

Assessing the Determinants of Children's Academic Self-Efficacy Beliefs: A Replication

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Since previous research suggested that modeling is a more important predictor of children's academic/scholastic self-efficacy (comprising efficacy and response-outcome expectations) than performance accomplishments, the present study reexamines this issue. Subjects, 358 schoolchildren (M age = 10.58 years), completed the children's scholastic self-efficacy and Intelligence Achievement Responsibility Scales, while their mean grade score was obtained. Their teachers completed the Teacher Self-Efficacy Scale. Multiple regression showed that performance accomplishments with feedback was a more effective determinant of efficacy and response-outcome expectations than modeling. Also, age and attributional style mediated the influence of performance accomplishments on efficacy and outcome expectations, attributional style interacted with modeling in predicting efficacy expectations, while age interacted with performance accomplishments and modeling in explaining outcome expectations. These results support self-efficacy predictions.

Increasing importance is currently attached to self-efficacy beliefs (Bandura, 1977a, 1977b, 1978, 1982) that comprise efficacy and response-outcome expectations. Efficacy expectations reflect the belief that the behavior required to produce the outcome can be executed successfully, response-outcome expectations that the subjective probability that a given belief—performed successfully—will result in specific outcomes. There is some

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support for self-efficacy in modifying phobic (Bandura & Adams, 1977; Bandura, Adams, & Bayer, 1977; Bandura, Adams, Hardy, & Howells, 1980) and nonphobic (Chambliss & Murray, 1979; Conditte & Lichtenstein, 1981; Kazdin, 1979; Schunk, 1981) behavior.

Yet the determinants of efficacy and response-outcome expectations have not received sufficient empirical attention. It is postulated that performance accomplishments, being a direct source of experience, would be the most influential source of efficacy information (Bandura, 1978, 1982). The information derived from vicarious experience would be less dependable, as the experiential source here is not as reliable as an enactive experience. Likewise, information from verbal persuasion would be even less reliable, since there would be no experiential basis whatsoever. Finally, the weakest source of self-efficacy information would be emotional or physiological arousal. The influence of attributional processes is acknowledged. Specifically, it would avail little to effect successful performance if such success is then attributed to an external source (Bandura, 1977a).

Keyser and Barling (1981) studied the scholastic self-efficacy beliefs of 504 elementary schoolchildren. They found that modeling was a more significant predictor of self-efficacy than performance accomplishments, while the modeling X attributional style interaction was highly significant. When operationalized as scores on the Wide Range Achievement Test, performance accomplishments were not at all significant in predicting self-efficacy. Only when operationalized as teacher's rating of the children's behavior in the class did this variable predict self-efficacy beliefs, and then it only accounted for less than 1% of the variance. Finally, locus of control (LOC) attributions were significant only as a moderator of modeling, not as a main effect.

Some problems limit the external validity of these results. First, efficacy and response-outcome expectations were combined multiplicatively to constitute overall self-efficacy, even though they may have diverse determinants and effects (Kazdin, 1978). Second, performance accomplishments were operationalized such that subjects received no performance feedback, although it is a crucial process (cf. Bandura, 1978). Finally, Keyser and Barling (1981) suggest that age explains some of the impact of the modeling effect. Yet they could not assess this empirically as all the children in their research were drawn from the same grade, minimizing the resulting age range.

METHOD

The present study thus examined these issues, and involved a constructive replication of Keyser and Barling's (1981) study.

Subjects

A group of 358 white schoolchildren from grades 2 through 7 (M age = 10.58 years, SD = 1.58; 190 boys, 160 girls) participated in this replication study, as did all their class teachers (15 females, 1 male).

Procedure

Keyser and Barling's (1981) children's scholastic self-efficacy scale, comprising 20 items, 10 of which assess efficacy and 10 response-outcome expectations, was used. This scale has adequate reliability and constructive validity. Two diverse measures assessed performance accomplishments. The first comprised the average of all the school grades the child obtained at the end of the previous semester, thereby including a feedback component as each child was aware of his/her grades. Second, a measure of performance accomplishments was derived using the Classroom Participation Factor from Barling's (1978) study of the Devereaux Elementary Behavior Rating Scale (i.e., items 3, 4, 6, 8, 21, 39, 43, and 45). The 10-item Teacher Self-Efficacy Scale (Keyser & Barling, 1981) assessed teacher's self-efficacy as a possible modeling influence. This scale was also reliable, while its construct validity has been demonstrated. Finally, the 20-item shortened form of the Intellectual Achievement Responsibility (IAR) Scale (Crandall, Katkovsky & Crandall, 1965) assessed the children's LOC beliefs specific to the scholastic situation. All testing took place in groups and was conducted by two graduate psychology students, who assured the children that their responses were confidential. The teachers completed their self-efficacy scales during the same period but away from the children.

RESULTS AND DISCUSSION

Multiple-regression analyses showed that the performance accomplishments \times age interaction explained a significant proportion of the variance in efficacy expectations (31.1%),³ while the performance accomplishments \times LOC interaction contributed 4.9% of the efficacy

³A preliminary analysis showed that performance accomplishments *without* feedback was not a significant determinant of either efficacy or response-outcome expectations. Thus, only the performance accomplishments variable that included a feedback component, i.e., average grade scores, was used in all the subsequent regression analyses.

Table I. Determinants of Efficacy Expectations

Predictor variables	Multiple		Increase in
	<i>R</i>	<i>R</i> ²	<i>R</i>
Performance (marks) × age	.56	.31	.31
Performance (marks)	.67	.45	.14
Performance (marks) × LOC	.71	.50	.04
Modeling × LOC	.73	.53	.03
Modeling	.75	.56	.03
Performance (teacher rating)	.77	.59	.03
Modeling × age	.78	.61	.01

expectations variance.⁴ However, only the modeling × LOC attribution explained a significant proportion of the variance in efficacy expectations (2.94%) (see Table I). On the other hand, the performance accomplishments × age interaction was a significant predictor of the response-outcome expectation (45.5% of the variance), while the modeling × age interaction accounted for 7.2% of the variance in response-outcome expectations (see Table II).

While performance accomplishments were a more important predictor than modeling of both efficacy and outcome expectations, their effects were mediated by the child's attributions and age. These results contradict those of Keyser and Barling (1981), and three factors are offered in explaining the discrepancies.

First, Keyser and Barling (1981) combined their indices of efficacy and response-outcome expectations to reflect a single self-efficacy index. This study, however, analyzed the determinants of these two expectations separately, as these determinants may differ (Kazdin, 1978). Of some interest, therefore, is that the determinants of efficacy and outcome expectations were not identical. Although the performance accomplishment × LOC interaction predicted the efficacy expectation only, the performance accomplishments × age interaction was a significant predictor of both efficacy and response-outcome expectations. Likewise, the modeling × LOC interaction was a significant predictor of efficacy expectations, but only the modeling × age interaction was a significant determinant of response-outcome expectations.

Second, performance accomplishments were operationalized differently here. Keyser and Barling (1981) did not include a feedback com-

⁴Although both the performance accomplishments and modeling main effects were significant determinants of efficacy (14.3% and 3.4% of the variance, respectively) and response-outcome (20.1% and 4.2% of the variance, respectively) expectations, their influence was discounted and is not discussed since interactions involving both these main effects were significant in predicting efficacy and response-outcome expectations (Kerlinger, 1973).

Table II. Determinants of Response-Outcome Expectations

Predictor variables	Multiple		Increase in
	<i>R</i>	<i>R</i> ²	<i>R</i>
Performance (marks) × age	.68	.46	.46
performance (marks)	.81	.66	.20
Modeling × age	.85	.73	.07
Modeling	.88	.77	.04

ponent. When the children in the present study were aware of their accomplishments, they were a significant determinant of efficacy and response-outcome expectations. A third factor that may account for the discrepancies may be the age *range* used in each study. The children in this study ranged in age from 6.68 to 13.83 years (grades 2 through 7), with approximately equal numbers of children per grade. However, Keyser and Barling's (1981) sample comprised 6th-grade children only. This is important since age mediated the influence of performance accomplishments on both efficacy and response-outcome expectations. Yet Keyser and Barling (1981) could not assess this issue directly because of the limited age range of their sample.

Like the previous research, the mediating influence of LOC attributions was again demonstrated, and this is consistent with theoretical predictions (cf. Bandura, 1977a, 1978). For successful performance accomplishments to effect self-efficacy beliefs, it is crucial that their effects must be self-attributed. The importance of LOC attributions was evident in the present results as the performance accomplishments × LOC attribution interaction explained more of the variance in efficacy and response-outcome expectations than performance accomplishments alone.

Since this research and that of Keyser and Barling (1981) concentrated only on the two major determinants of self-efficacy beliefs, future studies might profitably assess the role of verbal persuasion and emotional/physiological arousal. In addition, since the importance of environmental influences is acknowledged (cf. Bandura, 1977a), the impact of a variable such as perceived classroom climate on self-efficacy beliefs might be assessed. Another variable that might be manipulated in an attempt to account for more of the variance of these two expectations is the modeling source. Specifically, this study used the teacher as the source of the modeling influence, and it may be worthwhile to assess the role of other potential models—for example, parents and/or peers. A related issue is the moderating effect of the observers' view of the models' characteristics (e.g., prestige, control over valued reinforcement). In addition, both Keyser and Barling (1981) and this study operationalized the modeling variable as the correspondence between teachers' and children's self-reported self-efficacy

beliefs. Future research should focus on experimentally manipulating the modeling source in ascertaining its effects. Finally, a global index of school grades (performance accomplishments) was used, and the determinants of efficacy and response-outcome expectations might be specified more precisely were performance accomplishments to be specified in a less global manner.

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