Discussed are several studies that have examined the effect of sex differences on learning to read. Various findings have suggested 1) sex differences in anxiety manifest themselves early in children's academic careers; 2) girls tended to perform better on readiness measures; 3) boys scored significantly higher on a criterion test administered after programed instruction while girls scored higher after direct teacher instruction; 4) no significant differences were found between sexes as a result of sex grouping; 5) American girls excelled over American boys in reading achievement while the reverse was true among German students; and 6) girls develop language competence before boys. Educational implications are then discussed, concluding that teachers should identify those factors that possibly interfere with the boys' "right to read," and to plan and implement programs that produce quality readers, giving more attention to each and every individual. (HOD)
Although the amount of research data on the topic of sex differences and learning is voluminous, conclusive statements of significant differences are somewhat less available. Factors of methodology and experimentation often confuse and cloud the results of potentially significant and useful studies. Less technical, but more heated, and probably the basis for much of the controversy, is the amount of variation that exists among psychologists, sociologists, and educators as to the origin, development, and significance of sex differences. Numerous studies support the biological as well
as the cultural basis of sex differences. While it may be true that most American psychologists have supported the cultural determinants of such differences, newer research and the reexamination of older studies have lead to rather convincing arguments for ultimate biological origins. Such dichotomous arguments may prove fruitless, however, since it hardly seems possible to separate the nature-nurture variables contributing to sex differences. The most reasonable hypothesis, at this point, appears to be one that credits the interactional workings of innumerable biological and cultural forces.

One's point of view as to the origin of sex differences effects how one describes and justifies the various differences found among boys and girls throughout their early years. As one psychologist has claimed, those who side with cultural determinants stress the expectations placed upon boys and girls by our society. (12) In other words, society consists of male and female members with each group having established identities and roles to be followed. The child, according to this theory, learns his role in society through sex-stereotypic upbringing. On the other hand, those supporting a biological foundation tend to see differences as products of constitutional origin. Therefore, society's expectations are merely reflective of its experiences with two kinds of children.
Although these arguments are almost unending, the important fact still remains: boys and girls differ in many ways. Aside from the obvious physiological differences, certain behavioral differences are evident as early as one year of age. Boys are already more active and explorative, while girls are passive and more dependent upon their mothers. (4) In addition, parents have already demonstrated differential behavior toward the two sexes.

One particular aspect influenced by factors in the environment, and favoring girls, is language development. Numerous studies have found girls to develop speech ahead of boys, to articulate more clearly, to use sentences ahead of boys, to use less slang, and to have a larger vocabulary. (6, 7, 11, 18) In general, girls develop language competence at a faster rate than boys especially when I.Q. and socio-economic status are held constant. It is also important to note that boys are the victims of speech defects at a significantly greater proportion than girls. (6, 7, 10, 20) Two widely accepted hypotheses are offered in explanation of these differences. One is that mothers do not reinforce boys for their speech habits (or imitations) as much as they do with girls. (6, 7) Because of greater contact with their mothers, girls imitate their speech habits much more readily than boys. The second hypothesis is that boys, because of their active, explorative nature, and their preoccupation with
properties of objects, have less need for verbalization especially in communicative and interpersonal situations. (11)

Again, these arguments must be re-examined since many more mothers work today and are away from boys and girls alike. Also, newer games, television programs, children's books, and a variety of other activities are now giving increased attention to boys and induce greater verbal response. Finally, newer studies dealing with the various complexities of language, rather than speech alone, have not found significant differences between the sexes. (1, 2, 9, 14)

SEX DIFFERENCES AND READING

One fact that can hardly be debated is that girls as a group show significantly higher achievement in learning to read than boys. Loughlin (5) and his associates, in an attempt to discover the relationships between anxiety and achievement among elementary school children, studied the differences between the sexes by intelligence, subject-matter, grade, and achievement level. The entire population of grades four through eight in an urban-suburban school district was given a series of tests including the California Reading Test. In general, the results confirm the hypothesis that girls generally attain higher mean anxiety scores than do boys. Such findings suggest that sex differences in anxiety manifest themselves early
in children's academic careers, reach a peak in the fifth or sixth grade, and diminish considerably by the time the eighth grade is attained."

In a study of over thirteen thousand students in grades 2 through 8, Gates (3) found the mean raw score for girls higher than that for boys on twenty-one comparisons of the Gates Reading Survey tests. In addition, a "relatively large proportion of boys obtained the lowest scores without a corresponding increase in the number obtaining top scores." The results of the study reveal that boys obtain lower mean scores in reading ability throughout elementary school. Evidence from the U.S.O.E. First Grade Studies also indicate sex differences in reading. It was generally found that mean scores were in favor of girls on readiness measures, first grade achievement tests, and on tests given to the groups that continued the experiments through the second grade. In addition, another large-scale study, the recent National Assessment of Educational Progress reported that girls did better than boys on all reading skills at three school ages. (13)

Several interesting studies have attempted to find appropriate methods of instruction or grouping that would minimize sexual differences in learning to read. McNeil (8) conducted a study that compares boys and girls learning to read through two approaches:
programed instruction vs. direct instruction by female teachers. An auto-instructional program in reading was presented to the children when they were in kindergarten. The children were tested on word recognition afterwards. The same group then enrolled as first graders and received instruction from female teachers. Again, the students were tested after four months of instruction in addition to being interviewed individually.

The results of programed instruction as revealed on the criterion test indicated that the boys obtained significantly higher scores than the girls. The criterion test administered after direct teacher instruction, however, showed that these same boys were inferior to the girls. In addition, analysis of the taped interviews revealed that boys received more negative admonitions than girls and boys were given less opportunity to read. Evidence from McNeil's findings support the hypothesis that boys are treated differently than girls and that such treatment by teachers effects achievement in beginning reading.

Several researchers have attempted to measure differences in reading achievement between boys and girls after instruction was provided to sex-segregated groups. Wyatt (19) focused attention on first graders by recognizing and utilizing sex differences as criteria for grouping. After a 140-day instructional period, all children
were given a series of reading tests. Although no significant differences were found among boys in different teaching approaches, it was generally found that girls as a group had significantly higher scores when compared with those of all boys. Wyatt concluded that the lag found among boys appears dependent upon factors other than grouping and teaching approach.

Tagatz (17) and Stanchfield (16) both studied sex-segregated grouping. While Tagatz found that personal adjustment was significantly increased as a result of sex grouping, test results revealed no significant differences in reading achievement. Stanchfield also found that boys did not learn to read better as a result of such grouping. It appears evident that boys and girls can profit by remaining together for instruction.

Many other studies could be cited that repeatedly give evidence of sex differences in reading. One additional finding, a classic in this area, should be mentioned. Preston (15) conducted a study in which he compared the reading achievement of German students with that of American students. Fourth and sixth grade students were used in both countries. Each group of students took two reading tests (the Franksfurter Test and the Gates Reading Survey were translated so that each pupil took both tests in his native language). When the mean scores were compared, it was found
that American girls excelled in reading over American boys. The reverse was true with the German sample. Preston also reports that whereas the incidence of reading retardation is greater among boys in America, the reverse is found among German students. Preston suggests that one explanation for the pattern found among the German sample is the predominance of male teachers in Germany. He further concludes that the evidence provides reason to believe that sex differences in reading stem from possible cultural or environmental conditions.

EDUCATIONAL IMPLICATIONS

Not only do studies dealing with sex differences in learning to read provide information concerning the incidence of such phenomena, they also frequently site possible causal factors in addition to recommending practices to help alleviate or reduce the differences. The following suggestions and implications are offered to administrators as well as classroom teachers. Although these comments and recommendations are presented from the personal point of view of this writer (influenced by his sex), they can be justified by studies in psychology, teaching methodology; or simple common sense.

1. **Language.** Most educators are at least minimally familiar with the vast amount of research giving evidence of the slower
language development of boys. The fact that many differences in language development are culturally determined is also understood by a large number of teachers. Would it not be logical, therefore, to assume that basic language instruction (including reading) would not be exactly the same for boys as for girls at a given time in most situations? If we accept this assumption as being true, one immediately questions the apparent gap and loss between factual knowledge and classroom practice. Knowledge of such differences is valuable only to the extent that adjustments are made in aspects of the school program effecting the growth and development of language skills. The reading readiness period is a particularly important phase of reading that demands attention to the language facility of each child. It is essential that the linguistically immature child does not become frustrated with reading at any time because of inadequate attention to his language needs.

2. Behavior and interests. One hardly needs years of teaching experience to note the general behavior pattern of boys. Most boys tend to engage in activities that are physically active and require minimal amounts of verbal interaction. Furthermore, such play usually takes place in areas away from adult language models. In addition to certain natural tendencies toward "boy type" activity, our society exerts a considerable amount of pressure upon boys to
develop the stereotyped male image. Suffice it to be said that reading ability does not appear on any list of criteria measuring one's masculinity.

Within the realm of reading instruction, boys again have interests apart from the female-oriented content of some reading texts. Most boys tend to delight in the active, fast-moving adventures of "real" (that is "real" in the sense of quality of characterization) animals and people as opposed to the sterility found in many children's books. In addition to appropriate library books, many other materials such as comic books and sports magazines may spark an interest in reading and, interest, in turn, sparks learning. An efficient teacher is one who provides a wide variety of books and materials to meet the interests and needs of students. More efficient will she be if materials are selected to complement the outside activities liked by students, and such activities are creatively utilized as assets rather than liabilities.

3. Feminine schools. The typical elementary school supports and often demands many traits and qualities that are characteristic of female domination: "nice," quiet, non-aggressive behavior; conformity to rules, regulations, curriculum, teacher-styles; neatness, cleanliness, manners, posture; emphasis upon verbal interaction and passive activities. It is important for teachers to
be able to recognize when these forces of female domination are adversely effecting the learning atmosphere for boys. A teacher who provides opportunities for development and personal expression will find her pupils more easily motivated to participate in a wide variety of activities. An over-insistence upon conformity toward behavior patterns that are characteristically feminine could only result in frustration and alienation that may affect the boys' lifetime learning (reading) habits.

Needless-to-say, the emergence of more male teachers would help counterbalance some of the difficulties of the feminine school. It is important, however, that the male teacher does not become totally engulfed and transformed by the existing system. Mere physical sex is not as significant as the identity and role exhibited by the male teacher. It is crucial that we look at all persons as having traits that will fall on a continuum of feminine and masculine characteristics. One's placement on such a continuum would probably prove more significant than mere labeling as male-female according to sex. Furthermore, a balance between male and female personnel would be more appropriate and democratic than domination by either sex.

4. Incentive. Perhaps one of the most important aspects of the teaching and learning process is the motivational stimulation
provided for each activity. In addition to this external stimulation, some activities contain a certain amount of incentive within themselves. Unfortunately, the act of reading is usually found to contain more incentive for girls than for boys. Elementary school boys usually have fewer motives and less need for reading than do girls. Consequently, it becomes of paramount importance that purposes and goals are provided for each lesson and reading activity. If also based upon appropriate measures of ability and interest, the instructional tasks become easier and more pleasant. Such programs are enjoyable and child-centered, and promote maximum development of the essential qualities of life-long readers.

Conclusion.

Many variables must be considered in the study and analysis of sex differences in learning to read. Mere knowledge of the fact that boys are generally slower than girls in learning to read is not enough. Teachers are urged to identify those factors that possibly interfere with the "boys' right to read," and to plan and implement programs that produce quality readers. Keynote to the entire problem is the need for more attention given to each and every individual. It thus becomes a challenge to every teacher to help the individual child develop habits conducive to lifetime reading enjoyment.
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