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Coping With the Less Interesting Aspects of Training: Toward a Model of Interest and Motivation Enhancement in Individual Sports

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Boring activities are not always avoidable. Yet, one can ask: Is boredom inevitable? Studies in the field of interest self-regulation suggest that it might be possible to transcend boredom and enhance motivation through the use of interest-enhancing strategies (IESs). The goal of this project is to build a model of interest and motivation self-regulation in the context of individual sports. Four IESs are examined: creating challenges for oneself, adding variety to the task, providing oneself with self-relevant rationales for performing the task, and exploiting stimulation from other sources than the task itself. The proposed model comprises the following hypotheses: (a) IESs predict higher levels of interest, in both interesting and less interesting tasks; (b) Interest in "less interesting" tasks predicts higher levels of self-determined extrinsic motivation; and (c) Interest in "interesting" tasks and self-determined extrinsic motivation predict higher levels of intrinsic motivation. Although exploiting stimulation displayed an unexpected direct negative relation with extrinsic motivation, the remainder of the results supports the proposed hypotheses. The discussion offers suggestions for future research on the role played by self-influence in the regulation of interest and motivation.

Everyday, individuals perform a variety of activities. Of these activities, some are quite interesting, whereas others are less interesting and can even be considered boring. Most people have few problems performing interesting activities because they are fairly enjoyable. However, the performance of less interesting tasks is not always a pleasant pursuit. With less interesting activities, motivation to perform the activity is often low. Although many activities are not inherently interesting, their completion is often deemed necessary. For example, although most would consider participation in athletics as a self-motivated decision due to interest in the sport, many of the tasks specific to athletic endeavors are not very interesting and can often be monotonous and repetitive. Athletes must constantly practice and refine their skills, sometimes performing very basic moves for long time periods. While performing these tasks is essential to improving one's performance, it can be tedious and boring for the athlete. Most authors agree that boredom is dysfunctional and must be alleviated (e.g., White, 1959). Conversely, interest has been associated with a host of positive consequences such as greater perceived competence, freedom, and positive emotions (Deci, 1992). Further, interest is a powerful motivator and a key component in intrinsic motivation and self-determination (Deci & Ryan, 1985; Reeve, 1989). Overall, research has focused primarily on the influence of the social environment in altering interest and motivation. For instance, past research re-

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vealed that competence-promoting information (Boggiano & Ruble, 1979) and structure (Harackiewicz, Abrahams, & Wageman, 1987) enhanced interest and motivation. Conversely, information that implied or provoked incompetence (Vallerand & Reid, 1984), as well as monetary rewards (Deci, 1975) and competition (Deci, Betley, Kahle, Abrams, & Porac, 1981), has been shown to reduce interest and motivation. Shifting the focus from the context to the individual, as well as looking at how interest and motivation are generated when they are lacking, provides a novel perspective for the study of interest and motivation.

On the basis of the works of Sansone, Weir, Harpster, and Morgan (1992) regarding interest and motivation self-regulation, and Deci and Ryan (1985) on self-determined motivation, the goal of this project is to build a model of interest and motivation self-regulation in individual sports. Sansone et al. (1992) designed an innovative model of interest and motivation self-regulation. Although the interest-enhancement component of this model is theoretically well developed, the motivational component has been somewhat neglected. Specifically, there is no theoretical proposition regarding the nature of motivation. Deci and Ryan's self-determination theory (1985) provides such theoretical postulates regarding the nature of motivation. However, the intrapersonal processes underlying self-determination internalization, a key component of this theory, have been, by and large, overlooked. The study of interest-enhancing strategies (IESs) might yield useful insight with respect to this issue. We believe that Deci and Ryan's and Sansone's theories are complementary and therefore, we attempt to integrate them in the hope of gaining a better understanding of (a) the role played by IESs in the emergence of interest and (b) the role played by interest in the evolution of intrinsic motivation and self-determined extrinsic motivation. The model proposed in this study comprises three main components: IESs, interest, and motivation (i.e., intrinsic motivation and self-determined extrinsic motivation). Theoretical considerations and research evidence pertaining to the components of the model and to the relations between these components are reviewed in the following sections. The specific goals of the study and the hypothesized interrelations between the components of the model are summarized subsequently.

TOWARD A MODEL OF INTEREST AND MOTIVATION ENHANCEMENT IN INDIVIDUAL SPORTS

Interest Self-Regulation: IES Use

There has been very little investigation of the processes underlying interest self-regulation. To our knowledge, the only article on this topic has been contributed by Sansone et al. (1992). These authors proposed a theoretical model based on the use of IESs that describes how individuals regulate their interest and motivation to perform boring activities. According to Sansone et al., when a task is uninteresting and when its performance is deemed necessary, people are likely to utilize IESs. IES use is theorized to induce gains in interest and motivation.

Sansone et al. (1992) performed a series of three experimental studies designed to provide support for their theory. Results revealed that participants possessed implicit knowledge about IESs and about the circumstances under which they can be applied. Also, participants engaged in IESs mainly when the experimental task was uninteresting and when they had good reasons for doing the task. Moreover, strategy use was associated with greater likelihood of subsequent voluntary task performance. Finally, participants believed that motivation toward various everyday activities (i.e., exercising, reading, and listening to music) could be efficiently regulated through interest enhancement.

In their studies, Sansone et al. (1992) identified three IESs: (a) challenge enhancement, (b) exploitation of stimulation extrinsic to task performance, and (c) introduction of variety within the task. In addition to the three IESs proposed by Sansone et al., we suggest a fourth one: (d) provision of self-relevant rationales for performing the activity.

1. Challenge enhancement: Competence and mastery have been recognized by several authors as key components in motivational processes (Bandura, 1977; deCharms, 1968; Deci & Ryan, 1985; White, 1959). Moreover, the opportunity for gains in competence, effectance, or mastery feelings is said to engender interest. Challenge is hypothesized to foster interest by providing a test for one's competence. The effect is at its peak when the challenge is optimal (Bandura & Schunk, 1981; Csikszentmihalyi, 1975; Harter, 1978). Within this study, *challenge enhancement* was operationalized as the strategy wherein the athlete attempts demanding tasks that are slightly beyond his or her current abilities and/or uses proximal goal setting as a major motivator when performing the boring task. An example of such an attempt to increase interest is a figure skater who sets daily training goals.

2. Exploitation of stimulation extrinsic to task performance: It is common knowledge that lack of stimulation can be boring. From a more scientific point of view, low stimuli levels are hypothesized to physiologically induce discomfort (Berlyne, 1960; Fiske & Maddi, 1961). According to Schultz (1965) and Zuckerman (1969), there is an ideal range of stimulation, and deviations from this range cause the individual to seek ways to remedy the situation. Suedfeld (1981) suggested that individuals may turn to contextual features for stimulation when interest is low. Within this study, *exploitation of extrinsic stimulation* was operationally defined as the IES wherein the athlete uses cues external to the task itself to stimulate performance of the boring activity. We surmised that all extrinsic stimulation (i.e., stimulation from other sources than the task itself) could serve the same purpose.

Thus, in our opinion, these cues can come from the external environment (e.g., physical features of the context) or from within the individual themself (e.g., daydreams). An athlete who watches others train while performing a boring task, for instance, is using contextual features to increase interest.

3. Introduction of variety within the task: Aside from insufficient stimuli level, the familiarity of a given set of stimuli is said to substantially decrease its arousing properties (Voss & Keller, 1983; Zuckerman, 1979). Such a decrease in activation will cause the individual to act to improve the situation. For instance, Hackman and Oldman (1976) proposed that levels of interest toward a familiar task can be revitalized by adding some sort of variety to its performance. Within this study, *introduction of variety within the task* was accordingly operationalized as the attempt to decrease the monotony of a task by adding diversity to its performance. An example of this strategy is an athlete who switches training tasks often to keep from becoming bored.

4. Provision of self-relevant rationales: Sansone et al. (1992) proposed that having a good reason to perform a task provides the necessary motivation to do it and to attempt interest-enhancement. Yet, we suggest that personal endorsement of the importance of the benefits to be gained can enhance interest in and of itself. The motivational properties of long-term goals and personal values have long been known (e.g., Latham & Locke, 1991). The extent of personal endorsement and responsibility with respect to one's goals has been related to mood and motivation self-regulation (Showers & Cantor, 1985). Moreover, consistency between the goals and values underlying a behavior and one's self-concept correlates with high levels of interest and self-determination (Deci, 1992). On the premise of these findings, we hypothesize that interest and motivation enhancement can be achieved through the self-provision of relevant values and long-term goals. In this study, *provision of self-relevant rationales* was operationally defined as the strategy wherein the athlete approaches the task with personally valid reasons for its performance as a means to overlook feelings of disinterest. An athlete who reminds himself or herself of the benefits to be gained from performing a boring task is using a rationale to increase interest.

According to Sansone et al. (1992), people possess cognitive schemas, called *activity definition*, in which their knowledge concerning a particular task and its characteristics are stored. Judgments relevant to the perceived interest of the task are part of the activity definition. The cornerstone of interest and motivation enhancement is the hypothesized flexibility of activity definition. IES use leads to the psychological transformation of the activity's definition as it changes to accommodate the novel and more positive information yielded by interest-enhancement. That is, IES use is said to lead to higher levels of interest and motivation.

Interest

Interest is commonly defined as an experiential state characterized by focused and effortless attention, and accompanied by feelings of pleasure and concentration (Krapp, Hidi, & Renninger, 1992). When a task is interesting, it provides an appeal that makes the person want to perform that task. Interest is attained in "flow," a state that results from optimal stimulation (Csikszentmihalyi, 1975). Boredom is thought to be the antithesis of interest. It is a feeling that is familiar to all of us. It is an aversive and counter-productive experience that can be quite an impediment at times. It is most often defined as an unpleasant experiential state provoked by prolonged exposure to monotonous stimulation (Mikulas & Vodanovich, 1993; O'Hanlon, 1981). Moreover, boredom is characterized by aversion toward the monotonous elements of the situation and by a need to escape them (Mikulas & Vodanovich, 1993). Boredom is generally thought to result from a mismatch between the individual's optimal state of arousal and the stimulation available in the environment (Berlyne, 1960; Csikszentmihalyi, 1975; Fiske & Maddi, 1961; Hebb, 1955; Zuckerman, 1969). Although interest and boredom have often been studied independently, it is intuitively obvious that these are not independent constructs. Boredom and lack of interest are synonyms. Thus, for clarity purposes, this study focuses on a construct labeled *interest.* Interest has been operationally examined with respect to a variety of training tasks pertaining to figure skating such as figures, footwork, spins, and so forth. These various tasks were grouped to form two constructs: Interest in "interesting" tasks and interest in "less interesting" tasks. Sansone et al. (1992) proposed that IESs are used mainly when an activity is uninteresting. In accordance with Sansone et al., it is hypothesized that the use of the four proposed IESs will predict higher levels of interest toward "less interesting" tasks. However, interest levels can cover a broad range. That is, even if the task is somewhat interesting, there is often room for improvement. Interest is a pleasant feeling and we do not see why people should refrain from actively seeking accrued gratification if they possess the means to do so. If the levels of interest provided by a particular task are not optimal, and if IESs can readily be used, we believe that people will use these strategies in a spontaneous attempt to make the activity even more enjoyable. Thus, it is hypothesized that the use of the four proposed IESs will also predict higher levels of interest toward "interesting" tasks.

Intrinsic and Self-Determined Extrinsic Motivation

Sansone et al. (1992) proposed that when a task is uninteresting, people will use IESs. IES use is hypothesized to lead to heightened levels of interest. In turn, higher levels of interest are said to induce increases in motivation. Sansone et al.

(1992) even suggested that extrinsic motivation could become intrinsic over time. However, these authors fail to clarify how they define intrinsic and extrinsic motivation. Throughout the article, *motivation* is generally simply referred to as the desire to perform a behavior. Because there is no conceptual elaboration regarding the nature of motivation, the processes relating interest-enhancement to gains in motivation are unclear. Self-determination theory (Deci & Ryan, 1985) provides theoretical propositions concerning the nature of motivation that could be helpful in this respect. According to Deci, Vallerand, Pelletier, and Ryan (1991), motivation can be differentiated into two broad categories: (a) pleasure-related motives (i.e., intrinsic motivation) and (b) instrumental motives (i.e., extrinsic motivation). Moreover, the level of perceived agency (i.e., self-determination) is said to be a fundamental dimension of all motivated behaviors.

1. Intrinsic motivation: Within self-determination theory, intrinsically motivated behaviors represent the height of self-determination because they are undertaken freely out of pleasure and satisfaction. These feelings constitute the spontaneous gratification that is the source of activity performance. Engaging in the activity becomes an end in itself, that is, an intrinsic purpose. An intrinsically motivated athlete enjoys the physical sensations derived from training, or the excitement experienced while learning and mastering athletic skills. However, motivated behaviors are not always performed out of pleasure. Thus, external incentives are differentiated from intrinsic motives (Ryan & Connell, 1989).

2. Extrinsic motivation: A behavior performed for instrumental purposes is said to be extrinsically motivated. For example, many individuals exercise as a means of maintaining a slim and healthy figure. Extrinsically motivated behaviors are not enjoyable to perform: They are a means to an end. Yet, it is important to realize that extrinsic motivation does not systematically preclude personal freedom. Extrinsically motivated behaviors can be reluctantly performed out of external pressure or freely undertaken out of personal choice. Albeit always instrumental, extrinsically motivated behaviors vary to the extent that they are perceived as constrained by external contingencies or as freely endorsed by oneself. According to Deci and Ryan (1985), extrinsically motivated behaviors can be posited on a self-determination continuum. When the level of self-determination is low, behavioral regulation proceeds through pressure and constraint. Thus, the experience of submission to an outward source of control predominates. For instance, self-determination toward a training task is low when it is performed mainly to gain the coach's approval. Conversely, when extrinsic motivation is highly self-determined, the person values the outcome of the extrinsically motivated behavior sufficiently to perform it out of personal choice (Deci & Ryan, 1985). Thus, despite its instrumental origin, the performance of the behavior becomes an expression of the person's self, and the experience of agency predominates. Although self-determined extrinsic motivation appears similar to intrinsic motivation, the two are different. Whereas the latter is performed purely out of interest and enjoyment, the former is an instrumental behavior performed primarily as a result of being personally valued (Deci et al., 1991). For example, an athlete displays self-determined extrinsic motivation when an unpleasant training task is performed because it is a preferred means of improving one's athletic skills.

In line with the conceptualization of motivation proposed by Deci and Ryan (1988) and Deci et al. (1991), this study examines two different motivational constructs: Intrinsic motivation and self-determined extrinsic motivation. The crux of the problem is: How would IES use affect the motivational factors proposed by Deci et al. (1991)? Deci (1992) posited that interest covaries positively with intrinsic motivation and with the level of self-determination of extrinsic behaviors. However, it is unclear whether interest is viewed as an antecedent or a consequence of motivation. In the context of this study, we would like to propose that interest is an important antecedent of intrinsic motivation and of self-determined extrinsic motivation. Specifically, we believe that the heightened levels of interest induced by interest-enhancing strategy use contribute to the internalization of self-determination. According to self-determination theory (Deci & Ryan, 1985), people are active agents driven by a natural tendency to internalize the regulation of their behavior. That is, people transform external into internal regulation, and the motives underlying a given activity increase in self-determination over time. Yet, the intrapersonal processes through which the internalization of behavioral regulation is achieved remain to be studied. Paradoxically, research pertaining to motivation self-regulation generally focused on interpersonal processes. Interest enhancing strategy use (Sansone et al., 1992) could constitute a potential mechanism allowing self-determination internalization to proceed. Thus, we hypothesize that IES use can induce two qualitatively different processes resulting in motivation enhancement. First, interest enhancing strategy use is hypothesized to heighten the level of interest associated with enjoyable activities, thus increasing the level of pleasure associated with intrinsic motivation. Second, IES use is hypothesized to heighten the level of interest of less interesting activities, thereby increasing the level of self-determination of extrinsic motivation.

Finally, it is necessary to consider the interrelation between extrinsic and intrinsic motivation. In the literature pertaining to self-determination theory, it is unclear whether self-determined extrinsic motivation can evolve into intrinsic motivation over time. Yet, Sansone et al. (1992) suggested that the distinction between extrinsic and intrinsic motivation may blur over time as a result of the changes in the activity definition. In agreement with Sansone et al. (1992), we believe that when gains in interest are sufficiently high, it is possible for extrinsic motives to become intrinsic. Thus, it is

hypothesized that self-determined extrinsic motivation predicts intrinsic motivation.

SUMMARY OF GOALS AND HYPOTHESES

The objective of this study is to test a model of interest and motivation self-regulation derived mainly from the theoretical perspectives of Sansone et al. (1992) and Deci et al. (1991). In sum, it is hypothesized that the use of the four proposed IESs results in higher levels of interest for both "interesting" and "less interesting" tasks. Higher levels of interest are, in turn, hypothesized to lead to increases in intrinsic and extrinsic motivation. Specifically, interest in "interesting" tasks is hypothesized to predict intrinsic motivation, whereas interest in "less interesting" tasks is hypothesized to predict the level of self-determination of extrinsic motivation. Finally, self-determined extrinsic motivation is hypothesized to predict intrinsic motivation. The hypothesized model of interest and motivation self-regulation is presented in Figure 1.

METHOD

Participants and Procedure

A total of 120 recreational (n = 36) and competitive (n = 84) figure skaters from 24 clubs in the Ottawa–Carleton area volunteered to participate in the study. In all, two questionnaires were discarded because of missing data bringing the total to 118 (108 female participants and 10 male participants). The age of the participants ranged from 14 to 30 years with a mean age of 17.3 years. Participants spent an average of 10.3 hr/week training and they had been involved in figure skating for an average of 10.2 years. The questionnaires were distributed to the figure skaters after a workout and the participants were informed that the purpose of the study was to examine the means by which athletes cope when they are faced with a boring task they cannot avoid.

Instruments

Interest-Enhancing Strategies for Individual Sport Scale (IESISS). This scale was constructed for the purposes of this study. The items of the IESISS represent IESs that could likely be used in individual sport. Items were formulated in accordance with the operational definition of the IESs presented in the introduction. Subsequently, the items were presented to figure skating experts who confirmed their relevance to figure skating. The IESISS is comprised of 16 items grouped into four subscales. The latter correspond to the proposed IESs: (a) challenge enhancement (CH), (b) exploitation of stimulation from other sources than the task itself (STIM), (c) introduction of variety within the task (VAR), and (d) provision of self-relevant rationales (RAT).

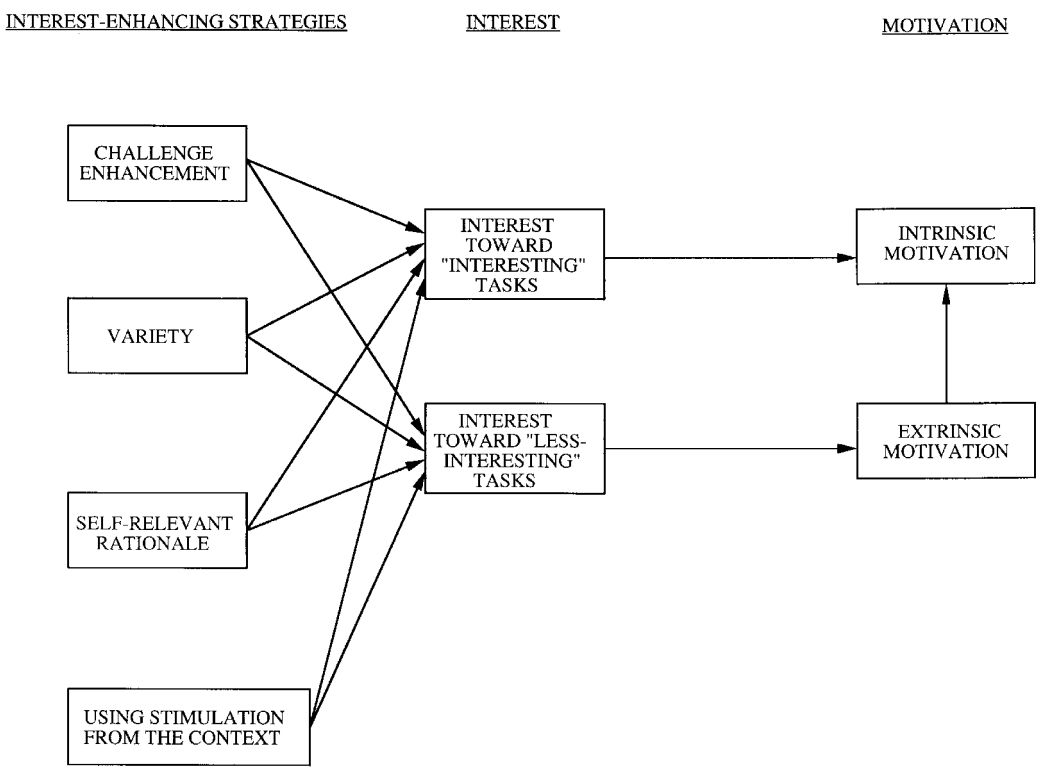

FIGURE 1 Hypothesized interest and motivation self-regulation model.

The items are presented following a general statement: "Please indicate how frequently you use the following strategies when you perform less interesting skating tasks." The items are presented in random order. Participants are asked to rate how frequently they use the proposed strategies on a 9-point scale ranging from 1 (*never*) to 9 (*always*).

Results of an exploratory factor analysis (maximum likelihood extraction with oblimin rotation) revealed that the factorial structure of the IESISS was sound. Four eigenvalues were superior to 1 ($\lambda_1 = 3.27$; $\lambda_2 = 2.16$; $\lambda_3 = 1.77$; $\lambda_4 = 1.38$) and the factors corresponding to RAT, VAR, STIM, and CH accounted for 53.6% of the variance. The chi-square statistic indicated that there was no significant difference between the covariance in the sample and the covariance estimated from the chosen factorial solution, $\chi^2(62, N = 118) = 50.08$, $p = .86$. Moreover, all items loaded significantly on their target factor ($L > .30$; Stevens, 1986). Although three items displayed significant cross-loadings, this was not considered a problem because of the discrepancy between the magnitude of the loadings on the target factor and the secondary factor. Specifically, Items 2, 11, and 9 exhibited high loadings on their target factor (.94, .50, and .62, respectively), while displaying only moderate loadings (.32, −.33, and .39, respectively) on their secondary factor. In sum, the 16 items of the IESISS adequately represented the variance in the data while displaying a satisfactory factorial structure. In addition, the internal consistency of the subscales was estimated using Cronbach's alpha method. These values were acceptable, ranging from .61 to .70. Finally, correlations between IESISS subscales and relevant variables were evaluated to substantiate the construct validity of the IESISS. CH displayed significant positive correlations with competence, perceived freedom, and weekly training time. VAR appeared positively related to perceived competence and negatively related to distraction. RAT was positively related to perceived competence and positive emotions. Finally, STIM was positively correlated with distraction and negatively correlated with perceived competence, positive emotions, and perceived freedom. The items comprising the IESISS, as well as the results of the factor analysis, can be found in Table 1. The correlations between the IESISS subscales and relevant constructs are presented in Table 2. The items within each subscale were averaged to yield global scores for each strategy.

Interest in Figure Skating Tasks Scale (IFS). This scale evaluated ratings of interest toward 12 figure skating tasks. Discussions were conducted with skating experts to identify a complete set of training tasks pertaining to skating. "Spins," "Figures," or "Footwork"are examples of such training tasks. The skating tasks are presented following a general statement: "Please indicate how interesting you generally find the following figure skating tasks." The level of interest in each item is evaluated on a 9-point scale ranging from 1 (*not interesting at all*) to 9 (*totally interesting*). All items on the IFS were ranked according to their mean. A median split was subsequently performed and an average was computed for the six

TABLE 1
Exploratory Factor Analysis on the Items of the Interest-Enhancing Strategies for Individual Sports Scale

Number	*Item*	*RAT*	*VAR*	*STIM*	*CH*
2.	I don't worry about whether or not I like the activity, I just do it.	.94			.32
5.	As long as I have a good reason for performing the task, it doesn't matter if it's not that interesting.	.57			
15.	I realize that the activity will help me achieve my goals, so I just do it.	.47			
16.	I take the attitude that the task must be done regardless.	.46			
10.	I vary the elements that I work on with my coach.		.87		
11.	I try to vary the way I approach the task.		.50		−.33
1.	I like to alternate the less interesting tasks with those that are more interesting.		.43		
6.	I switch training tasks often.		.41		
12.	I find that I daydream often.			.66	
9.	I think of something else.			.62	.39
13.	I pay attention to the spectators.			.57	
4.	I watch other people who are training.			.35	
7.	I set long-term goals for myself.				−.74
14.	I like to attempt elements that are beyond my current level.				−.62
3.	I set goals for improvement during each training session.				−.43
8.	I prepare a training schedule and I stick to it.				−.30

Note. Acronyms represent interest-enhancing strategies: RAT = provision of self-relevant rationales, $\alpha = .70$; VAR = introduction of variety within the task, $\alpha = .64$; STIM = exploitation of stimulation from the physical context, $\alpha = .61$; CH = challenge enhancement, $\alpha = .65$. The nonsignificant loadings ($L < .30$) are not displayed.

TABLE 2
Correlations Between the Subscales of the Interest-Enhancing Strategies for Individual Sports Scale and Related Constructs

	CH	*VAR*	*RAT*	*STIM*
Competence	.38**	.32**	.22*	−.19*
Distraction	−.16	−.23*	−.08	.24**
Positive emotions	.10	.07	.28**	−.23*
Perceived freedom	.31**	.15	.12	−.20*
Weekly training time	.26**	.12	.01	−.15

Note. Acronyms represent interest-enhancing strategies: CH = challenge enhancement; VAR = introduction of variety within the task; RAT = provision of self-relevant rationales; STIM = exploitation of stimulation from the physical context.
*$p < .05$. **$p < .01$.

items with the highest means to create a global score for "interesting" tasks. The "interesting" tasks were "footwork" (M = 7.05), "artistic components" (M = 7.79), "jumps" (M = 7.78), "spins" (M = 7.73), "solos" (M = 7.49), and "competitions" (M = 7.57). Likewise, an average score was computed for the six items with the lowest means to obtain a global score for "less interesting" tasks. The "less interesting" tasks were "stroking" (M = 5.65), "stretching" (M = 5.74), "weight training" (M = 6.37), "figures" (M = 5.48), "dance" (M = 6.63), and "test days" (M = 6.62). Mean levels of interest in "interesting" (M = 7.55) and "less interesting" (M = 6.05) tasks were significantly different ($t = -11.18$, $p < .0001$).

Sports Motivation Scale (SMS; Pelletier et al., 1995). This scale is comprised of 28 items grouped into seven subscales (4 items per subscale) representing different motivational orientations: three types of Intrinsic Motivation (IM; IM to know, to experience stimulation, and to accomplish), and four types of extrinsic motivation (Identified Regulation [IDEN], Introjected Regulation [INTRO], and External Regulation [ER], and Amotivation [AMO]). The factorial structure of the SMS has been supported by a confirmatory factor analysis. Moreover, the subscales of the SMS have displayed satisfactory temporal stability ($.58 < r < .84$) and internal consistency ($.74 <$ Cronbach's $\alpha < .80$). The items are evaluated on a 7-point scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*). An average score was computed from the 12 items composing the intrinsic motivation subscales to create a global intrinsic motivation score. Based on previous research involving Deci and Ryan's motivational taxonomy (e.g., Blais, Sabourin, Boucher, & Vallerand, 1990), the scores on the extrinsic and amotivation subscales were weighted and combined to obtain a global measure of self-determined extrinsic motivation: $SD = (2(\text{IDEN}) + (\text{INTRO}) - (\text{ER}) - 2(\text{AMO}))/4$.

Related training constructs. Perceived competence (6 items; $\alpha = .87$), distraction (1 item), positive emotions (3 items; $\alpha = .86$), and freedom (1 item) experienced during training were measured by items adapted from the Rochester Assessment Package for Schools (Wellborn & Connell, 1987). Items were rated on a 9-point scale ranging from 1 (*does not correspond at all*) to 9 (*corresponds exactly*). Weekly training time was assessed by a single open item ("I train _____ hours every week").

RESULTS

Preliminary Analyses

Summary statistics of all variables involved in the study were first inspected. Mean and standard deviation values revealed that the variables under study displayed acceptable dispersion. Kurtosis values ranged from −1.17 to 3.43, whereas skewness values ranged from −1.62 to .92. Despite a few relatively high values, univariate values of kurtosis and skewness were generally deemed acceptable because mean kurtosis ($|M| = 0.75$) and mean skewness ($|M| = .65$) were within 0 and 1 (Muthén & Kaplan, 1985). Overall, examination of summary statistics provided no reason to suspect that the distribution of the variables under study departed significantly from normality. Second, means of all the variables were inspected and Bonferroni t tests were performed to detect potential differences between recreational and competitive figure skaters. No such differences were identified. These results support the assumption that recreational and competitive skaters can be pooled in a single sample. The Pearson correlations among all of the variables included in the interest and motivation enhancement model are presented in Table 3.

Means for the IESISS Subscales

Examination of the means of the four IES subscales indicated that the IESs used most frequently by the figure skaters were VAR (M = 6.10) and CH (M = 6.06), followed by RAT (M = 5.86) and STIM (M = 4.48). Thus, the four IESs were employed to a moderate extent by the skaters. A comparison of the means as evaluated by Bonferroni t tests revealed that

male participants (n = 10) and female participants (n = 108) did not differ in their use of IESs.

Path Analyses

The path analysis procedure was performed using EQS (Bentler, 1993) and LISREL VII (Jöreskog & Sörbom, 1989) statistical programs. Model fit was assessed on the basis of multiple criteria: The chi-square likelihood ratio statistic, the Satorra–Bentler Scaled Statistic (S–BSS; Satorra & Bentler, 1988), the Comparative Fit Index (CFI; Bentler, 1990), and the Goodness-of-Fit Index (GFI; Jöreskog & Sörbom, 1989). First, the fit of the hypothesized model was assessed. Global consideration of the aforementioned criteria revealed an unsatisfactory fit. The S–BSS (5.42, p = .86) appeared acceptable, but all the other indexes were out of their respective acceptable ranges, $\chi^2(12)$ = 72.84, p < .0001; CFI = .63; GFI = .88. Second, new paths were created on the basis of substantively plausible significant modification indexes, and nonsignificant paths were deleted. The fit of the modified model was significantly better than the fit of the initial model, $\Delta\chi^2$ = 39.45, p < .001. Moreover, the fit of the new model was globally satisfying. The value of the S–BSS (S–BSS = 8.68, p = .97) indicated a very good fit between the estimated model and the sample covariances. Moreover, the GFI and the CFI displayed satisfactory values (GFI = .94, CFI = .89). The chi-square statistic remained significant, $\chi^2(14)$ = 33.39, p < .01. However, this was not considered a problem because the chi-square likelihood statistic is notoriously oversensitive (Byrne, 1994). Examination of the modification indexes revealed that any additional modifications to the model would yield only minor fit improvements. The cost in parsimony did not justify the marginal gains that could have been achieved by further modifications. In sum, although the fit of the initial version of the interest and motivation enhancement model was inadequate, it was possible to create a valid modified model. Global examination of the fit criteria indicated that the new model adequately represented the sample variance. The resulting model is presented in Figure 2.

Interest in "interesting" tasks was significantly predicted by the use of CH and VAR strategies. These strategies were related positively to interest in "interesting" tasks and they explained 21% (p < .001) of its variance. VAR and RAT strategies related positively to interest in "less-interesting" tasks and they explained 16% (p < .001) of its variance. In turn, interest in "less interesting" tasks and STIM strategy use predicted self-determined extrinsic motivation. Whereas interest in "less interesting" tasks was positively linked to self-determination, use of STIM strategy was related negatively to self-determination. Interest in "less interesting" tasks and STIM contributed to 22% (p < .001) of self-determination variance. Finally, intrinsic motivation was predicted by interest toward "interesting" tasks and by self-determined extrinsic motivation. These predictors were both positively related to intrinsic motivation and they explained 34% of its variance (p < .001). Because there was no reason to believe that athletes would limit themselves to the use of a single type of IES, correlations were also evaluated between the four IESs. No significant correlations were found between RAT, STIM, and VAR strategies. Thus, the use of these strategies is seemingly independent. STIM and CH strategies were also unrelated to each other. However, moderate correlations emerged between RAT and CH, and between VAR and CH.

In sum, three strategies, namely CH, VAR, and RAT, allowed for the significant prediction of interest toward "interesting" tasks, "less interesting" tasks, or both. Hence, a more frequent use of these strategies was related to higher levels of interest toward "interesting" training tasks, "less interesting" training tasks, or both. In turn, levels of interest toward "less-interesting" tasks predicted self-determination, whereas levels of interest toward "interesting" tasks and self-determination predicted intrinsic motivation.

TABLE 3
Pearson Correlations Between All Variables of the Interest and Motivation Self-Regulation Model

	IM	*SDEM*	*INT*	*L–INT*	*VAR*	*CH*	*STIM*	*RAT*
IM	—							
SDEM	.45**	—						
INT	.40**	.34**	—					
L–INT	.33**	.36**	.27**	—				
VAR	.15	.17	.35**	.30**	—			
CH	.41**	.29**	.38**	.28**	.33**	—		
STIM	–.11	–.34**	–.11	–.14	–.06	–.06	—	
RAT	.37**	.27**	.17	.27**	.14	.32**	.04	—

Note. IM = intrinsic motivation; SDEM = self-determined extrinsic motivation; INT = interest toward interesting tasks; L–INT = interest toward less interesting tasks; VAR = introduction of variety within the task; CH = challenge enhancement; STIM = exploitation of stimulation from the physical context; RAT = provision of self-relevant rationales.

*p < .05. **p < .01.

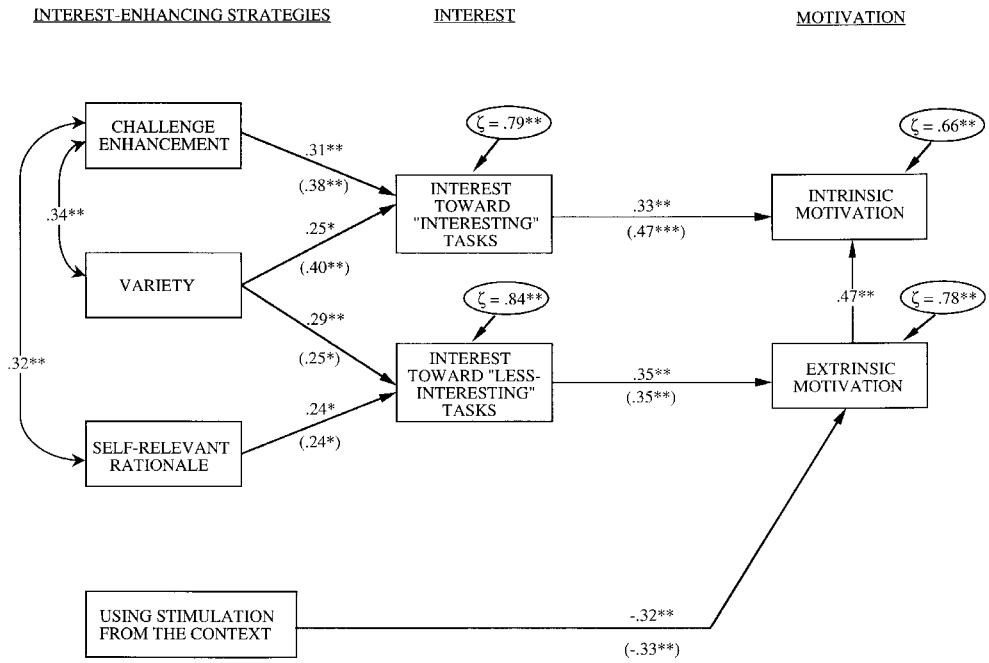

FIGURE 2 Final interest and motivation self-regulation model. The path coefficients (standardized) are presented above the arrows representing the paths, whereas the Pearson correlations are presented in parentheses below the paths. ζ represents the error of prediction associated with each dependent variable. * $p < .05$. ** $p < .01$. *** $p < .001$.

The fourth strategy, namely STIM, appeared unrelated to interest. Yet, this strategy exhibited a direct negative relation with self-determination. This indicates that a frequent use of this strategy was associated with lower levels of self-determination.

DISCUSSION

Boredom is a feeling that is familiar to all of us. It is an aversive and counter-productive experience that can be quite an impediment at times. Unfortunately, boring tasks are not always avoidable. But is boredom inevitable? Theories in the area of interest and motivation self-regulation suggest that it might be possible to transcend boredom and enhance motivation. On the basis of the works of Sansone et al. (1992) and Deci et al. (1991), the goal of this study was to build a model of interest and motivation self-regulation comprised of IESs, interest, intrinsic motivation, and self-determination. The pattern of relations between the components of the model was assessed through path analyses. Results offer support for the hypothesized model. CH, VAR, and RAT strategies are indeed related to higher levels of interest toward "interesting" tasks and/or "less-interesting" tasks. Moreover, interest toward "less-interesting" tasks predicts self-determined extrinsic motivation, whereas interest toward "interesting" tasks and self-determined extrinsic motivation predict intrinsic motivation. Thus, most significant paths are in accordance with the hypothesized model. Yet, there is one noteworthy exception: the path between STIM strategy use and self-determination. The unexpected presence of a path between STIM strategy use and self-determination is contrary to research hypotheses in two different ways. First, the impact of STIM strategy use appears to bypass interest and to impact directly on self-determined extrinsic motivation. Second, this impact is negative: Frequency of STIM strategy use is significantly related to a decrease in self-determination. How is this to be interpreted? Is this "interest-enhancing" strategy actually a "motivation-hindering" strategy? Is this occurrence a sample-specific happenstance? Because the STIM subscale was correlated with negative consequences (i.e., high level of distraction, low perceived competence and freedom, as well as infrequent experience of positive emotions), it is possible that the frequent use of this strategy may indeed lead to adverse effects. However, this unexpected finding could indicate a problem within the proposed causal sequence. Specifically, when the motivation toward the task is very low, this strategy could be used more often. Because the study of IES use is in a preliminary stage, additional research is needed to settle the issue. In addition to the presence of unexpected significant paths, the lack of statistical signifi-

cance of some hypothesized paths must be noted. Specifically, the paths between CH, STIM, and interest in "less interesting" tasks, as well as the paths between RAT, STIM, and interest in "interesting" tasks, failed to reach the threshold of statistical significance. Although unforeseen, it is conceivable that these results reflect reality. Some strategies might further enhance interesting tasks and others might heighten interest levels toward boring tasks. Such knowledge could be quite useful in and of itself. Yet, like the emergence of unforeseen significant paths, the lack of significance of hypothesized paths is difficult to interpret because of the preliminary status of research in interest enhancement. New studies are in order to explore the matter.

Aside from the unexpected presence and absence of significant path coefficients, further limitations pertaining to this study must be addressed. First, the psychometrics limitations pertaining to the IESISS must be acknowledged. The scale was constructed for the purposes of this study and the exploratory factor analysis results, the construct validity correlations, and the internal consistency estimates were obtained from the study sample. This procedure was deemed sufficient for the exploratory purposes of this study. However, studies providing independent assessments of the IESISS validity and reliability are necessary to further establish its psychometric properties. A second concern relates to the model building procedure itself. A posteriori adjustments increase the error rate. Thus, it is important to recognize the exploratory status of the model. Cross-validation studies are necessary to rule out the eventuality of spurious significance. An additional issue pertaining to model construction is the implied direction of causality. In the hypothesized model, causality flows from IESs to interest, and from interest to motivation. Yet, alternative causal sequences remain plausible. For instance, one could argue that it is the level of self-determined extrinsic and intrinsic motivation that causes an individual to use IESs. Alternatively, interest levels could predict IES use, and IES use, in turn, could predict self-determined extrinsic motivation and intrinsic motivation. Thus, due to the cross-sectional nature of the design, it is impossible to make absolute claims regarding the direction of causality between the variables under study. Studies involving longitudinal designs could prove useful in settling this question. Here, gains in interest could be measured against baseline levels. Further, any resulting changes could be more readily attributed to the independent variables (i.e., IESs). Finally, the nature and the size of the sample surveyed are also limitations that should be acknowledged. Additional studies involving larger samples and different contexts are required to support the inferences drawn from the figure skating sample. In sum, in light of the aforementioned limitations, it is important to acknowledge the exploratory nature of the study. The hypothesized model and the current results are best viewed as a preamble to future investigations on the topic.

Research on interest and motivation self-enhancement is in its infancy and several interesting questions could be addressed in future investigations. Are changes in interest and motivation resulting from strategy use stable or temporary? Are IESs coping mechanisms that must be continuously used for the gains in interest to persist? Or are the gains in interest cumulative over time? What are the differences and similarities in the outcomes associated with the use of the various IESs? For instance, because RAT hinges on personal values and long-term goals, it could be hypothesized that changes in interest induced by the use of this strategy are positive, cumulative, and relatively stable over time.

Although it is apparent that more research is needed to further validate the current findings, the study offers preliminary support for the proposed interest and motivation self-regulation model. In our opinion, the contributions of this model are twofold. First, we believe that the theories of Sansone et al. (1992) and Deci et al. (1991) complement each other nicely. Self-determination theory (Deci & Ryan, 1985) supplements the interest and motivation enhancement model (Sansone et al., 1992) by providing theoretical postulates regarding the nature of motivation and the mechanisms underlying its evolution. Deci and Ryan (1985) contended that the basic dimension of motivation is self-determination. Moreover, pleasure-related motives are distinguished from instrumental ones. In turn, the interest and motivation enhancement model proposed by Sansone et al. (1992) also enriches self-determination theory (Deci & Ryan, 1985). According to self-determination theory, motivation is not a static phenomenon. People are active agents driven to internalize the regulation of their behavior. Yet, the intrapersonal processes permitting the internalization of behavioral regulation appeared to have been largely neglected. The study of interest enhancing strategy use (Sansone et al., 1992) might help to shed some light on this matter. Specifically, the gains in the levels of interest resulting from IES use could constitute the process by which people heighten their intrinsic motivation and their self-determined extrinsic motivation, thus internalizing the regulation of their behavior. In sum, we believe that the joint investigation of the theories of Sansone et al. (1992) and Deci et al. (1991) are likely to expand our knowledge of interest and motivation self-regulation.

Finally, in parallel to its theoretical consequences, we believe that the study of interest and motivation self-regulation holds beneficial applied implications as well. Past research primarily focused on the influence of social and contextual variables in altering interest and motivation. Yet, in our view, self-influence is an equally important factor that has been, by and large, overlooked. Higher interest and motivation levels are related to very positive consequences such as greater perceived competence, freedom, positive emotions, and longer persistence in an activity (see Deci, 1992, for a review). It is our hope that the study of interest and motivation self-regulation will yield insightful knowledge regarding the processes by

which individuals can bring such desirable consequences on themselves.

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