

The Development of Achievement-related Expectancies

Jacquelynne E. Parsons

Smith College

Diane N. Ruble

Princeton University

PARSONS, JACQUELYNNE E., and RUBLE, DIANE N. *The Development of Achievement-related Expectancies*. CHILD DEVELOPMENT, 1977, 48, 1075-1079. This study investigated the development of achievement-related expectancies. Based on the models of attribution and cognitive developmental theory and on past research, it was predicted that younger children would relate past history of outcomes to expectancies differently than older children, that sex differences in expectancies would not be present in the preschool-age group, and that older children would have the lowest expectancies. As predicted, success/failure experiences had a more systematic effect on school-age children's expectancies than on the expectancies of preschoolers, and older children consistently reported lower expectancies. In addition, the subject's sex in interaction with age influenced both initial expectancy and the use of outcome information.

A number of investigations have explored the relationship between expectancy for success and performance (Crandall 1969; Diggory 1966; Feather 1966). A frequent conclusion of these studies is that the evaluation of one's likelihood for success can affect both persistence at a task and quality of performance. Recently, attention has turned to an examination of developmental determinants of variations in individuals' expectancies for success (e.g., Crandall 1969; Heckhausen 1967; Parsons & Ruble 1972; Parsons, Ruble, Hodges, & Small 1976). Consistent with this trend, the present investigation examined children's achievement-related expectancies as a function of age and previous successes or failures at a task.

Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1971) suggested that achievement-related behaviors are mediated by attributions of causality. According to this model, individuals use two dimensions in making attributions of causality: locus of control and stability. The stability dimension is assumed to influence expectancies. Previous evidence supports the link between the stability of one's attributions and one's achievement-related expectancies in older children and adults (Dig-

gory 1966; Montanelli & Hill 1969; Weiner 1974). However since the stability attribution-expectancy link reflects a cognitive judgment based, in part, on the integration of one's history of previous outcomes, basic cognitive-developmental processes should influence the nature of this link in children of different ages. For example, younger children may not integrate temporally separated events in the same manner as older children or adults and therefore may respond quite differently than older children and adults to a series of successes or failures (Inhelder & Piaget 1958). In support of this suggestion, both Diggory (1966) and Heckhausen (1967) found that young children tend to respond optimistically to failure. However neither of these studies varied age or sex systematically in their design.

In an attempt to investigate the impact of age on the relationship between cumulative experience and expectancy, Parsons and Ruble (1972) exposed three groups of children (6-, 8-, and 10-11-year-olds) to repeated success or failure experiences and then measured their expectancies for success. While they found that the 6-year-olds had the highest expectancies in both the success and failure condition, all of the children in the failure condition had

This research was supported by an internal student aid grant from Smith College. Portions of this study were presented at the Eastern Psychological Meeting in Philadelphia, 1974. Reprint requests should be sent to Jacquelynne Parsons, Department of Psychology, Clark Science Center, Smith College, Northampton, Massachusetts 01063.

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lower expectancies than the children in the success condition. These data suggest that, while younger children are more optimistic in their expectancies, failure influences their expectancies to about the same degree as it does older children. However, before concluding that the younger children do use serial outcome information in forming their expectations two issues need to be explored further. First, since the youngest children in this sample were already 6 years of age, they may have been too old to provide a sensitive test of the developmental hypothesis. Furthermore, all of the children may have been responding to their last failure experience rather than the series of experiences. A more accurate test of the developmental hypothesis requires a comparison of the impact of one failure experience to the impact of multiple failure experiences on the expectancies of preschool as well as older children. If children integrate their experiences accumulatively in forming expectancies, then their expectancies should vary monotonically with the number of success or failure trials.

Thus based on these theoretical considerations and on the results of previous research (Crandall 1969; Nicholls 1975; Parsons & Ruble 1972) the following developmental predictions were made. In the older but not the youngest age groups, expectancies should vary monotonically with the number of preceding outcome trials; expectancies should decline as a function of age; school-age girls should have lower expectancies than their male peers. Since no developmental analyses have been made of the emergence of this sex difference, there are no empirical data available on which to base a developmental prediction. But since preschool children have been minimally exposed to peer expectancies and since parents appear to be encouraging achievements equally for preschool boys and girls (Maccoby & Jacklin 1974; Parsons et al. 1976), it is unlikely that sex differences will be evident in this age group.

Method

Seventy-two white children equally divided by sex and age into six groups were recruited as subjects from a private college-affiliated grammar school. Each subject responded individually to six hidden object puzzles. Like the MFF puzzles used in Parsons and Ruble (1972) these stimuli are ambiguous

enough to allow for the experimental manipulation of success and failure independent of the child's actual performance.

Before the task was introduced, the children were given standardized instructions and allowed one practice trial with no verbal feedback. Then the children were asked whether or not they thought that they could find all the hidden objects in the next picture and whether they were very sure, pretty sure, or only a little sure of their expectancy. Thus, a six-point scale of certainty of success was created (1 = very sure of failure and 6 = very sure of success). Expectancies were again measured prior to the second and fifth trials. After the fifth trial, all subjects were told they had succeeded and were praised for good performance on "this very difficult task." The children received either consistent success or failure feedback after each of the four experimental trials. Outcome was controlled by the time given to complete the task.

Results

A mixed model ANOVA revealed significant main effects for age, $F(2,60) = 13.79$, $p < .001$, and outcome, $F(1,60) = 11.54$, $p < .01$, and three significant interactions: trials \times outcome, $F(2,120) = 10.80$, $p < .001$, age \times trials \times outcome, $F(4,120) = 9.37$, $p < .001$, and age \times sex \times trials \times outcome, $F(4,120) = 3.97$, $p < .01$.

As predicted, the effect for age is the result of the decreasing certainty of success as a function of age (see table 1). The effect for outcome is the result of the children in the success condition ($M = 4.99$) having higher expectancies than children in the failure condition ($M = 4.15$). Furthermore, inspection of the means associated with the trial \times outcome interaction and the a posteriori test ($p < .05$) indicate that the outcome condition difference occurred following trial 1.

The age \times trials \times outcome interaction and simple effects tests ($p < .05$) (see table 1) supported the prediction that children's responses to feedback varied as a function of both age and outcome. Specifically, the 3½-5-year-old children did not use the feedback accumulatively in forming their expectancies. In contrast, the 6½-year-old children's expectancies varied monotonically with outcome history. Finally the 9½-11-year-old children's expectancies varied monotonically with success,

TABLE 1
A. AGE \times TRIAL \times OUTCOME MEANS

AGE AND OUTCOME	TRIALS		
	1	2	5
3½-5:			
Success....	5.58 ¹	5.75 ²	5.35 ³
Failure....	5.00 ⁴	4.42 ⁵	5.33 ⁶
6½-8:			
Success....	4.42 ⁷	4.66 ⁸	5.33 ⁹
Failure....	4.90 ¹⁰	4.47 ¹¹	3.40 ¹²
9½-11:			
Success....	4.00 ¹³	4.50 ¹⁴	4.58 ¹⁵
Failure....	3.70 ¹⁶	2.90 ¹⁷	3.25 ¹⁸

B. SUMMARY OF A POSTERIORI TESTS

Within age and outcome across trials	5 < 1 = 2 = 3 = 4 = 6; 9 > 8 = 7; 12 < 11 = 10; 13 = 14 = 15; 16 = 17 = 18
Within age and trials across outcome.....	1 = 4; 2 > 5; 6 = 3; 7 = 10; 8 = 11; 12 < 9; 13 = 16; 17 < 14; 18 < 15
Within outcome and trial across age...	1 > 7 = 13; 2 > 8 = 14; 3 > 15; 3 = 9; 9 = 15; 4 = 10 > 16; 5 = 11 > 17; 6 > 12 = 18
Linearity tests:	
3½-5-year-olds...	Nonsignificant
6½-8-year-olds...	Both success and failure conditions significant: $F(1,120) = 9.93$, $p < .01$, and $F(1,120) = 27.0$, $p < .001$, respectively
9½-11-year-olds..	Success condition significant: $F(1,120) = 4.03$, $p < .05$

but not with failure. Other a posteriori comparisons are summarized in table 1.

The means associated with the age \times sex \times trials \times outcome interaction are depicted in figure 1. Based on an inspection of this figure and on appropriate a posteriori tests, the following interpretations of this interaction were made: (1) As predicted, there were no significant sex difference in the youngest age group and no significant linear trends. (2) The initial expectancies of the girls were significantly lower than those of boys in both of the 9½-11-year-old groups but in neither of the 6½-8-year-old groups. (3) The final expectancies of the girls were lower than the boys only in the 6½-8-year-old failure group. (4) Among the 6½-8-year-olds in the success condition, expectancies taken prior to trial 5 were significantly higher than expectancies taken prior to trial 1 for the girls only; girls: $\bar{x}_1 < \bar{x}_5$; $F_{lin}(1,120) = 8.07$, $p < .01$; boys: $\bar{x}_1 = \bar{x}_2 = \bar{x}_3$;

$F_{lin}(1,120) = 2.61$, $p > .10$. (5) Similarly, in this age group in the failure condition mean expectancies taken prior to trial 5 were significantly lower than expectancies taken prior to trial 1 for the girls only. However, the linear trend was significant for both boys, $F_{lin}(1,120) = 4.13$, $p < .05$, and girls, $F_{lin}(1,120) = 28.25$, $p < .001$. Since it appears that the girls' expectancies dropped more in response to failure than did the boys', change scores were calculated and tested with the t statistic. The girls' change scores were significantly greater than the boys', $t(10) = 1.97$, $p < .05$. (6) While the oldest boys' expectancies in the failure condition did fall, $\bar{x}_1 > \bar{x}_2 = \bar{x}_5$ and $F_{lin}(1,120) = 8.21$, $p < .01$, the expectancies of the females did not change. (7) Finally, in the oldest age groups the mean expectancies of the boys and girls in the success condition did not increase significantly from trial 1 to trial 5 and the linear trend for both groups was not significant.

Discussion

This investigation provides some initial, exploratory data concerning the development of achievement-related expectancies in children. As predicted, the relationship between past experience and subsequent expectancies did vary as a function of age. The preschool-age children did not use the outcome feedback systematically in forming their expectancies, perhaps due to cognitive immaturity and limited social experience. The nature of the limitation placed on the children's response to this task by cognitive immaturity is unclear. A monotonic relationship between expectancies and outcome history depends on at least two skills: memory and integration of serial information. The preschool children could differ from the older children on either or both of these cognitive skills. Additionally, the preschoolers might have these skills but fail to see the relevance of past outcomes for future performance.

Further, the various significant interactions indicate that expectancies varied as a function of age, sex, and outcome. First, sex differences did not emerge in the preschool age group. Second, while the boys and girls in the 6½-8-year-old group started with equal expectations, the girls' expectancies dropped more in response to failure. This finding is consistent with previous studies reporting a more marked effect of failure on females than

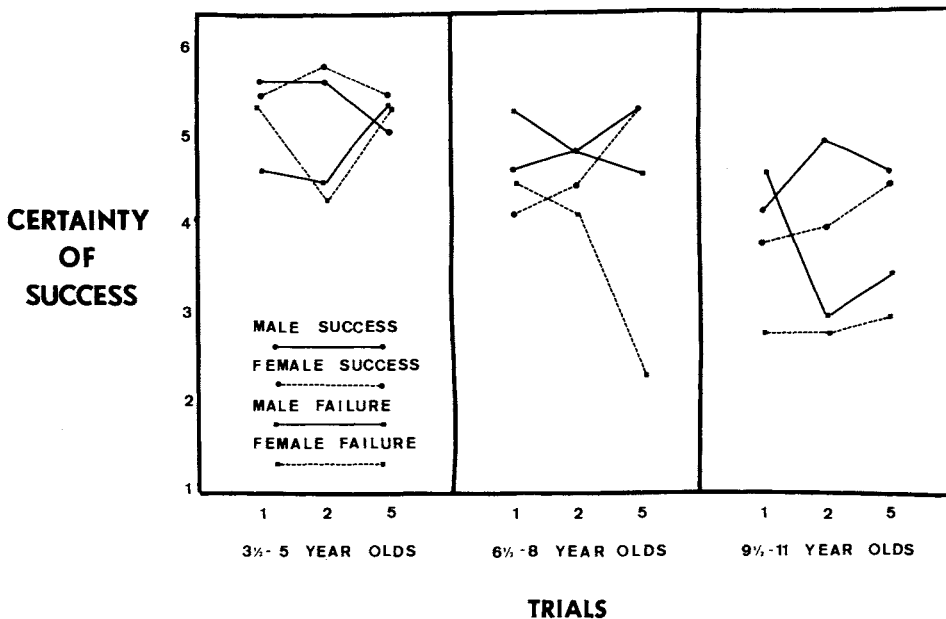


FIG. 1

on males (Crandall 1969; Nicholls 1975). Perhaps, as Nicholls (1975) found, the girls in this age group make more stable attributions for their failures than the boys. Also consistent with other studies (Crandall 1969; Parsons et al. 1976), the girls in 9½-11-year-old groups began the task with lower expectancies than the boys. In addition, the 9½-11-year-old females in the failure condition began with extremely low expectancies. Why the females in this condition had such low initial expectancies is unclear. But the fact that their expectancies did not decrease further in response to failure may be due to a floor effect.

A comparison of the response of the 9½-11-year-old boys to failure with that of the 6½-8-year-old girls suggests that these older boys may be responding to failure as the younger girls did. An implication of this comparison is that the incorporation of failure into one's self-concept may begin earlier developmentally in females than in males. That is, boys may remain "eternal optimists" longer than females, or alternatively, girls may become "doubting realists" sooner than boys.

Finally, the similarity of the expectancies of males and females on trial 5 in the success condition for the two older groups suggests that, while girls may approach a new task with lower expectancies, subsequent success

at the task can overcome the initial sex difference. Unfortunately, in the oldest group, the decrease in sex differences in expectancies following success is not due to an accelerated response to success among the females, as appears to be the case in the 6½-8-year-old group. Instead, it appears to be the joint result of a slight, nonsignificant increase in females' expectancies coupled with no significant increase in the males' expectancies. Consequently, while the final expectancies of boys and girls in this age group were equal, they were both less certain of success than their counterparts in either of the younger two groups.

This brings us to the last major finding in this investigation: the general decline in expectancies with age. There are several possible explanations for this result. Since expectancies are related to one's concept of one's own abilities, perhaps the older children's expectancies reflect a lower estimate of their own general abilities. In support of this suggestion, Ruble (1975) found that older children rated their ability on a specific task as lower than did younger children. This developmental decline in expectancies might also reflect an increase in a child's response to failure with age coupled with a decline in response to success. The pattern of data sug-

gests a developmental trend toward an increasing response to failure, with the girls preceding the boys. Further support for this interpretation is provided by Ruble, Parsons, and Ross (1976). They found that older children both lowered their estimates of their ability more and reported feeling worse in the face of failure than did younger children. Alternatively, the older children may have learned that it is more ego protective and/or more socially acceptable to express less rather than more certainty of success.

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