

The Effect of Differential Amounts of Positive Verbal Feedback on the Intrinsic Motivation of Male Hockey Players

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The purpose of this study was to assess the relationship between the amount of positive verbal feedback presented and the ensuing intrinsic motivation of male hockey players toward a hockey-related task. The subjects were 50 male hockey players 13-16 years of age who performed on an interesting task consisting of 24 slides that allowed the subject to test his decision-making abilities in simulated hockey situations. Subjects performed on the task and received either 6, 12, 18, 24 (on every trial or slide), or no positive verbal reinforcements regarding their performance. Following their participation on the task, subjects answered an intrinsic motivation questionnaire and a question on feelings of competence. Results indicated that subjects receiving positive verbal feedback displayed a much higher level of intrinsic motivation and experienced higher levels of feelings of competence than subjects in the control group, irrespective of the amount of feedback presented. Further, no other differences were found among the feedback groups. These findings are discussed in light of cognitive evaluation theory (Deci & Ryan, 1980) and previous intrinsic motivation studies on the effect of positive verbal feedback. Finally, implications and suggestions for future research within the realm of sport are proposed.

In the past decade, an important change has pervaded the human motivation literature. Theorists and researchers alike have come to favor an organismic approach to the study of behavior over the traditional mechanistic and reductionist perspective. It is now accepted that individuals are active causal agents in their rela-

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tionship with the environment. Human beings act out of their own choosing on the basis of personal internal events (Deci, 1975). Consequently, the organismic approach has focused on the study of peoples' thoughts, feelings, and motives as the primary determinants of behavior.

One organismic construct which has received considerable attention is that of intrinsic motivation. Based on the work of deCharms (1968) and White (1959), Deci (1975) posited that intrinsic motivation depends on both a need for feelings of competence and self-determination. According to this position, people need to feel efficient at activities or tasks over which they assume personal control. These activities, in providing participants with feelings of competence and self-determination, become intrinsically motivating and consequently may be engaged in on a long-term basis.

It is believed that sport activities are representative of such intrinsically motivating activities. Accordingly, the study of intrinsic motivation in sports has received much attention (e.g., Gerson, 1978; Halliwell, 1978, 1979; Orlick & Mosher, 1978; Thomas, 1977; Vallerand, 1982; Vallerand, Reid, & Marisi, 1980). Following the lead of theorists and researchers in social psychology (e.g., Arkes, 1978, 1979; Bandura & Schunk, 1981; Boggiano & Ruble, 1979), investigators have recently concentrated their efforts on attempting to uncover conditions most likely to foster and increase intrinsic motivation. One such condition is positive verbal feedback of performance.

Results of studies conducted in sport settings on the effects of positive verbal feedback on intrinsic motivation have paralleled findings from the social-psychological literature (e.g., Anderson, Manoogian, & Reznick, 1976; Deci, 1971; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Swann & Pittman, 1977; Weiner & Mander, 1978). The results from sport studies have shown that positive verbal feedback of performance generally increases intrinsic motivation relative to negative verbal feedback conditions (Vallerand et al., 1980; Weinberg & Jackson, 1979; Weinberg & Ragan, 1979) and relative to baseline or pretest level (Vallerand et al., 1980). Cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1980) suggests that these increases in intrinsic motivation following presentation of positive feedback occurs because individuals have enhanced feelings of competence from such feedback.

Studies examining the effect of positive verbal feedback on intrinsic motivation in sport-related settings (Orlick & Mosher, 1978; Vallerand et al., 1980; Weinberg & Jackson, 1979; Weinberg & Ragan, 1979) have nevertheless contained important shortcomings. First, none of these studies has used athletes as subjects; rather, elementary school students as well as the college physical education population have been subjects. Second, the tasks employed in these studies were fine and gross motor tasks (especially the stabilometer). Although the motor tasks used represent intrinsically motivating activities and pertain to the sport domain, they nevertheless differ in important ways from tasks found in sport. Thus, the two points raised above suggest that the external validity of these results appears questionable at best from a sport perspective. Therefore, one purpose of this study was to conduct a study that could be generalized to the sport domain. This was done by employing athletes as subjects as well as by making use of a sport-related, intrinsically motivating activity.

A third and final point concerning these studies is that they have only compared positive feedback with negative or no-verbal feedback. They have not assessed the effects of differential amounts of positive verbal feedback on intrinsic motivation.

yet this would appear worthy of consideration. In actual sport settings, some coaches, teammates, and fans lavish athletes with praise and others use verbal reinforcement sparingly. Such distinct behaviors may differentially affect athletes' intrinsic motivation. It is conceivable that intrinsic motivation varies in a positive linear fashion with the amount of positive feedback presented because athletes may make use of a corresponding rule and equate levels of feelings of competence (and consequently, intrinsic motivation; Deci & Ryan, 1980) with the amount of positive feedback presented. Thus, a linear relationship may take place between amount of positive feedback on one hand and feelings of competence and intrinsic motivation on the other.

On the other hand, it is also possible that low to moderate amounts of positive feedback yield higher levels of intrinsic motivation than large amounts of positive verbal feedback because this latter type of feedback may be perceived as undiscerning of actual competence at the task and may lead the athlete to make external attributions for the feedback (e.g., "the coach is really a nice guy") instead of internal attributions (e.g., "I am really good at this activity"). In this latter instance, the athlete's perception of competence and intrinsic motivation would be enhanced by low to moderate amounts of positive verbal feedback but not by large amounts of positive feedback. Thus, a curvilinear relationship may exist between amount of positive feedback on the one hand and intrinsic motivation and feelings of competence on the other.

It is obvious, therefore, that the relationship between the amount of positive verbal feedback presented and intrinsic motivation and feelings of competence is unclear. Thus, especially for this latter consideration and because of the important implications which may follow from a better understanding of this relationship, it was deemed important to assess the effect of differential amounts of positive verbal feedback on intrinsic motivation and feelings of competence. More specifically, it was the purpose of this study to test the linear and curvilinear relationship hypotheses. Because of the plausibility of both hypotheses, it was not possible to predict which of the two hypotheses would be supported by the data.

Method

Subjects and Design

French-speaking male elite hockey players ($N = 50$), who were participating in two 1-week hockey camps, served as subjects in this study. Subjects ranged in age from 13 to 16 years, with a mean age of 14.9 years. The use of experienced athletes was designed to enhance the ecological validity of the study. Subjects were randomly assigned to one of five conditions where they received either no verbal feedback or 6 (PF6), 12 (PF12), 18 (PF18), or 24 (PF24) positive verbal reinforcements over 24 trials.

Task and Questionnaires

*Task.*¹ The task used in this study was a task specifically constructed by Thiffault

(1980) to assess hockey players' decision-making abilities. The task consists of 24 slides depicting a hockey player holding a puck in different situations. Subjects must decide and verbally indicate which of three alternatives among those of shooting, passing, or skating appear most appropriate for the situation at hand. The subject's answer stops a voice-reaction timer which is placed around his neck. This yields the subject's reaction time to the stimuli. For more details on the task, the reader is referred to Thiffault (1980).

Questionnaires. Two questionnaires were used in this study. The first was the Mayo Task Reaction Questionnaire (TRQ). This scale consists of 23 questions, each of which is scored on a 7-point scale. The maximum score is thus 161 and is indicative of the highest level of intrinsic motivation. This scale has been found to have high internal consistency (.93; Mayo, 1977) as well as high split-half reliability (.90; Fisher, 1978) in previous studies. Further, the scale has also been found to possess construct validity, as it yielded results in line with predictions from cognitive evaluation theory (see Fisher, 1978; Mayo, 1977; Vallerand et al., 1980). Thus, the instrument appears to represent a reliable and valid measure of intrinsic motivation.

Because subjects in this study were French-speaking hockey players, the TRQ was carefully translated into French by the author and a colleague and adjusted so that the questions matched the characteristics of the task used in this study. When the translation of the questionnaire was finished, it was shown to two experts in sport psychology who judged each item. Both judges found the items adequate. The scale was then given to undergraduate physical education students. This pretest showed that all questions were clear.

The second questionnaire included three questions. The first measure, "To what extent did you feel competent following your performance on the hockey task?" assessed subjects' feelings of competence. The second question, "To what extent do you agree with the experimenter's feedback of your performance?", assessed subjects' perceptions of the veracity of the experimenter's feedback. Finally, the third question, "To what extent was the hockey task challenging?", measured the subjects' degree of involvement in the task. These three measures were scored on a 7-point scale.

Procedures

Subjects were led individually to the laboratory by an assistant and were welcomed by the experimenter who explained the purpose of the study. Subjects were told that they were about to be assessed on their decision-making abilities. It was explained that they would be shown 24 hockey slides depicting a hockey player with a puck in different situations. Subjects would have to decide if the hockey player should shoot, pass, or skate, depending on the situation presented. Subjects were also told that they would have to make the right decision while answering as quickly as possible. At the time, the experimenter put around the subject's neck a voice-time recorder that would record the time it would take the subject to answer. Subjects were also told that following the session, they would be asked to answer two short questionnaires pertaining to the "hockey slides task" they had just completed.

Subjects in the control group were then told that the experimenter would be very busy during the evaluative session and, consequently, would not be able to talk to them. Subjects in the positive verbal feedback groups, however, were told that from time to time the experimenter would act as a coach and tell them how well they were

¹A pilot study done with elite hockey players with age varying from 14-16 years showed that the hockey task was intrinsically motivating.

doing. Following these explanations, the experimenter answered the subject's questions and then turned out the lights.

Subjects in the control group were not told anything during the experiment, while subjects in the positive verbal feedback group were provided with different amounts of bogus positive task-related feedback (6, 12, 18, 24) depending on the condition. The verbal feedback was standardized across conditions and trials and was always provided after the slides (or trials) in the form of "Your performance up to now is very good," and "It's quite rare to see someone like you who is so quick and yet makes very few mistakes." In the PF6 condition, feedback was presented after every four trials. In the PF12 condition, it was offered after every two trials, whereas in the PF18 condition, feedback was offered on two successive trials while not presented on the third trial. This sequence was repeated over the course of the 24 trials. Finally, in the PF24 condition, feedback was presented after every trial. Following performance on the "hockey slide task," the experimenter gave subjects the two questionnaires. Following completion of the two questionnaires, subjects were debriefed and thanked for their participation.

Results

Manipulation Check

It may be hypothesized that differences in intrinsic motivation among the different feedback groups are due to subjects' suspicion of the veracity of the experimenter's feedback or simple disagreement with it. To rule out this alternative plausible hypothesis, subjects in the feedback groups rated on a 7-point scale the extent to which they agreed with the experimenter's feedback of their performance. The results showed that subjects agreed heavily with the experimenter's feedback ($M = 6.45$). Further, no differences existed among the feedback group ($F < 1$). Thus, the present results indicate that positive feedback was perceived similarly across feedback conditions and does not represent a confounding variable in the present study.

A manipulation check was also made on subjects' degree of involvement in the task. Subjects rated on a 7-point scale the extent to which they found the task challenging. Results showed that subjects found the task highly challenging ($M = 6.42$). Further, no significant differences were found among the feedback groups ($F < 1$). It thus appears that subjects in the feedback groups were heavily and equally involved in the task. Therefore, different levels of involvement in the activity is ruled out as a confounding variable in this study.

Intrinsic Motivation and Feelings of Competence

A one-way analysis of variance was conducted, with the TRQ serving as the dependent variable, in order to assess the effects of differential amounts of positive verbal feedback presented on intrinsic motivation. The analysis yielded a main effect for feedback, $F(4,45) = 8.39, p < .001$. Newman-Keuls post hoc tests further indicated that all positive verbal feedback groups reported more intrinsic motivation than the control group but did not differ among themselves. The TRQ means are shown in Table 1.

To assess the effect of the positive verbal feedback conditions on feelings of competence, a one-way analysis of variance was performed, with feelings of competence serving as the dependent variable. An F value of $F(4,45) = 5.17, p < .002$ was ob-

Table 1
Means for the Intrinsic Motivation (TRQ) and Feelings of Competence Measures as a Function of Differential Amounts of Positive Verbal Feedback

Condition	TRQ ^a		Competence ^b	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PF0	124.8	13.0	4.6	1.1
PF6	150.2	9.2	5.7	1.2
PF12	143.3	10.5	6.4	0.5
PF18	142.7	16.5	5.9	1.0
PF24	151.6	6.7	6.0	0.8

^aScores may vary from 23 to 161

^bScores may vary from 1 to 7

tained. Newman-Keuls post hoc analyses indicated that, like the results found with the TRQ, subjects in all four feedback groups reported having felt more competent than subjects in the control group. Further, no differences existed among these four positive verbal feedback groups. Means for the feelings of competence measure are displayed in Table 1. Finally, in order to assess the relationship between intrinsic motivation (TRQ) and feelings of competence, a correlation was performed between the two measures. A correlation of $+ .58 (p < .001)$ was obtained.

Discussion

Results from this study showed that positive performance feedback increased athletes' intrinsic motivation and feelings of competence irrespective of the amount of positive feedback presented. Thus, neither the linear nor the curvilinear relationship hypotheses were supported. Perhaps the crucial aspect of positive verbal feedback lies in the qualitative aspect of the message rather than in the number of messages. In agreement with an organismic model (Deci, 1980), intrinsic motivation does not appear to be affected by the reinforcement per se, but rather by the perception of such reinforcement. Once athletes *interpret* the positive feedback as an indication of their actual performance, they experience high levels of feelings of competence and intrinsic motivation which are neither enlarged nor lessened by further presentation of positive task-related feedback.

The finding that positive verbal feedback of performance increased intrinsic motivation is consistent with previous literature (e.g., Anderson et al., 1976; Deci, 1971; Vallerand et al., 1980; Weinberg & Jackson, 1979; Weinberg & Ragan, 1979) and cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1980). Cognitive evaluation theory posits that when feelings of competence are enhanced, intrinsic motivation increases.

The results from this study, however, are only in accord with cognitive evaluation theory and cannot be presented as evidence for this theoretical formulation. It can

not be concluded from the present data that increases in feelings of competence caused increases in intrinsic motivation.² In effect, although the present results indicate that the two constructs were moderately correlated ($r = +.58, p < .001$) and were similarly affected by the feedback manipulation, it is possible that the relationship between feelings of competence and intrinsic motivation is concomitant rather than causal in nature. That is, the relationship between feelings of competence and intrinsic motivation may be a function of a strong relationship of each of the dependent variables with the competence feedback. Further research is needed to determine whether positive verbal feedback (or success experiences) produces independent increases of feelings of competence and intrinsic motivation or if feelings of competence represent the mediating agent between the competence feedback and subsequent increases of intrinsic motivation.

In conclusion, results from the present study indicate that low, moderate, or high amounts of positive verbal feedback produce similar increases in feelings of competence and intrinsic motivation. Further research should address itself as to whether these findings hold for athletes of different ages, sex, and level of ability. To this end, the use of the methodology employed in this study is proposed. By using athletes as subjects and a sport-related task relevant to these athletes within the boundaries of a laboratory experiment, the present methodology allows for high internal and external validity. Such an approach to the study of intrinsic motivation in sports could provide more realistic yet highly reliable sport-relevant findings that could ultimately enable us to shape sport settings so that they become more conducive to participants' intrinsic motivation and long-term involvement.

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²Although Deci and Ryan (1980) concluded in a recent review of the literature that evidence exists for the theoretical postulate that changes in feelings of competence cause changes in intrinsic motivation, an objective assessment of the present state of affairs yields different conclusions. To the best of this author's knowledge, it has not been demonstrated that feelings of competence represent the mediating construct between the feedback presentation and intrinsic motivation. Future studies should address this issue.