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AUTHOR Latta, R. Michael
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ABSTRACT

Two experiments were designed to test Kukla's cognitive theory of task performance, based on intended effort. Experiment I was designed to determine if success feedback leads to an overall increase in performance level and differential asymptotic performance for those high and low in achievement motivation. Experiment 2 was aimed at determining if intended effort is positively related to behavioral intensity and whether it varies with achievement motivation. Results of the experiments revealed that: (1) intended effort predicts behavioral intensity and performance level better than achievement motivation and success feedback; (2) success feedback produces initial increases in performance for all subjects; and (3) success feedback produces earlier asymptotic performance for those high, compared to those low, in achievement motivation. The results are discussed with respect to consistency in cognitions and behavior. (Author/PC)

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The Influence of Achievement Motivation, Success, and Intended Effort on Behavioral Intensity

R. Michael Latta, Iowa State University

Abstract

A test of Kukla's (1972) cognitive theory of performance revealed that: 1) intended effort predicts behavioral intensity and performance level better than achievement motivation and success feedback, 2) success feedback produces initial increases in performance for all subjects, and 3) success feedback produces earlier asymptotic performance for those high compared to those low in achievement motivation. The results are discussed with respect to consistency in cognitions and behavior.

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There have been many theories designed to predict task performance. Hull-Spence drive theory (Spence, 1958) and Weiner's (1972) attribution theory of achievement behavior have both been used to predict performance on the basis of individual differences. Hull-Spence drive theory predicts performance on the basis of the interaction of anxiety and task complexity, while Weiner's theory specifies performance differences to be predicted by individual differences in the tendency to make attributions to the causal factors effort, ability, luck, and task difficulty.

Recently, Kukla (1972b) has offered a cognitive theory of task performance, based upon intended effort. Kukla's model incorporates properties of intentions outlined by Dulany (1968) and Fishbein (1967) rather than individual differences in anxiety or attributions to causal factors. Here, behavioral intensity (the vigor with which an action sequence is undertaken) is assumed to be an increasing function of how much effort a person intends to exert at a task. A postulate of the theory specifies that subjects perceiving themselves to be high in ability will have lower intended effort than subjects perceiving themselves to be low in ability, given a constant level of task difficulty. Thus, rather paradoxically, high ability subjects should perform worse than low ability subjects, assuming a constant number of errors for both groups, since they work less hard.

On the basis of past research (Kukla, 1972a, Experiment 1; and Atkinson, Bastian, Earl, and Litwin, 1960), differences in achievement motivation are equated with differences in perceived

ability. Thus, level of achievement motivation is equated with a disposition to perceive one's ability as high or low which influences behavioral intensity through the cognitive mediator intended effort.

Intended effort is influenced by perceptions of task difficulty as well as achievement motivation (perceived ability). Here, perceived difficulty is confined to skill situations in which luck can not influence outcomes. In accordance with previous evidence (Weiner, Heckhausen, Meyer, and Cook. 1972), intended effort is assumed to be related to perceived task difficulty by an inverted U function. Hence, maximal intended effort occurs for tasks perceived to be of moderate difficulty. Task difficulty also points out the difference between behavioral intensity and performance. Although intended effort and behavioral intensity are high, performance may be low due to a misperception of task difficulty. On the average, behavioral intensity and performance are expected to be highly correlated.

Specific predictions can be derived from this theory for situations where subjects are allowed to estimate intended effort and then experience success. Given a task perceived as difficult:[1] 1) initial success feedback will result in an increased performance level for all subjects, and 2) continued success feedback will lead to earlier asymptotic performance for those high in achievement motivation compared to those low in achievement motivation. Here, success feedback is assumed to only affect perceived difficulty. The first prediction should occur because success is assumed to

result in a decrease in perceived difficulty, leading to maximal intended effort. An early performance asymptote should occur for those high in achievement motivation because the perception of the task as easy should occur earlier for them, and perception of the task as easy results in lowered intended effort. If the assumptions of the theory hold, intended effort should: 1) be positively related to behavioral intensity, and 2) be lower for subjects high in achievement motivation than for subjects low in achievement motivation.

Two experiments were conducted to test the two sets of hypotheses outlined above by varying achievement motivation and succes feedback about performance.

Experiment I

Experiment I was designed to determine if success feedback leads to an overall increase in performance level and differential asymptotic performance for those high and low in achievement motivation. Here, performance level was defined as the number of correct digit-symbol substitutions completed on a timed digit-symbol substitution task.

Method

Subjects Eighty introductory psychology students who participated for extra credit to be applied toward their course grade were used as subjects for Experiment I. Subjects were classified as high or low in achievement motivation using scores from the Mehrabian scale of resultant achievement motivation (Mehrabian,

1968) obtained two weeks prior to the experiment.

Procedure All subjects were randomly assigned to the success feedback or the no feedback control groups and were administered one practice trial followed by six, thirty second test trials of the digit-symbol substitution task. The task was administered under skill instructions and involved six symbols and the numbers one through six. Success feedback was given on even numbered trials by consulting false norms which indicated the subject to have performed twice as well as the average student.

Results

The results of a repeated measures ANOVA performed on the performance scores appears in Table 1.

Insert Table 1 here

As predicated, bogus success feedback produced a main effect on performance level over the six test trials. Both high and low achievement motivation subjects exhibited a higher level of performance given success compared to control conditions. Although the three-way interaction of success feedback, resultant achievement motivation, and trials was not significant, Figure 1 indicates that continued success resulted in an early asymptote in performance for those high in achievement motivation, while those low in achievement motivation continued to increase in performance level up to trial six. Simple effects tests using Sheffé's method indicated those low in achievement motivation receiving success feedback to have performed better than all other groups from trial

three to trial six ($p < .05$).

Insert Figure 1 here

Experiment II

Experiment II was designed to determine if intended effort is positively related to behavioral intensity and varies with achievement motivation. Admittedly, intended effort constitutes a dependent variable since it is a cognitive response produced by the interaction of perceived task difficulty and achievement motivation (perceived ability). However, the present theoretical analysis indicates intended effort to qualify as an independent variable which predicts differences in behavioral intensity not directly attributable to task difficulty, achievement motivation, or nature of the outcomes.

Method

Subjects Forty subjects categorized as high or low in achievement motivation were selected for Experiment II following the procedure used in Experiment I.

Procedure The procedure was identical to that used in Experiment I except that all subjects were requested to estimate their intended effort following the thirty second practice trial. Intended effort was defined as the subject's estimate of his probability of success (Kukla, 1972b). The actual ratings of intended effort were made on a 1-99 point scale in response to the question, "What are your chances of performing better than average at this task?". The scale was anchored at the extremes by "No chance at all" and

"Completely certain", and in the middle by "An even chance". The number of attempted digit-symbol substitutions was the measure of behavioral intensity. The number of correct digit-symbol substitutions was the measure of performance level as in Experiment I.

Results

As predicted, intended effort was positively related to behavioral intensity (r_{38} = .36, $p < .02$). Also, those high in achievement motivation had lower intended effort ($\bar{X}$ = 42.8) compared to those low in achievement motivation ($\bar{X}$ = 48.2), but the difference was not statistically significant (t_{36} = 1.0, $p < .33$). Also, the assumption that behavioral intensity and performance level are highly correlated was supported (r_{38} = .69, $p < .0001$).

Table 2 shows the results of a multiple regression analysis conducted on the behavioral intensity and performance scores using achievement motivation, the presence of success feedback, the interaction of success feedback and achievement motivation, and intended effort as predictors. As can be seen in Table 2, intended effort was found to be the best predictor of both behavioral intensity and performance level. The same solution was achieved using a forward, backward, and stepwise procedure (see Draper and Smith, 1961).

Insert Table 2 here

Discussion

Although the results of Experiment I provide some preliminary support for Kukla's cognitive theory of performance, the evidence is not compelling since other theories would make similar predic-

tions. For example, Weiner's (1972) attribution theory of performance would also predict an early performance asymptote for those high in achievement motivation and incentive theory would predict success feedback to facilitate performance (see, Warm, Kanfer, Kuwada, and Clark, 1972).

The results of Experiment II, however, provide much more compelling support for Kukla's position. Even though intended effort did not vary significantly with achievement motivation, the finding that behavioral intensity is better predicted by intended effort than by achievement motivation or the presence or absence of success feedback indicates that behavioral intensity is greatly influenced by the effort level to which a subject commits himself. Since behavioral intensity and performance level are highly correlated, the choice of an effort level by way of intended effort also influenced performance to a significant degree. Thus, the cognitive mediator intended effort may qualify as both a response and a predictor of other responses.

The fact that intended effort predicts behavioral intensity and performance level quite well does not prove that cognitions cause behavior. The question may be asked in another way, "Does intended effort cause behavioral intensity, or are cognitions and overt behaviors two independent responses classes which happen to be correlated for some reason?". The position taken by the present author is that intended effort is related to behavioral intensity because the subject desires to maintain consistency in beliefs and behavior. Consistency theories in general (Heider,

1958; and Festinger, 1957) indicate a descrepancy in cognitions and behavior to be unpleasant. From the point of view under consideration, requesting the subject to make public his intended effort makes that cognition salient and constrains the subject to exert himself to only that degree, regardless of situational factors such as successful outcomes. Thus, the subject's perception of his ability (achievement motivation) and the difficulty of the task may cause behavioral intensity if intended effort becomes salient.

As mentioned earlier, the results of the present investigation are far from conclusive. Since Kukla specifies perceived task difficulty to combine with perceived ability in determining intended effort, which in turn causes behavioral intensity and performance level, further research is required before the model can be considered viable. For one thing, a variety of task difficulties and abilities need to be employed to determine if differential levels of intended effort result. Of course, perceptions of task difficulty and ability should also be measured to be certain that perceived difficulty and ability correspond to objective difficulty and ability. Also, future research should investigate the effects of both success and failure on perceived task difficulty, intended effort, and the behavioral measures of intensity and performance. Finally, more adequate attention should be given to subjects' perceptions of their own performance with respect to success and failure. The correspondence of one's own standards of performance with those of an evaluator may have systematic effects on intended effort and performance.

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FOOTNOTES

1. Estimates of the perceived difficulty of the digit-symbol substitution task were obtained from an independent sample of sixty subjects following a practice trial. The estimates were made on a 1-99 scale anchored at the ends with very easy and very difficult. Results indicated the task to be perceived as moderately difficult ($\bar{X}$ = 61).

TABLE 1

Summary of the Analysis of Variance of Performance Scores for Experiment I as a Function of Experimental Conditions

Source	DF	MS	F
Achievement Motivation (AM)	1	191.27	2.44
Success Feedback (SF)	1	369.25	4.71*
AM X SF	1	42.60	.54
Subjects (AM X SF)	76	78.36	
Trials (TR)	5	191.18	31.43**
AM X TR	5	7.29	1.20
SF X TR	5	3.77	.62
AM X SF X TR	5	5.67	.93
TR X Subjects (AM X SF)	380	6.08	
Corrected Total	479		

* $p < .03$

** $p < .0001$

TABLE 2

Summary of the Regression Analysis for Experiment II to Find the Best Predictor of Behavioral Intensity and Performance

Behavioral Intensity

Source	DF	MS	F	R-Square
Intended Effort	1	1618.46	5.82*	.133
Error	38	277.84		
Corrected Total	39			

Performance

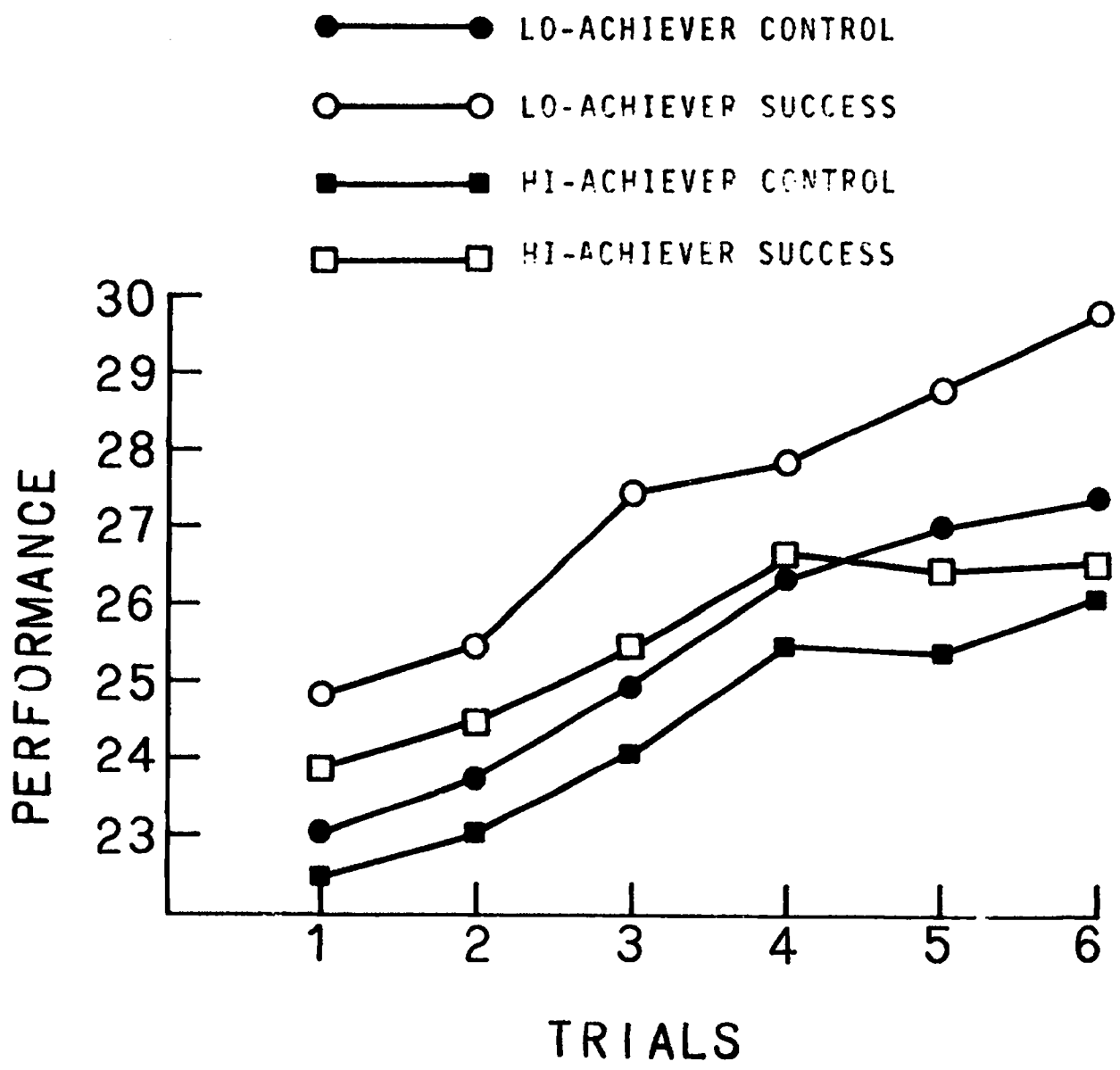
Source	DF	MS	F	R-Square
Intended Effort	1	2338.41	11.9**	.24
Error	38			
Corrected Total	39			

*p < .02

**p < .002

FIGURE CAPTIONS

1. Performance as a function of experimental condition in Experiment I.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TRIALS