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DEVELOPMENT AND PSYCHOMETRIC PROPERTIES OF THE SCALE FOR SELF-CONSCIOUSNESS ASSESSMENT[1]

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Summary.—This scale development employed Duval and Wicklund's (1972), Carver's (1979), and Zaborowski's (1987) theories on self-consciousness. The aim of the study was to create a new method to assess the self-consciousness construct, in an effort to operationally express self-consciousness, while circumventing existing metric and other impediments. Initially, 38 pilot interviews were conducted with undergraduate psychology students, and two studies followed, one on 494 participants and one on 248 participants. Exploratory factor analysis models, equivalence testing, followed by a third confirmatory factor analysis study on a separate sample of 216 participants, resulted in a final 24-item scale. A four-factor structure of two public and two private self-consciousness dimensions emerged. The Scale for Self-Consciousness Assessment (SSCA) can be of use in various areas of psychological research, possibly in concurrent use with other constructs of interest, due to its theoretical and research importance and its adequate psychometric properties.

The concept of self-consciousness entails coding, processing, and integrating information about the self (Wicklund, 1975; Cramer, 2000). According to Ito (1998), consciousness comprises three different levels: wakefulness, awareness, and self-consciousness. Consciousness in humans is directed to the self so that an individual is "aware of what is going on in his or her internal world" (Ito, 1998, p. 191). The process of self-consciousness is made up of both content and form. Content refers to the *information* that is being attended to, while one is preoccupied with self. Form refers *to the manner* in which such information is processed (Zaborowski, 1987; Cramer, 2000).

Self-consciousness as a term has been used by James (1892), Cooley (1907), Mead (1914), Vygotsky (1925/1999), and more recently by Duval and Wicklund (1972), Wicklund (1975), Fenigstein (1997), Fenigstein, Scheier, & Buss (1975), Zaborowski (1987), and other researchers. General theories on the functioning of self-consciousness have been supported empirically, namely, Duval and Wicklund's theory (1972), Hull and Levy's theory (1979), Carver's theory (1979; Scheier & Carver, 1985), and Zaborowski's theory (1987). Wicklund's theory places emphasis on the content of self-consciousness, Hull's theory gives priority to form, while Zaborowski's theory assumes a dialectical interaction of form and content. Wicklund, Carver, and others have argued that self-consciousness entails

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processes involved in matching a person's momentary condition against one's own standards. Hull argued that self-consciousness entails processes of coding information pertaining to the self. Zaborowski's theory seems to account for a broader range of phenomena than Wicklund's and Hull's theories. Wicklund has coined the notion of salient self-components upon which a person's attention is focused, while Zaborowski employs the concept of content centers of self-consciousness. Zaborowski's theory admits the operation of different standards in external self-consciousness and places the emphasis on the standard of inner justice which functions in both external and internal self-awareness. So, according to different theories, emphasis has been placed on different—independent or interactive—facets of self-consciousness.

Zaborowski (1980, 1987) distinguished between internal and external self-consciousness; the internal facet relates to egocentrism, individualism, negative emotional responses toward the self (e.g., sense of guilt), low self-esteem, etc. Defensive self-awareness and ill disposition stemming from it may be an even more negative expression of this internal facet. In contrast, the external facet is an objective, socialized processing of the self. An intermediate form between the two facets is reflective self-consciousness (appraisal and evaluation of self and others, assessment of duties and rights and recollection of needs and emotions). Carver and Scheier (1998) have demonstrated that individuals who mostly attend to their own inner thoughts and feelings are high in private self-consciousness, while those who mostly view themselves as social objects tend to see themselves according to others' view of them and are sensitive to others' reactions to their behavior. Finally, the terms "self-consciousness" and "self-awareness" have been used interchangeably by Zaborowski (1987) and later on by other researchers (Silvia & Gendolla, 2001; Wickens & Stapel, 2008, 2010). For Duval and Wicklund (1972) though, self-awareness is the state of self-focused attention, whereas the trait is called self-consciousness, with objective self-awareness being the *ability* to become the object of one's own attention (Heinemann, 1979).

Fenigstein, *et al.* (1975) devised a 23-item scale (Self-Consciousness Scale, SCS) to measure individual differences in self-consciousness. They supported the distinction between self-consciousness and self-awareness. Self-awareness refers to a state of self-directed attention, while self-consciousness refers to dispositional self-directed attention. Factor analysis of the Fenigstein, *et al.* scale (1975) revealed that self-consciousness consisted of three factors: public self-consciousness, private self-consciousness, and social anxiety. Fenigstein, *et al.* argued that "the private self-consciousness factor was concerned with attending to one's inner thoughts and feelings. The public self-consciousness factor was defined by general awareness of

TABLE 2
THREE SUCCESSIVE CONFIRMATORY FACTOR ANALYTIC MODELS AIMING AT ITEM ELIMINATION (STUDY 2)

Model	χ^2	*df*	$\chi^2 \div df$	*RMSEA*	*GFI*	*CFI*	*TLI*	$\Delta\chi^2$	Δdf
Null model									
36 items (3 cross-loadings)[a]	1,633.59	591	2.76	.063	.84	.86			
36 items (no cross-loadings)[b]	1,760.14	594	2.96	.067	.82	.84	NA	NA	NA
33 items (no cross-loading)[c]	1,321.28	495	2.67	.064	.85	.87	.05	312.3*	96

Note.—$TLI = \dfrac{\frac{\chi^2_0}{df_0} - \frac{\chi^2_1}{df_1}}{\frac{\chi^2_0}{df_0} - 1}$

*Statistically significant at the .001 level. NA: non-applicable, since $(\chi^2_0 \div df_0) - (\chi^2_i \div df_i) < 0$. [a]For this model all 36 items which loaded on at least one factor (see Table 1) were considered. Three items were allowed to cross-load. A fourth item had been already eliminated due to multicollinearity problems. [b]For this model, no cross-loadings were allowed for the same 36 items, that is, we related each of the items only with the highest loading factor. [c]For this model, all three items which cross-loaded on the factors were totally excluded from the analysis. $p < .00001$ for all models.

STUDY 3

Sample and Procedure

The sample for this final study consisted of 216 participants (34% men, 66% women) all university students (*M* age = 20 yr.). These participants were recruited from several Departments of the University of Athens (Philosophy, Physics, Psychology, Medicine, Political Science and Public Administration, and from the National Metsovion Polytechnic School of Athens). The final aim was to confirm the factor structure found in previous attempts through confirmatory factor analysis models for this final sample of University students. All participants responded to the 42-item questionnaire rated on a five-point Likert-type scale (5: Always true for me, 4: Many times true for me, 3: Sometimes true and sometimes not true, 2: Few times true for me, 1: Never true).

Results

Although there were 42 items administered, the analysis regarded 33 of them, as these were shown to participate in the four-factor structure found in the two previous studies. The variable ratio exceeded 5, satisfying the criterion set by Bryant and Yarnold (1995), but ratio of participants to free parameters, more suitable for CFA, reached only 3 and was less than satisfactory (Streiner, 1994; Tabachnick & Fidell, 2001). Although this is a limitation of the current study, this is the first time SSCA data have been subjected to such an analysis, which should in any case provide initial insight for further research in respect to the scale's structure. Several models were tested after having ruled out collinearity problems, after

having ascertained overidentification of all models to be tested and finding no missing values. The Pearson *r* indices among the 42 items were also compared to Kendall *T* and Spearman ρ indices, as the initial scoring scale is a 5-point Likert-type one and there was a need to ascertain that Pearson *r* indices could be safely employed in these models. Indeed, Pearson *r* indices did not differ at a statistically significant level (the comparison was carried out on Fisher *z* transformations of initial indices and through formula 1) with the Kendall and Spearman coefficients, thus it was justified to use Pearson *r* indices for model estimation:

$$z = \frac{z_1 - z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}} \qquad [1]$$

where z_1 and z_2 are the Fisher *z* transformations of initial indices, $N_1 = N_2 = 216$; the *z*-criterion is evaluated for its statistical significance under the standard normal distribution. Six CFA models were tested.

Model 1: Independence model.—The independence model (all variables uncorrelated) was easily rejected. The χ^2 criterion reached 4,561.34 and was statistically significant ($p < .00001$) for 861 degrees of freedom. Following this, a series of models were tested for which either the number of factors was under question or the associations and their modifications, or both (for a brief summary of the outcomes for all models see Table 3).

Model 2: Single factor, 33-item model.—The possibility of a unifactorial solution was tested. This model was rejected as well, as the χ^2 criterion reached 3,342.77 and was statistically significant ($p < .00001$) for 495 degrees of freedom.

Model 3: Two-factor, 33-item model.—For this model all the private self-consciousness items were aggregated into a single factor and all public self-consciousness items were aggregated into another single factor and the two dimensions were tested for their presence in the data. The χ^2 criterion reached 1,838.35 and was statistically significant ($p < .00001$) for 494 degrees of freedom. This model was rejected as well.

Model 4: Four-factor, 33-item model.—For this model, each item was related to its respective factor as indicated through Study 2 (loadings in Table 1). This was the target model as the four-factor structure for the 33 items was expected on the basis of all previous exploratory analyses to fit the data best. Although χ^2 was significant, RMSEA was .071 indicating a very large drop in comparison to previous models. Indices indicated that this model was better, although this model did not fit the data well. For this reason, and in an attempt to remedy possible inconsistencies which caused the lack of fit, modification suggestions were computed and these suggested six additional direct paths from latent variables to the