

The Effects of Subjective and Objective Competitive Outcomes on Intrinsic Motivation

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The present study was designed to assess the effects of subjective and objective competitive outcomes on intrinsic motivation following completion of a one-on-one basketball jump-shooting competition. Researchers all too often operationalize competitive outcomes in terms of winning and losing, and neglect to examine performance from the subjective perspective of the individual. The intrinsic motivation of winners and losers and individuals high and low in perceived success were compared by employing a multidimensional measure of intrinsic motivation. Results indicated that both winners and high success individuals displayed significantly greater intrinsic motivation than losers and low success individuals, respectively. However, multivariate analyses of variance demonstrated significant differences only between the perceived success groups when intrinsic motivation was examined at a multidimensional level. Specifically, high success individuals perceived themselves as trying harder, being more competent, and enjoying the activity more. These findings are discussed from a cognitive evaluation perspective that focuses on the role played by self-perception of events in relation to motivational processes.

Inherent to most sporting activities is competition, a goal directed and social process that some individuals thrive on but that for others represents a major source of discomfort, pressure, and stress. Indeed, an overemphasis on competition is a commonly cited antecedent of attrition in children's sports (Gould, 1986). Sport participation is generally initiated by a genuine interest in activity for the activity's sake, for fun, enjoyment, and pleasure. This intrinsic interest is, in some cases, apparently reduced by the external influence of competitive emphasis.

A growing body of literature in the sport and social psychology literature suggests that external influences can have either facilitating or debilitating ef-

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fects on intrinsic interest. As competition is such a pervasive aspect of sport participation, the effect of competition on intrinsic motivation is particularly interesting. Deci and Ryan (1980, 1985) have attempted to understand the effects of competition and other external events on intrinsic motivation within the framework of cognitive evaluation theory. This theoretical framework suggests that competition can affect intrinsic motivation differentially, depending upon how one interprets or perceives the competitive situation. Specifically, the extent to which an external event, such as competitive outcome, is perceived to influence self-determination or reflect competence can have an impact upon intrinsic motivation (Deci & Ryan, 1980, 1985). Intrinsic motivation is enhanced when outcomes or events reflect competence and/or are perceived to be self-determined.

The effect of competition on intrinsic motivation has been the focus of a number of studies in the social and sport psychology literature. Direct competition (i.e., against an opponent) has been shown to both reduce intrinsic motivation (Deci, Betley, Kahle, Abrahms, & Porac, 1981) and increase it (Weinberg & Ragan, 1979). Reeve, Olson, and Cole (1985) experimentally manipulated competitive outcomes and reported intrinsic motivation to be enhanced in winners but reduced in losers. However, the functional significance of competition is clearly not uniform for all individuals. A possible explanation for this may lie in the subjective interpretation of competition rather than the objective competitive outcome.

Although success and failure are frequently treated as being synonymous with winning and losing, respectively, it is quite possible to play extremely well against a superior opponent and lose, yet still perceive the experience as successful. Conversely, a poor display against an inferior opponent that nonetheless results in a win is often perceived as a less than successful performance. In the sports world this is commonly referred to as "winning ugly." Maehr and Nichols (1980) have conceptualized success and failure as psychological states rather than reflecting objective levels of performance. A number of attribution related studies have also demonstrated the lack of congruence between individuals' perceptions with regard to objective and subjective competitive outcomes (e.g., McAuley, 1985; Spink & Roberts, 1980). It is not clear, however, whether objective and subjective competitive outcomes differentially affect intrinsic motivation.

Deci and Ryan (1985) have proposed that perceptions of personal competence are intimately related to intrinsic motivation. Those individuals who perceive themselves to have performed well (subjective outcome) are likely to be more intrinsically motivated than those who perceive personal competence to be low. These perceptions of competence are generally arrived at through positive or negative feedback. Within the competitive sport domain, the most immediate and salient feedback is derived from objective outcome, winning or losing. Winning, in most instances, provides positive feedback leading to subsequent perceptions of competence and intrinsically motivated behavior. However, losing, although negative, does not necessarily imply decreased competence. Indeed, having lost but played well can challenge the individual to persist at the task with renewed efforts.

Thus, from a cognitive evaluation perspective, Deci and Ryan (1985), like Maehr and Nichols (1980), would argue that winning and losing do not automatically provide positive and negative feedback, respectively, regarding competence. Therefore the first purpose of the present study was to examine the relative

influence of subjective competitive outcome (perceived success) and objective competitive outcome (win/loss) on intrinsic motivation. It was hypothesized that the perceptions of success would have a more marked effect on intrinsic motivation than would winning or losing.

In order to systematically determine the effects of competitive outcomes on intrinsic motivation, it is of paramount importance to be able to measure the construct of interest accurately. Typically, intrinsic motivation has been assessed by such behavioral indices as time on task or continued participation in the absence of rewards (e.g., Lepper & Greene, 1975). Others have measured intrinsic motivation by simply surveying the extent of individuals' enjoyment of the activity or how often they participate in the activity in their free time (e.g., E. Ryan, 1977, 1980). In addition to behavioral measures of motivation, some attempts have been made to cognitively assess levels of intrinsic motivation using such measures as the Mayo (1977) Task Reaction Questionnaire (e.g., Vallerand, 1983).

Recently, Ryan (1982) and his colleagues (Plant & Ryan, 1985; Ryan, Mims, & Koestner, 1983) have developed a measure of intrinsic motivation that assesses the construct from a multidimensional perspective. The Intrinsic Motivation Inventory (IMI) is a flexible assessment tool that determines individuals' levels of intrinsic motivation as an additive function of the underlying dimensions of interest/enjoyment, perceived competence, effort, and pressure/tension. A fifth dimension, perceived choice, has recently been added to the inventory but has yet to be validated. Such an instrument allows one to explore the effects of events and information on intrinsic motivation at a more meaningful level by examining variables that are hypothesized to mediate the process of intrinsically motivated behavior. Therefore, the second purpose of this study was to determine whether subjective and objective competitive outcomes had differential effects on the dimensions of perceived competence, effort, pressure/tension, and interest/enjoyment.

Method

Subjects and Task

A total of 116 undergraduate male ($n=80$) and female ($n=36$) students enrolled in a required physical education class volunteered to participate in the experiment. Their mean age was 21.35 years.

The task consisted of a modified version of the popular basketball shooting game, "Horse." The object of the game is to successfully make a basketball shot of one's choice and have one's opponent successfully replicate the shot. Failure to replicate the shot results in the assessment of the first letter of the word "Horse" to the player missing the shot. Continued failure to make subsequent shots results in the gradual accumulation of all the letters of the word and loss of the game. The original game of "Horse" was modified in two ways. First the game was shortened to overcome a potential time problem, thus we arrived at "Dog," which constituted a three-miss loss instead of a five-miss loss. The second modification concerned the types of shot permitted in the competition. Shot selection was restricted to jump shots ranging from 5 to 15 feet from the basket. This limitation allowed the investigators to more accurately assess the ability level of the individuals and match competitors accordingly. Assessment of ability level based on all facets of basketball shooting would have been an onerous and perhaps futile task.

It was therefore deemed appropriate to limit shot selection to the jump shot within the delineated boundaries.

Measures

The Intrinsic Motivation Inventory (Ryan, 1982) was employed to assess overall intrinsic motivation and the underlying dimensions of interest/enjoyment, perceived competence, effort, and pressure/tension. What appears to be unique about the Intrinsic Motivation Inventory (IMI) is that the total 28 items have rarely been used, and the inclusion or exclusion of any one factor (dimension) fails to adversely affect the remaining factors. Furthermore, shorter versions of each subscale have been utilized and are apparently reliable, thus redundant items can be excluded. Another aspect of interest concerns the malleability of the items, which can be easily modified to fit a wide variety of activities. For example, the generic scale item, "I was pretty skilled at this activity," can be changed to, "I was pretty skilled at serving the tennis ball," to better reflect the situation of interest. A final advantage of the IMI is its apparent ability to tap those underlying perceptions that will provide more accurate information concerning how events influence intrinsic motivation.

Ryan and his colleagues have employed the IMI in such diverse settings as reading, learning, writing, and hidden-figure puzzle tasks. McAuley, Duncan, and Tammen (in press) have recently applied the IMI in a competitive sport setting and assessed the tenability of the proposed factor structure. McAuley et al. reported acceptable reliabilities and provided confirmatory support for a hierarchical factor model consisting of one general factor of intrinsic motivation with four underlying dimensions or factors of pressure/tension, interest/enjoyment, perceived competence, and effort.

The version of the IMI employed in this study consisted of 16 items scored on a Likert scale from strongly disagree (1) to strongly agree (7).¹ The generic label "activity" was suitably reworded to reflect the nature of the current task, shooting a basketball. As indicated earlier, the original IMI consists of 28 items. Four of these items assess the dimension of perceived choice, which is still undergoing development, and therefore were excluded from this study. Six other items were considered to be redundant and were also excluded. Finally, two further items were excluded following item analysis due to their low item-total correlations. Ryan (1982) has noted that some items within the subscales overlap considerably and that the incremental R for each item over four for any given dimension is small. Thus, we felt justified in reducing the number of items without unduly sacrificing the internal consistency of the overall scale.

The 16-item scale consisted of a minimum of 4 items per subscale, a practical length from an administrative perspective. Thus, each individual had a score for each of the four dimensions underlying intrinsic motivation, which were then summed to give an overall measure of the construct. Individuals also indicated how successfully they thought they had performed during the competition. This was assessed using a Likert format ranging from 1 (very unsuccessful) to 7 (very successful).

¹The version of the IMI employed in this study is available on request from the first author.

Procedures

The experiment consisted of two phases. In the first phase, participants were assigned a time to report to a gymnasium, where they read and signed an informed consent form, and then performed the LSU Long and Short Test (Nelson, 1967), which measures jump-shooting ability. The court was marked with tape in a 15-ft arc from the endline on either side of the basket to the top of the free-throw line, which served as a restraining line for the long shots. Participants waited behind the restraining line with a basketball, and upon the experimenter's "GO!" signal, attempted a long jump shot. Regardless of whether the shot was successful, the individual rushed forward to rebound the ball and attempted a jump shot from inside the arc. Upon completion of the short shot, the ball was rebounded and dribbled beyond the 15-ft arc for another long jump shot. This routine continued for 1 minute with individuals being allowed two 1-min trials, with the total points scored over the two trials reflecting their ability score. They were later matched by ability and gender for the competitive phase of the experiment. Such matching represents an effort to provide a competitive situation that was optimally challenging for the participants. This challenge or ego involvement is considered necessary for perceptions of competence and intrinsic motivation to be present (Deci & Ryan, 1985).

A few days later, participants were telephoned and given an appointed time to report to the gymnasium to participate in the competitive phase. They were tested in pairs and, after a brief warm-up period, were told they had been matched on ability and instructed in the modified game of "Horse," its rules and regulations. Five- and 15-ft radius arcs were taped onto the floor to clearly indicate the shooting boundaries. A coin toss determined which person shot first. Once an outcome was determined, participants completed the measure of success and the Intrinsic Motivation Inventory (Ryan, 1982).

Results

Before progressing further, it is appropriate to consider the internal consistency of the four subscales and the overall Intrinsic Motivation Inventory. Reliabilities of these measures were determined by coefficient alpha (Cronbach, 1951). Internal consistency for the four subscales was generally quite adequate, with the alpha coefficient for each scale as follows: interest/enjoyment ($\alpha = .80$), perceived competence ($\alpha = .87$), effort ($\alpha = .84$), and pressure/tension ($\alpha = .68$). The overall scale also appears to be internally consistent ($\alpha = .85$).

A 2×2 (Subjective Outcome \times Objective Outcome) analysis of variance was first conducted to determine whether these variables differentially affected overall intrinsic motivation as assessed by the IMI. Objective outcome was classified as winning and losing, and subjective outcome was classified as either high or low perceptions of success based upon a median split. Those rating their success at the median ($n = 18$) or with missing data ($n = 1$) were excluded from the analyses, resulting in a final sample of 97 subjects. Only the main effect for subjective outcome was significant, $F(1,93) = 32.00$, $p < .001$, with the main effect for objective outcome approaching significance, $F(1,93) = 3.78$, $p = .055$. Examination of the mean scores (see Table 1) revealed that winners were more intrinsically motivated than losers, and individuals who perceived themselves as

Table 1

**Descriptive Statistics for Overall Intrinsic Motivation
and Scores on Dimensions of the Intrinsic Motivation Inventory**

Dependent variable	Winners	Losers	High success	Low success
Intrinsic motivation	69.91 (12.21)	65.16 (13.84)	74.21 (11.95)	61.12 (11.13)
Perceived competence	18.81 (5.53)	16.28 (5.65)	20.04 (5.05)	15.09 (5.28)
Effort	18.47 (4.24)	17.20 (5.04)	20.23 (4.07)	15.54 (4.07)
Interest/enjoyment	21.12 (4.06)	19.36 (4.75)	22.02 (4.17)	18.55 (4.14)
Pressure/tension	11.71 (4.47)	12.40 (3.86)	12.14 (4.17)	11.98 (4.19)

successful had significantly higher perceptions of intrinsic motivation than those with lower perceptions of success.

In order to address the differential effects of competitive outcomes on the underlying multidimensional structure of intrinsic motivation, a 2×2 (Subjective Outcome \times Objective Outcome) multivariate analysis of variance was conducted with the dimensions of perceived competence, interest/enjoyment, effort, and tension/pressure as the dependent variables. Results of the multivariate analyses are summarized in Table 2.

Only the multivariate effect for subjective competitive outcome was significant. Subsequent univariate analyses indicated that the successful individuals perceived themselves to have tried harder, felt more competent about their basketball free-throw shooting capabilities, and enjoyed the activity more than did those who perceived themselves as less successful (see Table 1). In order to obtain a clearer picture of how the dependent variables maximized differences between groups, structure coefficients were then calculated. Structure coefficients represent the correlation between the discriminant scores and each dependent variable, are less susceptible to the influence of correlations among the dependent variables, and are therefore more accurate than discriminant function coefficients. The structure coefficients paralleled the univariate results by identifying effort as discriminating best between the two success groups, followed by perceived competence and interest/enjoyment.

Discussion

The present study was primarily designed to examine the effects of objective competitive outcomes (win/loss) and subjective competitive outcomes (perceptions of personal success) on the general construct of intrinsic motivation.

Table 2

Summary of Multivariate Analyses Examining the Effects of Objective and Subjective Outcomes on Dimensions of Intrinsic Motivation

Effect—objective outcome (win/loss)
Multivariate $F^a(4, 90) = 1.998$, ns.

Dependent variable	Univariate F^b	Structure coefficient
Perceived competence	0.22	-.165
Effort	7.52*	.954
Interest/enjoyment	0.39	.218
Pressure	2.36	.535

Effect—subjective outcome (perceptions of success)
Multivariate $F^a(4, 90) = 11.987$, $p < .0001$

Dependent variable	Univariate F^b	Structure coefficient
Perceived competence	14.55***	-.542
Effort	39.81***	.954
Interest/enjoyment	12.39**	-.510
Pressure	1.09	-.148

Note: High success was coded as 1 and low success as 2, hence the negative valence on the structure coefficients.

^aApproximations based on Wilks' lambda; ^bDegrees of freedom = 1,93.

* $p < .01$; ** $p < .001$; *** $p < .0001$.

Within a cognitive evaluation framework, it was hypothesized that perceptions of personal success rather than objective outcome (win/loss) would significantly influence intrinsic motivation. A second issue of interest was the differential impact of subjective and objective competitive outcomes on those components or dimensions that are proposed to underlie intrinsic motivation, namely perceived competence, effort, interest/enjoyment, and pressure/tension. Although winners and individuals who perceived themselves as successful evidenced higher overall levels of intrinsic motivation than did losers and those with lower success perceptions, this pattern was not completely reproduced when multivariate analyses examined the differences between the groups across the four underlying dimensions. The underlying dimensions failed to differentiate between winners and losers, but perceptions of effort, perceived competence, and interest/enjoyment discriminated between the successful and less successful groups.

It therefore appears that positive competitive outcomes can indeed facilitate intrinsic motivation in sport and physical activity, but that such an effect occurs at a more sophisticated and complex level than simply winning or losing.

Deci and Ryan (1985) propose that under certain conditions, individuals who perceive themselves as having performed a task well (perceptions of competence) will be more intrinsically motivated toward that activity. However, this effect occurs only when the activity is optimally challenging and the individual perceives the outcome or event to be self-determined (Deci & Ryan, 1985). In the present study, competitors were matched by ability and were aware of this parity. Thus the outcome was governed by their ability to best an opponent of similar capabilities, thereby providing the conditions of optimal challenge and self-determination.

Our results support Deci and Ryan's proposition in that individuals who perceived themselves to have performed well evidenced higher levels of intrinsic motivation than did those with lower percepts of success. This finding parallels the phenomenological orientation of cognitive evaluation theory which suggests that negative feedback (e.g., losing) will only reduce intrinsic motivation when it is perceived to be reflective of incompetence. Such perceptions are usually the consequence of tasks that are beyond one's capabilities (Deci & Ryan, 1985). However, in this investigation the task was optimally challenging, and losing did not necessarily reflect incompetence. Thus the importance of looking beyond what is traditionally operationalized as success (i.e., winning) and failure (i.e., losing) is underscored.

A number of studies have suggested that it is erroneous to equate winning and losing with success and failure (Maehr & Nicholls, 1980; McAuley, 1985; Spink & Roberts, 1980). Interpretations of competitive outcomes must be considered from the actor's perspective rather than simply taking stock of who wins or loses and assuming that such an outcome is the sole antecedent of cognitive processing. The present study suggests that the subjective interpretation of competitive outcomes, not the outcome per se, influences intrinsic motivation at the dimensional and composite levels. The sources of information being used to appraise personal performance success, as well as the attributions formulated to explain events (McAuley, 1985), have yet to be examined in relation to intrinsic motivation.

The present findings contribute further to our understanding of the relationship between competitive sport outcomes and intrinsic motivation by considering the underlying dimensions of motivation and how they are differentially affected by subjective and objective competitive outcomes. Whereas no multivariate effect was revealed for objective outcome, a number of motivational processes were demonstrated to be influenced by subjective perceptions of performance. Structure coefficients indicated that effort, followed by perceived competence and interest/enjoyment, maximized differences between levels of perceived success. The findings suggest that perceptions of success not only indicate perceived competence but also reflect self-determined behavior (effort). In situations wherein opponent capabilities are comparable, success or failure are frequently attributed to effort, a cause that is internal, unstable, and controllable (Weiner, 1985). Furthermore, when one perceives oneself to have been successful, at least in this limited environment, one's interest in and enjoyment of the activity is enhanced.

These are important findings with respect to the *process* of intrinsic motivation. Although some studies have examined the mediating influence of such variables as perceived competence (e.g., Vallerand & Reid, 1984), the majority of reports have concentrated on the more simple event/motivation relationship. Employing factorially based measures such as the IMI, it is now possible to deter-

mine what aspects of motivation mediate the relationship between perceived success and intrinsic motivation in sport.

Cognitive evaluation theory (Deci & Ryan, 1985) proposes that self-determination and perceived competence mediate between events and subsequent intrinsic motivation. A further proposition related to the initiation of intrinsically motivated behavior is the functional significance of the *informational* and *controlling* aspects of events, outcomes, and rewards. The informational aspect provides competence related feedback whereas the control aspect is posited to exert pressure upon the individual to engage in particular behaviors (Deci & Ryan, 1985). Although the results of some studies in the sport domain have been interpreted within a controlling/informational framework, few studies have actually manipulated the environment to create distinctly separate conditions representing the controlling and informational aspects of the event. If future studies can be designed to create these contexts within competitive situations, we may be able to gain further insights into the effects of such contexts on perceptions of success. Furthermore, it would be possible to determine how these self-perceptions of success, as a function of controlling and informational circumstances, affect the motivational subsystems that Deci and Ryan (1985) propose to underlie intrinsic motivation.

Although the present study did not employ the fifth dimension of the Intrinsic Motivation Inventory, perceived choice, this dimension may clearly be an important mediator of competitive outcome effects on overall intrinsic motivation. Additionally, this dimension could provide us with information that may help determine whether the informational or controlling aspects of the competition are in effect. In some sport situations, where players may be pressured to play certain positions or feel they are participating for reasons other than those that are intrinsically motivating, such dimensions of motivation as choice and pressure may play a more integral role.

In summary, the present investigation identifies two factors that further our understanding of the relationship between competitive sport outcomes and intrinsic motivation. First, it appears that individual perceptions with regard to success in competitive situations have a greater impact on intrinsic motivation than do winning or losing per se. Second, these perceptions of success, within the present competitive context, have differential effects on processes that underlie intrinsically motivated behavior. Perhaps such findings, coupled with the availability of the IMI as a reliable measurement tool, will stimulate more research in this area and further advance our understanding of sport motivation.

References

- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 296-334.
- Deci, E.L., Betley, G., Kahle, J., Abrahms, L., & Porac, J. (1981). When trying to win: Competition and intrinsic motivation. *Personality and Social Psychology Bulletin*, 7, 79-83.
- Deci, E.L., & Ryan, R.M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39-80). New York: Pergamon Press.
- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

- Gould, D. (1986). Understanding attrition in children's sport. In D. Gould & M.R. Weiss (Eds.), *Advances in pediatric sport sciences* (Vol. 2, pp. 61-86). Champaign, IL: Human Kinetics.
- Lepper, M., & Greene, D. (1975). Turning play into work: Effects of adult surveillance and intrinsic rewards on children's intrinsic motivation. *Journal of Personality and Social Psychology*, **31**, 479-486.
- Maehr, M.L., & Nicholls, J. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross-cultural psychology* (Vol. 3). New York: Academic Press.
- Mayo, R.J. (1977). The development and construct validation of a measure of intrinsic motivation. *Dissertation Abstracts International*, **37**, 5417B.
- McAuley, E. (1985). Success and causality in sport: The influence of perception. *Journal of Sport Psychology*, **7**, 13-22.
- McAuley, E., Duncan, T., & Tammen, V. (In press). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*.
- Nelson, J. (1967). *The measurement of shooting and passing skills in basketball*. Unpublished manuscript, Louisiana State University.
- Plant, R., & Ryan, R.M. (1985). Self-consciousness, self-awareness, ego-involvement, and intrinsic motivation: An investigation of internally controlling styles. *Journal of Personality*, **53**, 435-449.
- Reeve, J., Olson, B.C., & Cole, S.G. (1985). Motivation and performance: Two consequences of winning and losing in competition. *Motivation and Emotion*, **9**, 291-298.
- Ryan, E.D. (1977). Attribution, intrinsic motivation, and athletics. In L.I. Gedvilas & M.E. Kneer (Eds.), *Proceedings of NCPEAM/NAPECW National Conference, 1977* (pp. 346-353). Chicago: Office of Publication Services, University of Illinois at Chicago.
- Ryan, E.D. (1980). Attribution, intrinsic motivation, and athletics: A replication and extension. In C.H. Nadeau, W.R. Halliwell, K.M. Newell, & G.L. Roberts (Eds.), *Psychology of motor behavior and sport-1979* (pp. 19-26). Champaign, IL: Human Kinetics.
- Ryan, R.M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, **45**, 736-750.
- Ryan, R.M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, **45**, 736-750.
- Spink, K.S., & Roberts, G.C. (1980). Ambiguity of outcome and causal attributions. *Journal of Sport Psychology*, **2**, 237-244.
- Vallerand, R.J. (1983). The effects of differential amounts of positive verbal feedback on intrinsic motivation of male hockey players. *Journal of Sport Psychology*, **5**, 100-107.
- Vallerand, R.J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, **6**, 94-102.
- Weinberg, R., & Ragan, J. (1979). Effects of competition, success/failure, and sex on intrinsic motivation. *Research Quarterly*, **50**, 503-510.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, **92**, 548-573.