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ABSTRACT

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yearly standard achievement test results. Analyses revealed
consistently high and significant relationships between teachers'
ratings and subsequent school achievement. Teachers were surprisingly
accurate in early identification of both high risk and high potential
children. The Bender-Gestalt Test was more accurate for
identification of high potential than high risk children. Findings
support the use of these measures for initial screening of children
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EARLY IDENTIFICATION OF EDUCATIONALLY HIGH POTENTIAL
AND HIGH RISK CHILDREN[1]

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Early identification of educationally high potential and high
risk children provides opportunity for differential placement and
instructional programs appropriate for individual children. There is
general agreement as to the importance of early identification; differences
arise regarding techniques which provide accurate and valid early predic-
tion of school achievement. Practical considerations of time and
professional personnel impose further limits on identification procedures.

In addition to traditional reading readiness tests, teachers'
ratings and a variety of visuo-motor tests have been used extensively
for identification purposes. Since Wickman's (1928) widely quoted study,
teachers' ratings and predictions have been viewed with suspicion.
Later studies by Henig (1949) with beginning first grade pupils, and
Ilg, Ames, and Appel (1965) with young elementary school children suggest
that teacher evaluations may be useful additions to a predictive index.
Extensive evidence defines relationships between visuo-motor ability and
educational achievement in beginning school programs (Bryan, 1964;
Koppitz, 1964; Smith & Keogh, 1962); further evidence demonstrates this
relationship in the upper elementary school grades (Keogh & Smith, 1967).
Although visuo-motor measures are often included in test batteries aimed
at identifying the high risk child, some investigators suggest that

visuo-motor tasks are more accurate in identifying high potential than
high risk children (Keogh, 1965 a,b; Koppitz, 1964). With few exceptions,
most previous research has been limited to studies of cross-sectional
samples by age or grade, or follow-up of the same children over the
primary grades only. Results are unclear as to the predictive accuracy
of visuo-motor measures and teacher assessment for long term prediction
or as to differential accuracy for early identification of high risk or
high potential children.

Purpose. This study considered the predictive accuracy of the
Bender Gestalt and teachers' ratings for early identification of
educationally high potential and high risk children. Subjects were
followed from kindergarten entrance through a regular elementary school
program. Analyses were based on results of the Bender Gestalt at
kindergarten, kindergarten teachers' ratings, and pupils achievement in
grades two through five.

Sample.[2] Subjects were 28 girls and 21 boys who had participated
in a study of the Bender Gestalt at kindergarten (Keogh & Smith, 1968),
and for whom complete follow-up achievement data were available, grades
two through five. Subjects were enrolled in regular classes in four
schools in a Southern California public school district. The sample was
predominantly white, middle class; no known mentally retarded were
included.

Methods. Kindergarten data included the group Bender Gestalt
administered four times: at school entrance, and at $2\frac{1}{2}$ month intervals
over the school year. Benders were scored with a five category rating
scale system, range of possible total scores 9 through 45 (Keogh &
Smith, 1961). In the spring of the year, kindergarten teachers rated

subjects on a five point scale of reading readiness. "1: totally lacking in reading abilities" to "5: ready to begin reading now." School achievement data, part of the district's regular testing program, included the Stanford Reading Test (SAT) at grade two and the California Achievement Test (CAT) at grades three through five.

Results.[3] Data were organized first to compare performance of boys and girls on the kindergarten predictive measures and the follow-up achievement scores. No sex difference in Bender performance was found, but kindergarten teachers rated girls higher than boys in reading readiness. Means and standard deviations of teachers' ratings were 4.11 and 0.92 for girls, 3.24 and 0.83 for boys (t = 3.34, p = .01). Pearson r for kindergarten teachers' ratings and the four Bender measures were non-significant for girls; values of r were .17, .19, .26, and .18. Three of four relationships were significant for boys; values of r were .39, .53, .61, and .48. Comparisons of achievement scores within grades revealed that girls were significantly better than boys only in grade two reading. Grade placement means and standard deviations were 3.11 and 0.79 for girls; comparable values for boys were 2.51 and 0.67 (t = 2.75, p = .01). Achievement scores at grades three through five favored girls but were nonsignificant.

Strength of relationship between kindergarten predictive measures and later school achievement was evaluated with Pearson r. Teachers' ratings had consistently significant correlations with achievement measures. For girls, teachers' ratings and reading scores at grades two through five were .62, .55, .45, and .61; relationships to arithmetic achievement grades three through five were .36, .51, and .39 (df = 27, r = .37, p = .05; r = .47, p = .01). For boys, teachers' ratings and

reading achievement relationships were .60, .48, .59, and .69 for grades
two through five; values of r for arithmetic achievement, grades three
through five, were .69, .75, .74 (df = 19, $\tilde{z}$ = .43, p = .05; r = .55,
p = .01).

Relationships between the Bender at kindergarten and later
school achievement were generally lower and for the most part non-
significant, especially for girls. For girls, only three of twelve
possible relationships between the Bender measures and later reading
achievement were significant; no relationship with arithmetic was
significant. For boys, the first Bender administration (school entrance)
correlated significantly with fourth and fifth grade arithmetic achieve-
ment (r = .51 and .46); the third Bender administration (early spring)
correlated significantly with all achievement measures; values of r were
.60, .51, .58, and .57 for reading achievement, grades two through five;
values of r were .44, .56, and .59 for arithmetic achievement, grades
three through five.

When teachers' ratings and kindergarten Bender scores were
combined to predict third and fifth grade achievement, values of r were
.67 and .69 between the predictive measures and reading scores for girls;
comparable values of r were .61 and .71 for boys. Multiple r for the
kindergarten measures and third and fifth grade arithmetic scores were
.41 and .56 for girls, .71 and .76 for boys. Use of the multiple
coefficient of correlation increased the strength of relationship
between the predictive and criterion measures, the major contribution
to the relationship coming from teachers' ratings.

To determine the accuracy of kindergarten measures in identifying
high potential and high risk children, each of the four Bender distribu-

tions was dichotomized at the mean, and the consistently good and consistently poor performers isolated. The four boys and seven girls above the mean on all four Bender measures were considered high potential children in terms of visuo-motor ability. The eight boys and seven girls below the mean on all Bender measures were considered high risk children in terms of the visuo-motor dimension. Follow-up achievement data for the high potential and high risk groups are summarized in Table 1.

Table 1 about here

At fifth grade, only one high potential child was below grade level in reading, and none was below in arithmetic; range of reading scores was 4.3 to 8.7. Range of arithmetic scores was 5.2 to 7.2. For the high risk group (N = 15), seven children were below grade placement in reading, and six below in arithmetic. Range of scores was 3.0 to 7.3, and 3.0 to 6.9, for reading and arithmetic, respectively.

Mean score for teachers' ratings was 3.73, standard deviation 0.97. Seven children were rated low in reading readiness (ratings of one or two); thirteen children were rated high in reading readiness (ratings of five). Comparisons of high potential and high risk groups based on teachers' ratings are compared for Bender performance and follow-up achievement in Table 2.

Table 2 about here

At fifth grade, no child with a kindergarten teacher's rating of five was below grade level in reading or arithmetic; range of grade placement scores was 5.3 to 8.7 for reading, 5.4 to 7.8 for arithmetic. Of the seven children with kindergarten teachers' ratings of one or two,

five were below grade level in reading and three were below level in
arithmetic. Range of scores was 3.0 to 6.5 for reading, 4.0 to 5.7 for
arithmetic.

Discussion. The consistently high relationships between kinder-
garten teachers' ratings and later school achievement were most surprising.
High potential and high risk children identified by teachers at kinder-
garten were significantly different in school achievement, grades two
through five. Twenty of the 49 children in this sample, 41 percent, were
rated at the high or low extremes of reading readiness by the kindergarten
teachers. Eighteen, 90 percent, of those so identified achieved in the
predicted directions throughout the elementary school years. Accuracy of
prediction for such a large proportion of children in the sample suggests
that teachers recognized developmental and behavioral characteristics
important in school performance. Findings question the popular generali-
zation that teachers are more sensitive to personal-social than educationally
relevant aspects of behavior of young children. Alternatively, however,
results might be interpreted to lend support to the suggestion that pupil
performance is responsive to teacher expectancy (Rosenthal & Jacobson,
1966). Teacher ratings might be explained in terms of accuracy of
recognition of dimensions critical to school performance, or in terms of
a "self-fulfilling prophecy." It should be remembered that the original
ratings or predictions were made by kindergarten teachers. As children
progressed through the school program, they were placed in different
classrooms with different teachers. Teacher expectancy might be assumed
to vary in terms of individual differences among teachers in sensitivity
to and tolerance for children's behavior. Yet, the achievement of
children in the extreme groups was consistent over the grades studied.

The possibility of effects of a self-fulfilling prophecy is not negated,
but is certainly questionable, in explaining the performance of children
identified in kindergarten as high potential or high risk.

Results of the Bender analyses were consistent with earlier work
of Keogh and Smith (1967) and Koppitz (1964), who suggest that the Bender
is especially useful in early identification of high potential children.
This sample represents an above average socio-economic population, and
achievement for the group as a whole was above standard achievement test
norms. Children defined as good performers on the Bender at kindergarten
were significautly above the sample means as well as above the publishers'
norms in achievement at fifth grade. Poor performers on the Bender were
less discrepant from expected grade level achievement, but variability
within this group was greater. Early identification on the Bender was
more accurate for the high potential than the high risk child.

Results of this study lend credance to the generalization that
more predictive information is gained from the fact that a child does
perform well on a school related task than from the fact that he does not
perform well. Children who were rated high by kindergarten teachers or
who were successful on the Bender tended to be successful achievers
throughout the elementary school years. In this sense the measures were
useful in early identification of high potential children. However,
because a child was not successful on the readiness measures did not mean
that he could not be a successful school achiever. Preoccupation with
findings of deficiency, common in psychoeducational diagnosis, may be
less valid for school prediction than is specification of competencies.
Differences in maturity rates, experience, school atmospheres, pedagogy,
and motivational variables may have more critical effects on the school

success of high risk than high potential children.

Results of this study suggest that performance on the Bender and teachers' ratings at kindergarten may be useful clues in initial screening of children who are possible school learning problems. More extensive individual follow-up is obviously indicated in such cases. The findings of this study also suggest the need for more careful examination of the dimensions which teachers use to evaluate readiness. Specification of characteristics which teachers view as important may provide clues to understanding the complexities of school readiness.

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Table 1

School Achievement for Good and Poor

Groups by Bender Scores

	Good Bender N=11		Poor Bender N=15			
	M	SD	M	SD	t	p
Kindergarten						
Teacher Ratings	4.36	.77	3.13	1.20	2.86	.01
Grade 2						
SAT Reading	3.32	.70	2.61	.87	2.14	.05
Grade 3						
CAT Reading	3.32	.70	2.61	.87	2.14	.05
CAT Arithmetic	3.69	.68	3.33	.79	1.17	NS
Grade 4						
CAT Reading	4.90	.91	4.29	1.00	1.53	NS
CAT Arithmetic	5.20	.87	4.63	.86	1.60	NS
Grade 5						
CAT Reading	6.46	1.17	5.26	1.48	2.14	.05
CAT Arithmetic	6.05	.62	5.39	.78	2.23	.05

Table 2

School Achievement for Good and Poor

Groups by Teacher Ratings

	Good Ratings N=13		Poor Ratings N=7			
	M	SD	M	SD	t	p
Grade 2						
SAT Reading	3.69	.59	2.07	.41	6.14	.01
Grade 3						
CAT Reading	4.00	.40	2.80	.33	6.44	.01
CAT Arithmetic	4.02	.44	3.04	.63	2.86	.01
Grade 4						
CAT Reading	5.43	.85	3.97	.62	3.80	.01
CAT Arithmetic	5.51	.19	4.16	.50	4.34	.01
Grade 5						
CAT Reading	6.82	.86	4.46	1.14	4.94	.01
CAT Arithmetic	6.22	.47	5.04	.52	4.89	.01

Footnotes

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