

## On the Causal Effects of Perceived Competence on Intrinsic Motivation: A Test of Cognitive Evaluation Theory

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The purpose of this study was to test the validity of the psychological processes proposed by cognitive evaluation theory (Deci & Ryan, 1980) when the informational aspect of the situation is salient. More specifically, it was the purpose of this study to determine whether the effects of verbal feedback on intrinsic motivation are mediated by perceived competence. Male undergraduate students ( $N = 115$ ) participated in a first phase wherein their intrinsic motivation and perceived competence toward an interesting motor task, the stabilometer, was assessed. Subjects ( $N = 84$ ) who reported at least a moderate level of intrinsic motivation toward the task returned for the second phase of the study in which they were subjected to conditions of either positive, negative, or no verbal feedback of performance. Intrinsic motivation and perceived competence were again assessed. One-way analyses of variance with dependent variables, intrinsic motivation and perceived competence change scores from the first to the second phase, showed that positive feedback increased while negative feedback decreased both intrinsic motivation and perceived competence. Results of a path analysis conducted with verbal feedback, perceived competence, and intrinsic

The present study presents some data which have been published in French (Vallerand, Reid, & Marisi, 1980). The originality of the present paper consists of the following points: (a) the data on perceived competence is presented while it was not presented earlier, (b) the data is reanalyzed in a different and more informative way, specifically as it regards the nature of the relationship between perceived competence and intrinsic motivation, (c) in the original study half the subjects received a monetary reward and half did not. The reward did not affect intrinsic motivation nor perceived competence in any way. Because the reward manipulation is ineffective, no mention of reward manipulation is made in the present paper. This allows for a more detailed discussion of the relationship between perceived competence and intrinsic motivation, and (d) the study is presented in English. This makes it accessible to more people.

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motivation showed support for the mediating intrinsic motivation. The present results provide support for cognitive evaluation theory.

Individuals are viewed to be intrinsically motivated for the pleasure derived from the activity (Deci, 1971). Deci (1975) suggests that the determining factor underlying intrinsically motivated behavior is the internal rewards of self-determination and activities likely to yield such rewards. It is believed that sport activities are motivating activities. Indeed, an important source of motivation for participants (athlete, coach, referee, etc.) would be these feelings of competence and self-determination. Intrinsic motivation in sport-related environments has been studied (Gerson, 1978; Halliwell, 1978, 1979; Orlick & Vallerand, 1982; Vallerand, Reid, & Marisi, 1980).

Based on his definition of intrinsic motivation (Deci & Ryan, 1980) proposed cognitive evaluation theory. The theory proposes that the processes underlying changes in intrinsic motivation can be responsible for changes in intrinsic motivation. The process of cognitive evaluation theory is the relative salience of the two processes that determine intrinsic motivation. Deci and Ryan (1980) posit that when the process of "self-determination" is in operation, intrinsic motivation varies as a function of self-determination. That is, increases and decreases in self-determination lead respectively to increases and decreases in intrinsic motivation. Cognitive evaluation theory also suggests that when the process of cognitive evaluation theory is in operation, intrinsic motivation varies as a function of perceptions of competence. Increases in perceptions of competence lead to an increase in intrinsic motivation while a decrease in perceptions of competence leads to a decrease in intrinsic motivation.

While much of the intrinsic motivation research has focused on the process of cognitive evaluation theory (see Deci & Ryan, 1980 for review), the present paper focuses on the process of cognitive evaluation theory. Investigations of this process of cognitive evaluation theory are in line with the theory, performance-contingent rewards (Adelman, 1980) and proximal goal setting (Bandura, 1982). Increases in intrinsic motivation and perceived competence are the effects of verbal feedback of performance are a function of the process of cognitive evaluation theory. Specifically, it is generally found that positive performance feedback increases intrinsic motivation (e.g., Anderson, Manoogian, & Davey, 1980; Alafat, Wetherill, & Kramer, 1980; Weiner & Mander, 1978) while negative performance feedback decreases intrinsic motivation (Deci & Cascio, 1972; Weiner & Ragan, 1979).

Results from these studies are important (Vallerand, 1982) in that they show the powerful effects of rewards, goal setting, and verbal feedback of performance on intrinsic motivation.

motivation showed support for the mediating effects of perceived competence on intrinsic motivation. The present results provide strong support for cognitive evaluation theory.

Individuals are viewed to be intrinsically motivated when they engage in an activity for the pleasure derived from the activity itself and not for extrinsic rewards (Deci, 1971). Deci (1975) suggests that the need to feel competent and self-determining underlies intrinsically motivated behaviors. That is, individuals are motivated to experience the internal rewards of feelings of competence and self-determination and activities likely to yield such internal rewards become intrinsically motivating. It is believed that sport activities are representative of such intrinsically motivating activities. Indeed, an important source of motivation for sport participants (athlete, coach, referee, etc.) would appear to be this desire to experience these feelings of competence and self-determination. Accordingly, the study of intrinsic motivation in sport-related environments has received much attention (e.g., Gerson, 1978; Halliwell, 1978, 1979; Orlick & Mosher, 1978; Thomas, 1977; Vallerand, 1982; Vallerand, Reid, & Marisi, 1980).

Based on his definition of intrinsic motivation, Deci (1975; Deci & Ryan, 1980) proposed cognitive evaluation theory. The theory focuses on the psychological processes underlying changes in intrinsic motivation. It suggests that two processes can be responsible for changes in intrinsic motivation, the perceived locus of causality process and the perceived competence process. The theory suggests that it is the relative salience of the two processes that determine which process will be operative. Deci and Ryan (1980) posit that when the perceived locus of causality process is "in operation," intrinsic motivation varies as a function of perceptions and feelings of self-determination. That is, increases and decreases in perceptions and feelings of self-determination lead respectively to increases and decreases in intrinsic motivation. Cognitive evaluation theory also suggests that when the perceived competence process is in operation, intrinsic motivation varies in line with perceptions and feelings of competence. Increases in perceptions and feelings of competence produce an increase in intrinsic motivation while a decrease in perceived competence leads to diminished levels of intrinsic motivation.

While much of the intrinsic motivation research has concentrated on the locus of causality process of cognitive evaluation theory (see Deci & Ryan, 1980, for a review), the present paper focuses on the perceived competence process of the theory. Investigations of this process of cognitive evaluation theory have shown that in line with the theory, performance-contingent rewards (e.g., Rosenfield, Folger, & Adelman, 1980) and proximal goal setting (Bandura & Schunk, 1981) produce increases in intrinsic motivation and perceived competence. Results of studies on the effects of verbal feedback of performance are also supportive of the theory. More specifically, it is generally found that positive performance information increases intrinsic motivation (e.g., Anderson, Manoogian, & Reznick, 1976; Deci, 1971; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Swann & Pittman, 1977; Vallerand, 1983a; Weiner & Mander, 1978) while negative performance information decreases intrinsic motivation (Deci & Cascio, 1972; Weinberg & Jackson, 1979; Weinberg & Ragan, 1979).

Results from these studies are important from an applied perspective (Vallerand, 1982) in that they show the powerful effects of performance-contingent rewards, goal setting, and verbal feedback of performance on intrinsic motivation.

## Effects of Perceived Competence on Intrinsic Motivation: Cognitive Evaluation Theory

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To test the validity of the psychological processes in cognitive evaluation theory (Deci & Ryan, 1980) when the information is not salient. More specifically, it was the purpose of the present study to determine the effects of verbal feedback on intrinsic motivation and perceived competence. Male undergraduate students participated in the first phase wherein their intrinsic motivation and perceived competence were measured on an interesting motor task, the stabilometer, was used. Results reported at least a moderate level of intrinsic motivation and perceived competence for the second phase of the study in which verbal feedback of either positive, negative, or no verbal feedback was provided. Changes in intrinsic motivation and perceived competence were again measured. Results of variance with dependent variables, intrinsic motivation and perceived competence change scores from the first to the second phase of the study showed that positive feedback increased while negative feedback decreased intrinsic motivation and perceived competence. Results of a path analysis showed that verbal feedback, perceived competence, and intrinsic motivation were significantly related.

The data which have been published in French (Vallerand, 1982) and the data of the present paper consists of the following points: (a) the data was presented while it was not presented earlier, (b) the data is presented in a more formative way, specifically as it regards the nature of the relationship between perceived competence and intrinsic motivation, (c) in the original study the reward and half did not. The reward did not affect intrinsic motivation in any way. Because in the earlier publication the information was discussed, no mention of reward manipulation is made. This paper provides for a more detailed discussion of the relationship between perceived competence, intrinsic motivation, and (d) the study is presented in English.

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For instance, in line with Vallerand (1982) these results strongly suggest that coaches and other sport personnel should use positive feedback over negative feedback in their interactions with athletes. From a theoretical perspective, however, Vallerand (1983b) has recently argued that these studies do not provide a complete test of cognitive evaluation theory since it has not been shown that changes in intrinsic motivation are mediated by changes in perceptions and feelings of competence. For instance, with respect to verbal feedback, it is possible that verbal feedback affects intrinsic motivation for reasons unrelated to one's perceived competence. Alternatively, verbal feedback may produce independent increases in both perceived competence and intrinsic motivation. This latter notion implies that changes in perceptions and feelings of competence are concomitant to those of intrinsic motivation and that perceived competence does not cause changes in intrinsic motivation.

The purpose of the present study was to test cognitive evaluation theory's (Deci & Ryan, 1980) postulate regarding the mediating effects of perceived competence on intrinsic motivation. More specifically, it was the purpose of this study to assess the effects of positive and negative performance feedback on intrinsic motivation and determine whether these effects are mediated by changes in perceived competence. In line with previous research, it was hypothesized that positive feedback would increase intrinsic motivation while negative feedback would decrease intrinsic motivation. The mediating effects of perceived competence on intrinsic motivation were assessed through a path analysis (Wolfe, 1980). In line with cognitive evaluation theory it was predicted that results of the path analysis would show that the effects of verbal feedback on intrinsic motivation are mediated by perceived competence.

## Method

### Subjects

The subjects in this study were male undergraduate physical education students. Subjects ( $N = 115$ ) volunteered to participate in the first phase of the experiment while 84 subjects who displayed at least a moderate level of intrinsic motivation in the first phase participated in the second phase of the study.

### Task and Questionnaires

**Task.** The task used in this study was the stabilometer motor task (Marietta 3-15A). The purpose of the task is to maintain balance for the entire duration of each trial. Trials lasted 20 seconds each with a 20-second rest in between. Results of a pilot study indicated that the stabilometer was intrinsically motivating for male undergraduates.<sup>1</sup> A more detailed description of the stabilometer is presented by Wade and Newell (1972).

**Questionnaires.** The Mayo (1977) Task Reaction Questionnaire (TRQ) served as the measure of intrinsic motivation. The TRQ reflects Deci's (1975) definition of intrinsic motivation (a need to feel competent and self-determining). It consists of 23

<sup>1</sup>A pilot study showed that the stabilometer motor task is an intrinsically motivating task. Results from the pilot study can be obtained from the first author upon request.

questions, each of which is scored on a 7-point scale and is indicative of a high level of intrinsic motivation. In several studies (e.g., Fisher, 1978; Lopez, 1981) it has been found to possess high internal consistency and reliability (.96; Fisher, 1978). The questionnaire has good construct validity, as it has yielded results in line with cognitive evaluation theory (see Fisher, 1978; Mayo, 1977; Vallerand, 1983). In a recent study (Vallerand & Brawley, 1983) showed that the findings as a behavioral measure of intrinsic motivation during a free-choice period). Finally, the questionnaire is relatively free from social desirability answer bias and the instrument appears to represent a reliable and valid measure of intrinsic motivation.

A second questionnaire was also employed. It consisted of a 7-point rating scale on perceived competence in a specific situation-specific aspect of perceived competence. The questionnaire was "How competent do you think you are on the

### Procedures

The study consisted of two phases. The first phase was to assess initial levels of intrinsic motivation and to select a moderate to high level of intrinsic motivation to be returned for the second phase of the study while the second phase was the treatment conditions.

**First Phase.** During the first phase, 115 subjects were selected on an individual and voluntary basis. Subjects were informed of the task and task instructions through prerecorded instructions. The stabilometer motor task was a good predictor of intrinsic motivation. Subjects were interested in finding out how physical education they were. Following instructions, subjects were allowed 10 trials. Trials lasted 20 seconds each with a 20-second rest in between. Knowledge of results provided. Subjects answered questions about performance.

**Second Phase.** Approximately 3 weeks following the first phase, subjects had displayed at least a moderate level of intrinsic motivation on an individual basis for the second phase of the study. Intrinsic motivation was operationally defined as a minimum score of 4 on the 23, 7-point TRQ. The 84 subjects who met this criterion performed the task in randomly assigned conditions of positive, negative, and no verbal feedback performance.

Subjects in the verbal feedback condition were informed by the experimenter would tell them how well they were performing. Positive verbal statements (e.g., "It looks like you are doing well and it shows in your performance") were presented after the first trial. Negative verbal feedback (e.g., "This is an easy task but your improvement is not as well as you can"). In the no verbal feedback condition, subjects received information regarding their performance after each trial given in the positive and negative verbal feedback

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questions, each of which is scored on a 7-point scale. The maximum score is thus 161 and is indicative of a high level of intrinsic motivation. The TRQ has been used in several studies (e.g., Fisher, 1978; Lopez, 1981; Mayo, 1977; Vallerand, 1983a) and has been found to possess high internal consistency (.93; Mayo, 1977) and split-half reliability (.96; Fisher, 1978). The questionnaire has also been shown to possess construct validity, as it has yielded results in line with predictions from cognitive evaluation theory (see Fisher, 1978; Mayo, 1977; Vallerand, 1983b). Further, results from a recent study (Vallerand & Brawley, 1983) showed that the Mayo TRQ yields the same findings as a behavioral measure of intrinsic motivation (time spent on the target activity during a free-choice period). Finally, the questionnaire has been found to be relatively free from social desirability answer sets (Mayo, 1977). Thus, the instrument appears to represent a reliable and valid measure of intrinsic motivation.

A second questionnaire was also employed. This questionnaire comprised a 7-point rating scale on perceived competence. This scale served to measure the situation-specific aspect of perceived competence on the stabilometer. This scale was "How competent do you think you are on the stabilometer?"

## Procedures

The study consisted of two phases. The purpose of the first phase was to assess initial levels of intrinsic motivation and to identify subjects displaying a moderate to high level of intrinsic motivation toward the task. These latter subjects returned for the second phase of the study wherein they were assigned to different treatment conditions.

*First Phase.* During the first phase, 115 subjects came to the laboratory on an individual and voluntary basis. Subjects were informed of the purpose of the study and task instructions through prerecorded instructions. Subjects were told that the stabilometer motor task was a good predictor of athletic performance and that we were interested in finding out how physical education students do on the task. Following instructions, subjects were allowed 1 practice trial and then 10 test trials. Trials lasted 20 seconds each with a 20-second rest in between. At no time was knowledge of results provided. Subjects answered the questionnaires after task performance.

*Second Phase.* Approximately 3 weeks following the first phase, subjects who had displayed at least a moderate level of intrinsic motivation returned on an individual basis for the second phase of the study. A moderate to high level of intrinsic motivation was operationally defined as a minimum of 92 on the TRQ (this constituted an average minimum of 4 on the 23, 7-point scales comprised in the TRQ). The 84 subjects who met this criterion performed 20 trials on the stabilometer under randomly assigned conditions of positive, negative, and no verbal feedback of performance.

Subjects in the verbal feedback conditions were informed that the experimenter would tell them how well they were doing from time to time. Different positive verbal statements (e.g., "It looks like you have a natural ability to balance and it shows in your performance") were presented following every fourth trial commencing on the third trial. Negative verbal feedback was given on the same schedule (e.g., "This is an easy task but your improvement is quite slow. Try to perform as well as you can"). In the no verbal feedback conditions subjects did not expect nor received information regarding their performance. Thus, instances of feedback were given in the positive and negative verbal feedback treatments on five trials. Verbal

feedback was always bogus in nature. Following completion of the trials, subjects were asked to respond to the questionnaires. Following completion of the questionnaires, subjects were debriefed and thanked for their participation in the experiment.

### Results

In order to assess the effects of the feedback manipulations on changes in intrinsic motivation, a one-way analysis of variance was carried out on the TRQ change scores from the first phase to the second phase.<sup>2</sup> Results of the analysis revealed a significant main effect,  $F(2,81) = 20.25, p < .001$ . Newman-Keuls post hoc analyses revealed that all three feedback groups differed significantly ( $p < .05$ ) from each other in the expected direction. That is, subjects in the positive feedback condition reported the highest level of intrinsic motivation followed by the no-verbal feedback and negative verbal feedback conditions. Similarly, a one-way analysis of variance was performed on the perceived competence change scores. Results of the analysis yielded a significant main effect,  $F(2,81) = 17.13, p < .001$ . Newman-Keuls post hoc analysis revealed that all three feedback groups differed significantly ( $p < .05$ ) from each other. As expected, subjects in the positive feedback condition reported the highest level of perceived competence followed respectively by the no-feedback and negative-feedback conditions.<sup>3</sup>

Finally, in order to determine the causal effects of perceived competence on intrinsic motivation, a fully recursive path analysis (Asher, 1976) was performed through a multiple regression analysis on the data with the TRQ change scores serving as criterion and the perceived competence change scores and verbal feedback serving as predictors. In order to use verbal feedback as a predictor, the "dummy" coding procedures outlined by Kerlinger and Pedhazur (1973) were used. More specifically, subjects in the negative feedback condition were given a score of 1, those in the no-feedback condition received a score of 2, while subjects in the positive conditions received a score of 3. In order to provide a rigorous test of the mediating effect of perceived competence on intrinsic motivation, the effects of perceived competence were compared to those of performance feedback. If perceived competence plays a mediating role, it should have a stronger direct effect and explain more variance in intrinsic motivation changes than verbal feedback.

Results from the path analysis are shown in Figure 1. The path analysis reveals a picture which is clearly in line with a mediating model. That is, the analysis indicates that positive feedback produces increases in perceived competence which in turn lead to augmentation of intrinsic motivation (the path analysis also indicates that negative feedback decreases perceived competence which in turn produce diminished levels of intrinsic motivation). The analysis also reveals that the effects of

<sup>2</sup>One-way analyses of variance were also carried out on the TRQ and perceived competence scores obtained in the first and second phase of this study. While no differences were found among the feedback groups on these two measures in the first phase, results of the analyses performed in the second phase mirrored those of the change scores. Results of the analyses performed on the change scores are presented for the sake of brevity.

<sup>3</sup>Means and standard deviations for the Mayo TRQ and competence measures can be obtained by writing to the first author.

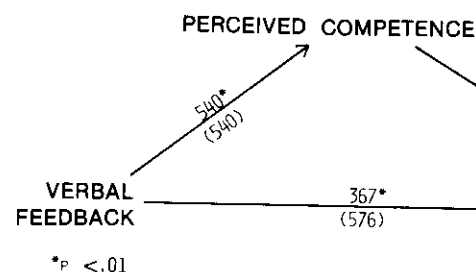


Figure 1 — Path analysis depicting the mediating effect of verbal feedback-intrinsic motivation relationship. Perceived competence explains the variance in intrinsic motivation while verbal feedback explains the variance in perceived competence. Path coefficients (beta weights) are over the arrow and standard errors are in parentheses below the arrows.

perceived competence ( $P = .46$ ) on intrinsic motivation changes is stronger than the direct effect of verbal feedback ( $P = .37$ ). Further results from the path analysis is based, revealed that while both perceived competence and verbal feedback explained significant variance at the .01 level, perceived competence explained slightly more variance while verbal feedback explained less.

### Discussion

The purpose of this study was to test the proposition that when the perceived competence increases and decreases intrinsic motivation, these changes in intrinsic motivation are actually mediated by changes in perceived competence. Results from the analysis of variance supported this proposition from cognitive evaluation theory.

The present results appear to have important implications for the study of intrinsic motivation. The results underscore the importance of organismic variables in the study of intrinsic motivation (Deci, 1980). To study the effects of performance on intrinsic motivation without considering internal constraints is a misleading analysis of intrinsic motivation changes. The results of the present study indicate that performance on intrinsic motivation take place through changes in perceptions and feelings of competence. To the extent that these changes in perceptions and feelings of competence take place. However, if the feedback does not affect perceived competence, intrinsic motivation remains unchanged. Thus, in line with cognitive evaluation theory (Deci, 1980) it is seen that organismic variables and ones intrinsic motivation to be a function of perceived competence.

A second and most important implication of the present study is the support for the theory (Deci & Ryan, 1980). This theory proposes that intrinsic motivation varies as a function of perceived competence. The results from the present study provide support for the theory that performance increased intrinsic motivation while these effects were mediated by perceived competence. Thus, the effects of competence are not merely concomitant

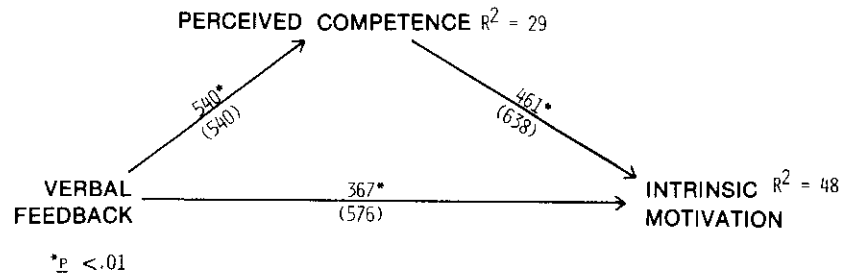
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**Figure 1** — Path analysis depicting the mediating effects of perceived competence on the verbal feedback-intrinsic motivation relationship. Perceived competence explained about 40% of the variance in intrinsic motivation while verbal feedback accounted for slightly less than 8%. Path coefficients (beta weights) are over the arrow and the zero-order correlations under the arrows

perceived competence ( $P = .46$ ) on intrinsic motivation were stronger than those of verbal feedback ( $P = .37$ ). Further results from the regression analysis, upon which the path analysis is based, revealed that while both of these effects were significant at the .01 level, perceived competence explained slightly more than 40% of the intrinsic motivation variance while verbal feedback explained slightly less than 8%.

**Discussion**

The purpose of this study was to test the contention of cognitive evaluation theory that when the perceived competence process is operative, positive and negative feedback increases and decreases intrinsic motivation, respectively, and that these changes in intrinsic motivation are actually caused by changes in perceived competence. Results from the analysis of variance and especially the path analysis supported this proposition from cognitive evaluation theory.

The present results appear to have important implications. First, the present results underscore the importance of organismic variables as determinants of one's intrinsic motivation (Deci, 1980). To study the effects of verbal feedback on intrinsic motivation without considering internal constructs leads to an incomplete and misleading analysis of intrinsic motivation changes. The effects of verbal feedback of performance on intrinsic motivation take place through the effects of perceptions and feelings of competence. To the extent that the performance feedback produces changes in perceptions and feelings of competence changes in intrinsic motivation take place. However, if the feedback does not affect perceived competence, intrinsic motivation remains unchanged. Thus, in line with a cognitive/phenomenological perspective (Deci, 1980) it is seen that organismic constructs mediate between situational variables and ones intrinsic motivation toward an activity.

A second and most important implication deals with cognitive evaluation theory (Deci & Ryan, 1980). This theory proposes that, if the informational aspect is salient, intrinsic motivation varies as a function of perceived competence. The results from the present study provide support for the theory in that positive feedback of performance increased intrinsic motivation while negative feedback decreased it and that these effects were mediated by perceived competence. Thus, changes in perceptions of competence are not merely concomitant with those in intrinsic motivation

(e.g., Harter, 1978) but in complete agreement with cognitive evaluation theory they play a causal role in intrinsic motivation changes (see also Vallerand, 1983b).

Future research could be directed at several levels. First, the present results were obtained with male subjects only. It is suggested that this study be replicated with female subjects. Second, the present results should be replicated in a field setting with athletes. This would add to the ecological validity of the present findings in addition to providing a further test of cognitive evaluation theory. A third possible avenue for research pertains to the identification of mediating variables other than perceived competence when the informational aspect is salient. Results of the path analysis showed that verbal feedback had a significant effect on intrinsic motivation which was independent from the perceived competence effect. Future research should assess which other variables may mediate the feedback-intrinsic motivation relationship. Perhaps, as suggested by Harter and Connell (in press), one needs to differentiate between two components of perceived competence. The first one is an evaluative component ("I think I am competent on the stabilometer"). The second one is an affective component ("I feel competent about my ability on the stabilometer"). Only the evaluative component was assessed in the present study. The fact that the affective component of perceived competence was not assessed in this study may explain why there was still a significant effect of verbal feedback on intrinsic motivation independent of the perceived competence effect. Future research should assess the relative importance of these two components of perceived competence in this relationship with intrinsic motivation.

A fourth avenue of future research deals with the antecedents of perceptions and feelings of competence. Cognitive evaluation theory (Deci & Ryan, 1980) simply posits that competence (or incompetence) information affects intrinsic motivation. Yet, the theory does not outline the process through which people come to feel competent following reception of performance information. Future research should assess the nature of this process since it would enable us to predict more effectively the effects of performance feedback on perceptions and feelings of competence as well as the effects of this latter variable on intrinsic motivation. Finally, while the present study provided a test of outcomes and processes proposed by cognitive evaluation theory, it only dealt with the informational aspect of the situation. Future research should test cognitive evaluation theory's other two postulates which pertain to the controlling aspect and the relative saliency of the controlling and informational aspects. Such research would provide further test of cognitive evaluation theory which could ultimately lead to a better understanding of psychological processes underlying intrinsic motivation in sport environments.

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agreement with cognitive evaluation theory they  
 ation changes (see also Vallerand, 1983b).  
 ected at several levels. First, the present results  
 nly. It is suggested that this study be replicated  
 present results should be replicated in a field set-  
 o the ecological validity of the present findings in  
 of cognitive evaluation theory. A third possible  
 identification of mediating variables other than  
 ormal aspect is salient. Results of the path  
 ck had a significant effect on intrinsic motivation  
 perceived competence effect. Future research  
 s may mediate the feedback-intrinsic motivation  
 by Harter and Connell (in press), one needs to  
 ents of perceived competence. The first one is an  
 m competent on the stabilometer"). The second  
 ("I feel competent about my ability on the  
 component was assessed in the present study.  
 ent of perceived competence was not assessed in  
 was still a significant effect of verbal feedback on  
 F the perceived competence effect. Future research  
 nce of these two components of perceived com-  
 intrinsic motivation.  
 research deals with the antecedents of perceptions  
 tive evaluation theory (Deci & Ryan, 1980) simply  
 ppetence) information affects intrinsic motiva-  
 ine the process through which people come to feel  
 performance information. Future research should  
 nce it would enable us to predict more effectively  
 ck on perceptions and feelings of competence as  
 ariable on intrinsic motivation. Finally, while the  
 outcomes and processes proposed by cognitive  
 h the informational aspect of the situation. Future  
 uation theory's other two postulates which pertain  
 relative saliency of the controlling and informa-  
 ould provide further test of cognitive evaluation  
 d to a better understanding of psychological pro-  
 tion in sport environments.

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### Erratum

In Robert J. Vallerand's Attention and Decision Making: A Test of the Predictive Validity of the Test of Attention and Interpersonal Style (TAIS) in a Sport Setting, *JSP* 5, (4), 449-459, a line was missing from the abstract. The corrected abstract appears below:

The purpose of this study was to assess the relationship between athletes' attentional styles as measured by Nideffer's (1976 a, b) Test of Attentional and Interpersonal Style and a performance component, decision making. More specifically, 59 male basketball players were rated by experts on their decision making abilities and then divided into good, average, and poor decision makers. It was hypothesized that good, relative to average, and poor decision makers would display a more positive "scan" factor (higher BET, BIT, INFP scales) and a more adequate "focus" factor (low OET, and OIT, but high NAR scales). Results from the analyses of variance revealed no significant differences among the three groups. Furthermore, a discriminant analysis on the good and poor decision makers revealed no clear picture. The present results support Van Schoyck and Grasha's (1981) conclusion that the Test of Attentional and Interpersonal Styles does not seem to be sensitive enough to pick up differences in attentional style between performers of different levels.

## A Multidimensional Group Cohesion Instrument for Intercollegiate Basketball

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The purpose of the present study was to develop a cohesion instrument that measures both task-related and social cohesion presumed to exist in interacting sport groups. A sample of 100 intercollegiate basketball players ( $N = 196$ ) completed a 41-item instrument. Results from two different factor analytical techniques identified two common factors which accounted for greater than 50% of the total common factor structure. The four derived factors were Attraction to the Group, Unity of Purpose, Quality of Roles, and Roles. In addition, the internal consistency of the instrument was found to be high, yielding a Cronbach's alpha of .92. The findings suggest that group cohesion in intercollegiate basketball is multidimensional in nature, consisting of components of group work that is complimentary to the goals the group is pursuing. Findings of satisfaction and/or identification with group goals were also reported.

Group dynamics is a field of inquiry dedicated to the study of the nature of groups, the laws of their development, the nature of individuals, other groups, and larger institutions (Carron, 1981). A body of research which has attained a central place in the study of group cohesion. In abstract terms, group cohesion is defined as "the force that binds group members together" (Carron, 1981). Different conceptual properties have been associated with group cohesion. Debate is growing among researchers as to how group cohesion is operationalized, measured, and assessed.

Perhaps the most popular definition of group cohesion is one advanced by Festinger, Schachter, and Back (1950):

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