The Self-Consciousness Scale in Chinese College Students

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Fenigstein, Scheier, and Buss's (1975) 3-factor model, Burnkrant and Page's (1984) 4-factor model, and Mittal and Balasubramanian's (1987) 5-factor model of the Self-Consciousness Scale (SCS) were tested using the revised SCS (Scheier & Carver, 1985b) on 2 convenience samples of 201 and 179 Chinese college students. Burnkrant and Page's (1984) 4-factor model showed superiority over the other 2 models in confirmatory factor analysis. It is concluded that the division of the private self-consciousness subscale is adequate, whereas the division of the public self-consciousness subscale is not justified.

The Self-Consciousness Scale (SCS) was developed by Fenigstein, Scheier, and Buss (1975) and was later revised by Scheier and Carver (1985b). With 23 items in the original version and 22 items in the revised version, the SCS was intended to measure individual differences in self-focused attention along three dimensions. The private self-consciousness subscale (Items 1, 3, 5, 7, 9, 13, 15, 18, 20, 22; Item 3 was deleted in the revised version) records the tendency to attend to inner thoughts, feelings, and motives which are not easily accessible to others. The public self-consciousness subscale (Items 2, 6, 11, 14, 17, 19, 21) centers on the attention to those self-aspects that are also exhibited to the public (e.g., appearance and mannerisms). Finally, the social anxiety subscale (Items 4, 8, 10, 12, 16, 23) is derived from public self-consciousness and represents apprehensiveness over being evaluated by others in a social context (Fenigstein et al., 1975; Scheier & Carver, 1985b). These items are listed in Table 1.

The SCS has been translated into different languages and used in many countries, including France (Rime & Le Bon, 1984), French-speaking Canada (Pelletier & Vallerand, 1990), Germany (Heinemann, 1979), Hong Kong (Seek, 1994), Holland (Vleeming & Engelse, 1981), Italy (Comunian, 1994),

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Table 1

Items in the Revised Self-Consciousness Scale

- 1. I'm always trying to figure myself out. (1)
- 2. I'm concerned about my style of doing things. (2)
- 3. It takes me time to get over my shyness in new situations. (4)
- 4. I think about myself a lot. (5)
- 5. I care a lot about how I present myself to others. (6)
- 6. I often daydream about myself. (7)
- 7. It's hard for me to work when someone is watching me. (8)
- 8. I never take a hard look at myself. (9)
- 9. I get embarrassed very easily. (10)
- 10. I'm self-conscious about the way I look. (11)
- 11. It's easy for me to talk to strangers. (12)
- 12. I generally pay attention to my inner feelings. (13)
- 13. I usually worry about making a good impression. (14)
- 14. I'm constantly thinking about my reasons for doing things. (15)
- 15. I feel nervous when I speak in front of a group. (16)
- 16. Before I leave my house, I check how I look. (17)
- I sometimes step back (in my mind) in order to examine myself from a distance. (18)
- 18. I'm concerned about what other people think of me. (19)
- 19. I'm quick to notice changes in my mood. (20)
- 20. I'm usually aware of my appearance. (21)
- 21. I know the way my mind works when I work through a problem. (22)
- 22. Large groups make me nervous. (23)

Note. Corresponding item numbers of the original SCS are in parentheses.

Portugal (Neto, 1986), Spain (Banos, Belloch, & Perpina, 1990), Sweden (Nystedt & Smari, 1989), and Turkey (Ruganci, 1995).

Although the three-factor structure of the SCS has been validated in a wide range of studies (e.g., Bernstein, Teng, & Garbin, 1986; Bissonnette & Bernstein, 1990; Britt, 1992; Carver & Glass, 1976; Carver & Scheier, 1978; Turner, Scheier, Carver, & Ickes, 1978), other investigations have raised controversies about the three-factor structure of the SCS (e.g., Burnkrant & Page, 1984; Lennox, Welch, Wolfe, & Zimmerman, 1987; Piliavin & Charng, 1988). The focus of the factor controversy lies in whether the private self-consciousness subscale should be further divided into two separate factors.

Burnkrant and Page (1984) were the first to raise this concern. In their analysis, the original 10-item private self-consciousness subscale was divided into two separate factors named self-reflectiveness (Items 1, 5, 7, 15, 18) and internal state awareness (Items 13, 20, 22). Items 3 and 9 were deleted because of inadequate item reliability. By the same reliability criteria, Items 17 and 21 were taken out of the public self-consciousness subscale and Item 12 was excluded from the social anxiety subscale. They used confirmatory factor analysis on the original 23-item SCS. Their results, based on 360 adult women not from college and 198 college students, showed the superiority of their 4-factor model that divides the private self-consciousness subscale.

Discriminant validity support of Burnkrant and Page's (1984) division of the private self-consciousness subscale came from many studies (e.g., Conway & Giannopoulos, 1993; Reeves, Watson, Ramsey, & Morris, 1995; Watson & Biderman, 1993; Watson, Hickman, Morris, Stutz, & Whiting, 1994). For example, Piliavin and Charng (1988) correlated the self-reflectiveness and internal state awareness subscales with a scale of identity seeking. The correlations with self-reflectiveness (.299 and .226 in their U.S. and Polish samples) and internal state awareness (-.220 and -.057 in their U.S. and Polish samples) were found differentially to predict identity seeking. In the Polish sample only, the authors also correlated the two subscales with a self-esteem scale. The differential correlations were -.118 with self-reflectiveness and .249 with internal state awareness (Piliavin & Charng, 1988).

To a lesser degree, controversy was also raised regarding the dimensionality of the public self-consciousness subscale. Mittal and Balasubramanian (1987) used a correlational approach to examine the unidimensionality of each of the original three SCS subscales. In this approach, any two items, if internally consistent in measuring the same trait, should have a partial correlation that is close to zero when partialling out the underlying trait and should correlate equally with a third item.

In examining the seven items of the public self-consciousness subscale, they found support for Burnkrant and Page's (1984) finding that Items 17 and 21 were inconsistent with the rest of the items in measuring public self-consciousness. In addition, they found Item 11 to be lacking in internal consistency. When these three "bad" items were put together to form a separate scale, however, they met the researchers' criteria for unidimensionality. Thus, Mittal and Balasubramanian (1987) concluded that there were two separate public self-consciousness subscales, style consciousness (Items 2, 6, 14, 19) and appearance consciousness (Items 11, 17, 21). Using these criteria, they also agreed with Burnkrant and Page's (1984) division of the private self-consciousness subscale. Evidence for the validity of the two dimensionalities of public self-consciousness came from Watson et al. (1994). They reported that the partial

correlation with concern for dieting was higher for appearance consciousness (partialling out style consciousness) than for style consciousness (partialling out appearance consciousness) and that partial correlations with social anxiety and self-esteem were higher for style consciousness.

Thus, there are three interpretations of the SCS, which are represented by a three-factor (Fenigstein et al., 1975; Scheier & Carver, 1985b), a four-factor (Burnkrant & Page, 1984), and a five-factor (Mittal & Balasubramanian, 1987) structure. Missing in the debate over the factor structure of the SCS is a test of all three models across cultures. Also missing in the literature is such a test on the revised SCS, which was intended to improve and replace the old scale. The present study used confirmatory factor analysis to fit the three models on data obtained from two samples of Chinese college students using the revised SCS. In addition, the Life Orientation Test (LOT; Scheier & Carver, 1985a) was used in one sample to examine the discriminant validity of the different selfconsciousness subscales. Optimism and pessimism measured by the LOT and self-consciousness and social anxiety represent part of a nomological network of dispositional correlates. For example, both the LOT and SCS have been used to predict mental well-being, such as coping with depression (Reeves et al., 1995; Scheier, Carver, & Bridges, 1994) worry and anxiety (Lauver & Youngran, 1995; Pruzinsky & Borkovec, 1990) and loneliness (deJong-Gieveld, 1987).

Method

Two convenience samples of Chinese college students were used in this study. One sample consisted of 201 English majors from a foreign-language institute in Tianjin, China. The other sample contained 179 English majors from a foreign-language university in Shanghai, China. These English language students can read, write, and speak English fluently. The Tianjin sample was administered the 22-item revised SCS and the 8-item LOT (Scheier & Carver, 1985a). The Shanghai students were given only the 22 items of the revised SCS. Both scales were administered on a 4-point Likert-type scale using the scales' original verbal labels. Testing was anonymous. Personal information, such as gender and age, was not sought from these students.

Covariance matrices based on these two samples were analyzed using maximum likelihood estimation (mle) in LISREL-7 (Jöreskog & Sörbom, 1988). Given that mle has been used to analyze Likert scale data in confirmatory factor analysis studies, the present study proceeded with mle without getting into the debate over the estimation issue.

Stand-alone indicators of goodness of fit (Marsh, Balla, & McDonald, 1988) provided by LISREL-7 were evaluated. These included (a) the overall chi square, which tests the difference of lack of fit between a hypothesized model

and a just-identified model that has zero lack of fit; (b) the root mean square residual (RMR), which indicates average discrepancy between the elements in the hypothesized and sample covariance matrices; (c) the goodness-of-fit index (GFI); and (d) the adjusted goodness-of-fit index (AGFI) adjusting for degrees of freedom. These two indexes measure the amount of variances and covariances jointly explained by the model and are free from sample size influence (Jöreskog & Sörbom, 1988). Because chi square is sensitive to sample size, model complexity, and departure from multivariate normality, the ratio of chi square to degrees of freedom (χ^2/df), which compensates for some of these "sensitivity" problems, was also used to evaluate model fit. A value below 2.0 is considered to indicate adequate fit (Bollen, 1989). Because the tree models tested in this study represent a parameter-nested sequence, the chi-square difference test ($\Delta\chi^2$) of the lack of fit between two nested models was examined as the most important criterion for model comparison.

Two incremental fit indexes (Marsh et al., 1988) were also evaluated. One of them was the Bentler and Bonett (1980) normed fit index (BBI). When BBI is used to evaluate a hypothesized model against a null model, it represents the proportion of the maximum lack of fit that has been reduced by the hypothesized model. BBI was one of the most widely used indicators of incremental fit (e.g., Marsh et al., 1998; Sternberg, 1992).

The other incremental fit index was the Tucker and Lewis (1973) nonnormed fit index (TLI). It is similar to the BBI except that it has a penalty function on the number of parameters estimated. According to Marsh (1993; Marsh et al., 1988), TLI is the only widely used index that compensates for the more restricted model and provides an unbiased estimate. Both BBI and TLI range from 0, indicating total lack of fit, to 1.00, indicating perfect fit.

Models were evaluated by examining the absolute values of these goodness-of-fit indicators and, more importantly, by comparing their relative values from competing models (Marsh, 1993; Widaman, 1985).

Results

Fenigstein et al.'s (1975) three-factor model, Burnkrant and Page's (1984) four-factor model, and Mittal and Balasubramanian's (1987) five-factor model were tested within each of the two samples. Also tested was a no-factor null model which was used to calculate incremental fit indexes for model comparisons.

In the following discussion, items from the revised SCS are referred to by their corresponding item numbers in the original SCS. Thus, readers can compare the results here on the revised SCS with most of the existing studies which were based on the old SCS. Two sets of analyses were conducted within each of the two samples. In the first set of analyses, no items were deleted from the test. Thus, in Burnkrant and Page's (1984) four-factor model, Items 1, 5, 7, 9, 15, and 18 formed the self-reflectiveness factor and Items 13, 20, and 22 formed the internal state awareness factor. Item 9, which was deleted by Burnkrant and Page, was retained in this set of analyses. (The revised version does not have Item 3, which was also deleted by Burnkrant and Page). In the five-factor model, these two private self-consciousness subscales remained. The two public self-consciousness factors were formed by having Items 11, 17, and 21 load on appearance consciousness, and Items 2, 6, 14, and 19 load on style consciousness.

In the other set of analyses, items were deleted according to the criteria that an item's factor loading be larger than .20 or its error/uniqueness be smaller than .80. By these criteria, four items were eliminated. Among these four items were Items 9 and 12, which Burnkrant and Page (1984) and Mittal and Balasubramanian (1987) deleted from private self-consciousness and social anxiety subscales. In addition, Items 2 and 8 were deleted from public selfconsciousness and social anxiety subscales, respectively. These two items also had the poorest properties in Scheier and Carver's (1985b) analysis. In their analysis, Item 2 loaded equally well on both private and public selfconsciousness and had the lowest loading of .38 among public selfconsciousness items in both the original and revised forms of the SCS. Item 8 also had the lowest loadings of .27 and .40 among social anxiety items in their analyses of the two forms of the SCS. Other researchers have also found these two items problematic (Heinemann, 1979; Seek, 1994). Items 17 and 21, which were deleted by Burnkrant and Page, and Items 7 and 23, which were eliminated by Mittal and Balasubramanian, were found to be good items and were retained in this set of analyses.

In both sets of analyses, the different indicators of goodness of fit suggested little difference among the three models even though the four-factor and five-factor models had slightly better fit than the three-factor model. Table 2 contains values of different goodness-of-fit indexes from these models. However, the more important chi-square difference test clearly showed the superiority of the four-factor model. There was a significant reduction of chi square by the four-factor model, over the three-factor model, whereas the reduction of chi square by the five-factor model was not statistically significant. For the set of analyses involving all items, the chi-square difference tests between the three-factor and four-factor models were 24 and 36, df = 3, p < .01, for the two samples. In the analyses with reduced number of items, chi-square differences were 23 and 33 with 4 degrees of freedom for the two samples, respectively. These significant reductions of chi square justified the division of the private self-consciousness factor.

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Table 2

Goodness-of-Fit Indicator of Competing Models

Model	χ^2	df	χ^2/df	GFI	AGFI	RMR	BBI	TLI	$\Delta \chi^2$
			Using	g all 22	items				
Sample 1 (n	= 201)								
Null	1,008	231	4.36	.589	.550	.172	_	-	
3-factor	373	206	1.81	.860	.828	.083	.63	.76	
4-factor	349	203	1.72	.868	.836	.079	.65	.79	24*
5-factor	340	199	1.71	.873	.839	.078	.66	.79	9
Sample 2 (n	= 179)								
Null	766	231	3.32	.633	.599	.154	-		
3-factor	267	206	1.29	.873	.844	.072	.65	.88	_
4-factor	231	203	1.14	.892	.865	.064	.70	.94	36*
5-factor	227	199	1.14	.893	.864	.063	.70	.94	4
			Usir	ng 18 ito	ems				
Sample 1 (n	= 201)								
Null	788	147	5.36	.606	.542	.180			
3-factor	216	132	1.64	.890	.858	.068	.73	.85	
4-factor	193	129	1.49	.901	.869	.061	.76	.89	23*
5-factor	184	125	1.47	.909	.875	.059	.77	.89	9
Sample 2 (n	= 179)								
Null	647	147	4.40	.630	.569	.171	_		_
3-factor	189	132	1.43	.885	.851	.072	.71	.87	_
4-factor	156	129	1.21	.906	.875	.062	.76	.94	33*
5-factor	150	125	1.20	.909	.876	.061	.77	.94	6

Note. GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; RMR = Root Mean Squares Residual; BBI = Bentler and Bonett Index; TLI = Tucker and Lewis Index.

^{*}p < .01.

Table 3

Discriminant Validity of the Self-Consciousness Subscales

	SR	ISA	SC	AC
	Using al	ll 22 items		
Social anxiety	.33	02	.32	.16
Optimism	13	.13	.02	.07
Pessimism	26	.09	13	.05
	Using	18 items		
Social anxiety	.34	.06	.32	.16
Optimism	12	.13	.03	.08
Pessimism	26	.09	12	.05

Note. SR = self-reflectiveness; ISA = internal state awareness; SC = style consciousness; AC = appearance consciousness.

The division of the public self-consciousness factor was shown to be unjustified by the chi-square difference test. For the analyses involving all the items, chi-square difference between the four-factor and five-factor models were 9 and 4 for the two samples with 4 degrees of freedom. For the analyses on the reduced items, they were 9 and 6 with 4 degrees of freedom. These chi-square reductions were not significant at p < .05.

In evaluating the discriminant validity of the SCS subscales, two factors, optimism and pessimism, were estimated from the eight LOT items. This two-factor structure of the LOT was also widely used in the literature (Chang & McBride-Chang, 1996; Marshall & Lang, 1990; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Mroczek, Spiro, Aldwin, & Ozer, 1993; Scheier & Carver, 1985a). The structural associations with optimism and pessimism were distinctively different for the two private self-consciousness factors, self-reflectiveness and internal state awareness. Structural relations between these two factors and social anxiety were also distinctively different. These structural relations, however, were much more similar across the two public self-consciousness factors, style consciousness and appearance consciousness. This information is contained in Table 3. Thus, discriminant validity evidence further supports the superiority of the four-factor model or the division of the private self-consciousness.

Discussion

There are two conclusions to be drawn from these analyses. First, the division of the public self-consciousness subscale as specified by Mittal and Balasubramanian's (1987) five-factor model is inadequate. The set of goodness-of-fit indexes were almost the same as those associated with the more parsimonious 3-factor and 4-factor models. Moreover, the more powerful chi square difference test showed no significant chi square reduction. Additional evidence against the division of the public self-consciousness subscale is found in the nearly identical structural associations between these two ill defined public self-consciousness factors and other constructs.

The second conclusion is that Burnkrant and Page's (1984) four-factor model that divides the private self-consciousness subscale into selfreflectiveness and internal state awareness fit the data better than other models. This model is superior to the five-factor model by all the goodness-of-fit indexes and chi-square difference test. It is superior to the three-factor model by the significant chi-square difference test. The adequacy of this model or the division of the private self-consciousness subscale is further supported by the clearly differentiating structural associations with other constructs. This finding is consistent with the literature where self-reflectiveness and internal state awareness have been found to correlate differently with other variables and, particularly, with depression (Reeves et al., 1995; Watson & Biderman, 1993; Watson et al., 1994). Reeves et al. (1995) called these two scales a healthy "dysphoria-enhancing" influence and unhealthy "dysphoria-inhibiting" effect, respectively (p. 440). The differential associations of these scales with the life orientation scales found in this study lend support to Reeves et al.'s interpretation.

Fenigstein et al.'s (1975) original three-factor model falls between the four-factor and five-factor models in terms of its fit to the data. From the goodness-of-fit indexes, it fits almost as adequately as the four-factor model. Moreover, it enjoys the additional merit of being the most parsimonious among the three models. However, collapsing the two separate private self-consciousness scales to achieve parsimony seems unjustified, given the significant chi-square difference test and differential correlations these two subscales demonstrate with other constructs. Modifying the three items that make up the internal state awareness factor might be a strategy to keep the SCS's original simpler structure.

Findings from this study provide additional support of the adequacy of the four-dimension interpretation of self-consciousness. However, this evidence itself is not conclusive in determining the superiority of one model over another partly because the study was based on another culture where crosscultural validity of the various SCS models is equally undetermined, as is the

construct validity within the original population. Construct validation is an ongoing process. The addition of cross-cultural evidence together with the existing findings based on the home culture greatly strengthens the construct validity of a four-factor SCS interpretation.

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