DEMOCRITUS UNIVERSITY OF THRACE
UNIVERSITY OF THESSALY
HELLENIC SOCIETY OF SPORT PSYCHOLOGY

SKIATHOS
HELLAS
MAY 28 - JUNE 2, 2001

PROGRAMME & PROCEEDINGS

VOL 3rd , THURSDAY MAY 31

In the dawn of the new millennium

EDITORS: ATHANASIOS PAPAIOANNOU
MARIOS GOUDAS
YANNIS THEODORAKIS

REVISION OF THE SELF-CONSCIOUSNESS SCALE: TRACK AND FIELD ATHLETES

Panayotis Veligekas, K.L Mylonas, & A. Gari, The University of Athens, Greece

Key words: private and public self-consciousness, factor structure, elite – non elite athletes

Self-consciousness refers to self-focused attention. Fenigstein, Scheier and Buss (1975) proposed a distinction between self-consciousness and self-awareness. Awareness refers to a state of self-directed attention, while self-consciousness refers to dispositional self-directed attention. Fenigstein, et al. (1975) developed the Self-Consciousness Scale (*SCS*), which is a 23-item inventory measuring individual differences in self-focused attention along three dimensions. The private self-consciousness subscale (i.e., I reflect about myself a lot) is described as a tendency to reflect and attend to one's inner thoughts, feelings, and motives which are not easily accessible to others. The public self-consciousness subscale (i.e., I am concerned about the way I present myself) is considered as the general awareness of oneself as a social and public object. Finally, the social anxiety subscale (i.e., I feel anxious when I speak in front of a group) is reflecting an individual's discomfort in the presence of others.

The *SCS* has been widely used (indicatively, Buss, 1980; Scheier & Carver, 1985) and has demonstrated construct validity in a variety of contexts (Carver & Scheier, 1978) and across cultures (Heinemann, 1979; Shek, 1994). Empirical research devoted to self-consciousness suggests that private and public self-consciousness are two independent dimensions that operate as important mediating variables. The private and public self-consciousness correlate with measures such as social or personal identity, suggestibility, self-schema articulation, predictive validity of self-reports, recall of self-reference tasks. Furthermore, the scale has been used in sport psychology (Brooks, 1998; Martin, Craib & Mitchell, 1995). Loss of self-consciousness has been shown to be related to sport psychology and physical education issues, such as task orientation (Papaioannou & Kouli, 1999).

The aim of this study was twofold. The first aim was to examine the psychometric properties of the Self-Consciousness Scale for a sample of 436 Greek University students. The second aim was to re-evaluate these properties for a sample of 485 Greek athletes and to examine the differences of private and public self-consciousness between elite and non elite athletes, who participated in track and field activities.

Methods and Procedure

The psychometric properties study, involving 436 students of the Department of Physical Education and Sport Science of the University of Athens, also tested for the translation validity of the Greek *SCS* version. In this study, 224 students were males and 212 were females. The students were recruited at the University Campus and responded to the 23-item *SCS*. The second study involved 485 athletes; 306 were males and 179 were females. 256 were elite athletes and 229 were non-elite athletes. The athletes were approached at their training locations and responded to the 23-item *SCS*.

Results

Item and Factor analyses: the PE University student sample

The 23 original *SCS* items were item-analysed in order to test for their psychometric properties and their potential use, in accordance to statistical and theoretical assumptions. Exploratory factor analyses models were applied for the pool of 23 items for the 436 PE students. The results for this analysis revealed a three salient-factor structure (social anxiety, public self-consciousness, private self-consciousness) but excluded 10 items from the factors. 36.63% of the total variance was accounted for by this model. The internal consistency analyses concurred with the exploratory factor analysis results in excluding some of the items from further testing. On the psychometric basis of maximizing Cronbach α and in an attempt to maximize the discriminatory power of the scale and its components, we excluded 6 of the original items and re-analysed the remaining 17 items for their internal consistency and factor structure. The α coefficient for this pool of items was .76; exploratory factor analysis revealed three salient factors, accounting for 43.9% of the total variance. The results of this analysis are presented in Table 1.

Factor analyses for the sample of 485 athletes: exploring the differences between elite and non-elite athletes.

The same factor analytic models employed for the 436 students were also applied to the athlete data set. The Exploratory factor analytic phase for the 17-item scale was expected to reveal a similar factor structure to the one already observed for the student population. This hypothesis was confirmed with minor exceptions; the Cattell Salience coefficients, calculated for the two factor structures for the two populations also verified the factorial similarity (for the 1st factor: *S*=.83, %HP=58.82, p<.01; for the 2nd factor: *S*=.75, %HP=70.59, p<.01; for the 3rd factor: *S*=1.00, %HP=70.59, p<.01). The results for this exploratory factor analysis are presented, along with the students' factor structure, in Table 1, for comparability reasons.

Table 1. Exploratory Factor analysis results: 17-item Self-Consciousness Scale

Items	Social Anxiety		Public Self-Consciousness		Private Self-Consciousness	
	PE students	Athletes	PE students	Athletes	PE students	Athletes
8	.76	.54	.13	.27	−.07	−.12
10	.76	.79	.18	.12	.08	.04
4	.72	.66	.19	.12	−.07	−.04
16	.65	.75	.30	.14	−.07	−.01
23	.52	.45	.00	.21	.08	-.01
6	.23	.37	.83	.70	.05	.01
14	.15	.34	.82	.76	.05	.14
19	.27	.40	.77	.69	.16	.14
2	.20	.41	.48	.02	.06	.12
1	−.01	−.05	.00	−.17	.71	.68
20	.19	.01	.07	.11	.65	.67
5	−.03	−.16	.00	.34	.61	.43
13	-.05	−.13	.14	.23	.61	.60
15	−.05	.15	.04	−.07	.48	.62
17	.13	−.03	.18	.66	.05	−.08
7	.07	.24	.10	.19	.08	.18
18	−.02	.01	−.02	.03	.02	.02
Eigenvalues	4.04	4.33	2.14	2.04	1.28	1.35
Variance accounted for by each factor	23.77%	25.45%	12.58%	12.01%	7.54%	7.97%

PE University Students (N=436): total variance accounted for by the three factors 43.90%
Athletes (N=485): total variance accounted for by the three factors 45.43%

Despite the obvious similarity for the two factor structures, before proceeding in calculating the final scores for each factor, Confirmatory factor analysis models were applied to the athlete data, in respect to the factor structure present in the student data. The main hypothesis regarded factor replication, at least to a satisfactory level, in order to allow for further analyses employing the factor sr ucture outcomes. The first confirmatory factor analysis model was expected to replicate the students' three factor structure; this structure included 14 out of the 17 initially factored items. The χ^2 for this model, with 165 degrees of freedom, was 414.71 and statistically significant at the .001 level. The suggested lack of fit was mainly due to the high error covariance of the 1st and the 2nd factors (social anxiety and public self-consciousness). However, this result, which supported the null hypothesis, was outweighed by the rather low root mean square error of approximation (.057), by the quite large goodness of fit index (.94) and by the fact that 485 participants may yield highly significant χ^2 coefficients, an inflated type I error situation (Bryant & Yarnold, 1995).

In surpassing any doubt about the confirmatory replication of the factor structure, the social anxiety latent variable was removed from the model (along with all respective manifest variables) and the model was re-examined. It was shown that for this model the χ^2, with 24 degrees of freedom, was 51.62 and statistically significant at the .001 level. The root mean square error of approximation was .049 and the goodness of fit index was .98. The χ^2/df index was 2.15, whereas for the previous model, it was 2.51, suggesting that the 2nd model's results were quite more stable. These results indicated, as a whole, that the athlete data fitted the hypothesized two factor sub-structure rather well and that the factor scores of these two factors (public and private self-consciousness) could safely be used in further analyses.

The *SCS* scores for public and private self-consciousness were tested in regard to athletic and demographic variables (athletic performance levels and gender). The public and private self-consciousness scores were computed directly from the factor analytic model, as regression factor scores, and were transformed to T-scores. These T-scores for public and private self-consciousness were analysed through a two-way multivariate general linear model with gender and performance levels (elite and non-elite athletes) as the independent variables. The number of participants in this analysis was 444 athletes. The results for this multivariate model showed that there was a marginally significant multivariate gender effect (for the Hotelling's T^2 criterion, $F_{2,439} = 2.76$, p=.064, $\eta^2 =.01$), and also a significant multivariate performance effect (for the Hotelling's T^2 criterion, $F_{2,439} = 3.91$, p<.05, $\eta^2 =.02$). The interaction multivariate effect was non-significant.

Despite the low variance explained, these findings are indicative of the discriminatory power that facets of self-consciousness may introduce into research models regarding psychological or athletic-psychological phenomena. In this case, the public self-consciousness score was higher for females and lower for males. The same holds for non-elite vs elite athletes, respectively. In contrary, males showed higher private self-consciousness than females, and the same stands for elite vs non-elite athletes, respectively. The means and 95% confidence intervals for this analysis are presented in Figure 1.
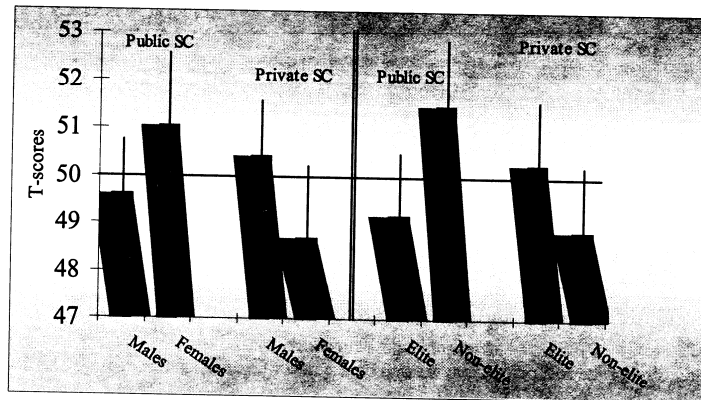
Figure 1. Mean T-scores for Public and Private Self-Consciousness, by Gender and by Performance levels.

Discussion and Conclusions

In regard to the Fenigstein, Scheier and Buss Self-Consciousness Scale, as this was tested empirically for the two Greek populations, it can be concluded that its original (23-item form) psychometric properties are not as satisfactory as expected. This finding is not an uncommon one (indicatively, Lennox, Welch, Wolfe, Zimmerman, & Dixon, 1987). The 17-item version though, clarified that the underlying factor structure seems quite stable and that further efforts should remedy the psychometric problems related to inconsistencies and to the small number of items. This can be achieved by proceeding to an adaptation of the scale for the Greek population, on the basis of the available empirical evidence.

For the elite vs non-elite athletes comparison, it is possible that the elite private self-consciousness is inflated by their need to introspect their motives, emotions, thoughts, knowledge that might prove of help in monitoring their achievement and goals. On the other hand, the public self-consciousness difference is more striking. This difference might be attenuated by the non-elite athletes disposition towards public appearance and behaviour and by the suppression of such a disposition by the elite athletes. It might be the case that their first priority is their strenuous efforts for achievement and not their "public image".

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