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Toward a Theory of Task Motivation and Incentives[1]

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This paper summarizes and integrates research concerned with a long-neglected topic in psychology: the relationship between conscious goals and intentions and task performance. The basic premise of this research is that an individual's conscious ideas regulate his actions. Studies are cited demonstrating that: (1) hard goals produce a higher level of performance (output) than easy goals; (2) specific hard goals produce a higher level of output than a goal of "do your best"; and (3) behavioral intentions regulate choice behavior. The theory also views goals and intentions as mediators of the effects of incentives on task performance. Evidence is presented supporting the view that monetary incentives, time limits, and knowledge of results do not affect performance level independently of the individual's goals and intentions. A theoretical analysis supports the same view with respect to three other incentives: participation, competition, and praise and reproof. Finally, behavioral intentions were found to mediate the effects of money and "verbal reinforcement" on choice behavior. It is concluded that any adequate theory of task motivation must take account of the individual's conscious goals and intentions. The applied implications of the theory are discussed.

In 1929, Bills and Brown introduced a report concerned with the effects of mental set as follows:

> One of the most important factors determining the level of efficiency which an individual may attain in . . . work is the attitude or set with which he enters upon the task. . . . But more effort has been directed toward controlling attitude as a disturbing variable than toward studying it for its own sake. As a result little is known regarding the . . . influence of set in . . . work. (p. 301).

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In 1963, Ryan[3] made the following observation about recent work in human motivation:

> It is impossible to perform a psychological experiment upon a human subject without manipulating and controlling his intention or task. In spite of this fact, the experimental study of tasks has been relatively neglected in modern psychology. (Ch. V, p. 1).

These two statements, made nearly 35 years apart, indicate a persistent neglect in experimental psychology of the study of conscious factors in task performance. The cause of this neglect is a doctrine which has dominated experimental psychology for the last several decades: the doctrine of behaviorism. Its fundamental thesis is that psychology is the study of observable behavior and that (human) behavior can be understood without the use of explanatory concepts referring to states or actions of consciousness.

In recent years, however, some psychologists have become dissatisfied with the limitations placed upon research and theory by the behaviorist dogma. A growing number of investigators have begun to study the effects of conscious goals, intentions, desires, and purposes on task performance. The basic (implicit or explicit) premise of this research is that man's conscious ideas affect what he does, i.e., that one of the (biological) functions of consciousness is the regulation of action (see Branden, 1966; Rand, 1964, for a fuller discussion of the nature and functions of consciousness).[4]

It is argued here, in agreement with Ryan (1958), that:

> Tasks [intentions, goals, etc.] . . . are to be treated as causal factors in behavior. By this I mean that a task is a *necessary* condition for most kinds of behavior. (To find and account for the exceptions is an empirical problem). . . . I shall assert that a very large proportion of behavior is initiated by tasks, and that a very large proportion of tasks lead to the behavior specified by the tasks. (p. 79).

It is the purpose of this paper to draw together and integrate the existing literature on the relationship between conscious goals or intentions and task performance. For our purposes the terms goal and intention will

[3] The following mimeographed chapters by Ryan are available from the Department of Psychology, Cornell University, Ithaca, New York: Chapter I: Explaining behavior; Chapter II; Explanatory concepts; Chapter V: Experiments on intention, task and set; Chapter VI: Intentional learning; and Chapter VII: Unintentional learning.

[4] There are important philosophical issues involved in the decision to use or not to use concepts referring to states of consciousness as explanatory terms. These issues are both epistemological, e.g., the problem of the privacy of conscious states, and metaphysical, e.g., the mind-body problem. Due to space limitations, however, the present paper is confined exclusively to a discussion of experimental findings.

be used in their vernacular meaning as "what the individual is consciously trying to do." (Some distinctions between these two terms will be made later in the paper.)

It should be stressed that in the last analysis the content of a particular individual's goals and intentions must be inferred from his verbal report (based on his introspection). However, there are still a number of different procedures that may be used to study the relationship between conscious goals or intentions and task performance: (1) goals can be assigned by the experimenter before performance and the subject's acceptance of these goals (i.e., his decision to actually try for them) checked later by questioning; (2) subjects can be given a limited choice of goals before task performance and asked to choose one of them; (3) subjects can be allowed to set any goals they wish on the task and then asked to indicate what their goal was after performance. In addition, these methods can be used in various combinations; for example, results obtained using method (3) can be checked using method (1), i.e., by assigning the same goals to a new group of subjects that a previous group had set themselves. In the studies to be reported here, all three methods were used and all yielded substantial relationships between goals or intentions and task performance. Thus for our purposes, the advantages and disadvantages of the different procedures are not important (though in other contexts, it might be of interest to study them).

No attempt is made in the studies reported to specify the ultimate roots or causes of the particular goals or intentions an individual develops on a task. Our interest here is only in the relationship between these goals and intentions, once established, and subsequent behavior. Thus, we are not presenting a complete theory of task performance but only some foundations for a theory.

Turning briefly to the issue of nonintentional behavior, it is obvious that no individual is aware of or consciously intends every single action or movement he makes. But it remains to be seen just how much behavior can be explained with reference to conscious intent. For instance, Ryan (1958) argues: "The concept of *determining tendency* would suggest that the effect of a task [intention] may operate over such a time-span that it may produce an effect at a time when the individual is no longer aware of the task as such" (p. 82).

It may be instructive in this context to discuss four types of "unintentional" behaviors that occur frequently in everyday life in order to see to what degree these might be explained in terms of conscious intent: (1) *One category is behavior whose end is foreseen but in which each movement in the sequence that is the means to the end is not consciously initiated.* For example, in returning an opponent's shot in tennis,

an experienced player is not consciously aware of his footwork, backswing, or grip, but only of the intent to approach and return the shot. In such cases as this, the action leading to the goal has become automated through extended practice; each response automatically sets off the next response in the sequence. However, it should be recognized that the behavior sequence as a whole must still be *triggered* by a conscious intent (e.g., as "to return the shot" or "win the point" in the example above). Once the initial intent is abandoned, action ceases, e.g., if the tennis player suddenly decides not to try to return a shot, the usual action sequence will not occur.

Furthermore, automated behavior of this type is *initially learned* consciously and intentionally. This is true of any series of skilled goal-directed movements or actions taken by man (though such actions will involve physiological activities of which he may never be aware introspectively; see type 4 below).

(2) A second category involves *behavior in which a different end occurs than is intended due to error or lack of ability.* For instance, one could try to return a tennis shot but hit the net instead. The behavior would be consciously initiated but the outcome would be imperfectly correlated with the intended outcome due to lack of knowledge or ability. Such behavior is usually described as "accidental." Clearly concepts other than conscious intent are required to explain accidents, but it should be recognized that accidents often involve very small deviations from the intended outcome (e.g., as when a tennis shot goes out of bounds by an inch). Thus conscious intent would be *one* factor in the explanation of the action sequence as a whole.

(3) A third type of nonintentional behavior is *behavior in which the end that is foreseen logically entails another end that is not foreseen as such.* For example, in a verbal "conditioning" or a free-association experiment, one might intentionally give only the names of "jewels" (rubies, emeralds, diamonds, etc.). In doing so one would also be giving "plural nouns." Plural nouns would not be consciously intended as such but would be logically entailed by the intention to list jewels. Dulany (1961, 1962) uses the term "correlated hopytheses" to describe subjects' hypotheses in verbal-conditioning experiments which are correlated with the "correct" hypothesis. One could similarly use the term "correlated behavior" to describe behavior which was not intended as such but which was logically correlated with intended behavior.

(4) Finally, there is *behavior which is not and never was under direct conscious control, but may be indirectly controlled.* For instance, in the course of carrying out a voluntary act, many automatic, nonconscious physiological actions will occur (e.g., muscle contractions, neural activity,

glandular secretions, etc.)—actions which one could not become aware of using the unaided senses. But by initiating certain molar actions one may indirectly control some of these molecular actions.

The key point to recognize in the above four cases is that all the actions in question were or could be *initiated* by a mental act, that they were or could be originally *set in motion* by a conscious goal or intention. In addition, the results or outcomes of the behaviors are ordinarily either the ones intended or are correlated with those intended (the size of the correlation depending upon the individual's capacity, knowledge, ability, and the situation).

The research to be reported here involves predominantly simple tasks in which learning complex new skills and making long-term plans and strategies is not necessary to achieve goals—tasks of the type in which effort and concentration are likely to have a relatively direct effect on output or choice.

The paper is divided into two parts. Part I reports research dealing with direct relationships between goals or intentions and task performance. Part II is an extension of the theory to attempt to account for the motivational effects of external incentives on task performance. *An external incentive is defined as an event or object external to the individual which can incite action.* It is argued that if goals or intentions are a necessary condition for most kinds of behavior, then incentives will affect behavior only through their effects on goals and intentions and will have no effect independent of their effects on goals and intentions. Part II reports research relevant to this deduction.

I: GOALS, INTENTIONS, AND TASK PERFORMANCE

Goal Difficulty and Level of Performance

The studies in this section are concerned with the relationship between the level or difficulty of the goal the subject is trying for and the quantitative level of his performance (amount of output, speed of reaction time, school grades, etc.). If goals regulate performance, then hard goals should produce a higher level of performance than easy goals, other things (such as ability) being equal.

Figure 1 shows the combined results of 12 studies on this topic by the present investigator and colleagues. In some of these studies goals were assigned to subjects by the experimenter and goal acceptance was checked by interviews. In other studies subjects set their own goals. In all cases goals were expressed in terms of some specific quantitative score that the subject was trying to achieve on each trial or on the task as a whole. Goal difficulty is expressed in Fig. 1 in terms of the percentage of trials

on which the subjects trying for a particular goal actually beat that goal. Performance level is expressed in terms of the within-study z-score for performance for the particular goal group in question. Thus each point represents a particular group (a particular goal) in a particular study; it indicates the probability of the subjects in that group reaching their goal and their mean output in relation to the other goal groups in that study.

The results are unequivocal: the harder the goal the higher the level of performance. (This was also true within each study; see Table 1.) Although subjects with very hard goals reached their goals far less often than subjects with very easy goals, the former consistently performed at a higher level than the latter. The rank-order correlation between goal difficulty and performance for all the points shown in Fig. 1 is .78

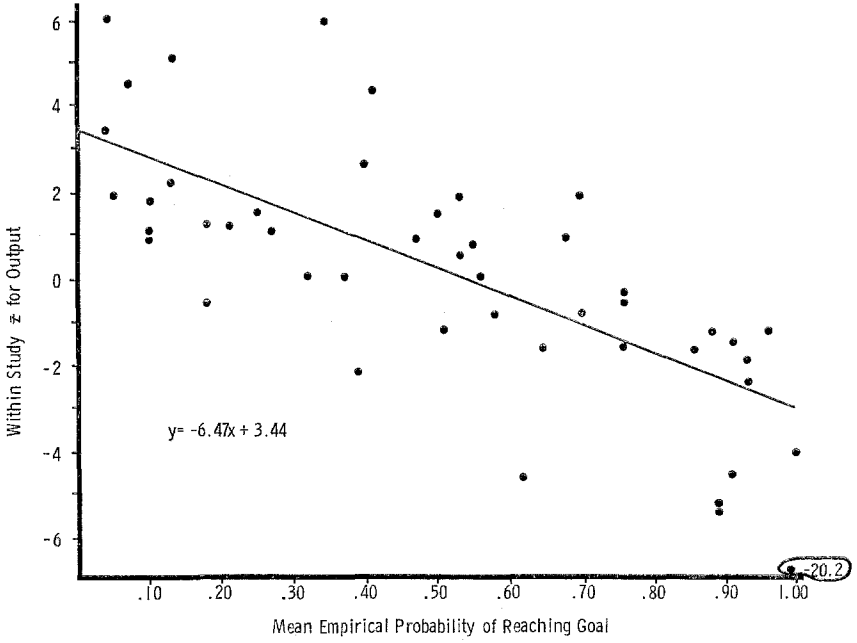

FIG. 1. Output as a function of goal difficulty for 12 studies combined.

($p < .01$). (The one extreme point, circled in Fig. 1, was not used, however, in calculating the slope of the function, as this would have given a misleading picture of the general relationship between the two variables.)

The nature of the experiments from which the above data were obtained are summarized in Table 1. Note that a variety of different tasks were used: brainstorming, complex computation, addition, perceptual

TABLE 1

SUMMARY OF 12 STUDIES OF THE RELATIONSHIP OF GOAL DIFFICULTY TO PERFORMANCE LEVEL

Study	Task	Trials & Length	Goal Group	N	Goal Source[a] E	Goal Source[a] S	Success %	Success Rank	Performance Measure	Output Rank	Rho: Succ. Rank vs. Output Rank
Locke, 1966a	#1. Listing objects in a given category	15 1-min. trials	Easy	26	X		93	1	Total objects listed	3	−1.00
			Medium	22	X		55	2		2	
			Hard	23	X		13	3		1	
	#2. Listing uses for objects	20 1-min. trials	Easy	27	X		91	1	Total uses given	4	−.80
			Self set	27		X	53	2		2	
			Progressive	29	X		18	3		3	
			Hard	29	X		07	4		1	
	#3. Listing uses for objects	6 1-min. trials per goal	Easy	23 same Ss	X		89	1	Total uses given	3	−1.00
			Self set	23 same Ss		X	76	2		2	
			Hard	23 same Ss	X		04	3		1	
Locke & Bryan, 1966b	Complex computation	6 10-min. trials	Hard	5	X	X	13	2	Total problems correct	1	
			Improve over prev. perf.	24		X	70	1		2	−1.00
Locke & Bryan, 1967a	Perceptual speed (pilot study a)	10 2-min. trials	Hard	9	X	X	05	3	Total rows correct in relation to practice score	1	−1.00
			Imp.—Beat best prev. score	16		X	21	2		2	
			Imp.—Beat or equal immed. prev. score	12		X	39	1		3	
	Addition (pilot study b)	10 2-min. trials	Very hard	8	X	X	04	4	Total problems correct in rel. to practice score	1	−.80
			Hard	26		X	50	3		2	
			Easy	13		X	76	1		3	
			Very easy	4	X	X	62	2		4	

TABLE 1 (*Continued*)

Study	Task	Trials & Length	Goal Group	*N*	Goal Source[a] *E*	Goal Source[a] *S*	Success % Block II	Success % Block III	Success Rank Block II	Success Rank Block III	Performance Measure	Output Rank Block II	Output Rank Block III	Rho: Succ. Rank vs. Output Rank
Locke, Bryan & Kendall, 1968	#1. Listing uses for objects	7 1-min. trials on each block (II & III)	Hard (w/incentive)	19	X		76	25	2	10	Total uses given	8	1	−.85
			Hard (w/out incen.)	17	X		88	27	1	9		11	2	
			Self set (w/incentive)	22		X	58	56	4	5		9	7	
			Self set (w/out incen.)	12		X	65	51	3	6		12	10	
			Very hard (w/incentive)	21	X		32	18	8	11		6	3	
			Very hard (w/out incen.)	15	X		37	10	7	12		5	4	
	#2. Toy construction	1 50-min. work period	High Imp.	15		X	53		2		Total toys made in last 25′ in rel. to 1st 25′	1		−1.00
			Low Imp.	15		X	93		1			2		
Locke, 1967a	Listing objects in a given category	15 1-min. trials	4 No. obj. to	11	X		99		1		Total objects listed	5		−1.00
			8 try for on	17	X		89		2			4		
			10 each trial	15	X		68		3			3		
			12	41	X		41		4			2		
			13	21	X		34		5			1		

TABLE 1 (*Continued*)

Study	Task	Trials & Length	Goal Group	*N*	Goal Source[a] *E*	Goal Source[a] *S*	Success %	Success Rank	Performance Measure	Output Rank	Rho: Succ. Rank vs. Output Rank
Locke & Bryan, 1968	Academic performance (Catholic U.)	1 semester	A Min.	10		X	40	4	Grade obtained	1	−1.00
			B satisfactory	132		X	70	3	in History	2	
			C grade	168		X	96	2	course	3	
			D	10		X	100	1		4	
Locke & Bryan, 1967c	Addition	5 trials; mean length = 12 min. ea.	Hard	20	X		10	2	Total problems attempted in rel. to practice score	1	−1.00
			Easy	20	X		86	1		2	
Locke, 1967c	Reaction time	40 trials	Beat best prev. time	10	X		10	3	Mean reaction time	1	−1.00
			Beat immed. prev. time	10	X		47	2		2	
			Beat worst prev. time	10	X		91	1		3	

[a] *E* means goal was assigned by *E*; *S* means goal was selected by *S*; if an X appears in both the *E* and *S* cols., this means goal was assigned by *E* but that only this sub-group said they accepted the goal (i.e., there were other *S*s assigned the same goal who did not accept it and thus were not included).

speed, toy construction, reaction time, grade achievement in college—thus indicating the generality of the results across tasks.

There have been a small number of studies by other investigators of goal difficulty and performance, and the findings have been similar to those reported above. Dey and Kaur (1965) using a letter cancellation task found hard (assigned) output goals to produce a higher level of performance than easy goals. Mace (1935) in a study of psychomotor performance found that subjects who were instructed to try to improve their scores 25% per day, improved at a faster rate than those instructed to improve at a rate of 5% per day. Siegal and Fouraker (1960), using an experimental bargaining task, asked some subjects to try for a specific quantitatively high profit and others to try for a specific quantitatively low profit. The former group actually negotiated higher profits than the latter. Locke (1966b) reanalyzed some data gathered by Fryer in a study of code learning, in which some subjects set goals before each trial and some did not. Locke found that those subjects who set high goals in relation to their previous performance performed better on the task than those who set comparatively low goals. Eason and White (1961) found that subjects who were instructed to try to stay on target in a pursuit rotor task for 0, 50, and 100% of the time, respectively, actually did so. Eason and White also found that subjects tracking a smaller target showed greater muscular control (greater precision of movement) than those tracking a larger target. (This is an example of category type 3 of unintended behavior discussed above: the subjects with smaller targets were not trying explicitly for greater muscular control than those with larger targets; this outcome was a logical correlate of the former subjects trying to "stay on" a smaller target.)

Stedry (1960), in a study of problem solving, demonstrated the importance of distinguishing between instructions and the subjects' personal goals. He told different groups of subjects to try to complete different numbers of problems in the time allowed. He also had subjects indicate their own personal levels of aspiration, either before or after the goals were assigned by the experimenter. He found that hard assigned goals led to a higher number of problems completed than easy goals only if the goals were assigned *before* the hard-goal subjects set their personal goals. If they set personal goals first, they tended to reject the assigned hard goals and performed quite poorly on the task.

Two previous studies have found significant relationships between students' grade goals and actual grade performance in school (controlling for scholastic ability). Uhlinger and Stephens (1960) and Battle (1966) used college freshmen and junior high school students as subjects, respectively. Unfortunately, however, the grade-goal questionnaires were administered near the end of the semester during which the grades were

obtained, thus making the cause-effect relationship somewhat equivocal. (This was not true of the grade-goal study in Table 1, however.)

A study of "real life" goal-setting was carried out by Zander and Newcomb (1967). They studied the United Fund campaigns of 149 selected communities over a period of 4 years. It was found that communities who set monetary goals that were higher than their previous year's performance raised more money (in dollars per capita) in relation to their previous year's performance than communities who set goals that were lower than their previous year's performance. Further analyses supported the view that these goals were a cause rather than an effect of actual performance. (One exception to the former finding was that for communities with a history of failure to reach their fund goals, there was no correlation between goals and performance.)

In the industrial area, numerous investigators have observed that workers' output norms influence their level of production (e.g., Mathewson, 1931; Roethlisberger and Dickson, 1939; Smith, 1953; Whyte, 1955). The focus of interest in these field studies, however, was on the negative side of work norms and standards, on their effect in keeping *down* production. But a broader view of the issue should recognize that norms have a positive side; they also hold *up* production. A production norm is simply a work goal shared by a group of workers.

Since the experimental studies mentioned above were unanimous in finding that hard goals produced a higher level of performance than easy goals, a word is in order regarding a theory of task performance which would not have predicted these findings. Atkinson and Feather (1966) regard level of performance to be a function of the product of the probability of reaching the goal (task difficulty) and the incentive (satisfaction) value of reaching it. They assume that probability of success (PS) and incentive value (I) are inversely and linearly related, so that a high-PS task yields low satisfaction with success (I) whereas a low-PS task yields high satisfaction with success. Thus the highest product of these two scores and, thence, the highest output, should occur when both have a value of .50, which means when probability of success is .50[5] (see Atkinson, 1958). The curve relating probability of success to output should be bell-shaped, with extreme values of PS producing low output, and moderate values producing high output.

It is clear that the results of the studies cited above flatly contradict

[5] Atkinson's complete theory also incorporates the influence of need for achievement and fear of failure on performance. For purposes of this discussion it is assumed that the motive to approach success is greater than the motive to avoid failure. However, even if this were not true of the subjects used in the studies cited, there is no way that Atkinson's theory, as it now stands, could be made to predict a linear relationship between task difficulty and performance level.

this theory (cf., Fig. 1). The source of the contradiction involves the subjects with hard goals. The above cited studies found that subjects with hard goals worked harder, not less hard, than subjects with moderate goals. In other words, the *S*s adjusted their effort to the difficulty of the goal or task undertaken (see Bryan and Locke, 1967b). If the task was hard, they worked hard; if it was easy they worked less hard. And, in fact, it would have been irrational for them to act otherwise. If an individual genuinely has a difficult goal, it would be self-contradictory for him not to work hard to achieve it. If he did not do so, we would question whether he really had such a goal at all.

The issue here is one brought up by Stedry (1960) and discussed above: it concerns the difference between goal or task *assignment* and goal *acceptance*. It is true that many people reject difficult tasks which are assigned to them and probably more people reject very hard tasks than reject moderately hard tasks. But the point is that once a hard task *is* accepted, the only logical thing to do is to try one's hardest until one decides to lower or abandon the goal. It is argued that people who do stop trying when confronted by a hard task are people who have decided the goal is impossible to reach and *who no longer are trying for that goal.* In the above studies, most subjects assigned hard goals or tasks evidently accepted them (for some exceptions, see Locke and Bryan, 1967a).

Atkinson (1958), however, conducted one study which seemed to support his theory; subjects were given two tasks and were told that either $\frac{1}{20}$, $\frac{1}{3}$, $\frac{1}{2}$ or $\frac{3}{4}$'s of the subjects in the group they were in would win a monetary prize, the winners being those who showed the highest output on the two tasks. The highest output was achieved by the $\frac{1}{3}$ and $\frac{1}{2}$ probability-of-success groups with the two extreme groups showing the lowest output. In this study it is likely that many of the subjects in the $\frac{1}{20}$ group *did not try to win,* because they thought their chances were poor. The *actual goals* of the subjects in the different groups were not determined. Furthermore, an attempted replication of this study by McClelland (1961, p. 216) obtained a (negative) *linear* relationship between PS and output—a finding which supports the present theory.

Relationship of Qualitatively Different Goals to Level of Performance

The studies in this section are concerned with the relationship of qualitatively different goals to level of performance. Most of them deal with a comparison of the assigned goal of "do your best" with specific hard goals. The former was chosen for research by the present writer because it is used, explicitly or implicitly, in virtually all psychological

experiments. Yet, just what it means is not exactly clear. It was believed that such a goal did not necessarily lead to the highest performance possible. Thus it was decided to compare the output induced by a "do-best" goal with that which could be produced by specific quantitative hard goals of the type used in the studies described in the previous section.

Table 2 summarizes the results of eight studies conducted by the present writer and Bryan in which these two types of goals were compared. In six of the eight studies the subjects trying for specific hard goals performed at a significantly higher level than subjects trying to "do their best." Thus, a "do best" goal does not tend to produce (under the conditions of these studies) the highest possible level of performance.

Mace (1935) obtained a similar finding in a study of complex computation. He gave one group of subjects specific hard standards, geared to their ability level, to aim for in each work period, whereas other subjects were told simply to "do their best." The group with hard standards improved much faster than the "do best" group. Mace also analyzed the within-trial rates of the hard-goal and do-best groups and found that the difference between the groups was due entirely to the hard-goal group showing higher output toward the end of each 20-minute-trial period as compared with the do-best group. Both groups worked at the same pace early in each work period but the difference between them grew as the work period progressed. However, in one of the studies reported above (Locke and Bryan, 1966a) the superiority of the hard-goal groups was equally large during each segment of the work period (although in the latter study the periods were only 10-minutes long). On the other hand, in two other studies reported above (Locke and Bryan, 1967a) using single trials that lasted 1½–2 hours, Mace's finding was replicated. The difference between the groups increased steadily during the course of these long work periods. Clearly one reason that specific hard goals enhance performance is that they prolong effort during the latter portions of long work sessions.

In a study of a somewhat different nature, Henderson (1963) assigned fifth-grade children stories to read, but asked them to indicate what their *reading purposes* would be before they began. He found that children who formulated more complex, numerous, and creative purposes actually attained their purposes more fully and completely than did subjects who formulated fewer, less complex, and less creative purposes.

Finally, an industrial study by Meyer, Kay and French (1965) examined the effects of goal-setting during appraisal interviews on subsequent job performance. They found that of those performance items which were translated into specific goals, 65% showed subsequent im-

TABLE 2
SUMMARY OF 8 STUDIES COMPARING SPECIFIC HARD GOALS WITH "DO BEST" GOALS

Study	Task	Trials & Length	Goal Group	N	Goal Source[a] E	Goal Source[a] S	% Success	Performance Measure	Best (Absolute) perf. by:	Stat.	p
Locke & Bryan, 1966a	Complex coordination	12 10-min. trials	Hard	14	X		29	Linear slope of perf. curve	Hard goal	F = 17.75 (df. 1,24)	.001
			Do Best	14	X		—				
Locke & Bryan, 1966b	Complex computation	6 10-min. trials	Hard	5	X	X	13	Total problems correct	Hard goal	t = 1.99	.07
			Do Best	17		X	—				
Locke & Bryan, 1967a	Perceptual speed (pilot study a)	10 2-min. trials	Hard	9	X	X	05	Total rows correct in rel. to practice score	Hard goal	t < 1	ns
			Do Best	22		X	—				
	Addition (pilot study b)	10 2-min. trials	Very Hard	8	X	X	04	Total problems correct in rel. to practice score	Hard goal	t < 1	ns
			Do Best	21		X	—				
	#1. Perceptual speed	1 90-min. trial	End goal	24		X	08	Total rows correct in rel. to prac. score	End goal	t = 3.49	.002
			Do Best	17	X		—				
	#2. Addition	1 2-hr. trial	End goal	9	X		88	Total problems correct	End goal (matched groups)	t = 4.50	.001
			Do Best	9	X		—				
Locke, 1967b	Addition	5 trials; mean length = 12 min. ea.	Hard	18	X		16	Total probs. correct in rel. to prac. score	Hard goal	F = 4.83 (df. 1,32)	.05
			Do Best	18	X		—				
Bryan & Locke, 1967a	Addition	12 trials (range 15″ to 32 min.) on each of 3 days	Hard	6	X		54	Difference of trends across the three days	Hard goal	F = 6.20 (df. 2,20)	.01
			Do Best	6	X		—				

[a] For explanation of this heading, see Table 1.

provement, while of those performance items that did not get translated into goals, only 27% showed subsequent improvement.

Behavioral Intentions and Choice

The designs of the studies reported in the preceding sections required all subjects to work at the same task (do the same thing) and the focus of interest was on how well they did it (i.e., output). The experiments to be reported in this section were designed so that subjects had a *choice* either as to the difficulty of the *task* they would work on or the particular kinds of *responses* they would give. The intention to make a certain task choice or to respond in a certain way will henceforth be called a *behavioral intention* (after Dulany, 1962).

Three studies conducted by the present writer and colleagues (Locke, Bryan, and Kendall, 1968) examined the relationship between behavioral intentions and task choice. The task in all cases was word unscrambling and subjects were allowed to choose, on each trial, the length of the word (e.g., four letters, five letters, six letters, etc.) they would try to unscramble. Subjects had 45 seconds to try to solve each word chosen. Word-length choice was the dependent variable.

In the first study there were three blocks of ten trials each and subjects filled out a 5-point behavioral-intention scale before each trial and before each block of trials. The scale asked the subject to indicate whether she intended to choose a "very hard word," a "hard word," a "moderately hard word," etc. on the next trial or block of trials. The intention ratings were quantified on a 5-point scale: 1 for the "very easy words" alternative, to 5 for the "very hard words" alternative. The mean within-subject correlation between word length choice and intentions across the 30 trials was .81 (median = .80). The mean within-block, between-individual correlation between block intention and mean word choice on that block was .60 ($p < .01$).

In the second study, the first block consisted of ten choices. Before trial 1, one third of the subjects were told to try to "succeed" as much as possible; one third were told to "get as great a sense of personal achievement as possible," and one third were told to try and "overcome the greatest possible challenges." Behavioral intentions were measured on a 5-point scale completed before the block began and were quantified on a 5-point scale as in the previous study (see above). The relationship between instructions, intentions and mean word choice is shown in Fig. 2. Clearly the "challenge" group developed the "hardest" intentions and chose the hardest (longest) words while the "success" group developed the easiest intentions and chose the easiest (shortest) words. The "achievement" group was intermediate on both variables. The correlation

between instructions (quantified 5, 3, and 1 for the challenge, achievement and success groups, respectively) and mean word-length choice on the ten trials was .67 ($p < .01$), while that between intentions and mean word-length choice was .88 ($p < .01$).

On block II, there were ten more trials but no specific instructions. The correlation between intentions and word-length choice was .81 ($p < .01$).

In the third study, subjects had five blocks of five choices each and they filled out an intention rating before each block. The within-block correlation between mean word-length choice and intentions were .78, .83, .79, .85, and .79 for the five blocks, respectively, (all p's $< .01$).[6]

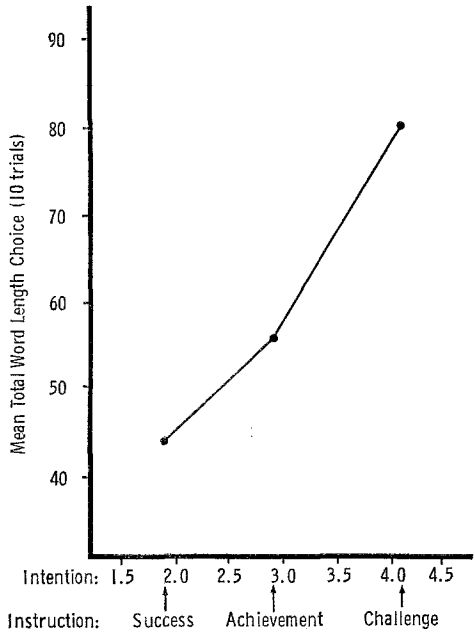

FIG. 2. The relationship of instructions and intentions to word-length choice.

Let us turn now to studies in which all subjects had to work on the same task but had a choice of *responses*. These studies have all been in the "verbal-conditioning" area. Subjects are asked to free associate or to make up sentences and are "reinforced" (by the experimenter saying "good" etc.) for listing certain types of words or certain kinds of sentences. Dulany (1962) gave his subjects postexperimental interviews asking them to report their behavioral intentions and found highly

[6] The blocks referred to here are not chronological (i.e., 1st, 2nd, 3rd, 4th, 5th) but refer to blocks in which all subjects received the same incentive, either 1, 2, 3, 4, or 5 cents. The effects of incentives on choice are discussed in Part II below.

significant correlations in three different studies between the subjects' behavioral intentions and the actual number of responses given in the intended category. For instance, subjects who intentionally tried to make up only sentences beginning with "I" or "We" actually made more such sentences than those who did not try to do this.

A study of a similar nature was conducted by Holmes (1966). Subjects who tried intentionally to give "I" or "We" sentences gave significantly more of them than those who did not try to do this, even when both groups were aware that "I", "We" sentences were the kind the experimenter was "reinforcing" them for giving.

Two later studies by Dulany (1968) reported correlations of .94 and .90, respectively, between behavioral intentions and responses on a task where the subject was to select, on each trial, one of two sentences presented to him.

Finally, a field study by Leventhal and Niles (1964) showed subjects films which demonstrated the danger of smoking and its relationship to lung cancer. Afterwards, they asked each subject to indicate how much *desire* he had to get a chest X-ray. The stronger the desire to get an X-ray the more likely the subject was to actually have one taken.

II: GOALS AND INTENTIONS AS MEDIATORS OF THE EFFECTS OF EXTERNAL INCENTIVES

A General Note on Instructions

In a number of the experiments reported in Part I, goals were manipulated by instructions. However, in most of the studies conducted by the author subjects' *acceptance* of their assigned goals was corroborated by interviews. Thus these studies were legitimately described as dealing with the relationship between goals and performance rather than the relationship between instructions and performance.

As every experimenter and shop foreman knows, one of the most efficient ways to get somebody to do something is to ask him, i.e., to *assign* him a goal or task. But it is important to recognize that instructions do not inevitably nor automatically affect an individual's goals or behavior. For example, in some of the studies reported in Part I, post-experimental interviews revealed that subjects did *not* accept their assigned goals. For these subjects there was no relationship between assigned goals and performance. Only when these subjects were reclassified according to the goals they actually reported working for did a relationship between goals and performance emerge (e.g., see Locke and Bryan, 1966b, 1967a).

Our theory suggests that instructions will affect behavior only if they

are consciously accepted by the individual and translated into specific goals or intentions. This applies equally well to the instruction by an experimenter to "try for quality in your answers" to the instruction by a shop foreman to "produce 400 portzeebies an hour." It is not enough to know that an order or request was made; one has to know whether or not the individual heard it and understood it, how he appraised it, and what he decided to do about it before its effects on his behavior can be predicted and explained.

There have been very few studies in which the effectiveness of instructions and intentions in accounting for behavior have been actually compared. However, in the second study (Study 4 in Locke *et al.*, 1968) of word unscrambling discussed previously in Part I, subjects were instructed to choose words to unscramble which would provide either "success," "achievement," or "challenge;" instructions correlated significantly with word choice ($r = .67$, $p < .01$), but this correlation was completely vitiated when the subjects' own behavioral intentions (established after the instructions were given) were partialed out ($r_p = .08$). In other words, the instructions were correlated with choice only by virtue of their correlation with intentions and had no effect on behavior over and above their effect on intentions.

Stedry's (1960) study (discussed in Part I) should also be recalled in this context. Subjects tended to reject hard goals assigned by the experimenter if they had already set their own personal goals.

In a memory experiment Eagle (1967) instructed different subjects to use either a rehearsal strategy or an associative strategy in memorizing a list of words. Eagle found that instructions per se had no effect on amount of recall; only when subjects were reclassified according to the strategy they *actually reported using* did a difference between groups emerge (in favor of those using the associative strategy).

Although instructions are the most commonly used incentive in everyday life, most psychological research has been focused on other types of incentives such as money, knowledge of results, participation, etc. Let us turn now to evidence concerning the dependence of their effects on goals and intentions.

Goals as Mediators of the Effects of Incentives on Level of Performance

Money. In a study reported by Locke *et al.* (1968) subjects worked on a brainstorming task (giving uses for objects) for three blocks of seven trials each. (This study is also listed in Table 1.) Goal-setting instructions and amount of incentive offered for output were systematically manipulated. It was found that subjects who set their goals high on block

III relative to block II improved their performance on block III more than those whose block III goals were not substantially higher than their block II goals. On the other hand, there was no main effect of incentive independent of goal level. Subjects who had the same output goals produced the same amount whether they were paid a bonus for reaching the goal or not. Using groups means as the units of analysis, the rank order correlation between output and goal level was .85 ($p < .01$).

In a second study reported by Locke *et al.* (see also Table 1), 30 subjects worked for 50 minutes at a toy construction task. The subjects set output goals at the beginning and at the halfway point of the work period. Half the subjects were paid on a piece-rate system and half were paid only for participation. It was found that the mean output of the two groups did not differ significantly in either half of the work period. This finding was congruent with the fact that the mean goal level of the two groups did not differ significantly in either period. On the other hand, when all subjects were combined, there was a significant relationship between second-half performance and second-half goal level.

Numerous industrial studies of the effects of monetary incentives on performance have found that the effectiveness of piece-rate incentive systems depend on the particular production quotas that workers have (e.g., Mathewson, 1931; Roethlisberger and Dickson, 1939; Whyte, 1955). If the workers feel that their long-term self-interest (either in terms of interpersonal relations, effort, or job tenure) will be threatened by trying to go "all out" for piece-rate earnings, they will restrict production to what they consider to be a "safe" level (a level that will protect their jobs and/or keep the time study man from retiming the job and setting new rates, etc.).

One effect of a well-run incentive system is that (providing the workers value money) it will encourage workers to accept tasks and set goals that they would not accept or set on their own (i.e., for the intrinsic enjoyment of the work itself). Thus, money can serve to *commit* subjects to tasks which they would not otherwise undertake. The use of incentives to insure goal acceptance was a key element in Taylor's (1911) "scientific management" system.

Knowledge of score. The studies to be reported in this section are concerned only with the effects of knowledge of overall scores (KS) on a task or knowledge of score on a task where there are no right or wrong answers (e.g., reaction time). Thus, we are concerned with "motivational" knowledge as opposed to epistemic knowledge of the type that can be used to correct errors (e.g., visual feedback on a dart-throwing task).

An initial study by Locke and Bryan (1966b) compared the effect of KS vs. NoKS on a complex computation task. Some subjects were

allowed to compute their scores after each trial and some were not. The subjects had six trials of 10 minutes each. No difference was found between the KS and NoKS groups in performance. However, when the subjects were reclassified according to their postexperimental goal descriptions, a significant relationship of goals to performance was found.

Two subsequent studies manipulated goal-setting and KS independently using a 2×2 design (Locke, 1967b; Locke and Bryan, 1967c). In both studies subjects worked on five trials of irregular duration (mean = 12 minutes) at an addition task. Periodically half the subjects (KS group) were given their scores and half (NoKS group) were not. In the first study, half the subjects were given specific hard goals to aim for on each trial, while the other half were told to "do their best." In the second study, half the subjects were given easy goals to aim for and half were given hard goals. In both studies, the subjects with hard goals performed significantly better than those with easy or do-best goals, but

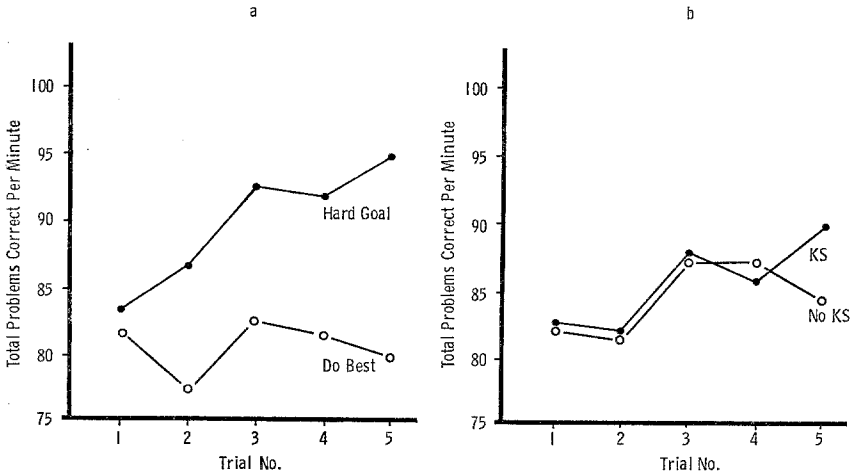

FIG. 3. The relationship of goals and knowledge of score to performance.

no difference in performance was found between the KS and NoKS groups. The results for the Locke (1967b) study are shown in Figs. 3a and b. The hard-goal group is clearly superior to the do-best group in performance whereas the KS and NoKS groups have very similar performance curves.

Another study (Locke and Bryan, 1967b) found that when KS does facilitate performance, it does so only *through* its effects on goal-setting. Subjects were given 16 5-minute trials on a complex computation task. One group of subjects were allowed to compute their scores after each

trial and another was not. Subjects filled out goal description questionnaires before, during, and after performance. It was found that the KS subjects performed significantly better than the NoKS subjects on the last eight trials, and it was only on these trials that the KS subjects set harder goals than the NoKS subjects. When differential goal-setting was controlled by partialing, the relationship of KS condition to performance was vitiated.

The important thing about KS, then, is not merely whether it is given or not given but how a subject interprets and evaluates it, and what goals he sets in response to it. The *form* in which KS is given, of course, can influence its effectiveness. For instance, if KS is given in such a form that it cannot be used to set goals or to judge one's progress in relation to a standard (as in Locke, 1967b; Locke and Bryan, 1967c) it will not affect motivation.

If, on the other hand, KS is given in relation to standards, the level of the standard can influence goal level. Locke (1967c) gave subjects feedback on a reaction-time task in relation to different standards; some subjects were told on each trial whether or not they had beaten their *best* previous score and others whether or not they had beaten their *worst* previous score. Positive feedback was given by means of a green light which signalled that a subject successfully beat the standard. In this study, subjects with the harder ("best") standards showed faster reaction times than those with easier ("worst") standards (see Table 1). To get green-light feedback, they had to try harder in the former case than in the latter. Thus giving knowledge in relation to the different standards in effect influenced the difficulty of the goals subjects tried for.

Time limits. Two studies by Bryan and Locke (1967b) gave subjects different amounts of time to complete an addition task. One group of individuals was given just enough time to complete the problems (the number being geared to the subject's level of ability) while another group was given twice this amount of time. It was found that the subjects given an excess amount of time took longer to complete the task than those given a minimum amount of time. The subjects given an excess amount of time also set easier goals on the task than did those given a minimum amount of time. When time limits were removed and subjects were free to work at their own pace, both experimental groups set their goals at the same level and worked at the same pace. Thus, the effect of the different time limits appeared to be a function of the differing performance subgoals which they induced. Their effects did not extend to a situation where the work was self-paced.

The foregoing studies of time limits can be viewed as belonging to a wider class of studies concerned with the effect of task difficulty on

performance. The difference between these studies and those discussed above is that in the present case no goals (other than completing the problems in the time allowed) were assigned as such; the subject was simply given a task and told how much time he had to complete it. The effect of the imposed time limits was a function of the goals the subjects set in response to them.

The above studies virtually exhaust the literature on the topic of goals as mediators of the effect of incentives on performance level. Our treatment of the next three incentives: participation, competition, and praise and reproof, is therefore confined mainly to a discussion of experiments in which goal-setting was mentioned only incidentally, or to discussion at the theoretical level.

Participation. A number of investigators have argued that employee participation in the decisions that affect them motivates better job performance (e.g., Maier, 1955; Likert, 1961; Viteles, 1953; Vroom, 1964), and there is research evidence that would appear to support this claim. However, the question that concerns us here is *how* participation serves to motivate job performance when it does so. In the typical field experiment on participation, many aspects of the job are likely to be changed: e.g., job method (method of performing the task), method of payment, rate of pay, quality and quantity of training, type of supervision, commitment of the worker to his assigned quota, the level of the quota, etc. Any one of these factors could affect subsequent production, but experimental research has not systematically tested the relative importance of each.

It will suffice for our purposes to point out that goal-setting, specifically a change in the production quota, has been an explicit element in many participation studies. For example, see the following description of Bavelas' study by Viteles (1953, p. 167):

> . . . in the course of . . . [participation] meetings, the experimenter . . . talked about the greater ease of working together as a team; discussed individual production levels with the group; questioned its members as to the level of production which might be obtained if they worked as a team, and *asked if they would like to set a team goal for higher production.* (italics mine).

In another study of participation by Lawrence and Smith (1955), the authors write:

> Members of these groups were encouraged to use their own judgment in setting goals, but were reminded that *unless they set the goal a little above their present accomplishment they would be unable to determine the effectiveness of the group when working as a team* (p. 334, italics mine).

Similarly in a study of participation at General Electric reported by Sorcher (1967): "The employees were asked . . . to set quality goals for themselves, and to discuss how they might improve their performance so as to improve the quality of their output" (p. 16). In this study substantial improvements in work quality were obtained as a result of the group meetings.

Most revealing of all is a recent field study conducted by Meyer *et al.* (1965) where the effects of participation and goal-setting were more clearly separated. The authors found that: "While subordinate participation in the goal-setting process had some effect on improved performance, *a much more powerful influence was whether goals were set at all*" (p. 126, italics mine). In other words the content of the participation sessions was more important than the fact of participation itself. (The results of goal-setting in this study were given previously in Part I.)

The above quotes should not be taken to imply that participation has no motivational effect in and of itself. For example, Macoby (quoted in Viteles, 1953) suggests that participation may help to internalize motivation—to increase a subject's *commitment* to performance standards. The point is that goal-setting has been an integral part of previous studies of participation. Considering the amount of evidence there is (see Part I) that goals regulate performance, it must be concluded that the results of at least some of these studies can be attributed largely, if not entirely, to the goal-setting which was associated with or induced by the experimental design.

Competition. It is well known, both from experimental studies and from everyday experience, that competition can serve as an incentive to increase one's effort on a task. This phenomenon is an intrinsic part of athletics and business and is not unknown in academia. In the paradigm case of competition *another person's or groups' performance is the standard by which goals are set and success and failure judged.* One reason competition in athletics is so effective is that winning requires that one surpass the performance of the *best* existing competitor. This typically results in the standard of success becoming progressively more difficult with time. Each time a record is broken, the level of performance required to win (against the record holder) is raised. Each competitor must then readjust his goal and his level of effort to the difficulty of the task. The result is progressively better performance. (Of course cognitive factors can facilitate performance improvement, i.e., discovering better methods of performing the task. But it is the individual's *goal* to win or improve that generally motivates the search for such innovations.)

The case is similar though not identical in business. (Unlike athletics, business is not a "zero-sum game," where one man's gain necessarily

means another man's loss. In business, wealth is *created* and therefore everyone benefits in the long run). Competition will encourage the development of better and better products as long as there are firms who wish to increase their share of the market. Competition may also spur firms to increase their quality or lower prices in order not to lose business.

The effect of competition, both between individuals and between groups, depends upon the particular person or persons one is competing with and one's own values. In athletics, the goal is typically to beat the best other competitor. In business this is not always the case; typically, business firms are satisfied to surpass their own best previous performances. Students, if they are competing, will ordinarily pick other students with grades or abilities similar to their own to compete with, or else will try to surpass their own best previous grade-point average.

The case of an individual trying to improve over his own previous performance on a task can be considered a special case of competition: *self-competition.*

As with participation, competition may have other effects besides inducing goal-setting. Above all, competition probably encourages individuals to remain *committed* to goals that they might otherwise abandon in the face of fatigue and difficulty. For instance, if mile runners only ran against themselves or against a stop watch, the 4-minute mile might never have been broken.

In addition, competition encourages the setting of goals that might not have been set at all in the absence of the other party. For example, if the Ford Motor Company had not developed a massed-produced low-priced automobile, General Motors might not have thought of developing a similar (competing) model (at that particular time).

Praise and reproof. A recent review of the literature on praise and reproof (Kennedy and Willcutt, 1964) concluded that the effects of both incentives were highly variable though praise was generally more effective in improving performance. Most studies have found complex interactions between praise and reproof and such variables as: age, social class, race, sex, task, and intelligence.

As with all the other incentives discussed heretofore, the present theory suggests that the effects of praise and reproof will be a function of what goals the individual sets in response to them. It is clear from introspection and from everyday experience that sometimes the reaction to criticism is to clench one's teeth and try harder; at other times, the reaction is to give up (and "sulk") or to deliberately do badly (to "get even" with the critic). Similarly, praise sometimes leads to the setting of new and higher goals and at other times it is taken as a signal to "goof-off."

A theory explaining the precise circumstances in which praise and

reproof will lead to the setting of higher and/or lower goals is beyond the scope of this paper. The important point is, however, that the effects of these incentives on performance should be a function of the goals the individual's set in response to them. The highly inconsistent results obtained by previous investigators may be attributed to their failure to control for differential goal-setting by subjects in the different experimental conditions.

The importance of goal-setting was implicitly recognized in one study, whose authors Kennedy and Willcutt (1964) paraphrase as follows:

> The authors concluded that when the examiner's statements led subjects to assume that a particular level of performance is expected or that his performance is less satisfactory than that of other subjects, failure increases motivation; but when the examiner's statements only comment upon the subject's performance, failure lowers motivation (p. 329).

This implies that reproof will have a facilitative effect on performance when it is given *in relation to a standard.* Our previous discussion of knowledge of score suggested the same thing; giving scores in relation to a standard is one means of implicitly manipulating or encouraging goal-setting by a subject.

Another factor that has not always been controlled in studies of praise and reproof is that of success and failure. In some studies (e.g., Anderson, White, and Wash, 1966) subjects were given fictitious test scores in relation to some (fictitious) norm and then praised (for high scores) or reproved (for low scores). Without two control groups given success and failure feedback alone, the relative contribution of praise and reproof as compared with task success and failure cannot be determined.

Let us turn now to the effects of incentives on choice.

Behavioral Intentions and Desires as Mediators of the Effects of Incentives on Choice

Money. Each of the three studies of word unscrambling described above (and reported in Locke *et al.,* 1968) involved monetary incentives. In the first study, subjects were offered: 0 cents for successfully unscrambling their chosen word on the first block of ten trials; 2 cents for each word solved correctly (regardless of length) on the second block; and 10 cents for each word solved correctly (regardless of length) on the third block. It was found that subjects tended to choose easier words as the payment for success became greater. There was a correlation across blocks between amount of incentive and mean word length choice of—.51 ($p < .05$). However, this correlation was vitiated ($r = .22$, ns) when the effects of intentions were partialed out, indicating that the money

did not affect word choice independent of its effects on the subjects' intentions.

In the second study discussed above, subjects were given "success," "achievement," or "challenge" instructions on the first block of ten trials, but were offered no money for correct solutions. On the second block, subjects were given no instructions but were offered 4 cents for each word correctly solved regardless of length. The point biserial correlation, for all subjects combined, between mean word-length choice and incentive (coded 0 and 1 for blocks I and II, respectively) across blocks was —.48 ($p < .01$). However, when intentions were partialed out this r was reduced to a nonsignificant —.10. In contrast, intentions correlated .86 ($p < .01$) with word choice across blocks after incentive was partialed out.

In the third study in this series described above, subjects had five blocks of five trials each; on each block the subject was offered either

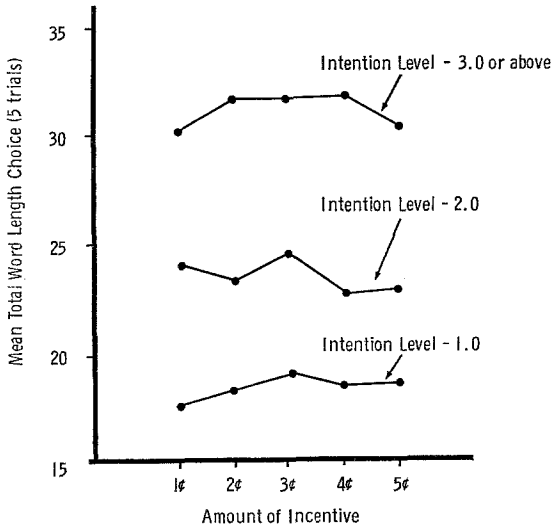

FIG. 4. Word-length choice as a function of incentive for three levels of intention.

1, 2, 3, 4, or 5 cents for each word solved correctly on that block regardless of length. (The order was counterbalanced across subjects.) Again subjects tended to choose easier words when offered the higher incentive. The relationship of intentions and incentive to mean word choice is shown in Fig. 4, where word choice is plotted as a function of incentive for each of three levels of intention. (Intention level 1.0 corresponds to the "very easy words" alternative on the intention scale; 2.0 corresponds to the "fairly easy words" alternative; 3.0 corresponds to the "neither

too easy nor too hard" alternative; the few subjects who checked intentions harder than this are also included in this group.) It is clear that the effect of intention on word choice was considerable but there was no effect of incentive within any given intention level. As in the previous two studies, incentive had no effect on word choice independent of the subjects' behavioral intentions. (There was also a no-incentive comparison group in this study. The results were the same whether or not this group was included. For the complete report, see Locke *et al.*, 1968, Study 5.) The overall correlation across blocks between intentions and word choice was .83 ($p < .01$); this correlation remained unchanged after partialing incentive. In contrast, the correlation across blocks of incentive with word choice after partialing intentions was .04 (ns).

Verbal "reinforcement." The previously discussed findings of Dulany (1962, 1968) and Holmes (1966) regarding behavioral intentions and verbal responses were obtained in studies of "verbal conditioning." The subjects in these studies were instructed to free associate or to make up sentences beginning with one of a number of pronouns, and the experimenter reinforced some arbitrarily designated class of words (e.g., plural nouns) or pronouns (e.g., I, or We) by saying "good" or "Mmm-hmm" after each response in that class. In the above three studies it was found that such "reinforcement" had no effect on responses independent of subjects' intention to give the "correct" response.

Another series of studies in this same area examined the effects of the subjects' conscious *desires* on behavior. In these studies subjects were asked to indicate the strength of their desire to get the reinforcement ("good," etc.) which the experimenter provided (e.g., DeNike, 1965; Spielberger, Berger, and Howard, 1963; Spielberger, Bernstein, and Ratliff, 1966; Spielberger, Levin, and Shepard, 1962). It was found that the frequency of emission of the "correct" response class was a direct function of the strength of the subjects desire to get the reinforcement (provided he knew what the "correct" response class was).

III: DISCUSSION

There is considerable evidence to support the view that goals and intentions are important determinants of task performance. It is argued that these long-neglected concepts are important enough so that any tenable theory of human motivation must take account of them. This conclusion is based both on the fact that consciousness is man's means of survival (Rand, 1964) and on the strong empirical relationships that have been obtained between goals and behavior.

The experimental findings also indicate that goals and intentions mediate the effects of incentives on behavior. It appears that a necessary

condition for incentives to affect behavior is that the individual recognize and evaluate the incentive and develop goals, and/or intentions in response to this evaluation. A careful examination of the subjects' goals and intentions in research on incentives should produce more clear cut results as well as providing a theoretical rationale for explaining how incentives affect action.

A highly simplified schematic showing the hypothesized sequence of events leading from events in the environment to action is given below:

Environmental Event (e.g., incentive)	→ Cognition	→ Evaluation	Goal-setting → Intention	→ Performance
(1)	(2)	(3)	(4)	(5)

The present research examined only the relationships between stages 4 and 5, and between 1, 4, and 5. Cognition and evaluation were assumed to occur, but their contents were not specified. The focus of interest was on the *results* of these processes (the goals or intentions established) and subsequent action. A complete theory of task motivation would, of course, have to deal with the processes of cognition and evaluation (and their determinants) as well as their outcomes.

It may be useful theoretically to classify the various incentives that were discussed in Part II. For our purposes the dimension of interest is the degree to which the different types of incentives suggest *specific* goals or intentions to subjects.

Instructions, of course, are the most direct means of manipulating goals and intentions. Instructions will influence behavior providing: (1) the individual accepts them, i.e., accepts the assignment as his own goal or intention, and (2) he is able to do what is asked (this will depend upon his knowledge, ability and the situation).

Giving an individual specific *time limits* is another fairly direct means of manipulating goals, given the same qualifications as for instructions. It was shown previously that individuals who accept different time limits will set different subgoals as well, but these were a result of their accepting the different time limits initially.

Two less direct means of manipulating goals are giving *knowledge of score* and providing *competition.* These incentives do not tell the subject directly what goal to try for, but if given in the right form, they may *suggest* specific standards to him. For instance, giving a subject his raw scores after each trial may suggest the goal of improvement (providing the trials are all the same length so that the trial scores are comparable). Similarly, giving KS in relation to some external standard is certain to imply a goal to the subject. Giving scores in relation to those of another

person is a common way of combining KS and competition. Again the effects of both incentives will be dependent upon the subject choosing to use the KS to set goals or to try to beat the other individual. These two incentives are usually quite effective in experimental situations where the subject is actively looking for cues as to what he is supposed to do and is anxious to cooperate (Orne, 1962).

Money, praise and *reproof,* and *participation,* in contrast to the above incentives, are quite indirect means of manipulating goals. None of them directly suggests or implies that the subject should try for a *particular* goal as such. Offering an individual money for output may motivate him to set his goals higher than he would otherwise but this will depend entirely upon how much money he wishes to make and how much effort he wishes to expend to make it. It is useful in this context to recall the well-known sociologist Max Weber's observation that the introduction of high incentive pay may reduce output if the worker's income aspirations remain the same as before the incentive was introduced. Some workers would prefer to make the same money in less time than to make more money in the same amount of time. The most important role played by money is probably to get a subject to accept an assigned task or goal or to insure his commitment to a job.

Similarly participation as such will not necessarily suggest a higher output goal; this will depend on the particular *content* of the participation process (the particular nature of the decisions reached). The most direct effect of participation is probably to commit a subject to the decision reached (as with money), whatever that might be.

The effects of praise and reproof on goal-setting are also indirect. Praise and reproof per se represent only evaluations of the subject's past performance and do not imply what *he should do* in the future. A subject's reaction to these incentives will depend on such factors as whether he considers the comments just or unjust, the particular work context in which the comments were made, his liking and respect for the person making the comments, his own personality, etc.

In most real life work situations a combination of all of these incentives are employed. A worker is hired and *instructed* on what to do and *how fast* to do it; he is given or gets *knowledge of performance* either from others or from the task itself; he may *compete* with others for promotion; he is *paid* for working, he is *evaluated* by his supervisor, and sometimes he *participates* in decision making. All of these factors can be considered ways of (1) getting the subject to set or accept work goals, and (2) retaining his commitment to them and insuring persistence over time.

The issue of goal commitment has not been dealt with in any of the research discussed above, but it is no doubt an important factor in per-

formance. The subject's degree of commitment to his goal may play an important role in determining how easily he will give up in the face of difficulty, how likely he will be to "goof off" when not being pressured from the outside, how likely he will be to abondon hard goals, and how prone he will be to "leave the field" (i.e., job) in the face of stress.

Finally, a word is in order about the possible industrial applications of the finding that goal setting is a major determinant of task performance. There are two recent trends in industry, which, although they were not inspired by this research, are quite congruent with its implications. One is a motivational program called *Zero Defects* (American Management Association, 1965). The purpose of a zero-defects program is basically to reduce errors in workmanship (i.e., increase the quality of work) by persuading workers to adopt higher goals with regard to quality. Carrying out the program often involves the gathering of more precise quality data (knowledge of results of the epistemic type) and changing of work methods, and some programs are supplemented by the introduction of group competition and prizes for accomplishment. Huse (1966) has argued that another important aspect of zero-defects programs is the opening up of channels of communication between the workers and management.

Without carefully controlled studies, of course, it cannot be determined just what particular aspects of the zero-defects programs are most responsible for the success that they have apparently enjoyed. But changing the quality goals of individual workers and managers does seem to be the key element; not only does it affect work directly but it apparently stimulates employees to try to *discover* better methods of doing the work.

While zero-defects programs are usually focused on work at the blue collar level, the focus of a second major trend is on work at the white collar level. It is called *Management by Objectives* (see Hughes, 1965; Valentine, 1966, for details). The key element in this system is the setting of specific performance goals by executives and managers. Goals are usually set jointly by the manager and his supervisor, thus participation is involved. Goals can involve sales, growth, output, income, costs or some combination of these, depending upon the particular type of job. The process involves: the delineation of company goals and the translation of these into goals relevant to the individual's own job, setting up hierarchies of objectives, planning out the means by which each goal is to be reached, and agreeing upon the criteria to be used in evaluation. (Zero defects could be interpreted as the application of this general approach to the particular problem of work quality). Again, many different factors are involved in management by objectives programs but the setting of specific goals is the cardinal element.

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