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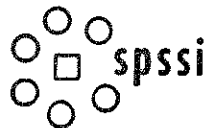
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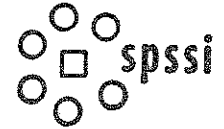
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Sex Roles: Persistence and Change

Issue Editors: Diane N. Ruble, Irene H. Frieze, and Jacquelynne E. Parsons

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## Cognitive-Developmental Factors in Emerging Sex Differences in Achievement-Related Expectancies

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This paper examines sex differences in achievement expectancies from a cognitive-developmental point of view. It has been reported consistently that females have lower initial expectancies for success than males. The antecedents of this difference are considered: (a) by examining when expectancy differences develop, and (b) by examining cognitive factors which may underlie these differential expectancies. The discussion of the first question is primarily empirical in nature; previous developmental studies of expectancy are reviewed and original data presented. Discussion of the second question is more theoretical and speculative. Based on the Weiner attributional model of achievement, the role of subjective perceptions in mediating expectancy differences is considered.

Sex differences in various areas of achievement have been documented among subjects ranging in age from early elementary school through adulthood (Maccoby & Jacklin, 1974). In some areas girls excel, e.g., in report card grades and language develop-

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ment; while in others, boys excel, e.g., in spatial abilities; but perhaps the most notable concern is the difference in the ultimate level of achievement by men and women, at least by traditional standards, after formal schooling is completed (Maccoby & Jacklin, 1974; Stein & Bailey, 1973). Certainly there are a number of external barriers to women's achievement (O'Leary, 1974). However, a persistent finding in the literature suggests that there may also be important internal or psychological barriers as well. Sex differences in expectations may be one such barrier. Females typically have lower expectations for success and are more likely to assume personal responsibility for failure than are males (Frieze, McHugh, Fisher, & Valle, Note 1). A number of investigations indicate that these kinds of self-perceptions influence achievement behaviors in many ways. For example, several studies report a relationship between expectancies for success and both persistence at a task and quality of performance (Crandall, 1969; Diggory, 1966; Feather, 1966). In addition, attributional patterns have been related to level of pride and shame experienced following success or failure on a task (Ruble, Parsons, & Ross, in press; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971). Thus it is possible that sex differences on these cognitive or self-perceptual variables might be responsible in part for the lower achievements of females as compared to males. In this paper, we will examine the origins of such differences, especially sex differences in performance expectancies, and will argue that a cognitive-developmental perspective provides a useful approach to exploration in this area.

#### *DEVELOPMENT OF DIFFERENCES IN EXPECTANCIES*

The existence of sex differences in expectancies for success from middle childhood and up is well established (see Maccoby & Jacklin, 1974). While there are some inconsistencies in the research, the vast majority of studies using a diverse assortment of tasks document the lower expectancies of females (Dweck & Gilliard, 1975; Maccoby & Jacklin, 1974; Montanelli & Hill, 1969; Nichols, 1975; Parsons, Note 2). However, it is not easy to determine from these studies at how early an age sex differences in expectancies typically develop. For example, Crandall (1969) cited a main effect for sex in a study including subjects aged 7 to 12 years; but because separate analyses for age were not done, it is not possible to determine whether the differences occur as early as 7 years. A more recent study suggests that such sex differences may be present soon after children enter school. In

a study of first graders, Pollis and Doyle (1972) found that despite the fact that the girls performed as well as the boys on a ball-throwing task, their performance was estimated, both by themselves and their peers, to be significantly lower than that of the boys. Thus, it appears that while differential expectancies are evident by the age of 6 or 7, previous research has not directly addressed the question of when these differences emerge.

If cognitive-developmental processes are involved in the emergence of differential expectancies, the age at which these differences emerge becomes an important theoretical as well as practical question. Some predictions concerning this question can be derived from the Weiner et al. (1971) attributional model of achievement. According to this model, achievement-related expectancies are mediated by the causal attributions made for past successes and failures. If one attributes success at a task to a stable cause, such as ability or task ease, one should anticipate continued success at the task; on the other hand, if one believes that success is due to an unstable cause, such as a high degree of effort or good luck, continued success may not be anticipated.

One source of information often used to make stable attributions is the history of the task outcome (Frieze & Weiner, 1971). Numerous studies have demonstrated that repeated failure at a task leads to a decrement in expectancies for that task, while repeated success leads to an increment in expectancies (Diggory, 1966; Montanelli & Hill, 1969; Parsons & Ruble, Note 3). However, according to Inhelder and Piaget (1958), younger children may not integrate temporally separated events in forming judgments, focusing instead on single events. This cognitive centering would make it difficult for them to use past experiences in predicting future outcomes. In support of this contention, Lester (1967) found that first-grade children continued to expect success despite a history of past failures. If it is true that children do not use serial information to form stable expectancies until they enter the concrete operational period, we would not expect to find consistent expectancy patterns among preschool children at all, much less to find consistent sex differences in these patterns.

Two other lines of reasoning suggest that relatively stable expectancies may not be present in preschool children. The first concerns the experiences children have had in performing achievement tasks and with success and failure. It may be that until children have been in school for awhile they are relatively unaware of what their capacities are and what realistic expectations might be. Developmental research in memory or metamemory

processes supports this hypothesis (Kreutzer, Leonard, & Flavell, 1975). Second, one explanation of sex differences in expectancies is that they reflect perceptions of appropriate sex roles. Since the preschool period is a time of developing sex-role awareness, it is possible that the awareness of the younger children is not sufficiently well developed to generalize to self-evaluations.

Studies by the present authors support the prediction that sex differences in expectancies do not develop until sometime after the preschool years. Parsons and Ruble (Note 3) examined expectancy-for-success ratings in children aged 3½ to 11 years. No sex differences were observed in the initial expectancies of the 3½ to 5 year olds; but in the older age groups the girls began with significantly lower expectancies than the boys. Similar findings are reported by Hodges (Note 4). She asked children at two grade levels (kindergarten and first; third and fourth) to rate on a nine-point scale how well they expected to do on a series of four tasks. A score for generalized self-expectancy for success was computed by summing expectancies for the four tasks. The results showed that the mean self-expectancy scores for the younger girls and boys were very close (girls = 26.44; boys = 24.50); while the older boys tended to have higher expectancies than the older girls (girls = 23.69; boys = 27.63),  $t(30) = 2.04$ ,  $p = .051$ .

In sum, research evidence to date suggests that reasonably consistent sex differences in expectancy for success develop sometime soon after children enter school. It is of course possible that such sex differences are present in younger children but have been obscured by the degree of verbal skills required in most measures employed. Nevertheless, the findings are consistent with several lines of reasoning which predict developmental trends of sex differences in achievement-related expectancies.

#### ANTECEDENTS OF DIFFERENTIAL EXPECTANCIES

Attempts to explain why females are less confident about their likelihood of success than are males have not revealed definitive answers. Crandall (1969) examined the following possible explanations: (a) differential success or reinforcement histories, (b) differential sensitivity to positive and negative feedback, and (c) cultural differences in the sex-appropriateness of making confident verbal statements. She found minimal support only for (b). Eighth-grade girls and boys were differentially responsive to long-term contradictory feedback. The girls seemed more

sensitive to the negative information and the boys to the positive. There was virtually no support for explanations (a) or (c). Crandall suggests that her data constitute only a preliminary examination of these explanations and that it is not yet legitimate to rule out the possibility that any one or combination of the above antecedents underlie observed sex differences. It is also possible that in her adult and older child samples the original antecedents are no longer discernable. It would seem to be more productive to examine the antecedents as close as possible to the time the differences are developing.

Assuming that sex differences in expectancies do not emerge until the early school years, what are the possible antecedent factors occurring at this time? Weiner's attributional model of achievement suggests that expectancies are influenced both by objective past history of outcomes and by one's subjective interpretation of those outcomes. However, objective past history of success and failure does not seem to vary as a function of sex, at least when intelligence scores (Crandall, 1969) and report card grades are used as an index of likelihood of success and failure (Maccoby & Jacklin, 1974). Thus it appears that major sources of differential expectancies must be fairly subjective or relatively covert in nature. Three such subjective or cognitive-perceptual factors will be considered: (a) perception of the expectancies of significant others, (b) perceptions of one's own ability, and (c) emerging causal attributions for success and failure. In addition, socialization factors which serve to reinforce the child's structuring of his social world will be discussed.

#### *Cognitive-Perceptual Factors*

Cognitive-developmental theorists suggest that much of children's self-concept, especially their sex-role identity, is derived from their interpretation of the attitudes and behaviors of those around them. According to this analysis children's sex-role acquisition is to a large extent directed by their conception of what are the appropriate behaviors and traits for their sex. For example, Kohlberg (1966) argues that, in an attempt to direct their own behaviors in appropriate directions, children extrapolate stereotypes of sex-role behaviors from their environment. Having created these stereotypes, children then seek to model their behaviors and shape their self-concepts accordingly.

Subsequent research has provided some support for these hypotheses. First, by age 5, children have developed clearly defined sex-role stereotypes regarding appropriate behaviors, traits, and

even expectancies (Williams, Bennett, & Best, 1975). Secondly, children do appear to monitor their behavior in terms of sex-role labels. For example, in one study (Montemayor, 1974), the performance level of first- and second-grade children was directly influenced by the sex-role labeling of the task.

Unfortunately stereotypes, especially sex-role stereotypes, are rarely value free. In addition to their beliefs regarding the sex-role appropriateness of a variety of more neutral traits, children also think that males are strong and competent while females are weak and incompetent (Kohlberg, 1966). Consequently, in that competence is directly related to success, acceptance of these stereotypes seems to necessitate a lower expectancy for females on a whole array of tasks.

*Perception of the expectancies of significant others.* Actual or perceived expectancies of significant others would seem to be especially important mediators of children's developing expectancies for themselves. Unfortunately there are very few data on the extent to which sex-role stereotypes actually affect differentially boys' and girls' perceptions of the expectations that significant others hold for them. In the Hodges study (Note 4), the children were asked to estimate how well they thought their parents, teacher, and best friend would expect them to do on a series of tasks. There were no significant mean differences between the boys' and girls' perceptions of others' expectations. However, when expectancy estimates were correlated with self-expectancies, an interesting pattern emerged from the data of the older (third and fourth grade) children. For the boys, all three correlations were highly significant (correlation of self-expectancy with parents = .88, teacher = .90, best friend = .69, all  $p < .01$ ). In contrast, the only significant correlation of the girls' self-expectancy ratings was with perceived teacher expectancy ( $r = .53$ ,  $p < .05$ ), a relationship also significant for the younger girls. These findings suggest that for some reason boys' self-perceptions are more consistent with their perception of the expectations of others than girls' are. What the specific impact of this difference might be with regard to sex differences in expectancies requires further research, but these data do provide an initial indication that girls and boys differ in the way they perceive and/or utilize the expectancy standards of significant others.

*Perceptions of ability.* If, as suggested, incorporation of the feminine sex-role stereotype implies the lowering of one's feelings of competence, we should expect young girls to develop lower estimates of their abilities than young boys. Support for this

prediction is provided by a recent study by the present authors.<sup>1</sup> Children at three grade levels (kindergarten and first; second and third; and fourth and fifth) made self-evaluative ratings on a nine-point scale after doing a concept-identification task. The children rated how good they thought they were at the task (perceived ability) and how well they thought they had done relative to other children their age (subjective outcome). The results revealed significant main effects for sex on perceived ability,  $F(1, 173) = 7.69$ ,  $p < .01$ , and on subjective outcome,  $F(1, 173) = 7.94$ ,  $p < .01$ . These effects indicate that girls perceived their abilities and outcome as low relative to boys in spite of the fact that girls actually performed better. Neuman-Keuls tests indicated that, for perceived ability, this sex difference was significant at the two youngest grade levels but not at the oldest. For subjective outcome, the sex difference was significant at all three grade levels.

Thus, in this study, girls appeared to have lower perceptions of their competence than boys as early as kindergarten, an age worth noting since sex differences in expectancies for success have not been found in children this young. However, there is a major difference between the dependent variable used in this study and expectancy measures. For expectancy, children are usually asked to predict how they will do before they attempt the task; whereas, in this study, the children evaluated themselves and their performance after they had done the task. One might therefore speculate that cultural prescriptions concerning differential achievement of males and females are reflected first in terms of evaluations of ability and evaluations concerning a concrete performance and only later in terms of more abstract future predictions.

*Causal attributions for success and failure.* One possible consequence of females' lower expectancies is that they might feed into a particularly debilitating attributional pattern. Valle (1974) suggests that people make attributions which serve to minimize changes in their expectations: If one expects to fail but succeeds, attributing the success to luck would maintain the initial low expectancy for that task; if one expects to and does fail, an attribution to lack of ability would be congruent with one's initial low expectancy. Thus children with lower expectancies should

1. These data were collected by Small for a senior honors project as part of a larger study; details of procedure are given in Ruble (1975).

attribute their failures internally and stably (i.e., to lack of ability) and their successes unstably (i.e., to effort or luck). This pattern would maintain their lower initial expectancies and would be congruent with their conception of their own ability. Dweck and Repucci (1973), Dweck (1975), and Feather and Simon (1971) all provide support for this general model. People with low initial expectancies do evidence this attributional pattern.

Since girls seem to infer from sex-role stereotypes that they are relatively low in ability, they may be more likely to develop this low expectancy attributional pattern. Furthermore, having done so their expectancies should be less affected by success and more affected by failure than boys' expectancies. While the results of all relevant studies are not totally consistent, the majority of studies using both children and adult subjects provide support for one or both of these predictions (Crandall, 1969; Crandall, Katkowsky, & Crandall, 1965; Jackaway, 1974; McMahan, 1973; Nicholls, 1975; Frieze et al., Note 1).

#### *Socialization Factors*

The mechanisms discussed thus far depend only on the child's cognitive-perceptual system. The development of both stereotypes and differential perceived reinforcement contingencies can grow out of the children's cognitive categorization of their social world. The children's parents may, in fact, be acting in a totally equalitarian fashion and still the children may extrapolate stereotypic beliefs from their culture. And in turn these stereotypic beliefs can influence children's perceptions of expectancies of others, perception of their own ability and performance, attributional patterns, and, ultimately, generalized expectancies for success.

Let us now turn to the more probable situation, that in which the parents and other primary socializers are varying their behavior in accord with the cultural sex-role stereotypes, with the result that the children are taught directly expectancies and patterns of attributions that reinforce differential expectancies based on sex. In what ways might significant socializing agents be contributing to the lower expectancies held by many young girls? At least three mechanisms are possible: (a) parents and teachers may convey the information that they have lower expectancies for females, (b) socializers may provide children with different attributional explanations for their successes and failures, and (c) socializers may respond differently to the achievements of boys and girls.

*Actual expectancies of others.* It has been reasonably well estab-

lished that the expectancies of others can have an effect on one's performance in a variety of situations (Rosenthal & Rosnow, 1969). Though a direct link has not been established, it seems plausible that the expectations of others can affect expectations regarding one's own performance. Several studies (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972; Deaux & Emswiler, 1974; Feldman-Summers & Kiesler, 1974) document quite clearly the fact that women are viewed, in general, as less competent and are expected to do less well than men on specific tasks. The question here is whether the major socializing agents apply these stereotypes in forming expectancies for particular children.

Several studies (Sears, Maccoby, & Levin, 1957; Tasch, 1952) have suggested that parents have higher educational aspirations for their sons. However, these parental biases do not become evident in research findings until the children are in adolescence. Further, the biases appear to be quite specific to parental concern regarding college education. The sex difference in expectancies occurs much earlier than adolescence and the evidence of differential parental expectancies for young children is equivocal at best (see Maccoby & Jacklin, 1974, for review). In fact, parents and teachers often expect girls to do better than boys in elementary school—though they do not relate these expectancies to their prognosis for the child's adult achievements in the same way for girls as for boys. Thus, despite their higher expectancies for her success in the immediate situation, adults may be conveying limited expectations for the girl's future.

A related issue is whether other parental behaviors, perhaps mediated by their differential expectancies, might indirectly induce lower expectancies in their daughters. Hoffman (1972) suggested that parents, especially mothers, may provide girls with too little encouragement for independence, autonomy, and separation, too much over-protection, and not enough conflict and hostility, and that these parental behaviors could result in lower self-confidence and expectancies, excessive dependency, and an over-developed affiliation need in females. The evidence for these suggestions is still weak. For example, Maccoby and Jacklin (1974) reported that parents do not seem to differentiate between boys and girls on such key socialization processes as independence training, achievement training, and response to dependency behavior. In only one area is there some support for the hypothesis that parents hold differential expectancies for sons versus daughters—namely, parental beliefs (and subsequent related behaviors) regarding the relative fragility of females. Parents treat daughters more gently

from birth (Moss, 1967; Tasch, 1952). However, it is unlikely that this difference alone could produce the lower expectancies for success commonly found among females. It is more likely that parents are conveying lower expectancies in a variety of subtle ways undetected in both laboratory experiments and field observations. The differences may be quite small, with no single dependent measure revealing a statistically significant difference, but the accumulative effect could be profound. The fact that differences, when they are present, are commonly in the appropriate direction supports this suggestion.

*Causal attributions provided by others.* Cognitive developmental analysis suggests another important socialization variable which to date has received little attention, namely, the explanations of success and failure provided by parents and teachers. Both parents and teachers have ample opportunity to provide such cognitive explanations for a child's successes and failures as "You must have tried very hard," "You're really smart," or "Maybe this is too hard for you." It is possible that parents and teachers vary these cognitive explanations or attributions in response to the sex of the child being addressed. Specifically, perhaps during the early school years, parents and teachers encourage boys to attribute their failure unstably, i.e., to task difficulty or bad mood, and consequently discourage the incorporation of failure experiences into the boys' self-concepts. In contrast, parents may overlook or agree with the girl's attribution of her failure to lack of ability, and consequently encourage the incorporation of failure information into her self-concept and expectancies for future success. Evidence reported by Deaux and Emswiler (1974), Etaugh and Brown (1975), and Feldman-Summers and Kiesler (1974) suggests that both adults' and children's attributions do vary as a function of the sex of the actor. However, each of these studies had peers judging other peers. If it can be assumed that adults use similar standards in evaluating children, then these studies also provide support for the contention that socializing agents may be modeling different attributional patterns for boys than for girls. More direct support for this hypothesis is provided by Dweck's (1975) finding that "teachers explicitly attributed intellectual failures to lack of motivation (an unstable cause) six times as often for boys as for girls." Comparable studies using parents as subjects have yet to be done.

*Feedback provided by others.* Children's expectancies could also be influenced by the patterns of feedback they get in response to their achievement effort. Hoffman (1972) suggested that parents

may respond more excitedly to and therefore may reinforce achievement related behaviors more for boys than girls. However, as Maccoby and Jacklin (1974) have pointed out, the evidence for this differential treatment is equivocal.

Alternatively, the pattern of discriminate versus indiscriminate feedback might influence children's expectancies. Dweck (1975, Note 5) suggested that evaluative feedback has meaning to children only when it has been discriminatively associated with the intellectual quality of their academic work. If used indiscriminately, feedback loses its meaning and may not be accepted as a true evaluation of one's work. Thus, if teachers use negative evaluative feedback more indiscriminately with boys than with girls, i.e., if they are more likely to criticize intellectually irrelevant aspects of boys' academic work, the negative feedback may lose its meaning for boys and have little effect on their expectancies. In contrast, if teachers use negative evaluative feedback more discriminately with girls, the feedback may have a more direct effect on the expectancies of females. Consequently, even if boys and girls are succeeding and failing at comparable rates (Maccoby & Jacklin, 1974), girls would be expected to have lower expectancies than boys since failure feedback would have a more marked effect on them than on boys. What is important in this argument is not the frequency of negative feedback per se but rather the ratio of its discriminate to indiscriminate use. In fact, this is exactly what Dweck found. Teachers used more indiscriminate criticism with boys, addressing two-thirds of the total negative evaluation for the boys to intellectually irrelevant aspects of their academic performance. In comparison, over two-thirds of the negative evaluations of girls were directed at the academic quality of the girls' schoolwork.

Once again, there are no comparable findings based on parental subject populations, but it does appear that teachers, at least, are using negative evaluative feedback differently depending on the sex of the child. Furthermore, there is good reason to suspect that this differential treatment is directly related to the differential expectancies of boys and girls.

#### CONCLUSIONS

We have suggested that girls, relative to boys, develop lower expectancies for success and that these lower expectancies in turn adversely affect the achievement-related behaviors of the girls. Mechanisms responsible for this important sex difference include

a set of factors related to the child's own construction of his/her world and a set of differential behaviors on the part of major socializing agents. Let us now consider the implications of this situation for changes in women's achievement behaviors.

Divesting the female stereotype of its implied incompetence would reduce the likelihood of young girls' concluding that they must be incompetent solely by virtue of being female. However, the tendency to stereotype and to incorporate these stereotypes into one's self-image is very strong; therefore, it appears that initial changes in this area must occur at the family level. Parents must make a concerted effort to prevent the emergence of the low expectancy pattern in their daughters and to keep themselves from reinforcing the cultural stereotype with their own behaviors. Parents and teachers must avoid the subtle cues which convey lower expectancies for girls, such as excessive concern with their safety, reluctance to encourage high career aspirations, willingness to accept low ability attributions, and failure to encourage continued effort in the face of defeat. In addition, as pointed out by Dweck (1975, Note 5), both negative and positive evaluative feedback should be discriminatively associated with the intellectual quality of children's work and appropriate strategies for improving performance should be suggested to both boys and girls. Finally, socializing agents should provide models of female competence and should reinforce directly the achievement behaviors and high expectancy attributions of young girls.

Each of these suggestions has been made by other authors in the past. If successfully implemented, these measures could prevent the emergence of the low expectancy pattern in females. Unfortunately, many girls have already developed this pattern and many more will do so in the near future. Consequently, therapeutic efforts aimed at changing this self-defeating attributional pattern are also necessary.

Dweck and Reppucci (1973) demonstrated that certain attributional patterns may be disruptive. They found that some children were especially likely to give up following failure experiences, even when these failures were interspersed with successes. These subjects in general took less responsibility for their outcomes and, when they did take responsibility, tended to attribute their outcomes (especially failure) to ability factors rather than to effort factors. The consequences of this attributional pattern were especially marked following failure. Recall that the tendency to attribute successes externally and to attribute failure internally, i.e., to the lack of ability, are characteristic of the low expectancy

attributional pattern. It would seem then that the low expectancy pattern evidenced by many females may have something in common with what Dweck and Reppucci have called "learned helplessness." In a more recent article, Dweck (1975) demonstrated that a program designed to teach children to attribute their failures to lack of effort produced a significant change in the children's response to failure experiences. Instead of disrupting their performance, failure served to motivate increased efforts to succeed. Similar results were not found for a control group of children given a comparable dose of success experience; in fact the disruptive effects of failure were accentuated in the control children. The important aspect of the training procedure appeared to be the attributional instructions. By changing the children's perceptions of and cognitive response to their failures, Dweck succeeded in reducing their "learned helplessness" response.

Similar procedures could be used to help counteract the low expectancy attributional pattern evidenced by many young girls. Particularly, parents and teachers could encourage girls to attribute their successes internally and stably, i.e., to ability, rather than encouraging them to "modestly" deny responsibility for or under-rate the magnitude of their successes. Likewise, they could encourage girls to attribute their failures to unstable yet controllable causes like lack of effort rather than to lack of ability or task difficulty. With this set of attributions, successes become rewarding and can serve to bolster the child's self-esteem. In contrast, failures though disappointing can serve to motivate increased efforts rather than to discourage further performance and to lower one's self-expectancies.

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