how informants perceive children's behavior problems.

In sum, each year of preschool represents a critical developmental period in which parents, teachers, and clinicians have an opportunity to prevent the development or exacerbation of problems that may interfere with children's ability to meet the challenges of school. Improving our understanding of how to measure children's risk status more accurately at the beginning of the year would allow prevention efforts to proceed before problems have developed further. The goal of the present study is to examine whether the use of multiple assessment methods and informants can improve our ability to predict behavior problems reported by parents at the end of the year. This is the first study to investigate the predictive utility of collecting more detailed information from parents through a structured interview of externalizing symptoms. In addition, few studies have explored the benefit of including information from teachers in the assessment of young children versus relying on the report of parents alone. Furthermore, this is the first study to investigate the utility of classroom observation as an additional piece of information to predict the short-term trajectory of children's behavior problems for children of this age. This investigation will clarify theoretical issues about whether different modes of assessment and types of informants offer conflicting portrayals of young children's behavior because they are inaccurate or because they capture different aspects of children's behavior that can help predict children's behavior over time.

CHAPTER II

METHOD

Participants

Eighty-one preschool children, their mothers, and their teachers participated in this study through a larger intervention project. Families were recruited from seven child care centers in the Springfield, Massachusetts area. Five of the seven centers serve economically disadvantaged families from ethnically diverse backgrounds, and the two remaining centers provide preschool education to predominantly Caucasian families with higher socioeconomic status. Parents identified 31% of the children as Hispanic, 19% as African-American, 40% as Caucasian, and 10% from other ethnic groups. The sample contained approximately equal numbers of boys and girls (38 girls and 43 boys), and the mean age of child participants at the beginning of the study was 4.4 years (range 3.2 to 5.4 years).

Procedure

This study utilized data from a larger intervention study. Parents learned about the study through a letter sent home with children from each preschool center. After approximately 2 months of the school year, families interested in participating attended a 2-hour meeting. During the meeting, mothers completed questionnaires designed to elicit demographic information and to identify behavior problems. Each mother also participated in a structured interview to ascertain more specific information about the presence, duration, and frequency of externalizing symptoms. Doctoral students in clinical psychology with extensive training administered these interviews. Teachers completed assessments of child behavior for each child in their class participating in the study. In situations with more than one teacher in a classroom, all

teachers were asked to complete questionnaires. After this initial meeting, research assistants visited preschool classrooms and videotaped children during both free play and structured learning activities. Research assistants were instructed to focus the camera on an area of the room with a group of children for 3 minutes, scan the classroom for approximately 30 seconds, and then focus on the next group of children for 3 minutes. If all of the children were assembled in one location, the research assistants focused the camera on the entire class. Each child was on camera for an average of 41 minutes. The majority of videotaping for each classroom was completed on one day, but some classrooms were taped on two separate occasions to increase the time the children were videotaped. The questionnaire initially collected from parents was obtained again approximately 6 months later.

Measures

Parent Report. Parents completed the Eyberg Child Behavior Inventory (ECBI), a 36-item self-report inventory designed to assess externalizing behaviors in children (Robinson, Eyberg, & Ross, 1980). This scale includes questions about the frequency of specific externalizing behaviors and requires parents to determine if the behaviors endorsed are problematic. Standardized norms for this instrument exist for children between the ages of 2 and 17. Studies have demonstrated that this measure has strong reliability and validity for use in detecting behavior problems in young children (Boggs, Eyberg, & Reynolds, 1990; Eyberg & Ross, 1978).

Parent Structured Interview. An adapted version of the disruptive behavior module of the Diagnostic Interview Schedule for Children – Parent Version (DISC-P; Fisher, Wicks, Shaffer, Piacentini, & Lapkin, 1994) was administered to parents to evaluate children’s externalizing symptoms. This interview takes approximately 20

minutes to administer. Although this instrument was designed to evaluate children 9-years-old and older, it has been utilized successfully for the evaluation of younger children (e.g., Anastopolis, Spisto, & Maher, 1994). This assessment has acceptable reliability, and has been found to relate to other indicators of symptomology in studies including younger children (Lahey et al., 1998; Shaffer et al., 1993; Piacentini, Shaffer, Fisher, Schwab-Stone, Davies, & Gioia, 1993). Data from the DISC-P was used to generate scores based on the number and duration of home attention deficit hyperactivity disorder symptoms (ADHD), school ADHD symptoms, oppositional defiant disorder symptoms (ODD), and conduct disorder symptoms (CD) endorsed by caregivers.

Teacher Report. The teacher form of the Child Behavior Profile (t-CBP) was administered to teachers to measure the frequency of externalizing symptoms displayed by each child in the classroom. This 113-item scale has been standardized for use with children between the ages of 4 and 18, and has been used extensively with preschool children. Adequate reliability and validity data has been established for this measure (Achenbach & Edelbrock, 1986). Scores for delinquency, aggression, and total externalizing behavior can be generated from this instrument.

Classroom Observations. Fourteen research assistants were trained for approximately 8 hours a week over a period of 8-weeks to code videotapes of preschool classrooms individually for each target child. Misbehavior, inattention, negative affect and prosocial behavior were rated as present or absent for the child of interest during every 15-second interval. Misbehavior was defined as physically aggressive or threatening acts toward peers, teachers, or objects; noncompliance; verbal aggression; disruptive behavior; and any other violation of classroom rules. Children were coded as inattentive during teacher-led group learning activities when they were distracted from

the activity, talking to other children, leaving the circle without being dismissed, or showing other signs of removal from the learning activity. Learning activities coded for inattention involved reading, singing, dancing, discussion of the weather, and other group games. Negative affect was coded if facial expressions, body movements, language or sounds indicated a negative emotional state (e.g., frowning, crying, head hanging down, whining, or screaming). Prosocial behavior included any positive interactions with peers, for example, having a pleasant conversation, sharing, helping, or any other positive involvement with others that did not involve misbehavior. Counts of each code were tabulated and averaged over the total number of relevant intervals the child appeared on camera. Rater agreement was calculated using intraclass correlation coefficients for each of the categories (misbehavior = .55, prosocial behavior = .64, inattention = .64, negative affect = .66).

CHAPTER III

RESULTS

The descriptive statistics presented in Table 1 provide information about children's behavior based on the ratings of parents, teachers, and classroom observers. The number of children included in the analyses varied slightly due to occasional missing data for some children. For Table 1, parent ratings on the ECBI and teacher ratings on the t-CBP were converted to T-scores to facilitate comparison to normative samples. Scores on the DISC-P represent the number of externalizing symptoms endorsed by parents during the interview. Classroom observation scores show the percentage of 15-second intervals in which a child performed a given behavior. The descriptive statistics suggest that the children in the sample demonstrated an average to slightly elevated level of behavior problems on standardized measures in comparison to a normative sample of preschoolers. Approximately 5% of children evaluated by parents on the ECBI and 11% of children rated by teachers on the t-CBP obtained scores greater than or equal to 65.

Table 2 includes descriptive statistics separated by sex for the main variables of the study. At the beginning of the year, parents reported more frequent behavior problems for girls on the ECBI [$t(78) = 2.25, p < .05$], but this discrepancy was no longer significant towards the end of the school year [$t(77) = 1.05, p = .30$]. On the structured interview, parents reported higher mean levels of behavior problems for boys, but this difference was not significant [$t(71) = -1.52, p = .13$]. Teachers indicated that boys and girls showed similar amounts of externalizing behavior [$t(78) = 1.24, p = .22$]. When observed within the classroom, boys showed significantly more inattentive behavior than girls [$t(62) = -2.18, p < .05$] and misbehaved more often, though this finding was only

marginally significant [$t(76) = -1.89, p = .06$]. Boys and girls showed similar amounts of prosocial behavior [$t(76) = .29, p = .77$] and negative affect [$t(76) = .06, p = .95$].

Overall, children from preschools serving disadvantaged families had similar levels of behavior problems to children from preschools serving more affluent families according to both teacher [$t(78) = -.47, p = .64$] and parent reports [$t(78) = .33, p = .74$]. Children from lower socioeconomic status tended to have more externalizing symptoms based on their DISC-P scores, but this finding did not reach significance [$t(71) = 1.86, p = .07$]. Children from high and low socioeconomic status were observed displaying misbehavior [$t(76) = -1.39, p = .17$], inattention [$t(62) = -.76, p = .45$], and negative affect [$t(76) = 1.29, p = .20$] a similar amount in their classrooms, however, disadvantaged children showed less prosocial behavior [$t(76) = -2.51, p \leq .01$].

Initially, all regression analyses described below were completed controlling for the effects of the behavior intervention from the larger study. Since the intervention did not influence the results to a significant degree and including irrelevant variables in regression analyses inflates standard errors, the following regression analyses were performed without controlling for the effects of the intervention. All regression analyses conducted to predict parent ratings on the ECBI include initial ratings on the ECBI as an independent variable to control for caregiver ratings at the beginning of the study, and to provide an estimate of children's trajectories across time. Unstandardized scores are used throughout the analyses on all measures.

Analyses of Agreement Among Parents, Teachers, and Observers

Correlation analyses were conducted to examine the relationship between parent, teacher, and observer perceptions of child behavior problems. Based on previous research, it was expected that informants' ratings of child behavior problems would show

lower levels of agreement when informants have different roles or settings. As predicted, parent ratings of the frequency of behavior problems on the ECBI were not significantly correlated with teacher ratings on the t-CBP ($r = .19, p = .11$), however, children with more behavior problems based on the parent interview (DISC-P) exhibited higher levels of behavior problems according to their teachers ($r = .42, p < .001$). Parent report on the ECBI and the DISC-P, respectively, were not significantly correlated with observed misbehavior in the classroom ($r = -.10, p = .41$; $r = .11, p = .35$). Children who presented more behavior problems according to their teachers showed higher levels of misbehavior when observed in their classrooms ($r = .36, p < .05$).

Analyses of Predictors of Externalizing Behavior Over Time

First, it was hypothesized that children with more externalizing symptoms on a structured interview with parents at the beginning of the school year would demonstrate more frequent behavior problems according to parent report on the ECBI approximately 6 months later. This hypothesis was examined using multiple regression analysis with DISC-P externalizing symptoms as the independent variable and intensity scores from the ECBI at the end of the year as the dependent variable, controlling for initial ECBI scores. As expected, children with more behavior symptoms based on parent interviews towards the beginning of the school year had more frequent behavior problems at the end of the year ($\beta = .20, SE = .10, t(69) = 2.13, p < .05$).

Follow-up analyses were conducted to investigate whether the predictive value of the diagnostic interview was attributable to attention deficit hyperactivity disorder symptoms, oppositional defiant disorder symptoms, or conduct disorder symptoms in the parent interview. Investigation of these symptom subtypes indicated that children with more inattentive and hyperactive symptoms showed increased behavior problems over

time ($\beta = .20$, $\underline{SE} = .09$, $t(69) = 2.14$, $p < .05$). Oppositional behavior ($\beta = .05$, $\underline{SE} = .09$, $t(69) = 0.53$, $p = .60$) and conduct disorder symptoms ($\beta = .10$, $\underline{SE} = .09$, $t(69) = 1.07$, $p = .29$) did not serve as significant predictors of the ECBI.

Second, it was predicted that teacher report of children's behavior problems at the beginning of the year would predict behavior problems reported by parents at the end of the year. Multiple regression analyses were conducted with externalizing behavior, as measured by the t-CBP, as the independent variable and problem behavior on the ECBI at the end of the year as the dependent variable. Analyses revealed that children experiencing more behavior problems according to their teachers showed increased levels of behavior problems at the end of the school year according to their parents ($\beta = .18$, $\underline{SE} = .08$, $t(75) = 2.14$, $p < .05$).

Since externalizing scores on the t-CBP include scores for both aggression and delinquency, additional regression analyses were conducted to determine the contribution of these factors to the prediction of parent reported behavior problems over time. Teacher report of aggression on the t-CBP significantly predicted ECBI scores when controlling for initial parent ratings on the ECBI ($\beta = .18$, $\underline{SE} = .08$, $t(75) = 2.13$, $p < .05$), but delinquency scores did not significantly predict parent reported behavior problems ($\beta = .09$, $\underline{SE} = .09$, $t(75) = 1.05$, $p = .30$).

It was hypothesized that children showing behavior problems when observed in their classrooms would have increased behavior problems over time. This hypothesis was evaluated using regression analyses with the categories of observed classroom behavior as independent variables and child behavior reported by parents on the ECBI as the dependent variable. This prediction was not supported: observed misbehavior ($\beta = .11$, $\underline{SE} = .08$, $t(73) = 1.37$, $p = .17$), inattention ($\beta = -.01$, $\underline{SE} = .10$, $t(59) = -.14$, $p = .89$),

and negative affect ($\beta = .07$, $SE = .08$, $t(73) = .89$, $p = .38$) did not significantly predict ECBI scores. In addition, prosocial behavior observed in the classroom was unrelated to changes in behavior problems reported later in the year by parents ($\beta = -.03$, $SE = .09$, $t(73) = -.37$, $p = .72$). In an effort to take into account children's combined level of prosocial behavior and misbehavior, the percentage of time children engaged in misbehavior was subtracted from the percentage of time children acted prosocial. This combined score was not a significant predictor of changes in behavior problems over time ($p = .38$).

Analyses of the Predictive Value of the Pervasiveness of Behavior Problems

In order to examine the hypothesis that children identified with pervasive problems across reporters would be more likely to display persistent behavior problems, multiple regression analyses were conducted using categorical cut-off scores as well as using continuous scores on the following measures: parent interview, teacher report, and classroom observation. Total externalizing scores were used from the parent and teacher measures, while misbehavior scores were utilized from the classroom observations. In order to determine in a categorical fashion whether children met criteria for behavior problems according to the report of a given informant, children were scored as demonstrating behavior problems on a measure if they scored greater than or equal to one standard deviation above the sample's mean. Children were coded as presenting problems according to zero through three raters, and this coding of pervasiveness of difficulty was used as an independent variable within a regression analysis with behavior problems rated by parents at the end of the year as the dependent variable. This hypothesis was also evaluated by standardizing ratings of behavior problems from the three informants and summing them to create a single variable. This construct was then

examined as a continuous independent variable in a regression analysis to predict parent report of behavior problems over time. Both categorical and continuous methods of data analysis revealed that children recognized with behavior problems by multiple raters were more likely to continue to display behavior difficulties over time (categorical cut-offs: $\beta = .20$, $SE = .09$, $t(72) = 2.40$, $p < .05$; continuous scores: $\beta = .25$, $SE = .09$, $t(67) = 2.80$, $p \leq .01$).

Analyses of Children with Elevated Behavior Problem Scores

Results with children with elevated ECBI scores only indicated very similar patterns in terms of the direction and size of the relationships, though, of course p -values were larger because of reduced power. The following analyses include the 40% of children ($N = 29$) within the sample with the most elevated parent ratings on the ECBI ($M = 3.78$, $SD = .50$) towards the beginning of the year. Externalizing symptoms reported on the DISC-P failed to significantly predict ECBI scores over time for this smaller sample of children with high initial ratings on the ECBI ($\beta = .27$, $SE = .18$, $t(26) = 1.48$, $p = .15$), but this finding may have been limited by a decrease in sample size. Exploratory analyses of the symptom subtypes included in the externalizing score revealed that children with more CD symptoms displayed more frequent behavior problems at the end of the year ($\beta = .43$, $SE = .16$, $t(26) = 2.77$, $p = .01$). Children with higher ADHD symptoms ($\beta = .22$, $SE = .19$, $t(26) = 1.19$, $p = .24$) and ODD symptoms ($\beta = .13$, $SE = .18$, $t(26) = .71$, $p = .48$) were not significantly more likely to have continued behavior problems over time according to parent report on the ECBI.

Analyses were conducted to determine whether teacher report of externalizing problems on the t-CBP would predict behavior problems over time. Teacher report of behavior problems was marginally significant as a predictor of behavior problems

reported by parents over time on the ECBI ($\beta = .29$, $SE = .16$, $t(28) = 1.76$, $p = .09$). Exploratory analyses of the components of the teacher rating of behavior problems indicated that aggressive behavior is a marginally significant predictor of behavior problems reported over time by parents ($\beta = .31$, $SE = .16$, $t(28) = 1.94$, $p = .06$), while children displaying delinquent behavior according to their teachers did not seem to be at higher risk for behavior problems over time ($\beta = .07$, $SE = .17$, $t(28) = .40$, $p = .69$).

As in the overall sample, high-risk children with more observed misbehavior ($\beta = -.04$, $SE = .16$, $t(29) = -.24$, $p = .81$), inattention ($\beta = .32$, $SE = .20$, $t(21) = 1.63$, $p = .12$), and negative affect ($\beta = .14$, $SE = .17$, $t(29) = .83$, $p = .41$) were not more likely to have continued behavior problems across the year. In contrast to results from the overall sample, high-risk children who demonstrated more prosocial behavior in the classroom displayed fewer behavior problems over time, however, this finding was only marginally significant ($\beta = -.29$, $SE = .16$, $t(29) = -1.85$, $p = .07$).

Analyses for Boys and Girls

Exploratory analyses of sex differences in the assessment and prediction of behavior problems during preschool were conducted with the 43 boys and 38 girls in the study. Children's externalizing behavior as reported on the parent structured interview did not show differences in its predictive utility for girls versus boys (interaction: $\beta = .14$, $SE = .17$, $t(67) = .85$, $p = .40$). In contrast, teacher report of externalizing behavior was marginally significant as a stronger predictor of behavior problems for boys than girls (interaction: $\beta = .25$, $SE = .14$, $t(73) = 1.82$, $p = .07$). Specifically, boys with higher levels of behavior problems according to their teachers displayed increased behavior problems according to parents later in the year ($N = 35$, $\beta = .28$), while this relationship

was not significant for girls ($N = 43$, $\beta = -.01$). Further exploratory analyses revealed that aggression noticed by teachers was not a significantly better predictor of behavior problems for boys versus girls (interaction: $\beta = .21$, $SE = .14$, $t(73) = 1.49$, $p = .14$), but teacher reported delinquency was a better predictor of problems over time for boys than for girls (interaction: $\beta = .36$, $SE = .12$, $t(73) = .85$, $p < .05$). Increased delinquent behavior in boys was related to more behavior problems towards the end of the year for boys ($N = 43$, $\beta = .29$), while girls displaying more delinquent behavior did not seem to be at higher risk ($N = 35$, $\beta = -.18$). Observed misbehavior ($p = .15$), inattention ($p = .56$), negative affect ($p = .67$), and prosocial behavior ($p = .94$) were not significantly better predictors of behavior problems over time for girls or boys. When children's percentage of time misbehaving in the classroom was subtracted from their percentage of time engaged in prosocial behavior with other children, this combined construct was not a significantly better predictor of behavior problems for girls versus boys ($p = .56$).

Analyses by Socioeconomic Status

Since parents often did not provide complete data concerning education and income, the influence of socioeconomic status was explored by conducting separate analyses for children from child care centers serving predominantly disadvantaged families versus those serving more affluent families. Children from disadvantaged preschools in the study were often from ethnic and racial minority groups, so the measurement of socioeconomic status is confounded with race and ethnicity. A further limitation to these analyses is that 56 children participated from the preschools serving families with lower socioeconomic status while only 25 participated from preschools serving families with higher socioeconomic status.

The parent structured interview did not differentially predict behavior problems over time for children from low or high socioeconomic status ($p = .38$). Further analyses showed that symptoms of ADHD ($p = .72$) and ODD ($p = .70$) endorsed by parents on the structured interviews were not differential predictors of behavior problems for children from low versus high socioeconomic status, whereas symptoms of CD reported by parents were better predictors of changes in behavior problems for children from high versus low socioeconomic status (interaction: $\beta = .21$, $SE = .10$, $t(67) = 2.06$, $p < .05$). Children from high socioeconomic status with high conduct problems showed significantly higher behavior problems across the school year ($N = 24$, $\beta = .44$), however, children from low socioeconomic status with high conduct problems did not show evidence of increased risk for difficulties over time ($N = 48$, $\beta = .01$).

Regardless of children's socioeconomic status, externalizing problems reported by teachers seemed to be similar in their utility as predictors of behavior problems over time ($p = .66$). Observed misbehavior ($p = .11$), inattention ($p = .11$), negative affect ($p = .50$), and prosocial behavior ($p = .15$) at school were not more informative as predictors of behavior problems for children from differing socioeconomic backgrounds. When children's percentage of observed misbehavior was subtracted from their percentage of prosocial behavior, this combination of prosocial and misbehavior was marginally significant as a stronger predictor of behavior problems over time for children from higher rather than lower socioeconomic status (interaction: $\beta = .18$, $SE = .10$, $t(71) = 1.80$, $p = .08$).

Factors Related to Agreement Between Parents and Teachers

Correlation analyses were conducted to examine possible influences on the level of agreement between parent and teacher ratings of externalizing behavior. Parent ratings

on the ECBI and teacher ratings on the t-CBP were converted to z-scores and then the absolute value of the difference between the two scores was used as a measure of discrepancy between raters. The match between the ethnicities of parents and teachers ($r = -.09, p = .41$) and the amount of parent involvement in school ($r = -.04, p = .73$) were not significantly related to the level of disagreement between raters. Consistent with previous research, the sex of the child being rated ($r = .02, p = .86$) was not related to the discrepancy between informants. Parents and teachers tended to agree more in their ratings of children with later birth order, but this finding was only marginally significant ($r = -.19, p = .10$).

CHAPTER IV

DISCUSSION

This study examined the usefulness of parent ratings on a structured interview, teacher report, and classroom observation to predict young children's behavior problems across approximately 6 months of preschool. This short-term longitudinal study was designed to test whether multimethod, multi-informant assessment strategies can help distinguish between transient, normative developmental challenges and more serious behavior problems. Since researchers and clinicians often depend on maternal report to assess whether a child is having behavior difficulties, maternal report on an inventory measuring the frequency of externalizing behaviors was used as the dependent measure in analyses predicting child behavior problems over time. Few studies have been conducted specifically in this area, and existing studies often focus on older children, lack sample diversity, and rarely include naturalistic observations of children.

Overall, the community sample of children who participated in the study presented typical levels of behavior problems according to both standardized parent and teacher reports of externalizing behaviors. Children with low and high socioeconomic status based on the community served by their preschools presented with similar levels of behavior problems, but disadvantaged children showed less prosocial behavior when observed in the classroom.

As expected based on previous research of agreement among informants of child behavior problems, parents and teachers with different roles in varying contexts with children showed limited agreement in their ratings of the frequency of child behavior problems on the ECBI and the t-CRB. Parents and teachers demonstrated increased agreement when parents completed a structured interview that included school-based and

home-based symptoms for externalizing problems. Perhaps asking parents about behaviors that have occurred in multiple settings allows parents to acknowledge when behavior at home differs from behavior at school, and this increases agreement. Teacher report and observational ratings within the classroom showed modest amounts of agreement, which would be expected since these evaluations depend on children's behavior in the same setting. These findings concerning agreement may indicate that informants are providing complementary information useful for a comprehensive assessment of behavior problems.

The main findings of the study revealed that assessments in addition to parent report on a behavior inventory offer important predictive information to understand the short-term trajectory of children's behavior problems. The DISC-P structured interview of externalizing symptoms was found to be a useful tool to obtain a more detailed account of symptoms which children experience. Children with increased symptoms had more frequent behavior problems across the school year, even when controlling for initial parent ratings on the ECBI. The presence of inattentive and hyperactive symptoms predicted behavior problems, whereas oppositional and conduct disorder symptoms provided less information. These symptoms may be more significant for children's development across a given school year because they may be more stable and less dependent on context. The relative influence of the ADHD symptoms may also be due to a higher frequency of endorsement of these symptoms versus those of other disorders, the focus on both home and school in questions related to ADHD, and a larger number of symptoms included in this section of the interview.

The use of a teacher inventory of behavior problems also improved the prediction of behavior difficulties over time, even when controlling for the initial ratings of parents

on the ECBI. The predictive value of the total externalizing score on the teacher report appears to be due to teachers' ratings of children's aggression rather than their delinquency. Teacher report seems to provide an additional perspective on children's development that can influence how concerned parents will feel about their children's behavior further in the school year.

Although a past study with younger children provided evidence that the integration of observational data can provide helpful information for understanding and predicting children's behavioral trajectories over time, the present study does not support this conclusion. Children showing higher levels of aggression, misbehavior, inattention, and negative affect were not found to have high behavior problems later according to their parents, and children with higher prosocial behavior did not show lower behavior problems over time. Perhaps frequency data from observation in the classroom is less useful than data concerning the quality and severity of interactions. Some of the variables included, such as misbehavior, were relatively infrequent, so this may have limited the predictive utility of this measure. This finding also may indicate that observation for approximately 40 minutes of children's behavior on a given day may provide less information than other forms of assessment that require informants to reference their experience with children over longer periods.

Past research has provided evidence that problems identified by both parents and teachers are often more severe and longstanding (Campbell, et al., 1994; Verhulst et al., 1994). For the present study, the examination of pervasiveness of behavior problems included information from parent report on a structured interview, teacher report, and classroom observation. It was hypothesized that children identified with significant problems across reporters would be more likely to have difficulties approximately 6

months later according to parent report. Using both categorical and continuous scores to define pervasiveness of behavior problems, children with problems identified across reporters were more likely to continue to have problems over the school year according to their parents. This finding suggests that the integration of information across raters and settings may improve the prediction of behavior problems.

Children with elevated levels of behavior problems may be at higher risk for long-term difficulties. In order to learn more about assessment strategies with high-risk children, analyses were conducted with the 40% of children ($N = 29$) within the sample with the most elevated parent ratings on the ECBI ($M = 3.78$, $SD = .50$) towards the beginning of the year. Children with concerning levels of behavior problems who displayed more conduct disorder symptoms based on a structured interview with parents were more likely to have externalizing problems 6 months later according to their parents. With this high-risk group, symptoms of conduct disorder seemed to be a potentially meaningful sign of continued problems during the year. Although prosocial behavior was not predictive of changes in children's behavior problems for the sample in general, children in this high-risk sample who demonstrated higher observed prosocial behavior at school showed fewer behavior problems over time. This finding was of marginal significance and should be interpreted with caution due to the small sample size. Nevertheless, prosocial behavior in children identified with significant behavior problems by their parents may create a buffer against other forms of stress and increase children's ability to maintain strong relationships with children and adults despite their behavior difficulties.

No predictions were offered for the exploration of sex differences in the assessment and prediction of behavior problems during preschool because of the lack of

research in this area. Symptoms of attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder reported by parents on a structured interview did not seem to offer information that was more predictive of problems over time for boys versus girls. In contrast, teacher report of boys' delinquent behavior predicted difficulties over time for boys, but not for girls. Girls may be less likely to engage in delinquent behavior or teachers may be less likely to notice these kinds of behaviors in girls. Perhaps girls who concern parents due to behavior problems do not display similar behavior at school. Classroom observation did not provide information that was more useful for understanding the behavior of girls versus boys.

The trajectory of boys' development of behavior problems has been studied and understood more clearly than that of girls. These findings suggest that the behaviors that may be important in predicting externalizing behaviors for boys, particularly within the classroom, may not be the same as those for girls. Perhaps we are not measuring these behaviors in ways that are meaningful for girls' development. Although girls present with behavior problems, factors that impact girl's behavioral and emotional health may be unique. More research is needed to explore context variables and processes that may be critical for girls on the trajectory to behavior problems.

Although most behaviors seemed to have similar predictive meaning and value for children from low and high socioeconomic status, some behaviors were more informative for children of high socioeconomic status. Children with higher levels of conduct disorder symptoms were more likely to continue to display behavior problems later in the school year. Perhaps these behaviors put these children at higher risk or they provoke more increased concern from their caregivers within their home and school environments. The relative amounts of prosocial behavior and misbehavior displayed by

children at school also seem to have been a better predictor for children from more affluent preschools. Prosocial behavior may enable these children to be less influenced by the negative impact of their misbehavior, and perhaps their teachers have enough resources to enable them to respond more often to children's prosocial behavior rather than just to disruptive or defiant behavior.

Analyses of sex differences, socioeconomic status, and diversity in this study were limited by small sample sizes when the sample was divided into subgroups. Also, a disproportionate number of the children were from preschools serving low-income families, so analyses of higher-income children were more exploratory and must be interpreted with caution. In addition, the measure of socioeconomic status utilized for the study did not allow for the exploration of within-group variability since a categorical distinction was made between children of high and low socioeconomic status.

Although research has explored factors related to agreement between parent and teacher ratings of child behavior problems, only a limited number of factors have been investigated. Exploratory analyses were conducted to investigate the potential influence of correspondence of ethnicity of the parent and teacher, level of parent involvement in school, child birth order, and child sex on interrater agreement between parents and teachers. None of these factors had a significant influence on interrater agreement, although children with later birth order tended to have less discrepant ratings. This may be because parents of children with older siblings have a larger reference group for evaluating children's behavior, so they agree more with teacher ratings due to increased experience with child development. Further research is needed to understand the complex influences on the perceptions of parents and teachers. It may be that actual

differences in child behavior across home and school settings may be the most significant influence on ratings of behavior between parents and teachers.

Although the results of this study cannot be generalized to understanding children's long-term trajectories of behavior problems, information about forms of assessment useful in the short-term can aid parents and teachers within preschools in making intervention decisions over a given school year. Longer-term studies and studies with diverse samples are needed to expand upon the present findings. All the measures in the study focused on child behavior and the interpretation of child behavior rather than on family or environmental variables. An expansion of the variables considered in the study may also improve the prediction of children's trajectories over time, and may provide useful information for understanding girls' development. Although children's prosocial behavior may be an important component of their prognosis and behavioral trajectory, only observational data captured this aspect of children's behavior. Questionnaires from parents and teachers concerning this topic may be helpful to explore in future studies.

In sum, these results highlight the importance of utilizing parents and teachers in the assessment process. Specific information about symptoms from parents and the frequency of behavior problems from the school setting can allow for more comprehensive assessment of behavior problems and better predictive information over time. These findings also highlight the importance of considering children's sex, socioeconomic status, ethnicity, and race in understanding the limitations and value of parent and teacher assessments of behavior problems.

Table 1

Mean Scores for Measures of Child Behavior

Measure	<u>M</u>	<u>SD</u>	<u>n</u>
ECBI			
Time 1 Intensity	49.9	9.7	80
Time 2 Intensity	48.9	7.7	79
DISC-P			
Home ADHD Symptoms	3.9	3.7	73
School ADHD Symptoms	0.7	2.2	73
ODD Symptoms	0.8	1.5	73
CD Symptoms	0.4	0.6	73
Total Externalizing	5.8	6.1	73
t-CBP			
Delinquency	55.5	5.2	80
Aggression	56.2	8.2	80
Total Externalizing	54.2	9.0	80
Observation			
Misbehavior	4.0	6.0	78
Inattention	15.6	18.7	64
Negative Affect	4.5	4.7	78
Prosocial Behavior	20.0	10.0	78

Table 2

Mean Scores for Measures of Child Behavior by Sex

Measure	Girls (n = 38)		Boys (n = 43)	
	M	SD	M	SD
ECBI				
Time 1 Intensity	52.5	9.6	47.7	9.4
Time 2 Intensity	49.7	7.3	48.2	8.0
DISC-P				
Home ADHD Symptoms	3.1	3.1	4.5	4.0
School ADHD Symptoms	0.5	1.4	0.8	2.7
ODD Symptoms	0.6	1.1	1.0	1.8
CD Symptoms	0.4	0.5	0.5	0.6
Total Externalizing	4.6	4.8	6.8	6.8
t-CBP				
Delinquency	55.7	5.9	55.2	4.5
Aggression	57.2	7.5	55.3	8.7
Total Externalizing	55.6	8.7	53.1	9.2
Observation				
Misbehavior	2.7	4.1	5.2	7.1
Inattention	10.5	15.8	20.5	20.2
Negative Affect	4.5	5.8	4.5	3.5
Prosocial Behavior	18.1	13.5	17.3	12.4

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