

## Behavior Problems and Social Skills in Preschool Children: Parent-Teacher Agreement and Relations with Classroom Observations

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The goals of the present investigation were to provide basic psychometric information about the use of the Preschool and Kindergarten Behavior Scales (PKBS; Merrill, 1994) with a sample of normally-developing preschool children, to assess agreement between parent and teacher ratings of children on this instrument, and to assess concurrent, criterion-related validity of these instruments in terms of their relations with observations of children's behavior in the classroom. Parents and teachers of 47 preschool children completed the scales and these children were observed naturalistically in the classroom setting. Overall, agreement between parents and teachers was modest ( $-.09$  to  $.38$ ). Cross-informant correlations were poor ( $-.09$  to  $.27$ ) for social skills, low ( $.15$  to  $.36$ ) for internalizing behaviors, and modest ( $.29$  to  $.38$ ) for externalizing behavior. Both parents and teachers rated boys as having more externalizing behavior problems than girls. Parents perceived their children to have more externalizing, and more overall, behavior problems than did teachers. In general, teacher reports, but not parent reports, were significantly associated with children's independently observed goal-directed activity, sustained attention, inappropriate behavior, peer affiliation, expressed negative affect, and proximity to a teacher in the classroom.

Results argue for the clinical utility of the PKBS for teacher-report assessment of child behavior problems and social skills in the preschool years, and suggest the need for cross-contextual assessment. Also, it is clear that children's behavioral and social competence are crucial for optimal functioning in the preschool setting.

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Preschool children with behavior problems are at significant risk for continued behavioral disturbances and more serious psychopathology throughout childhood (Campbell, 1997; Campbell, Pierce, March, Ewing, & Szumowski, 1994; Egeland, Kalkoske, Gottesman, & Erickson, 1990; Winsler, Diaz, Atencio, McCarthy, & Adams Chabay, 2000). Clearly, one of the keys to successful early identification, prevention, and intervention with this population is assessment. Parent report and teacher report of children's behavior on rating scales and questionnaires are the most common methods used for behavioral assessment during early childhood (Achenbach & Edelbrock, 1984), and indeed, many adult informant instruments for assessing the behavioral and socioemotional functioning of young children have been developed (Achenbach, McConaughy, & Howell, 1987; Bracken, Keith, & Walker, 1994; Walker & Bracken, 1996).

One issue that has received a fair amount of research attention over the years is the extent to which adult informants from different settings (e.g., home and school) agree on their reports of children's behavior. Achenbach et al.'s (1987) seminal meta-analysis of 119 studies concluded that overall median agreement (Pearson  $r$ ) between parent and teacher reports of children's behavior problems is a modest .27, with this association (a) being slightly higher when adults are reporting on externalizing as opposed to internalizing behavior problems, (b) staying the same regardless of whether adults were reporting on the behavior of boys or girls, and (c) being slightly higher for children (age 6-11) as opposed to adolescents. Subsequent research has generally confirmed the finding that cross-informant agreement is somewhat greater for externalizing than internalizing behavior problems (Diamond & Squires, 1993; Verhulst & Akkerhuis, 1989; Verhulst & van der Ende, 1991). However, subsequent findings regarding gender effects (Seiffge-Krenke & Kollmar, 1998; Verhulst & Akkerhuis, 1989) and age effects (Gagnon, Vitaro, & Tremblay, 1992; Seiffge-Krenke & Kollmar, 1998; Verhulst & Akkerhuis, 1989; Vitaro, Gagnon, & Tremblay, 1991) have been mixed. Low agreement between parent and teacher reports of children's behavior has typically been interpreted as evidence of the situation specificity of children's behavior problems and thus the need to obtain measures from multiple informants (Achenbach et al., 1987), rather than evidence of poor reliability of measurement. It is also clear, however, that various characteristics of the informant (i.e., maternal education, mental health, family stress) affect both the mean levels of children's behavior problems reported and agreement across raters (Kohen, Brooks-Gunn, McCormick, & Graber, 1997; Szatmari, Archer, Fisman, & Streiner, 1994).

The majority of the research on parent-teacher agreement, however, has been conducted with school-age children, leaving our understanding of cross-informant correspondence in behavioral reports for the preschool period much less clear. Some investigators have found increased parent-teacher agreement (correlations of .30 to .50) for preschoolers and kindergarten children compared to older children (Keenan & Lachar 1988; Vitaro et al., 1991). Agreement between raters across settings is likely to be related to the degree to which there is cross-setting involvement for at least one of the informants (Diamond & Squires, 1993). Parents often have more direct contact and participation in their children's preschool classroom compared to formal school settings. On the other hand, preschool children's

behavior may be less consistent over time and setting than that of older children, and the constructs themselves that are tapped by rating scales may change across settings and time more for preschool age children than for older children, which would make correspondence across informants less likely. Multirater (parent-teacher) congruence on the Social Skills Rating System (SSRS – Preschool Form; Gresham & Elliot, 1990) has been assessed recently within a sample of Head Start children and found to be quite low ( $r$ 's from .02 to .25) (Fagan & Fantuzzo, 1999; Manz, Fantuzzo, & McDermott, 1999), however, as the investigators point out, this could be partly due to cultural and socioeconomic differences between the teachers and the parents studied. Cross-informant research is clearly needed on other early childhood assessment instruments in other contexts in order to inform both clinical and research practice.

The Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994) is a relatively new instrument that has been lauded recently as promising and psychometrically sound, based on internal consistency, inter-rater reliability, quality of standardization sample, validity, and a favorable range (lack of floor and ceiling effects) (Bracken et al., 1994). However, research on this instrument is still in its infancy. Moreover, validation of adult ratings of children's behavior with independent observations of children's behavior in the classroom, although essential for the field, is unfortunately quite rare. Associations between children's observed behavior in the preschool classroom and teacher ratings can also provide information as to the source of teacher ratings. The goals of the present investigation, thus, were to: (1) provide basic psychometric information about the use of the Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994) with a sample of normally-developing preschool children, (2) assess agreement between parent and teacher ratings of children on this instrument, and (3) assess concurrent, criterion-related validity of the PKBS in terms of relations with classroom observations of children's behavior.

Classroom observations in the present study focused on children's social affiliation, expressed affect, inappropriate behavior, and sustained, goal-directed activity. Previous research has shown that child behavior problems are negatively associated with peer preference (Stormshak, Bierman, Bruschi, Dodge, & Coie, 1999) and that child social skills are positively associated with peer contact/interaction and negatively associated with teacher intervention/one-on-one involvement with children in early childhood classrooms (Kontos & Wilcox-Herzog, 1997). Also, children's social competence and lack of behavior problems have been found to be associated with children's active and sustained engagement in on-task classroom activities (Coolahan, Fantuzzo, Mendez, & McDermott, 2000; Del'Homme, Sinclair, & Kasari, 1994). Finally, children with greater behavior problems have been found to engage in less positive affect in the classroom (Levy-Shiff & Hoffman, 1989).

The following specific research questions were addressed in this report: 1) What is the internal consistency reliability of the PKBS for a sample of preschool children, and does it vary by rater? 2) To what extent do parent and teacher ratings converge for children's internalizing and externalizing behavior problems, and social skills? 3) To what degree does agreement between teachers and parents vary as a function of the age or gender of the child? 4) To what extent do children's social skills and behavior problems themselves vary as a function of age or gender of the child? 5) Are there mean differences across raters for children's social skills and behavior problems? and 6) To what extent are parent and teacher reports associated with direct observations of children's behavior in the classroom? In terms of

relations with classroom behavior, we expected that child externalizing behavior problems would be associated with more inappropriate behavior, less goal-directed and sustained activity, and more negative affect observed in the classroom. Further, internalizing behavior problems were expected to be associated with increased isolation, negative affect, and dependency on the teacher in the classroom. Finally, children rated as being more socially skilled were expected to spend more time interacting with their peers, express more positive affect, and engage in less inappropriate behavior than those seen as having poorer social skills. Due to both the presumed context-specificity of behavior and the fact that teachers are uniquely privileged observers of child behavior in the classroom context, we expected teacher-report ratings would be more strongly associated with child classroom behavior than parent ratings.

### Method

#### *Participants*

Participants included 47 preschool children (age  $M = 49$  mos.,  $SD = 5.6$ , range = 37.2 - 60.4; 47% male) attending one of two classrooms in a university-affiliated laboratory preschool in a medium-sized city in the Southeastern United States. The ethnic breakdown of the sample according to parental report on the preschool application/registration forms was 74% Caucasian, 9% African-American, and 17% Asian-American. A reasonable range of family socioeconomic levels was present in the sample (Hollingshead index - Range = 25 - 66,  $M = 51.28$ ,  $SD = 10.54$ ) as the preschool stratified its enrollment in the classrooms into three equal thirds: a) children of university faculty/staff, b) children of university students, and c) children of community members. Paternal age ranged from 25 to 52 years ( $M = 36.76$ ,  $SD = 5.5$ ) and maternal age ranged from 24 to 44 years ( $M = 33.55$ ,  $SD = 5.1$ ). Fathers' years of education ranged from 12 to 21 ( $M = 17.23$ ,  $SD = 2.8$ ) and mothers' education ranged from 12 to 21 years ( $M = 16.49$ ,  $SD = 2.3$ ). Each classroom had one lead teacher and an assistant teacher (all female). Lead teachers were both white, middle-aged, experienced (> 10 years) teachers with advanced degrees. Although the total number of participating children was 47, only 40 parents returned the PKBS. A series of t-tests and chi-square analyses revealed that the seven families who did not return the PKBS were not different from those that did on any of the demographic variables, nor were teacher reports for these children any different.

Although data collection occurred in two cohorts over a span of two academic years, for any given child, only one year's worth of data were used. That is, for each child, teachers and parents filled out the PKBS at the end of the school year after classroom observations (described below) had been conducted. Thus, the sample of 47 children discussed here only counts the children who attended the center both years ( $N = 10$ ) once — only one year's data (the year in which data were more complete) were used for the returning children.

#### Procedure

*Parent and Teacher Reports.* Toward the end of the academic year, parents and teachers were given the PKBS (Merrell, 1994, 1995) to complete and return. The PKBS is a 76-item, 4-point scale (0 = never, 3 = often), likert-type questionnaire which yields the following measures: (1) an overall social skills score (higher numbers meaning better social skills)

which is the sum of the subscales for social cooperation [12 items], social interaction [11 items], and social independence [11 items]; (2) an externalizing behavior problems score (the sum of subscales for self-centered/explosive [11 items], attention problems/overactivity [8 items], and antisocial/aggressive [8 items]); (3) an internalizing behavior problems score (sum of subscales for social withdrawal [7 items], and anxiety/somatic complaints [8 items]); and (4) an overall problem behavior score (an aggregate of both externalizing and internalizing problems). Parents received one questionnaire and were asked to have the parent who has the most direct contact with the child to be primarily responsible for completing the forms (resulted in 65% mothers, 10% fathers, and 25% both/unclear). Only the lead teacher from each classroom was asked to complete the PKBS.

*Classroom Observations.* A total of 7,887 time-sampled naturalistic observations of children's on-task behavior, sustained activity, social interaction, behavior, and affect in the preschool classrooms were conducted over the course of the two academic years. During year one, 2,752 observations were carried out over a 10-week period during the early spring semester of the academic year. During year two, 5,135 observations were completed over a 22-week period essentially spanning the entire academic year. Two female research assistants (one per classroom) observed children according to a predetermined random order. Observations began after a three-week introductory period during which time children grew accustomed to the presence of the observers in the classroom, observers were trained, the observational checklist instrument was pilot tested, and the reliability of the final observational checklist instrument was established. Observer influence effects were minimized in this study by both the presence of the three-week, rapport-building period and by the fact that children in these classrooms were generally quite accustomed to the presence of observers in the classroom given the center's laboratory responsibilities.

Observers, who were unaware of the research questions, used a behavioral observation checklist instrument to record their observations. Also, to assist in adhering to the time-sampling observation schedule, observers listened to pre-recorded time signals which projected via headphones to one ear from an audiocassette recorder attached to their belt. Target children were observed in 10-minute periods, with each period consisting of 10, 10-second direct observation intervals separated by 50-second recording intervals. Thus, an observer would observe a target child for 10 seconds, at which time the audio signal would sound and she would then record her observations for that 10 second period on the checklist instrument for the remainder of the minute. Then the audio signal would sound again indicating that it was time to observe the child again for the second, ten-second observation. This pattern would continue for ten observations at which time the observer would go on to conduct a series of ten observations on the next child on the list. During year one (one semester of observations), each child was observed for approximately 10, 10-minute intervals, and during year two (two semesters of observations) children were observed for approximately 20, 10-minute intervals. Predominant activity sampling (PAS; Hutt & Hutt, 1970) was used for the social affiliation and activity variables, meaning that if more than one type of behavioral class occurred within a 10-second observation interval, observers coded the occurrence of only the predominate behavior that was present for the larger time period during the observation. In all cases below, the variable used for the analyses was the overall proportion of observations for that child over the school year in which "X" occurred. The following were coded on the observational checklist instrument.

First, children's *activity* was coded as being either explicitly goal-directed or non goal-directed. Goal-directed activity was defined as behavior by the child which appeared focused, organized, and had a tangible goal or end point to the activity. The goal being pursued by the child could either be self-formulated or teacher-provided. Examples of goal-directed activity included, for example, building a structure out of Legos® or some other assembly/construction materials, doing a puzzle, playing a game with rules, or engaging in an organized make-believe episode of "house." Not explicitly goal-directed behavior in this context included, for example, aimless wandering around the classroom, looking on into another group's activity, and repeatedly spinning a puzzle piece around one's finger for the apparent "fun of it." Children's *sustained activity* was coded by assessing the relationship between the child's activity during the current ten-second observation interval and the child's activity during the previous observation period, one minute ago. For the second through tenth observation in each series of 10 observations on target children, the observer coded whether or not the activity the target child was engaged in during the current observation was the same (in terms of goal, materials, and behavior) as that in which the child was engaged during the previous observation one minute ago.

Children's immediate *social affiliation* was also coded. Observers noted, for each 10 second interval, whether the child was alone, with one or more peers, with a combination of one or more peers and a teacher, or one-on-one with a teacher. Children were coded as being alone if no other person doing the same general activity was within 3 feet of the target child and there were no social interchanges with another person during the observation. Children were coded as being with a peer if there were one or more other children present who were either doing the same activity in parallel with the target child within three feet or who were physically or verbally interacting with the target child. Children were coded as being with both peer(s) and a teacher if any adult was included as one of the members of a group, using the same criteria as those used above for 'peer.' Children were classified as being exclusively with a teacher if they were interacting one-on-one with a teacher with no other children present within three feet of the target child.

Children's *affect* (positive, negative, neutral) was also coded during the observations. Positive affect was coded if children exhibited any overt smiles or laughter during the observation. Negative affect was coded if frowning, crying, yelling, pouting, or explicit facial expressions of anger were present. Neutral affect was coded if the child's affect during the 10 seconds was flat (i.e., neither positive nor negative).

Finally, children's behavior during each 10 second period was coded as being either appropriate or *inappropriate*. Inappropriate behavior was defined as an intentional action that a) actually did (or was meant to) physically harm another person (e.g., hitting, kicking), b) damaged property or classroom materials, or c) involved verbal or physical rudeness with another person (e.g., yelling, name calling, teasing, grabbing...). If one of these behaviors occurred during the observation, the period was coded as containing inappropriate behavior. If not, the period was coded as appropriate.

Inter-rater reliability for the above coding systems used for the classroom observations was determined each year during the last phases of observer training, at which time two observers independently rated the same children for 259, 10 second observations. Reliability was acceptable to good for all category systems. Percentage agreement across observers

was 88% for children's activity (Kappa = .75), 96% for sustained activity (Kappa = .90), 87% for affect (Kappa = .71), 100% for inappropriate behavior, and 89% for social affiliation (Kappa = .83).

## Results

### *Internal Consistency of the PKBS*

Cronbach alpha reliability coefficients for the PKBS were calculated separately by informant and they are found in Table 1. As seen in the table, for practically every subscale and composite scale, internal consistency was quite acceptable (from .75 to .97) with no salient differences between parents and teachers. The figures are very similar to the internal consistency reliabilities reported in Merrell (1994). Parent report of children's anxiety/somatic complaints, however, demonstrated some degree of inconsistency (.58) within this preschool sample.

Table 1.

Cronbach's Alpha Reliability Coefficients for the PKBS by Informant,  
and Agreement (Pearson Correlations) Across Informant

PKBS	Parent (Alpha)	Teacher (Alpha)	Parent-Teacher Agreement
<i>Social Skills</i>			
Social Cooperation	.89	.88	-.09
Social Interaction	.78	.89	.18
Social Independence	.80	.75	.27+
Social Skills Total	.91	.90	.17
<i>Externalizing Behavior Problems</i>			
Self-Centered/Explosive	.83	.86	.29+
Attention Problems/Overactive	.86	.88	.35*
Antisocial/Aggressive	.79	.85	.38*
Externalizing Total	.93	.93	.37*
<i>Internalizing Behavior Problems</i>			
Social Withdrawal	.75	.79	.15
Anxiety/Somatic Complaints	.58	.77	.36*
Internalizing Total	.75	.86	.23
Problem Behavior Total	.91	.94	.30+

+  $p < .10$ , \*  $p < .05$

### *Convergence of Parent and Teacher Ratings*

Table 1 also lists the Pearson correlations that were calculated between parent and teacher ratings of children's internalizing and externalizing behavior problems, and social skills. Results indicate low to modest correlations (from  $-.09$  to  $.38$ ) overall between parent and teacher reports of preschool children's behavior. Cross-informant correlations for children's internalizing behavior ( $.15$  -  $.36$ ) and externalizing behavior ( $.29$  -  $.38$ ) were not unlike those reported by the original scale authors (Merrell, 1994). Parent-teacher correspondence for social skills in this preschool sample, however, were somewhat lower ( $-.09$  -  $.27$ ) than those reported by Merrell (1994). Parent and teacher ratings were somewhat more in agreement when reporting on externalizing behaviors than on internalizing behavior and social skills.

### *Parent-Teacher Agreement as a Function of Age and Gender of Child*

Table 2 displays parent-teacher correlations for the PKBS separately by the age of the children and by the gender of the children. Cross-informant agreement on internalizing behavior problems was consistently better for the three year old ( $r$ 's =  $.59$  to  $.68$ ) as compared to the four year old group ( $r$ 's =  $-.02$  to  $.04$ ). The differences between these correlations are statistically significant in the case of anxiety/somatic complaints ( $Z = 2.16, p < .05$ ) and overall internalizing behavior ( $Z = 2.13, p < .05$ ). Agreement between parents and teachers on children's antisocial/aggressive behavior was somewhat greater ( $r = .45, p < .05$ ) for the four year old children than for the three year olds ( $r = .13, ns.$ ), and social independence demonstrated increased parent-teacher agreement ( $r = .53, p < .05$ ) for three year olds than for four year olds ( $r = .25, ns.$ ). The differences between these correlations, however, do not reach statistical significance. In terms of gender differences in cross-informant agreement, the trend was for slightly greater correspondence for adult ratings of behavior problems when reporting on girls as opposed to boys. However, differences between these correlations, although notable, were not statistically significant given our relatively small sample sizes.

### *Age, Gender, and Informant Differences in Children's Ratings*

Means (and standard deviations) for children's social skills and problem behavior, by age, gender, and rater are found in Table 3. The data analysis strategy selected was to first run mixed 2 by 2 by 2 ANOVAs with age group (3,4) and gender (boy, girl) as between-subject factors, and rater (parent, teacher) as the repeated measure on each of the three total scales (social skills, externalizing, and internalizing). If significant effects were found with the aggregate scores, then additional identical ANOVAs were performed with the subscale scores as the dependent measures. Children's overall social skills ratings did not vary significantly as a function of child age, gender, or adult rater.

In terms of children's externalizing behavior, significant informant differences were noted for children's overall externalizing scale score,  $F(1, 34) = 18.85, p < .001$ , and for each of the three subscales [self-centered/explosive  $F(1, 34) = 19.83, p < .001$ , attention/hyperactivity  $F(1, 34) = 11.54, p < .01$ , and antisocial/aggressive  $F(1, 34) = 10.76, p < .01$ ]. In each case, parents reported more problems with children's disruptive behavior than teachers. A significant gender effect,  $F(1, 34) = 4.08, p < .05$ , was also observed for children's overall externalizing behavior such that both raters report more externalizing problems for boys than for girls. Finally, a significant age-by-gender interaction emerged for children's



Table 2.  
Agreement Between Parents and Teachers as a Function  
of Age and Gender of the Child

PKBS	Age of Child		Gender of Child	
	3-Yr.-Olds (N = 15)	4-Yr.-Olds (N = 23)	Boys (N = 19)	Girls (N = 19)
<i>Social Skills</i>				
Social Cooperation	-.17	.01	-.22	.04
Social Interaction	.31	.11	.17	.20
Social Independence	.53*	.25	.34	.19
Social Skills Total	.21	.17	.09	.23
<i>Externalizing Behavior Problems</i>				
Self-Centered/Explosive	.39	.27	.20	.15
Attention Problems/Overactive	.31	.34	.25	.39+
Antisocial/Aggressive	.13	.45*	.33	.12
Externalizing Total	.40	.37+	.22	.42+
<i>Internalizing Behavior Problems</i>				
Social Withdrawal	.59*	-.01	.04	.25
Anxiety/Somatic Complaints	.68*	.04	.16	.46*
Internalizing Total	.64*	-.02	.02	.44*

+  $p < .10$ , \*  $p < .05$

antisocial/aggressive behavior,  $F(1, 34) = 5.75, p < .05$ , indicating that antisocial/aggressive behavior was much more common among four-year-old boys than in the other three groups.

Internalizing behavior problems showed no gender differences yet revealed interesting informant-by-age interactions for both overall internalizing problems,  $F(1, 34) = 5.40, p < .05$ , and social withdrawal,  $F(1, 34) = 10.89, p < .01$ . Teachers saw much more withdrawn behavior and overall internalizing problems occurring among three-year-olds than among four-year-olds, however, parents reported either no age difference (in the case of overall internalizing problems) or the reversed pattern of three-year-olds being less withdrawn than four-year-olds (in the case of social withdrawal). Anxiety and somatic complaints were reported as much more common for parents than for teachers,  $F(1, 34) = 32.50, p < .001$ .

Overall, parents reported more behavior problems with their children than did teachers, as indicated by a significant main effect for rater on the combined behavior problems scale,  $F(1, 34) = 12.95, p < .001$ .

Table 3.  
Mean (and Standard Deviations) of Child Ratings by Informant, and by Age and Gender of Child

	Parent-Report				Teacher-Report			
	3-Year-Olds		4-Year-Olds		3-Year-Olds		4-Year-Olds	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
PKBS - Social Skills	86.8 (7.5)	88.0 (4.0)	86.7 (9.7)	89.5 (7.1)	79.7 (9.9)	85.8 (11.7)	88.7 (7.1)	87.4 (10.6)
PKBS - Externalizing Behavior Problems <sup>a,b</sup>	28.3 (6.2)	29.2 (7.8)	33.8 (16.2)	22.5 (9.2)	22.6 (11.8)	17.0 (7.6)	21.7 (15.1)	12.6 (11.2)
PKBS - Internalizing Behavior Problems <sup>c</sup>	12.7 (5.1)	12.0 (4.5)	13.9 (5.3)	12.2 (3.3)	13.6 (3.2)	13.2 (10.3)	9.6 (5.7)	8.2 (5.8)
PKBS - Behavior Problems Total <sup>a</sup>	41.0 (10.6)	41.2 (9.8)	47.7 (20.0)	34.7 (11.2)	36.1 (14.3)	30.2 (16.5)	31.3 (20.4)	20.8 (16.1)

<sup>a</sup> Rater effect, <sup>b</sup> gender effect, <sup>c</sup> rater-by-age interaction, (all  $p < .05$ )

### *Relations with Classroom Observations*

The last set of analyses had to do with relations between children's parent and teacher ratings and children's observed behavior in the classroom. Table 4 displays the correlations between parent and teacher reports and children's observed behavior, social affiliation, and affect in the classroom. As hypothesized, and consistent with the notion of the context specificity of children's behavior, teacher reports of children's social skills and behavior were more frequently and strongly associated with children's independently-observed classroom behavior, than were parent reports. Children rated by their teacher as having greater social skills engaged in more sustained ( $r = .57, p < .05$ ) and goal-directed ( $r = .45, p < .05$ ) activities in the classroom and they spent more time interacting with their peers ( $r = .40, p < .05$ ) and less time with a teacher ( $r = -.39, p < .05$ ) than children with poorer skills. Internalizing and externalizing behavior problems as reported by teachers were all negatively associated with children's goal-directed and sustained activity in the classroom ( $r$ 's between .38 and .57, all  $p < .05$ ). Further, teacher-reported externalizing problems were positively associated with inappropriate behavior ( $r = .31, p < .05$ ) and negative affect ( $r = .30, p < .05$ ) expressed in the classroom. Teacher-reported internalizing problems were negatively associated with time spent with peers ( $r = -.31, p < .05$ ) and positively with one-on-one time with a teacher ( $r = .36, p < .05$ ). Thus, considerable criterion-related validity was demonstrated for the teacher form of the PKBS.

Children's ratings on the PKBS from parents showed some, but considerably less cross-context, criterion-related validity. Inappropriate behavior in the preschool classroom was associated with parents' report of externalizing behavior problems ( $r = .33, p < .05$ ). Also, children who showed more externalizing behavior problems in the home spent more time in the presence of a teacher ( $r = .29, p < .10$ ) in the classroom. Finally, children who showed more internalizing behavior problems in the home expressed more overt positive affect in the classroom ( $r = .33, p < .05$ ).

To inform as to the sources of teacher reports of children's social skills and behavior, a series of hierarchical multiple regression analyses was conducted in which teacher report of child social skills, externalizing behavior, and internalizing behavior (in turn) were predicted on the basis of parent report (entered first) and then relevant classroom observational variables entered hierarchically. To avoid multicollinearity (goal-directed and sustained activity were correlated .75 with each other), only goal-directed activity was used as a predictor variable. Also, due to the ipsative nature of the four social interaction variables (alone, peer, teacher, both), only the proportion of observations in which the child was interacting with a peer was used as a social affiliation predictor. What are reported below are the final (and best) models for predicting teacher reports. Gender of child (and interaction terms between gender and the other variables) was included in the models but never found to contribute significantly to the prediction of teacher reports. In all cases, the first model run, predicting teacher report only on the basis of parent report was nonsignificant.

Teacher reports of children's social skills were significantly predicted ( $F_{(3,37)} = 4.63, p < .01, R^2 = .27$ ) by the combination of parent report of social skills ( $b = .05, t = .26, ns.$ ), proportion of time children spent interacting with peers ( $b = .43, t = 2.38, p < .05$ ), and the proportion of time children engaged in focused, goal-directed activity in the classroom ( $b = .32, t = 2.82, p < .01$ ). Affect expressed by the children in the classroom was not a significant

Table 4.  
Correlations between Parent- and Teacher-Reports  
and Children's Behavior in the Classroom (Proportion of Observations)

	Behavior			Social Affiliation				Affect	
	Goal-Directed Activity	Sustained Activity	Innapropriate Behavior	Alone	With Peer(s)	With Teacher	W/ Both Teacher and Peer	Positive Affect	Negative Affect
PARENT-REPORT									
PKBS - Social Skills	.23	.13	-.03	.04	.14	-.15	-.10	-.12	-.07
PKBS - Externalizing Behavior Problems	-.11	-.11	.33*	-.06	-.10	-.17	.29+	-.03	.16
PKBS - Internalizing Behavior Problems	-.18	-.15	.11	.08	.02	-.09	-.03	.33*	.15
TEACHER-REPORT									
PKBS - Social Skills	.57*	.45*	-.02	-.03	.40*	-.39*	-.23	.10	-.16
PKBS - Externalizing Behavior Problems	-.51*	-.39*	.31*	-.03	-.21	.12	.20	-.06	.30*
PKBS - Internalizing Behavior Problems	-.45*	-.38*	-.06	-.11	-.31*	.36*	.23	.15	.21

+  $p < .10$ ; \*  $p < .05$ .

predictor, nor was children's inappropriate behavior. Thus, teacher reports of child social skill appear to be based in part on how often they see the children interacting directly with other children and how much time children spend engaged in focused, goal-directed activities in the classroom.

Teacher reports of children's externalizing behavior problems were significantly predicted ( $F_{(3,37)} = 3.95, p < .01, R^2 = .24$ ) by the combination of parent report of externalizing behavior problems ( $b = .08, t = .55, ns.$ ), children's observed inappropriate behavior ( $b = 8.74, t = 2.23, p < .05$ ), and the proportion of time children engaged in focused, goal-directed activity in the classroom ( $b = -.27, t = 2.00, p < .05$ ). Affect expressed by the children in the classroom was not a significant predictor, nor was the amount of time children spent interacting with their peers.

Teacher reports of children's internalizing behavior problems were significantly predicted ( $F_{(3,37)} = 4.54, p < .01, R^2 = .27$ ) by the combination of parent report of internalizing behavior problems ( $b = .15, t = .75, ns.$ ), the proportion of time children engaged in focused, goal-directed activity in the classroom ( $b = -.21, t = -3.07, p < .01$ ), and the proportion of time children spent interacting with peers ( $b = -.21, t = 1.97, p < .05$ ). Affect expressed by the children in the classroom was not a significant predictor, nor was children's inappropriate behavior.

### Discussion

Understanding consistency across contexts in assessment instruments is important for facilitating effective communication between parents and teachers for the well being of children (Bracken et al., 1994; Fagan & Fantuzzo, 1999). The goals of this investigation were to provide basic psychometric information on the Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994) with a sample of normally-developing preschool children, to assess agreement between parent and teacher ratings of children on this instrument, to explore age and gender differences in adult report of preschool children's behavior, and to assess concurrent, criterion-related validity of this instrument in terms of relations with classroom observations of children's behavior.

The internal consistency reliabilities for the PKBS within this sample of normally developing preschool children were fine and mostly consistent with those originally reported in Merrell (1994). It is interesting to note, however, that in this investigation, parent report of children's anxiety/somatic complaints demonstrated some degree of internal inconsistency. Further attention may need to be given to the development of this particular subscale to maximize its effective use with preschool children.

Convergence across parents and preschool teachers on reports of children's behavior and social skills was low to modest ( $r$ 's =  $-.09$  to  $.38, M = .25$ ) which is mostly consistent with that reported by the original scale authors (Merrell, 1994) and others exploring similar constructs with other instruments (Achenbach et al., 1987). In the case of parent-teacher correspondence between ratings of children's social skills, agreement was somewhat lower in this study than in Merrell (1994). Such generally modest levels of agreement between parent and teacher in the relative behavioral rankings of preschool children, especially in the presence of data on the reliability and validity of the instruments, suggest that there is indeed considerable variability across settings in children's behavior problems and social competence.

Because of the limited overlap in adult ratings, it appears that collecting data on children's behavior in multiple settings would be best in early childhood assessment to get a clear picture of the child's behavior across settings. The presence of modest but typically significant correlations across raters suggests, however, some stability of individual differences in children's behavior across contexts. Further, it does not appear, at least from this investigation, that agreement between parents and teachers is greater for preschool-aged children than older children, as has been suggested by some (Keenan & Lachar 1988; Vitaro et al., 1991).

Consistent with previous research (Diamond & Squires, 1993; Verhulst & Akkerhuis, 1989; Verhulst & van der Ende, 1991), parent and teacher ratings were more in agreement when reporting on children's externalizing behavior than on internalizing behavior and social skills. Externalizing behavior is likely more salient than internalizing problems in both contexts which may account for the increased agreement on children's disruptive behavior found across raters. In terms of agreement varying by the age of the child, this study found that cross-informant convergence for internalizing behavior problems was consistently better when reporting on three year olds than on four year olds. Conversely, there was a trend for agreement between parents and teachers on children's antisocial/aggressive behavior to be greater for the four year olds than for the three year olds. Antisocial/aggressive behavior appears to be particularly salient among 4 yr. olds, especially among boys, while internalizing symptoms are particularly salient for younger preschoolers. Finally, although Touliatos and Lindholm (1981) suggest that cross-informant agreement overall is greater when adults are reporting on boys than girls, no evidence of this was found in the present study, with the trend here actually being in the opposite direction.

Several differences across raters were observed in terms of the overall mean levels of behavior problems reported by the informants. Parents reported that their children had more problems than teachers on all three externalizing behavior subscales, overall externalizing behavior problems, and anxiety/somatic complaints. This pattern is consistent with other investigations, mostly with older children (Gagnon et al, 1992; McGee, Silva, & Williams, 1983; Verhulst & Akkerhuis, 1989), that report parents as perceiving more child behavior problems than teachers. The present study confirms that this pattern is also present when adults are rating preschool children. Few gender differences were found in the present investigation with the exception that both informants rated boys as exhibiting more externalizing behavior problems than girls, a common finding in the developmental assessment literature. Also, teachers reported that four-year-old boys in particular engaged in more aggressive behavior in the preschool setting than the other three groups formed by age and gender.

Preschool teachers appear to discriminate between the behavior of three vs. four-year old children more than parents, at least when it comes to children's internalizing behavior problems, as indicated by the significant age-by-rater interactions. While parents saw no essential differences between the three- and four-year old children, teachers saw the older children as being less problematic with internalizing behavior. This is likely due to the fact that preschool teachers typically have more experience directly observing and comparing the behavior of three and four-year old children together in the same room. Also notable in this connection was the fact that although teachers and parents did not differ in their evaluations of the withdrawn behavior of four-year-olds, teachers perceived the three year olds to be

much more socially withdrawn than did parents. It is important for practitioners to keep both baseline mean differences between parent and teacher reports of children's behavior and such age-by-informant interactions in mind during assessment and decision making with preschoolers. Another issue worthy of consideration here is the finding of Vitaro et al. (1991) that teachers' ratings of children's behavior tend to improve as children get older but parents ratings of problem behavior tend to stay relatively high over time.

The final goal of this study was to assess the concurrent, criterion-related validity of the PKBS in terms of relations with children's behavior in the classroom and to explore the sources for teacher ratings. Results indicate high validity of the teacher-report PKBS in terms of relations with children's observed behavior in the classroom. As would be expected given the within-setting nature of this measure, teacher ratings of children's social skills and behavior problems on the PKBS were related to children's goal-directed activity, sustained attention, inappropriate behavior, peer affiliation, negative affect, and frequency of adult interaction/intervention in the preschool classrooms assessed independently during the same school year. Teachers gave higher ratings for social skills to children who spent much time interacting with their peers and to children who were particularly focused, goal-directed, and on-task in the classroom. Teachers reported more externalizing problems for children who engaged in inappropriate behavior in the classroom and to children whose behavior was less focused and goal-directed. Teachers reported more internalizing problems for children whose behavior was less focused and goal-directed, and to children who spent less time interacting directly with their peers.

Parent-reported child behavior problems and social skills in the home on the PKBS showed little cross-context criterion-related validity overall by being associated only with children's inappropriate behavior and proximity to a teacher in the preschool classrooms. Given true contextual variation in preschool children's behavior, associations across settings are difficult to document, especially with relatively small sample sizes. Of course, a more appropriate criterion with which to compare parent reports would be observations of the child's behavior at home — something that was not done here but should be the topic for future research. All in all, the reliability and validity data presented here suggest reasonable clinical utility of the PKBS with preschool children.

Lack of agreement between parents and teachers on preschool children's behavior problems and social skills is likely due to a combination of factors, many of which were not explored here, including (a) fundamental differences between the two types of raters, (b) differences in the rating process itself across settings (parents just evaluate one child whereas teachers typically evaluate multiple children at the same time thereby facilitating normative comparison), (c) real contextual variation in children's behavior, and (d) the influence of other personal variables (i.e., maternal depression, parental psychopathology, teacher workload/stress...). It is likely that there are fundamental rater differences/biases that do not go away even when child behavior across settings truly becomes more similar. Loukas et al. (1997), for example, recently demonstrated that even when children's actual behavior becomes quite similar across the school and home setting, as is the case with families with high levels of parental psychopathology, parent-teacher agreement remains low. Future work should systematically explore various methodological and person-related predictors of cross-informant correspondence. Merydith (2001) for example, suggests that a useful

methodological advancement for cross-informant research would be to equate the number of children rated by both informants by having each teacher only rate one child (as is typically the case for parents). Such work is clearly necessary in order for the field to better distinguish between rater bias, methodological artifact, and true contextual variation in children behavior.

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