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ABSTRACT

This study assessed the relationship between cognitive style and reading readiness, and examined effects of age and gender on measures of cognitive style and reading readiness. Subjects were 33 males and 27 females between 4 and 7 years of age. All subjects scored within the average range of intellectual functioning and were not color blind. Subjects took the following tests: (1) the Metropolitan Reading Test (MRT), Level 1; (2) Cards B and C of the Stroop Color-Word Test, a measure requiring selective attention; (3) the Fruit Distraction Test, a second measure of selective attention; and (4) the Children's Embedded Figures Test, a measure of field dependence-independence. In addition, mothers provided demographic information and completed Strom's Parent as Teacher Inventory. Results indicated that, among variables studied, the degree of field dependence-independence was the best predictor of children's reading readiness. Results also indicated that [illegible] and 7-year-old children scored significantly higher on the MRT than did 4- and 5-year-old children. No evidence for gender differences was found on any measure. On the Parent as Teacher Survey, only the mother's perception of her own creativity significantly correlated with the child's MRT scores. (Contains 11 references.) (MM)

Relations Among Cognitive Styles and Reading Readiness in Preschoolers[1]

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Problem

Most generally, this study contributes to the body of knowledge concerning relations between aspects of the reading process and the concept of cognitive style as it relates to reading (e.g., see Davis, 1991, and Kogan, 1980, for reviews of this work). The rationale for such studies has been that the identification of correlations between various aspects of reading and of cognitive styles will help pinpoint, more specifically, the cognitive mechanisms involved in reading. However, related to the relative newness of this field, the existing research has been modest in scope. That is, most of the published works have focused mainly on **the relationship between reading achievement** (as assessed by scores on standardized reading tests) of older children and/or adults **and one particular dimension of cognitive style**. For instance, several studies have identified a significant relationship between the cognitive style of field independence and high scores on tests of reading achievement (see Davis, 1991).

In contrast, the present investigation is the first to assess systematically the relationship between cognitive style and **reading readiness** (see Sippola, 1985). It would appear that the stage of reading readiness would be an important point of entry for research into the cognitive styles associated with reading in general. Further, while most studies in the area have typically employed only one dimension of cognitive style (e.g., field dependence-independence or selective attention or reflectivity-impulsivity), this research is novel in that it seeks to investigate the relations among different dimensions of cognitive style (field dependence-independence; attentional styles) and several measures of reading readiness in preschoolers toward determining whether certain measures of cognitive style are better predictors of reading readiness than are others.

Secondarily, the investigation also examines the effects of age and gender on measures of cognitive style and of reading readiness. The study of age differences in reading readiness is particularly timely in light of the longstanding (and recently renewed) societal controversy concerning the appropriate age for the beginning of a child's formal education (cf. Doman, 1980; Elkind, 1978; Moore & Moore, 1975). That the study of gender differences in cognitive style (particularly, field dependence-independence) is worthy of further empirical investigation gains support from researchers (e.g., Demick, 1991), who have advocated that prior findings in the area (e.g., relative to preschool boys, preschool girls have been shown to be significantly more field independent; yet relative to adolescent males, adolescent females are

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significantly more field dependent) need to address the issue of cohort effects and/or be updated in light of recent societal events (e.g., the women's movement).

These and other relationships were assessed in the following investigation.

Method

Sixty children, enrolled in a summer preschool program, participated in this study. There were 33 males (M age = 5.7 years) and 27 females (M age = 5.6 years). Of these children, 14 were four year-olds (M age = 4.3 years), 16 were five year-olds (M age = 5.1 years), 18 were six year-olds (M age = 6.1 years), and 12 were seven year-olds (M age = 7.3 years). All subjects scored within the average range of intellectual functioning (as determined by the Vocabulary subtest of the Wechsler Intelligence Scale for Children-Revised Edition) and were not color blind (as determined by the practice line on Card B of the Stroop Color-Word Test).

Materials

All subjects were administered the following battery of tests: (a) Level 1 of the Metropolitan Reading Test; (b) Cards B and C of the Stroop Color-Word Test (Stroop, 1935), a measure of selective attention (Card A, requiring reading ability, was not administered); (c) the Fruit Distraction Test, a second measure of selective attention (presumed analogous, by Santostefano, 1978, to the Stroop without requiring reading); and (d) the Children's Embedded Figures Test, a measure of field dependence-independence (Goodenough & Eagle, 1963).

Procedure

To maximize concentration, each child was administered one test per day; the order (as above) was held constant across subjects. In addition, mothers were asked to provide demographic information as well as to complete Strom's (1984) Parent as Teacher Inventory at their convenience.

Results

The main findings were as follows:

(a) A multiple regression analysis of the scores on the Stroop (ratio of total time on Card B to total time on Card C), the Fruit Distraction Test (ratio of total time on Card B to total time on Card C), and the Children's Embedded Figures Test (total number correct) with the total scores on the Metropolitan Readiness Test as the dependent variable was conducted. The degree of field dependence-independence was found to be the best predictor of reading readiness, $t = 3.57$, $p < .001$.

(b) An intercorrelation matrix revealed, first, that the Metropolitan scores were significantly correlated with the Embedded Figures scores, $r\ (58) = .59$, $p < .001$ (i.e., children who scored higher on Embedded Figures, those who were more field independent, scored higher on the Metropolitan). In addition, the Stroop ratio scores

were significantly correlated with the Metropolitan scores, r (58) = .38, $p < .01$. However, the Fruit Distraction Test ratio scores were found to be unrelated to the Metropolitan scores, r (58) = - 10, $p < .25$.

(c) The intercorrelation matrix also revealed that the Embedded Figures scores were highly correlated with the Stroop ratio scores, r (58) = .38, $p < .01$. The Fruit Distraction ratio scores correlated neither with the Stroop nor with the Embedded Figures scores.

(d) A three-way ANOVA (age x gender x field dependence-independence) indicated that, most generally, field independent children (M = 34.3) scored significantly higher than their field dependent peers (M = 30.3) on the Metropolitan, F (1, 44) = 6.30, $p <$ .05. However, there was also a significant interaction of age by cognitive style. That is, relative to the four and five year-olds (M = 26.7), the six and seven year-olds (M = 37.1) scored significantly higher on the Metropolitan, F (1, 44) = 37.53, $p <.01$.

(e) There was no evidence for gender differences on any of the measures.

(f) On the Parent as Teacher Survey, only the mother's perception of her own creativity was significantly correlated with the child's Metropolitan scores, r (58) = .26, $p < .05$. That is, more creativity in the mother appeared related to higher reading readiness scores in the child.

Discussion

This study has both theoretical and practical implications. On a theoretical level, the findings here, first, extend previous findings. That is, they support the notion that dimensions of cognitive style (particularly, field dependence-independence) are related not only to reading achievement in children (as prior studies have documented), but also to earlier aspects of the reading process, namely, reading readiness in preschoolers. Second, the findings may potentially clarify larger issues concerning organismic factors (e.g., age, gender, cognitive style) often associated with reading readiness (e.g., in this study, age and field dependence-independence, but not gender, are shown to be related to reading readiness). Third, the findings also have implications for the study of cognitive style per se. For example, the lack of a significant positive correlation between the interference ratio on the Stroop and the Fruit Distraction Tests may indicate that these two measures tap different processes and that, as Santostefano (1978) may have erroneously assumed, they are not interchangeable measures. Further, the surprising lack of significant gender differences in field dependence-independence during the preschool years here is in contrast to the majority of previous research which has shown pronounced gender differences in this age group (cf. Demick, 1991). Additional research is, thereby, sorely needed to assess the possibility that the current socio-historical context has altered this longstanding relationship.

On a practical level, the present research has suggestions for educational policy and procedure. For example, the finding concerning differences in reading readiness between four and five versus six and seven year-olds supports our current societal view

about the appropriate age at which to begin the formal education of children. Further, the findings concerning the relations between reading readiness and various measures of cognitive style suggest that reading readiness might be fostered through training programs which attempt to nurture a field independent cognitive style. Similarly, it remains an open empirical issue, perhaps one worth pursuing, as to whether a field dependent cognitive style is associated with readiness skills in other areas. Finally, the findings suggest the potential usefulness of the Stroop Color-Word Test as an easily administered, relatively expedient measure of reading readiness.

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