SPORT PSYCHOLOGY

Validity, Reliability, and Invariance of the Situational Motivation Scale (SIMS) Across Diverse Physical Activity Contexts

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This research assessed the reliability, presence of a proposed simplex pattern (construct validity), factorial validity, and multisample invariance of the Situational Motivation Scale (SIMS; Guay, Vallerand, & Blanchard, 2000). In Study 1, data were collected from three physical activity samples. After establishing internal consistencies for all scales, bivariate and interfactor correlations were calculated and the results supported a simplex pattern across samples. The SIMS factorial validity across the three samples was tested via confirmatory factor analysis. Based on modification indices and theoretical justification, the SIMS was reduced to a 14-item model and the multisample invariance of this solution was examined. Results supported partial invariance. In Study 2, a total of 1,008 female PE students responded to the SIMS under two experimental conditions. Internal consistency and the assumed simplex pattern was again supported. Finally, the results of multisample CFA were consistent with the proposed post hoc model respecifications suggested in Study 1, supporting partial invariance.

Key Words: self-determination, factorial validity, internal consistency, multigroup invariance

Stemming from the early writings of deCharms (1968) on the motivational consequences of internal versus external causation, self-determination theory (Deci & Ryan, 1985, 1991) has developed into a popular theoretical framework in contemporary psychology. Indeed, commensurate with theoretical advancements, over 800 publications have explored the intrinsic/extrinsic motivation distinction (Vallerand, 1997). Self-determination theory has also provided the conceptual foun-

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dation for a number of studies in the sport and physical education settings (see Vallerand, 2001, for an extensive review).

Embracing the fundamental tenets of self-determination theory, Vallerand (1997, 2001) proposed a hierarchical model which contends that motivation and its determinants, mediators, and consequences operate at three levels: global (or personality), contextual (or life domain), and situational (or state) levels (see Figure 1). Akin to an omnibus personality trait, motivation at the *global* level reflects how an individual generally interacts with his or her environment, be that in an intrinsic, extrinsic, or amotivated fashion (Vallerand & Rousseau, 2001). *Contextual* motivation, on the other hand, pertains to a relatively stable motivational disposition that one adopts toward a particular context, such as sport, work, or education (Vallerand, 1997). Essentially, it reflects the individual's usual motivation within a given context. It is proposed, however, that one's contextual motivation may vary greatly across life domains (Vallerand, 1997). Finally, *situational* motivation refers to the motivation one experiences while engaging in a particular activity, the "here and now" of motivation (Vallerand, 1997).

In considering the complexity of human motivation, Vallerand (1997, 2001) has argued that it is ineffective to study motivation in general. Rather he has proposed a more complete, refined, and precise account that considers motivations differing in type, namely intrinsic motivation, extrinsic motivation, and amotivation, and level of generality, namely global, contextual, and situational. As Vallerand and Rousseau (2001) allude, future research employing this hierarchical framework should lead to a greater understanding of the processes that underlie motivation in sport and exercise settings. Contemporary work in the physical activity domain has begun to look toward testing Vallerand's hierarchical conceptualization of the motivation process (e.g., Blanchard, Vallerand, & Provencher, 1998, cited in Vallerand & Rousseau, 2001; Brunel, 2000; Brunel, Chantal, & Vallerand, 2000; Kowal & Fortier, 2000).

The fundamental premise of self-determination theory (Deci & Ryan, 1985, 1991) at all levels of generality is that individuals need to feel competent, connected, and self-determined within social environments. Motivated behavior within this framework is underpinned by the innate psychological needs of competence, autonomy, and relatedness (Deci & Ryan, 1991). The degree to which these needs are fulfilled by social factors serves to mediate the level of self-determined motivation that the individual adopts at each level of generality (see Vallerand, 1997, for a detailed discussion). Specifically, social factors (e.g., autonomy-supportive environments) that allow one to experience autonomy, competence, and relatedness serve to elevate levels of intrinsic motivation. In a similar vein, social factors (e.g., controlling environments) that undermine such needs are known to thwart levels of intrinsic motivation and lead to less self-determined forms of motivation. To this end, several distinct types of motivation have been identified and are proposed to have various consequences for learning, performance, development, personal experience, and well-being (Ryan & Deci, 2000). The multifaceted types of motivation embraced by self-determination theory are intrinsic motivation, extrinsic motivation, and amotivation.

The most self-determined type of motivation is termed intrinsic motivation and refers to behaviors engaged in for the pleasure and satisfaction one derives from direct participation (e.g., "I participate in sport because it's fun") (Deci &
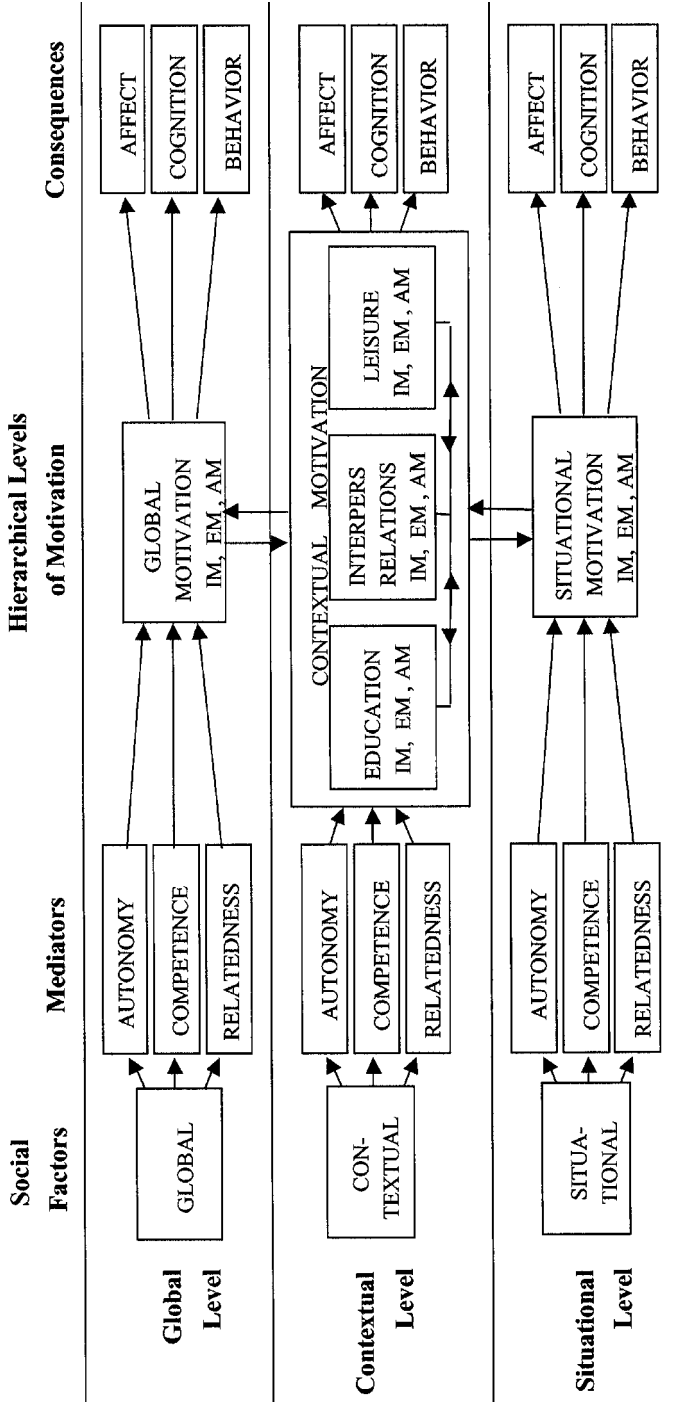
Figure 1 — Vallerand's (1997, 2001) hierarchical model of intrinsic and extrinsic motivation. Used with permission.

Ryan, 1985). Extrinsic motivation, on the other hand, refers to behaviors the individual pursues for incentives that extend beyond those inherent in the activity; the behavior is a vehicle toward a separable end (Deci & Ryan, 1985). From the lower end of the self-determination continuum, extrinsic motivation ranges from external regulation to integrated regulation.[1]

Identified regulation refers to relatively autonomous behaviors that occur when individuals come to value a certain activity as important to their personal goals (e.g., "I participate in exercise for my own good"). In contrast, external regulation refers to nonautonomous behaviors that are underpinned and dictated by externally controlled factors such as reward, payment, or threats (e.g., "I participate in PE because I have to").

The least self-determined type of motivation is called amotivation and can occur when an individual does not perceive contingencies between his or her behavior and subsequent outcomes (e.g., "I participate in sport but I'm not sure it's worth it"), lacks competence, or places no value on an activity (Ryan & Deci, 2000). Amotivated individuals are neither intrinsically nor extrinsically motivated. They believe that because success is unachievable or highly unlikely, there is little reason for exerting effort toward an uncontrollable outcome.

In essence, self-determination theory posits that intrinsic motivation and certain forms of extrinsic motivation, for example identified regulation, represent self-determined motivation and lead to positive motivational consequences. In contrast, it is proposed that motivational types low in self-determination, for example external regulation and amotivation, lead to negative motivational consequences. Empirical work in a variety of life domains has provided support for this postulation (see Vallerand, 1997, 2001).

A further postulation forwarded by self-determination theory holds that these motivational types form a continuum ranging from intrinsic motivation to amotivation (Deci & Ryan, 1985, 1991). Moreover, the correlations between these constructs are theorized to conform to a simplex-ordered correlation structure (Ryan & Connell, 1989). That is, the subscales adjacent along the self-determination continuum, for example external regulation and amotivation, are expected to be more positively correlated than those that are more distant, for example amotivation and intrinsic motivation (Ryan & Connell, 1989). Research in various domains including education (Ryan & Connell, 1989) and sport (Pelletier, Fortier, Vallerand, et al., 1995) has yielded support for this pattern of associations.

The development of measures designed to assess multifaceted motivation at the various levels of Vallerand's (1997, 2001) hierarchical model is an important next step if we are to examine the fundamental tenets of this framework in physical activity contexts. To this end, Pelletier and colleagues (1995) have developed the Sport Motivation Scale (SMS)[2] to assess motivation at the contextual level in *sport*, while Li (1999) has developed the Exercise Motivation Scale to assess motivation at the contextual level in *exercise* settings. As contextual measures, these inventories are designed to tap individuals' general motives for taking part in the physical activity domains of sport and exercise, respectively.

To assess motivation at the situational level in different contexts, Guay and colleagues (Guay & Vallerand, 1995; Guay, Vallerand, & Blanchard, 2000) have developed the Situational Motivation Scale (SIMS) (see Guay et al., 2000, for details of the development and preliminary validation of the inventory). This is an important step forward from a measurement perspective, as existing situational or

state measures (e.g., free-choice and self-report measures) designed to assess an individual's situational motivation have failed to differentially tap intrinsic motivation, extrinsic motivation, and amotivation as posited by Vallerand's (1997, 2001) hierarchical model of motivation (see Guay et al., 2000).

The SIMS is a 16-item self-report inventory designed to measure the constructs of intrinsic motivation, identified regulation, external regulation, and amotivation in both laboratory and field settings. Taking into account that the scale must be short and versatile in order to capture ongoing motivational regulations at the psychological state level, the SIMS measures both the intrinsic and amotivation constructs unidimensionally. In addition, the instrument only assesses the identified regulation and external regulation dimensions of extrinsic motivation, as Guay et al. (2000) have argued that the inclusion of integrated and introjected regulation items would yield a too lengthy inventory that may fail to capture ongoing self-processes. The SIMS is not restricted to one context; it can be readily applied to many field and laboratory settings. When completing this measure, respondents are asked, "Why are you currently engaged in *this activity*?"

Researchers (Blanchard & Vallerand, 1996; Brunel et al., 2000; Kowal & Fortier, 1999, 2000; Standage, Butki, & Treasure, 1999; Standage & Treasure, 2002; Treasure, Standage, & Lochbaum, 1999) have used the SIMS to measure situational motivation in various physical activity settings. This research has shown that the SIMS exhibits adequate reliability and construct validity as reflected in the expected motivational type/consequential outcome relationship (Blanchard & Vallerand, 1996; Brunel et al., 2000; Kowal & Fortier, 1999; Standage et al., 1999). Moreover, previous work in the education context has also provided support for the proposed simplex pattern among the SIMS subscales (Guay et al., 2000). To date, however, no published research has examined the factor structure of the SIMS in the physical activity domain.

Therefore, the purpose of the first study was to examine the reliability and factorial validity of the SIMS. We also sought to evaluate the factorial invariance of the SIMS across three diverse physical activity contexts. That is, while it has become common in recent years to test hypothesized factorial structures of measures used in the research process (e.g., Li, 1999; Roberts, Treasure, & Balague, 1998), few studies have examined the assumption of invariance in measurement models across different samples (e.g., Li, Harmer, Duncan, et al., 1998; Schutz, Eom, Smoll, & Smith, 1994). Measurement invariance refers to the extent to which a measure or construct maintains its meaning across groups or over time (Byrne, 1989). The issue of invariance is central to psychological inventories such as the SIMS. That is, a comparison between groups or over time on a measure that is not invariant is somewhat worthless (Hoyle & Smith, 1994). Indeed, when there is a significant departure from invariance, it can become a classic example of comparing "apples and oranges" (Hoyle & Smith, 1994). With this in mind, a further purpose of Study 1 was to test the assumption of measurement invariance using multisample confirmatory factor analysis (CFA).

Consistent with the research of Guay et al. (2000) in the educational setting with college-age participants, we hypothesized that the SIMS factor structure would be close to an acceptable fit based on numerical criteria across the three samples individually and combined in multisample confirmatory factor analysis. Since no previous work has examined the factorial invariance of the SIMS across situations in various contexts, no formal hypotheses were made regarding this analysis. Fi-

nally, empirical support for the simplex pattern of relationships among the SIMS subscales and internal consistency of each scale were expected across the samples.

STUDY 1

Method

Participants and Procedures

Analyses were performed on three data sets involving three diverse physical activity contexts that were collected and previously analyzed to examine other hypotheses regarding the construct of situational motivation in the physical activity domain. These samples consisted of male youth soccer players (n = 439; mean age = 16.13 years ± .71; range = 15–17) participating in a U.S. Soccer Olympic Development Program (Treasure et al., 1999), 7th- and 8th-grade U.S. middle-school children (n = 318; 182 M, 136 F; mean age = 13.22 yrs ± .66; range = 12–14) taking part in PE (Standage & Treasure, 2002), and participants in college physical activity courses which were largely fitness-based classes (i.e., walking, personalized workout, strength training) (n = 221; 99 M, 122 F; mean age = 20.84 yrs ± 1.65; range = 17–25 (Standage et al., 1999). Data for all studies were collected immediately following activity; for example, after participating in PE the students completed the inventory in the school gymnasium. In each instance, human-subject forms were filed with the respective school where each study was administered. Participation in all studies was voluntary. Parental consent was obtained for all participants under 18 years of age.

Measure

The Situational Motivation Scale (SIMS). The 16-item Situational Motivation Scale (Guay et al., 2000) is a measure of situational (or state) motivation toward a chosen activity (see Appendix). This self-report inventory contains four items per subscale and is designed to measure intrinsic motivation, identified regulation, external regulation, and amotivation. Participants are asked to respond to the stem, "Why are you currently engaged in this activity?" Each item is rated on a 7-point Likert scale ranging from 1 "corresponds not at all" to 7 "corresponds exactly."[3]

Results

Reliability of Measure and Interfactor Correlations

Internal consistencies (Cronbach, 1951) for the subscales of the SIMS across the three samples are listed in Table 1. As shown, all internal consistencies equaled or exceeded Nunnally's (1978) criterion of .70 deemed to represent acceptable reliability in the psychological domain. Also shown in Table 1 are simple correlations calculated between the dimensions of situational motivation. Consistent with self-determination theory, these correlations generally conformed to a simplex pattern of relationships across the three samples, in which those subscales adjacent along the self-determination continuum (e.g., external regulation and amotivation) were more positively correlated than the more distant ones (e.g., amotivation and intrinsic motivation). In addition to bivariate correlations,

Table 1   Internal Consistencies of and Bivariate and Interfactor Correlations Among the Situational Motivation Subscales for Each Sample

Sample	Intrinsic motivation	Identified regulation	External regulation	Amotivation
Elite youth soccer players				
Intrinsic motivation	**.84**	.75	−.26	−.46
Identified regulation	.59	**.70**	−.28	−.60
External regulation	−.23	−.25	**.81**	.57
Amotivation	−.39	−.48	.39	**.80**
Middle school PE				
Intrinsic motivation	**.89**	.91	−.41	−.65
Identified regulation	.82	**.83**	−.32	−.69
External regulation	−.39	−.32	**.85**	.62
Amotivation	−.58	−.59	.56	**.90**
College phys. activity classes				
Intrinsic motivation	**.83**	.59	−.24	−.42
Identified regulation	.57	**.78**	−.04	.56
External regulation	−.27	−.17	**.81**	.47
Amotivation	−.42	−.54	.47	**.87**

Note: Cronbach's alpha coefficients are indicated on the diagonal in boldface. Bivariate correlations on the bottom diagonal; interfactor correlations from CFA are on top diagonal.

interfactor correlations from the confirmatory factor analyses are presented above the diagonal. In contrast to bivariate correlations, interfactor correlations are free of measurement error because the error has been estimated and removed, leaving merely explained common variance (Ullman, 2001). As shown, these values mirrored the findings of the bivariate correlations and supported a simplex pattern of associations.

Single Sample CFA

CFA is a structural equation modeling technique that assumes multivariate normality. Therefore the initial analysis examined the multivariate normality of the 16 SIMS indicators for the samples. Results of multivariate kurtosis coefficients (PE = 80.69, $p < .001$; soccer = 122.90, $p < .001$; college physical activity = 104.71, $p < .001$) indicated that the present samples were non-normal in their distribution (Mardia, 1974). In view of the present sample sizes, it was considered inappropriate to use the asymptotically distribution free (ADF) method to analyze the non-normal data, as this method is sample size dependent. As a result, the ADF reflects a poor choice of estimation method under all conditions, apart from when

the sample size is very large ($n > 2{,}500$) (Ullman, 2001). Therefore, we used the "bootstrapping approach," which does not have a distributional assumption and estimates the standard errors for parameter estimates using the bootstrap algorithm of Efron (1982). In the present sample, 1000 bootstrap replication samples were drawn with replacement from the data sets (see Yung & Bentler, 1996, for a discussion on the application of bootstrapping to covariance structures).

The adequacy of the proposed a priori factor structure underlying the SIMS (see Figure 2) was examined via CFA. In the present study we used the maximum likelihood estimation (ML) method using AMOS Version 4.0 (Arbuckle, 1999). As recommended, several indices were employed to assess the model fit (Hu & Bentler, 1995, 1999). The overall fit of the model to the data was examined via the chi-square test (χ^2). A nonsignificant χ^2 indicates the model to be an acceptable fit to the sample data. In the present study, the χ^2 statistic was significant across samples, thus suggesting that the a priori SIMS model did not match the data. However, since the χ^2 statistic is influenced by sample size (Marsh, Balla, & McDonald, 1988), supplementary fit indices were assessed.

Based on the recommendations of Hu and Bentler (1999), we embraced a two-index presentation strategy. This approach advances the use of the standardized root mean square residual (SRMR) as a measure of absolute fit index together with a supplementary incremental fit index. We also employed additional indices of fit, namely the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The ML-based indices of TLI, CFI, and RMSEA were employed because, while the ML-based SRMR is the most sensitive index for models with misspecified covariances, these indices have been found to be the most sensitive to models with misspecified factor loadings (Hu & Bentler, 1999). The final set of fit indices therefore represent a combinational array of indices, an approach Hu and Bentler (1999) endorse for improved assessment of model fit.

As an absolute fit index, the SRMR assesses the degree to which the a priori structure reproduces the data, and for well-specified models the SRMR value should be close to .08 (Hu & Bentler, 1999). The RMSEA also represents a measure of absolute fit. In the present study, the RMSEA (with 90% confidence intervals) was employed and assesses the amount of unfitted residuals between the implied and observed covariance matrices. Values close to .06 reflect a good fit between the proposed model and the data (Hu & Bentler, 1999). Based on the recommendations of Hu and Bentler (1999), the observed SRMR values for the soccer and PE samples were acceptable (Table 2). However, the SRMR value for the college sample (.10) and the RMSEA values across samples were inadequate (>.06).

Incremental fit indices were then used to compare the proportionate improvement of the target model to a more restrictive model, typically a null model. In this instance the CFI and TLI were employed. Hu and Bentler (1999) proposed that cutoff values of close to .95 be used for these indices of fit. Results indicated that the SIMS model adequately fit the data for the PE sample (CFI = .95; TLI = .94). However, the model did not fare as well when applied to the soccer sample (CFI = .92; TLI = .90) and the college physical activity sample (CFI = .87; TLI = .84).

Assessment of Individual Parameter Estimates. The standardized maximum likelihood and uniqueness for the factor loadings for the observed variables on their proposed dimensions are shown in Table 3. All factor loadings were sig-
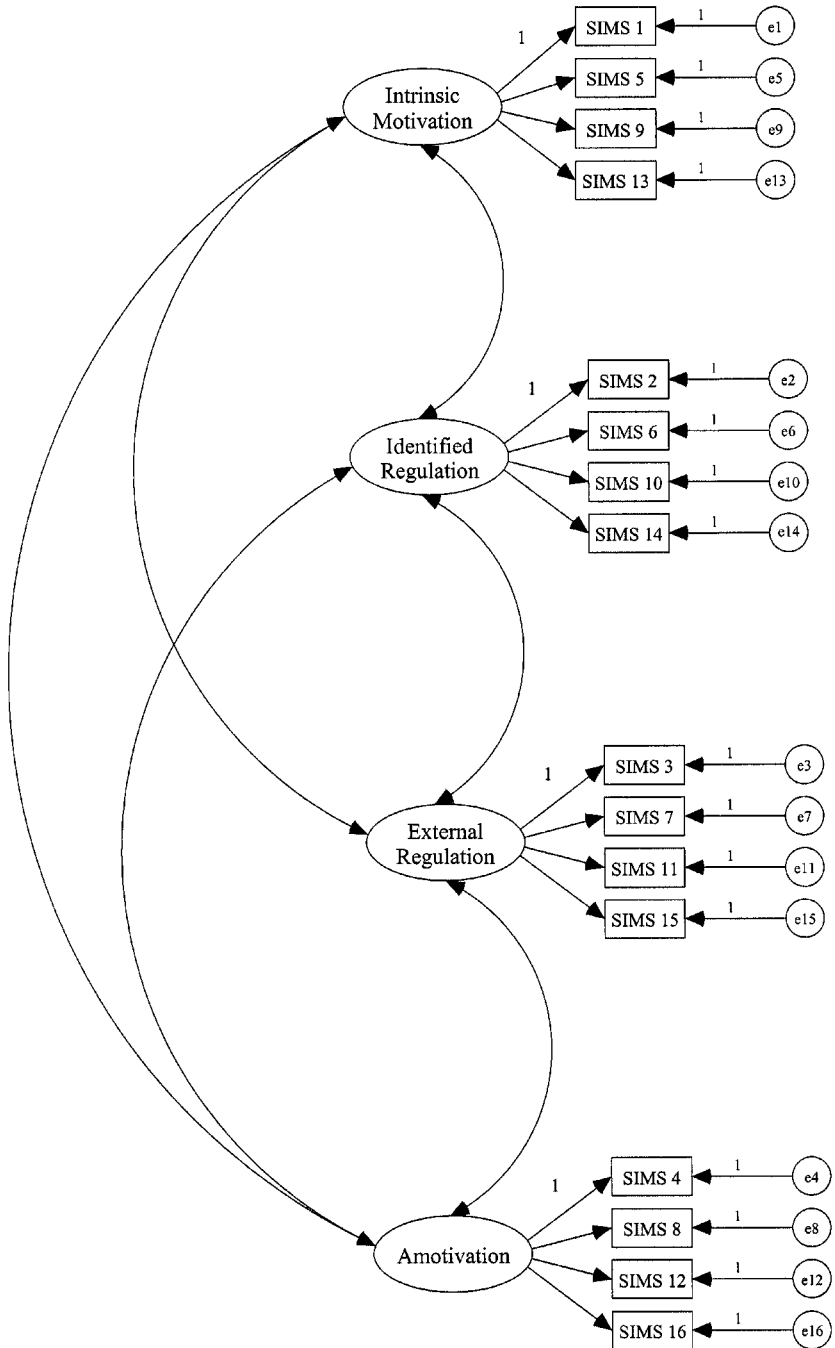
Figure 2 — The proposed a priori model of the SIMS.

Table 2 Summary of Fit Indices From Single Sample Confirmatory Factor Analyses With the Three Samples

Sample	χ^2	df	CFI	TLI	SRMR	RMSEA	(90% CI)
Elite soccer	329.44*	98	.92	.90	.06	.073	(.065 – .082)
Middle school PE	271.65*	98	.95	.94	.06	.075	(.064 – .085)
College physical activity classes	309.69*	98	.87	.84	.10	.099	(.087 – .112)

*$p < .001$

nificant with *z*-values greater than 1.96, suggesting that each item significantly contributed to the measurement of its underlying construct (Jöreskog & Sörbom, 1989). The uniqueness results indicate that while the SIMS items displayed moderate error in assessing dimensions of situational motivation, there was a marked increase in unexplained error for the PE sample.

Respecification of the SIMS Measurement Model.   Since the SIMS is a relatively new measure, and the a priori model failed to reach an acceptable fit in the soccer and college samples, we explored possible avenues of respecification. First, an examination of the modification indices suggested that several error variances should be allowed to share error covariance. As a rule of thumb, modification indices above 5 are generally considered large enough for a researcher to consider amending a model (Kelloway, 1998). However, since correlating error terms indicates that items share unique variance that cannot be explained by the underlying factor structure, we did not evaluate this method of model respecification (see Gerbing & Anderson, 1984; Jöreskog, 1993).

Second, large modification indices showed that Item 11 ("because I don't have any choice") and Item 10 ("by personal decision") cross-loaded heavily on corresponding latent constructs and across samples, ranging from 9.51 to 35.84 and 5.33 and 15.24, respectively. Specifically, Item 11 cross-loaded on all corresponding dimensions of motivation, while Item 10 displayed the same pattern in the college data but cross-loaded mainly on external regulation in the PE and soccer samples. The magnitude of deviation was greatest in the college sample. In light of the theoretical distinction between the motivation types presumed to be assessed by the SIMS, and given that such cross-loadings violate the exclusive item association of questionnaire development, it was deemed appropriate to explore the impact of excluding these items. It should also be noted that Item 7 cross-loaded to a lesser extent in the case of all samples.

Based on these findings, the original SIMS model was respecified to a 14-item model and reexamined. From a theoretical perspective, a close look at Item 10 ("by personal decision") and Item 11 ("because I don't have any choice") suggests that these items are assessing the construct of perceived autonomy, as opposed to their intended regulations. That is, while we concur with Guay et al.'s (2000) desire to tap these situational regulations by examining the why of behavior (Deci & Ryan, 1985; McClelland, 1985), we fail to see how these items can be

Table 3 Standardized Factor Loadings (FL) and Uniqueness (U) for the Soccer, PE, and College Samples

SIMS item	Soccer FL (U)	PE FL (U)	College FL (U)
1 (IM)	.70 (.48)	.80 (1.27)	.75 (.30)
2 (IR)	.61 (.40)	.73 (1.57)	.75 (.31)
3 (ER)	.77 (.49)	.74 (1.76)	.76 (.60)
4 (AM)	.61 (.53)	.83 (1.43)	.72 (.42)
5 (IM)	.74 (.48)	.83 (1.17)	.69 (.31)
6 (IR)	.73 (.28)	.79 (1.20)	.85 (.15)
7 (ER)	.80 (.51)	.88 (0.90)	.88 (.35)
8 (AM)	.77 (.50)	.85 (1.16)	.76 (.37)
9 (IM)	.83 (.35)	.83 (1.19)	.71 (.34)
10 (IR)	.50 (.60)	.67 (2.21)	.43 (.52)
11 (ER)	.64 (.55)	.74 (2.10)	.61 (.60)
12 (AM)	.76 (.33)	.83 (1.33)	.86 (.19)
13 (IM)	.75 (.43)	.82 (1.20)	.73 (.31)
14 (IR)	.64 (.39)	.79 (1.31)	.68 (.44)
15 (ER)	.68 (.83)	.72 (1.78)	.68 (.86)
16 (AM)	.72 (.49)	.79 (1.44)	.79 (.41)

Note: IM = intrinsic motivation; IR = identified regulation; ER = external regulation; AM = amotivation. Inter-item correlations available from first author on request.

differentiated from items intended to measure perceptions of autonomy in the situation at hand, a point apparently validated by the data.

Subsequently, each data sample was reanalyzed via CFA. Results for all samples displayed marked improvements in absolute and incremental fit indices due to the exclusion of Items 10 and 11; soccer, $\chi^2 = 215.05$, $df = 71$, CFI = .94, TLI = .92, SRMR = .05, RMSEA = .068 (90% CI = .058–.079); physical education, $\chi^2 = 176.46$, $df = 71$, CFI = .96, TLI = .95, SRMR = .04, RMSEA = .068 (90% CI = .056–.081); and college physical activity, $\chi^2 = 171.72$, $df = 71$, CFI = .93, TLI = .91, SRMR = .07, RMSEA = .080 (90% CI = .065–.096). Given that the models in the present study were non-nested, it would have been inappropriate to use the chi-square difference test to assess model improvement. Thus we employed Akaike's (1987) information criterion (AIC) to compare the degree of parsimony in the competing models.

The AIC is a non-normed index and is not scaled on a zero-to-one scale. For AIC, small values signify a better and more parsimonious model fit (Ullman, 2001). As Ullman indicates, however, there is no clear answer as to what is small enough; rather, small is small as compared to other competing models. Results showed that the AIC was reduced from 405.44 to 283.72 for the soccer sample, from 347.64 to

244.46 for the PE sample, and from 385.70 to 239.72 for the college physical activity sample. Such improvements indicate that the 14-item model is more parsimonious with the exclusion of the two cross-loading items.

With respect to the elimination of SIMS Items 10 and 11, the internal consistency of the identified regulation and external regulation subscales were reassessed via the calculation of alpha coefficients (Cronbach, 1951). Results indicated that for all samples (identified regulation = .80, .83, .71; external regulation = .81, .83, .80, for the college, PE, and soccer samples, respectively), the elimination of these items did not compromise the internal consistency of the two subscales in question.

Multisample CFA and Factorial Invariance. In order to generalize and test more stringently the strength and generalizability of the SIMS factor structure across the samples simultaneously, we conducted multisample CFA. This allows the researcher to simultaneously assess the invariance of the factor structure across samples varying in characteristics such as gender, age, ability, and in this case, context (cf. Byrne, 1998). Thus the underlying assumption is that the hypothesized model reproduces comparable findings across various data sets. As with one-sample CFA, the fit indices and the χ^2 statistic represent model fit. However, in multisample CFA, the variance/covariance matrices from the various samples are analyzed simultaneously so as to ascertain to what extent they are identical.

To examine which parameters of the SIMS model were invariant across the three samples, we employed a multistep analysis of invariance (Bollen, 1989; Byrne, 1989, 1998; Marsh, 1993). As Byrne (1998) outlines, the first step involves establishing a baseline model. Since we established that Items 10 and 11 were problematic across samples, we settled on the 14-item model as our baseline. Having established a baseline model for the three groups in single-sample analysis, invariance testing begins with the least restrictive model in which only the form of the model, namely the baseline model, is tested across samples for invariance (Marsh, 1993). This is a "non-invariant" step and provides a critical base for subsequent model comparisons (Marsh, 1993). Next, the factor loadings are constrained to be invariant across groups. The subsequent step involves constraining the covariance matrix to equivalence across groups, with the factor loadings still constrained. The penultimate step entails constraining the variances across groups, with the factor loadings and covariances still constrained. Finally, the uniqueness (error) is set to equivalence across groups, with the factor loadings, covariances, and variances still constrained. For the reasons already noted, the invariance analysis was only conducted on the 14-item solution.

Although a significant χ^2 difference test value emerged, the results revealed the pattern of factor loadings to be largely invariant across samples. This is evident from the identical values for absolute indices, incremental fit indices, and a marginal increase in AIC (4.18) (see Table 4). Such a finding supports the "partial invariance" of the SIMS (Byrne, 1989), which reflects the minimal condition for factorial invariance (Marsh, 1993). Notably, there was a marked deterioration of model fit when the covariances were constrained to equivalence. Not only did a significant χ^2 difference statistic emerge, but all measures of fit substantially worsened, with manifest increases in SRMR, RMSEA, and AIC, and reductions in CFI and TLI values. Such findings suggest the factor covariances to be variant across groups. Interestingly, the final two steps of the invariant analysis revealed minimal change in fit due to the constraining of variances and error variances (Table 4).

Table 4   Results for the Factorial Invariance of 14-item SIMS Model Across the Three Samples

Model	χ^2	df	TLI	CFI	SRMR	RMSEA (90% CI)		AIC
M_{form}	563.32	213	.93	.95	.04	.041	(.037 − .045)	767.32
$M_{loadings}$	585.50	222	.93	.95	.04	.041	(.037 − .045)	771.50
M_{cov}	1128.40	227	.84	.86	.34	.064	(.060 − .068)	1304.40
M_{var}	1131.62	230	.84	.86	.34	.063	(.060 − .067)	1301.62
M_{errors}	1156.56	240	.84	.86	.34	.062	(.059 − .066)	1303.87

Model Comparisons	χ^2 difference	df	p
M_{form} vs $M_{loadings}$	22.18	9	.01
M_{form} vs M_{cov}	565.08	14	.001
M_{form} vs M_{var}	568.29	17	.001
M_{form} vs M_{errors}	596.55	30	.001
$M_{loadings}$ vs M_{cov}	542.90	5	.001
$M_{loadings}$ vs M_{var}	546.11	8	.001
$M_{loadings}$ vs M_{errors}	574.37	21	.001
M_{cov} vs M_{var}	3.21	3	.36
M_{cov} vs M_{errors}	31.47	16	.01
M_{var} vs M_{errors}	28.25	13	.01

Discussion

The purpose of Study 1 was to examine the reliability, the assumed simplex relationship among the SIMS subscales, explore the factorial validity of the SIMS, and test the invariance of the SIMS measurement model across three diverse physical activity contexts. With respect to scale reliability, aligned with the work of Guay et al. (2000), support emerged for the internal consistency of the SIMS subscales in each physical activity context. Support was also provided for the proposed simplex pattern of interrelationships as postulated by the theoretical tenets of self-determination theory (Deci & Ryan, 1985, 1991). The latter findings add support to the construct validity of the SIMS and suggest the inventory is capturing the targeted motivation types in a conceptually coherent manner.

Consistent with the findings of Guay et al. (2000) in the educational setting, the fit indices from the CFA analyses revealed the SIMS a priori model produces a marginal fit to the data. Ullman (2001) argues, however, that good-fitting models produce consistent results on many different indices in many if not most cases. Therefore, given that the SIMS is a relatively new measure and the data from all samples failed to reach an acceptable fit to the model, we explored possible avenues of respecification. Modification indices revealed that Items 10 and 11 in the original SIMS a priori model deviated from the measurement of their underlying constructs and cross-loaded on corresponding latent factors across samples. This

cross-loading was more prominent in the college sample than in the other samples, which may be due partly to its small sample size ($n = 221$), as Hu and Bentler (1999) assert that ML-based TLI and RMSEA are less preferable when the sample size is small ($n < 250$). Based on these findings, it seemed appropriate to reduce the 16-item version of the SIMS to a 14-item questionnaire (Appendix). The elimination of these items, however, did not compromise the internal consistency of the identified regulation and external regulation subscales.

More important, a close look at the content of these two items justified their exclusion from a theoretical perspective. That is, as previously mentioned, Items 10 and 11 appear to tap perceptions of autonomy—the freedom to choose one's course of action—rather than their intended motivational constructs. For example, when considering Item 10, "by personal decision," previously utilized items such as "I feel free to do this activity" (Guay et al., 2000) and "I do this activity because I want to" (Blais, Vallerand, & Lachance 1990), and "I feel that I do PE because I want to" (Standage, Duda, & Ntoumanis, in press) all seem to evaluate autonomy aligned with the theoretical tenets that one is the *origin* of his/her behavior (deCharms, 1968; Deci & Ryan, 1991). Likewise, Item 11, "because I don't have any choice," can be likened to formerly used autonomy items such as "I often feel that I have to go to swim practice" (Kowal & Fortier, 2000), "I felt obligated to go to swim practice" (Kowal & Fortier, 1999, 2000), and "I feel controlled at school" (Vallerand, Fortier, & Guay, 1997); they embrace autonomy from the perspective that one is controlled or is the *pawn* to external pressures (deCharms, 1968).

In view of autonomy's presumed mediating role in the self-determination framework (Deci & Ryan, 1985, 1991; Vallerand, 1997), such items become even more problematic should the SIMS be used to assess situational motivation in a test of theory. Indeed, the mere inclusion of the word "choice" in Item 11 encompasses the underlying concept of autonomy, and will just by employing identical terminology facilitate strong associations between the two constructs. We firmly believe the SIMS should not fall victim to the conceptual problems—the additional assessment of the antecedents (i.e., competence) and consequences (i.e., effort) of intrinsic motivation—that have marked previous motivational inventories (e.g., the Intrinsic Motivation Inventory; McAuley, Duncan, & Tamman, 1989; Ryan, 1982) (cf. Markland & Hardy, 1997; Vallerand & Fortier, 1998).

In addition to the elimination of the two items, modification indices suggested that certain error terms should be allowed to share error covariance. However, since we had no theoretical justification to correlate various error terms within and across constructs, we chose not to explore this route. Indeed, such an approach may have led to an acceptable fit while obfuscating a more important theoretical structure (Gerbing & Anderson, 1984). Future work addressing the underlying factor structure of the SIMS should address such concerns.

The theoretical respecification of the SIMS model led to the comparison of a 14-item solution to the a priori 16-item model using multisample analyses. Results of this post hoc approach suggested that the 14-item model provides a more parsimonious and improved fit to the data across the three samples. We then took the next step and analyzed which parameters of the SIMS 14-item solution were invariant across the three samples. Results supported the "partial invariance" of the SIMS structure, revealing an equivalence of all factor loadings across samples. Such a finding suggests that SIMS items are equally valid for individuals in various physical activity contexts.

The next step in the invariance procedure was to examine the effect of constraining the factor covariances. Although Guay et al. (2000) found the factor variances/covariances to be invariant across gender, the present findings suggest that the motivational types do not share the same degree of linear association across various contexts. Given that situational motivation pertains to the here and now of motivation, such findings may be attributable to situational dynamics associated with the motivation process. That is, when assessing an individual's motivation for engaging in a particular activity at a given time, the notion is that the SIMS captures the elements which constitute that particular and often distinct situation.

To this end, the motives that adolescent boys give for participating in soccer may differ greatly from the reasons that college students give for participating in physical activity classes. Thus it is not surprising that a baseline model specified for the groups collectively does not hold invariant across the situations that differ with regard to their motivation related characteristics (e.g., physical setting, precursory social factors, demands, benefits). Moreover, cross-sectional designs in field settings, as opposed to an ongoing analysis of self-regulations, result in data in which we often observe such self-regulatory constructs interacting and intertwining in many disparate ways, contingent upon a given situation (R.J Vallerand, personal communication, Oct. 4, 2001).

The final two steps involve constraining the variance and error residuals to equivalence. The latter step is considered the least important in the process of invariance testing and is unlikely to be met in most applications (Bentler, 1995). Interestingly, both steps revealed no deterioration of fit due to the constraining of variances and error variances, above and beyond that due to the constraining of the covariances. This finding suggested that the variances and measurement error across contexts were essentially invariant. With respect to the results suggesting that the SIMS be modified to a 14-item version, Newton, Duda, and Yin (2000) point out that generalization and interpretation from post hoc analyses should be viewed with caution, as such methods of model respecification increase the rate of Type I errors.

With new data, the aim of Study 2 was to test the revised 14-item measurement model against the original 16-item SIMS model to examine and verify the post hoc results obtained in Study 1. We also sought to test the SIMS in an experimental setting. This represents an important step, as ultimately state measurement tools are used to assess theoretical constructs in lab and experimental field settings, going beyond cross-sectional and correlational designs. In such settings the response variance may become more limited depending on on the manipulation at hand. Thus, establishing a measurement tool that is sensitive and robust in such settings represents an important advancement in the literature on intrinsic/extrinsic motivation.

STUDY 2

Method

Participants and Procedures

Data for Study 2 were collected from 1,008 girls in Grades 7 and 8 in U.S. middle schools participating in various walking activities in PE; age range was 12 to 14 years (Prusak, 2000). Having obtained parental and participant consent for involvement in the present study, we administered the 16-item SIMS to the partici-

pants on three occasions and under two experimental conditions, choice vs. no choice. On Day 1 we introduced a walking unit and gave a handout to all students summarizing the benefits of walking as a lifetime activity. At this time, the notion of *having* or *not having* choice was first emphasized.

Teachers were instructed to tell the classes in the choice group that they would be making many choices during the unit about which activity they would participate in, and at times with whom. The no-choice groups received verbal cues from a physical education teacher such as, "I have chosen to do walking with you for the next 2 weeks" or "I will choose the groups you work in." These types of choice or no-choice verbal cues were continued throughout the walking unit. This intervention took place over 10 days of the participants' regular physical education period. In the present study, we report only the results obtained for the choice and no-choice groups on Day 10, namely the cessation of the intervention program.

Results

Reliability of Measure and Interfactor Correlations

Descriptive statistics, internal consistency (Cronbach, 1951), bivariate correlations, and the interfactor correlations from the CFA for the SIMS subscales across the two conditions are listed in Table 5. As shown, all internal consistencies exceeded Nunnally's (1978) criterion of .70. Further, consistent with the findings of Study 1, the deletion of SIMS Items 10 and 11 did not compromise the internal consistency of the identified regulation and external regulation subscales. Finally, and congruent with the results of Study 1, the bivariate and interfactor (CFA) correlations again, in general, supported the presence of a simplex pattern of associations between the SIMS subscales.

Multisample CFA and Factorial Invariance. As in Study 1, the initial analysis examined the multivariate normality of the 16 SIMS indicators for the present samples. Results of multivariate kurtosis coefficients (Mardia, 1974) were 99.96 and 61.46 for the choice and no-choice groups, respectively, thus indicating that the present samples were non-normal in their distribution. Given that the present samples were comparable in size to those in Study 1, we again used the bootstrapping approach.

Results of the multisample CFA comparing the two models are listed in Table 6. As shown, the proposed a priori (16-item model) displayed a good fit to the data. However, results did demonstrate that the 14-item model possessed improved indices of fit, reductions in RMSEA and SRMR, and a 210.93 reduction in AIC. In total, such findings support the 14-item SIMS model. Finally, it should be noted that although fit indices suggested the 16-item model to be acceptable, a recurrent observation was that the problematic Items 10 and 11 identified in Study 1 again violated the exclusive item association principle and cross-loaded on corresponding latent constructs. Specifically, in the choice sample, Item 11 cross-loaded on the intrinsic motivation (modification index = 15.31), identified regulation (MI = 12.76), and amotivation (MI = 5.96) factors, while the same item cross-loaded on the identified regulation (MI = 5.64) factor in the no-choice sample. With respect to Item 10 in the choice sample, the findings mirrored those found in Study 1 with Item 10 cross-loading on the external regulation factor (MI = 18.36).

Table 5 Descriptive Statistics, Internal Consistencies, and Interfactor Correlations of Situational Motivation Subscales for Both Conditions

Condition	Mean	*SD*	Intrinsic motivatn.	Identified regulation	External regulation	Amoti-vation
Choice						
Intrinsic motivation	4.41	1.52	**.86**	.86	–.51	–.59
Identified regulation	4.54	1.51	.77	**.85 (.86)**	–.47	–.62
External regulation	3.27	1.77	–.45	–.45	**.89 (.87)**	.66
Amotivation	2.42	1.40	–.51	–.54	–.59	**.86**
No-choice						
Intrinsic motivation	3.95	1.47	**.85**	.79	–.53	–.56
Identified regulation	4.00	1.41	.73	**.82 (.88)**	–.48	–.57
External regulation	4.12	1.82	–.46	–.46	**.88 (.84)**	.62
Amotivation	2.75	1.44	–.50	–.49	.56	**.86**

Note: Cronbach alphas in parens represent alpha coefficients for 14-item SIMS model. Bivariate correlations are on bottom diagonal; interfactor correlations from the CFA are on top diagonal.

Table 6 Multisample Confirmatory Factor Analysis for the 16-Item and 14-Item SIMS Models Across Both Experimental Conditions

Model	χ^2	*df*	CFI	TLI	SRMR	RMSEA (90% CI)	AIC
16-item model	549.18*	196	.96	.96	.05	.042 (.038 – .047)	701.18
14-item model	354.25*	142	.97	.97	.03	.039 (.034 – .044)	490.25

*$p < .001$

In the no-choice sample, Item 10 cross-loaded on intrinsic motivation (MI = 8.34) and external regulation (MI = 14.88). As in Study 1, to a lesser extent Item 7 was again shown to cross-load to a lesser degree in the choice sample, while Item 15 displayed the same pattern in the no-choice sample. Finally, Item 13 cross-loaded on the identified regulation factor in both samples. However, we did not explore modifications to the SIMS factor structure based on this finding, as the

Table 7   Standardized Factor Loadings (FL) and Uniqueness (U) for Both Samples

SIMS item	Choice		No choice	
	FL	(U)	FL	(U)
1 (IM)	.82	(1.03)	.85	(0.77)
2 (IR)	.78	(1.19)	.82	(0.92)
3 (ER)	.86	(1.09)	.82	(1.38)
4 (AM)	.82	(0.95)	.76	(1.24)
5 (IM)	.84	(0.92)	.82	(0.99)
6 (IR)	.86	(0.88)	.88	(0.66)
7 (ER)	.87	(1.04)	.90	(0.87)
8 (AM)	.80	(1.03)	.84	(0.85)
9 (IM)	.82	(1.09)	.81	(1.15)
12 (AM)	.80	(1.00)	.85	(0.86)
13 (IM)	.70	(1.94)	.64	(1.98)
14 (IR)	.85	(0.87)	.82	(1.02)
15 (ER)	.75	(1.71)	.70	(2.16)
16 (AM)	.68	(1.49)	.67	(1.53)

Note: IM = intrinsic motivation; IR = identified regulation; ER = external regulation; AM = amotivation. Inter-item correlations available from first author on request.

item content ("because I feel good when doing this activity") is aligned with Deci and Ryan's (1985, 1991) theoretical conceptualization of intrinsic motivation. Thus, such findings may reside with the self-determined nature of both constructs.

Assessment of Individual Parameter Estimates.   The standardized maximum likelihood factor loadings and uniqueness values for the 14 observed variables on their proposed dimensions are shown in Table 7. As in Study 1, all factor loadings were found to be statistically significant, with z-values greater than 1.96. The uniqueness values were also quite high. Such findings may reside with the situational dynamics and increased variance of participatory motives in the required PE experience (i.e., some kids enjoy PE while others take part only because it is part of the school curricula).

To verify the invariance findings from Study 1, we employed the same multistep procedure on the 14-item solution in Study 2. As shown in Table 8, the results mirrored those obtained in the first investigation.

Discussion

The principal aim of Study 2 was to further examine the factorial validity of the SIMS. Of particular interest was both the comparison of the 14-item model suggested by post hoc analyses in Study 1 to the a priori SIMS model, and the factorial invariance of this solution. Multisample confirmatory factor analyses in-

Table 8 Results for Factorial Invariance of 14-item SIMS Model Across Both Experimental Conditions

Model	χ^2	df	TLI	CFI	SRMR	RMSEA (90% CI)	AIC
M_{form}	354.25	142	.97	.97	.03	.039 (.034–.044)	490.25
$M_{loadings}$	392.29	151	.97	.97	.04	.040 (.035–.045)	510.29
M_{cov}	1148.22	156	.86	.88	.33	.080 (.075–.084)	1256.22
M_{var}	1182.35	159	.86	.88	.33	.080 (.076–.084)	1284.35
M_{errors}	1317.56	172	.85	.86	.33	.081 (.077–.085)	1393.58

Model Comparisons	χ^2 difference	df	p
M_{form} vs $M_{loadings}$	38.04	9	.001
M_{form} vs M_{cov}	793.97	14	.001
M_{form} vs M_{var}	828.11	17	.001
M_{form} vs M_{errors}	963.33	30	.001
$M_{loadings}$ vs M_{cov}	755.94	5	.001
$M_{loadings}$ vs M_{var}	790.07	8	.001
$M_{loadings}$ vs M_{errors}	925.29	21	.001
M_{cov} vs M_{var}	34.13	3	.001
M_{cov} vs M_{errors}	169.35	16	.001
M_{var} vs M_{errors}	135.22	13	.001

dicated that the 14-item model resulted in improvements over the 16-item model, suggesting a better model fit and a more parsimonious model across the two experimental groups.

Study 2 also found the factorial validity of the SIMS 14-item baseline model to be robust under the rigors of experimental manipulation. Such a finding has important ramifications for future research grounded in the self-determination framework. Specifically, since social factors form the antecedents to variations in motivation within this theory, a measure that can maintain factorial structure under experimental conditions would seem to be a valuable addition to the current methodology in the literature on intrinsic/extrinsic motivation.

The results as they pertain to the invariance of the SIMS factorial study confirmed the findings of Study 1. Again support for partial invariance of the motivational types, as measured by the SIMS, was suggested across the two groups. As in Study 1, there was a marked deterioration of the measurement model when the factor covariances were constrained. Such a finding suggests that not only do groups *not* share the same degree of linear association across various contexts, but also within the same population when the social factors are manipulated (choice vs. no-choice). Consistent with Study 1, the constraining of the variances did not yield a worse fit above and beyond that accounted for by the factor covariances. Similarly, only a marginal deterioration in fit occurred when the error variances were constrained.

General Conclusion

Previous studies employing the SIMS in physical activity contexts have to date provided evidence regarding the construct validity and reliability of the inventory (Blanchard & Vallerand, 1996; Kowal & Fortier, 1999, 2000). In the present study, reliability and construct validity via the simplex pattern of associations has again been supported, and preliminary evidence has been offered for the factorial validity and partial invariance of the SIMS. Collectively, this research would suggest that the SIMS represents a promising measure of motivation at the situational level applicable to both field and laboratory settings.

While the present findings are indicative of the SIMS potential to assess motivation in the here and now, a number of issues must be addressed in future work. Most important, we feel it is necessary to address how possible model/item respecifications, in line with the theoretical tenets of self-determination theory, might produce an improved measurement model and result in a stronger assessment of situational motivation. Specifically, two items appear to depart theoretically and empirically from the construct of which they are designed to measure. We recognize that it is problematic to reduce the identified and external regulation subscales to three item measures, and thus recommend the addition of supplementary items to assess these constructs. Such refinements should be grounded in theory and not be data driven (Mulaik, 1987), placing emphasis on reducing cross-loading items while carefully rewording certain items to ensure that all items measure their theoretically desired constructs in line with Deci and Ryan's (1985, 1991) theorizing.

While the present studies supported partial invariance by indicating that the SIMS items are equally valid for individuals in various physical activity contexts and under different experimental conditions, results suggest that the model becomes highly variant with the constraining of the factor covariances. Such findings suggest that the dynamics of motivation at the situational level are complex and diverse. This finding supports Vallerand's (1997, 2001) contention that it is ineffective to study motivation in general. Indeed, the findings indicate that the self-regulatory styles embraced by self-determination theory (Deci & Ryan, 1985, 1991) operate and function differently depending on the situation at hand. Research examining how these regulations differ over time at the situational level and their subsequent impact on motivation at different generality levels of the hierarchical model will provide further insight into the nature of these self-regulatory constructs (cf. Vallerand, 1997).

In addition to refinements of the SIMS, future research in physical activity contexts should ascertain whether there is gender invariance in the SIMS. Research on self-determination at the contextual level has revealed gender related variation, with females displaying more motivationally adaptive profiles in sports (e.g., Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier et al., 1995). While Guay et al. (2000) found the SIMS to be invariant across gender in the education context, a parallel analysis would be fruitful in aiding our understanding of potential gender influences on self-regulatory processes in the physical activity domain.

In conclusion, we believe the SIMS represents a very useful tool for studying situational motivation in laboratory and field settings. Based on the current findings, however, we would advocate the 14-item SIMS measure for research assessing situational motivation in physical activity settings. That is, this slightly

abbreviated inventory appears to more soundly measure each motivational regulation at the situational level, as posited by self-determination theory (Deci & Ryan, 1985, 1991). However, we do not propose that the current 14-item model should represent the final measurement tool. Rather, we feel that additional items based on theory be added to the identified regulation and external regulation scales. Moreover, there may be additional cross-loading items due to a reduction in the potential cognitive set of responses available following the removal of the two items, so future research on the current 14-item questionnaire and subsequent versions of the SIMS is essential. Finally, with further item refinements of the SIMS, a multidimensional measurement tool will be available that can further aid our understanding of the self-regulatory dynamics of motivation at the situational level.

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Notes

[1] In addition to identified regulation and external regulation, self-determination theory (Deci & Ryan, 1985, 1991) postulates integrated and introjected regulations. Arguing that the inclusion of these two external regulations would render an exceedingly long "state" questionnaire, Guay et al. (2000) did not include them in their scale development procedures. Specifically their aim was to develop a measure of situational motivation that was both versatile and brief to capture ongoing self-regulatory processes. Guay et al. acknowledge that a possible limitation of their measure is the non-inclusion of the introjected regulation subscale and assert that future research should ascertain whether the inclusion of this scale would enhance our knowledge of situational motivation. They made no reference to integrated regulation. Since the present version of the SIMS does not assess these constructs, we will not elaborate on the integrated and introjected regulations further in this paper.

[2] The stem for the SMS is "Why do you practice your sport? (using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport)" (Pelletier et al., 1995). The use of the word *presently* seems problematic to the distinction between the contextual and situational levels of the hierarchical model. However, we feel that this problem resides with the SMS, as this measure is intended to measure one's usual motivation in sport settings while the SIMS is designed to assess the "here and now" motives. Future work is needed to ensure that the two measures are assessing motivation at their respective level of generality.

[3] The soccer players and college physical activity students responded on a 5-point scale anchored by strongly agree = 5 to strongly disagree = 1. This was because the purposes of these investigations were to examine other questions pertaining to situational motivation in the physical activity domain. As is evident in the present results on a 5-point scale (except for the uniqueness values that increased for responses made on the 7-point scale), this difference in scaling had a minimal effect on the absolute and incremental fit indices. Moreover, the parallel pattern of findings reported across both studies (i.e., model fits, modification indices, and the pattern of invariance findings) further supports this assertion.

Appendix

16-Item Version of the SIMS* (Guay, Vallerand, & Blanchard, 2000)

Directions: Read each item carefully. Using the scale below, please circle the number that best describes the reason why you are currently engaged in this activity. Answer each item according to the following scale: 1 = correspond not at all; 2 = correspond a very little; 3 = correspond a little; 4 = correspond moderately; 5 = correspond enough; 6 = correspond a lot; 7 = correspond exactly.

Why are you currently engaged in this activity?

Because I think that this activity is interesting.	7	6	5	4	3	2	1
Because I am doing it for my own good.	7	6	5	4	3	2	1
Because I am supposed to do it.	7	6	5	4	3	2	1
There may be good reasons to do this activity, but personally I don't see any.	7	6	5	4	3	2	1
Because I think that this activity is pleasant.	7	6	5	4	3	2	1
Because I think this activity is good for me.	7	6	5	4	3	2	1
Because it is something that I have to do.	7	6	5	4	3	2	1
I do this activity but I am not sure if it is worth it.	7	6	5	4	3	2	1
Because this activity is fun.	7	6	5	4	3	2	1
By personal decision.[a]	7	6	5	4	3	2	1
Because I don't have any choice.[b]	7	6	5	4	3	2	1
I don't know; I don't see what the activity brings me.	7	6	5	4	3	2	1
Because I feel good when doing this activity.	7	6	5	4	3	2	1
Because I believe this activity is important for me.	7	6	5	4	3	2	1
Because I feel that I have to do it.	7	6	5	4	3	2	1
I do this activity, but I am not sure it is a good thing to pursue it.	7	6	5	4	3	2	1

Note: Items 10 and 11 (superscripts [a] and [b]) are omitted in the 14-item measure.
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Acknowledgment