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Short Communication

The short form BSRI: Instrumentality, expressiveness and gender associations among a United Kingdom sample

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ABSTRACT

The structure of the short form Bem Sex Role Inventory (Bem, 1981) was examined in two UK samples of 214 women and 166 men, and 215 women and 166 men, respectively, aged 17–22 years. A confirmatory factor analysis of the masculinity and femininity items for the first sample produced a poor fit. An exploratory factor analysis of the data from this sample produced a 3 factor solution which, together with the original 2 factor solution was examined in confirmatory factor analyses of the data from the second sample. Neither produced a good fit, although the 3 factor solution was better. Gender differences in factor loadings were examined in a further multigroup CFA, which demonstrated that an unconstrained model produced a better fit than a constrained one. The findings suggest that when using the BSRI it would be prudent to examine underlying factor loadings.

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1. Introduction

The Bem Sex Role Inventory (BSRI; Bem, 1974) has been widely used in different cultural settings to provide a measure of sex role stereotyping. (Calvo-Salguero et al., 2008; Colley et al., 1994). The personality attributes it contains were designed to measure stereotypical masculinity and femininity, but a number of authors have challenged the view that the BSRI measures global self concepts of masculinity and femininity, and have concluded that the scales measure narrower self-perceptions in relation to socially desirable instrumental/agentive and communal/expressive traits (Spence, 1993; Spence and Helmreich, 1981). The original structure of the BSRI was subject to criticism. Choi and Fuqua (2003) summarised the modal findings from 23 factor analytic studies, which suggested a single simple F factor but two or more complex M factors. However, Bem (1981) developed a short 30-item version of the scale and this version has been shown to be both purer and have construct validity in relation to the measurement of instrumentality and expressiveness (Campbell et al., 1997; Holmbeck and Bale, 1988).

Over three decades have elapsed since the BSRI was introduced, so changing gender roles may have changed perceptions of the gender associations of instrumentality and expressiveness. Holt and Ellis (1998) found that *loyal* and *childlike* from the original F scale no longer discriminated significantly. They also found evi-

dence of reduced gender stereotyping since the scale was introduced in 1974. Further findings have demonstrated that stereotypes of women, and women's self-perceptions, have become more instrumental in line with changes in social roles (Diekmann and Eagly, 2000; Spence and Buckner, 2000). It is also likely that gender role associations vary across cultural settings. In the U.K., data collected at around the same time as those of Holt and Ellis (1998) showed far fewer BSRI items to be differentially desirable for a man or for a woman. Wilcox and Francis (1997) with an all-female UK sample of 16–19 year-olds, found that only three M and three F items were differentially desirable. Of the short form items, only *warm* and *affectionate* from the F scale produced significantly higher ratings for a woman and only *strong personality* from the M scale produced significantly higher ratings for a man, supporting the view that adolescent girls in the UK were conceptualising gender-typed men and women differently from Bem's original US sample.

The BSRI, particularly the short form, is still widely used as a measure of gender-linked expressive and instrumental personality attributes. As issues have been raised concerning its currency and validity across samples, and there is evidence of change in women's gender conceptions, this study aimed to examine its structure among young people in the U.K.

2. Method

Data from two separate studies were pooled and randomly split into 2 samples. The first comprised 214 female and 166 male student

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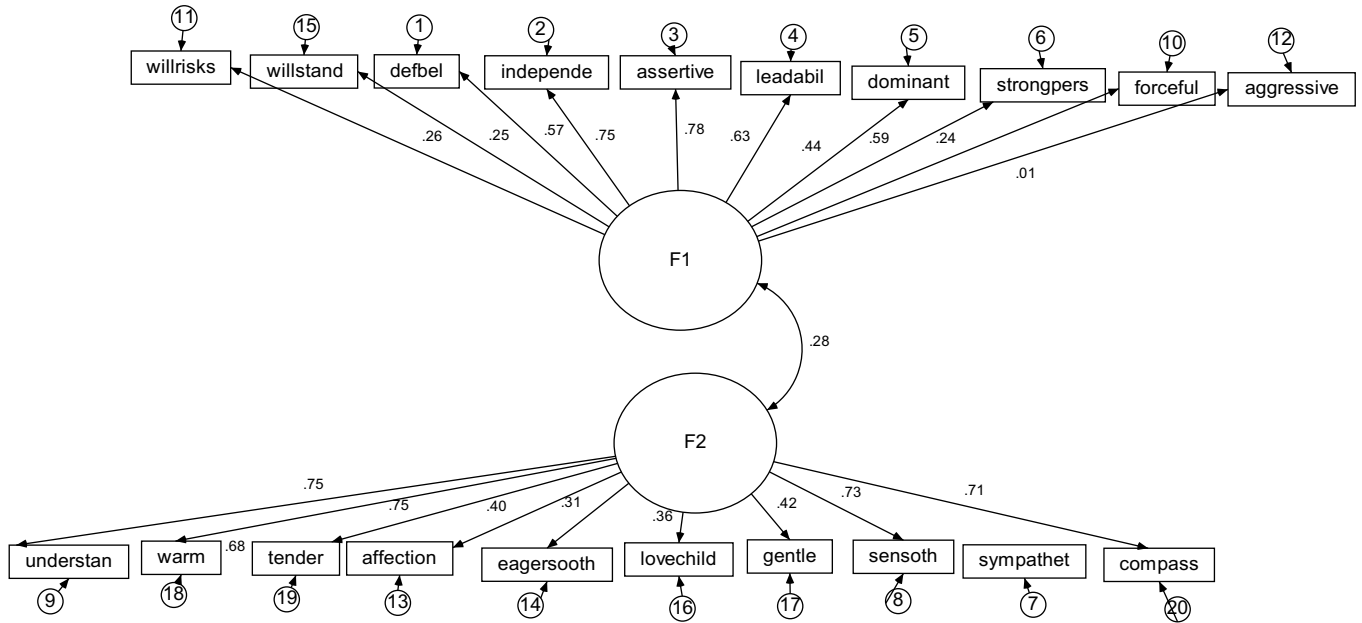


Fig. 1. Two factor model, Sample 1.

participants aged 17–22 years (men *M* age = 19.28, *SD* = 1.2; women *M* age = 19.11, *SD* = 1.1), while the second comprised 215 female and 166 male students aged 17–22 years (men *M* age = 19.22, *SD* = 1.2; women *M* age = 19.01, *SD* = 1.5) Both samples rated how well each of the 30 short form BSRI items described them on a scale from 1 (never or almost never true) to 7 (always or almost always true).

3. Results

3.1. Confirmatory factor analysis of Sample 1

As a first stage a CFA was used to establish the fit of Bem’s M and F scales to the current data (Fig. 1). This two factor structure showed a poor fit: $\chi^2 = 1299.02$, *df* = 171, *p* < .001, *CFI* = .579, *SRMR* = .158, *RMSEA* = .132 (.126–.139). As a result, the data from Sample

1 were subjected to an exploratory factor analysis in order to examine their structure with no prior model assumed.

3.2. Exploratory factor analysis of Sample 1

The twenty M and F items were submitted to principal components analysis. The Kaiser–Meyer–Olkin Measure of Sampling Adequacy was .84. Bartlett’s Test of Sphericity, suggested it was possible to reject the null hypothesis, $\chi^2 = 2814.46$, *df* = 190, *p* < .001.

The decision on the number of factors to retain was based on parallel analysis of Monte Carlo simulations comparing the eigenvalues to those that might be expected from purely random data with no structure (in the present case from 1000 generated datasets), and inspection of the Scree Plots. Both methods suggested

Table 1
Factor loadings from the EFAs of Sample 1.

	Factor 1	Factor 2	Factor 3	Men			Women		
				Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
<i>M items</i>									
Assertive	-.097	.796*	-.018	-.169	.777	-.082	-.087	.837	.014
Leadership ability	.255	.728*	-.078	.170	.608	.150	.256	.723	-.046
Dominant	-.214	.624*	-.248	-.357	.462	-.182	-.263	.562	-.410
Strong personality	-.032	.650*	.105	.045	.504	.306	-.061	.691	-.037
Forceful	-.730*	.284	.088	-.667	.377	-.095	-.783	.187	.067
Aggressive	-.844*	-.004	.196	-.808	.031	.191	-.861	-.021	.099
Willing to take a stand	-.223	.222	.369*	-.242	.051	.703	-.123	.082	-.148
Independent	.026	.782*	-.070	-.058	.838	-.100	.069	.803	.085
Defends own beliefs	.168	.616*	.065	.324	.567	.093	.087	.671	.125
Willing to take risks	-.554*	.259	.219	-.362	.369	.065	-.592	.267	.272
<i>F items</i>									
Understanding	.799*	.237	.064	.678	.021	-.110	.820	.286	-.080
Sympathetic	.467*	.147	.296	.541	.217	.239	.518	.278	.304
Eager to soothe hurt feelings	-.123	-.140	.765*	-.020	-.111	.739	-.119	-.011	.786
Sensitive to needs of others	.683*	.154	.244	.664	.170	-.115	.702	.139	.240
Compassionate	.468	.127	.480	.478	.158	.374	.516	.080	.142
Loves children	.115	-.044	.480*	.012	.019	-.137	.173	-.069	.217
Affectionate	-.032	-.004	.742*	.108	.061	.613	-.076	.103	.722
Gentle	.039	-.106	.666*	-.079	-.233	.266	.044	-.124	.404
Warm	.388	.269	.429	-.035	.122	.123	.545	.292	.303
tender	.587	.150	.303	.261	.024	.059	.692	.070	.001

* Items used for the 3 factor model.

that three factors should be retained. The fourth eigenvalue (1.09) failed to exceed the fourth mean eigenvalue (1.24) from the parallel analysis. Principal components analysis was then performed on the twenty items for three factor solutions. The three factors ac-

counted for 25.4%, 15.9% and 10% of the variance respectively. They were subjected to oblique (oblimin) and orthogonal (varimax) rotation with delta set to 0. For interpretation purposes, factor loadings of above .3 were considered as relevant to the factor

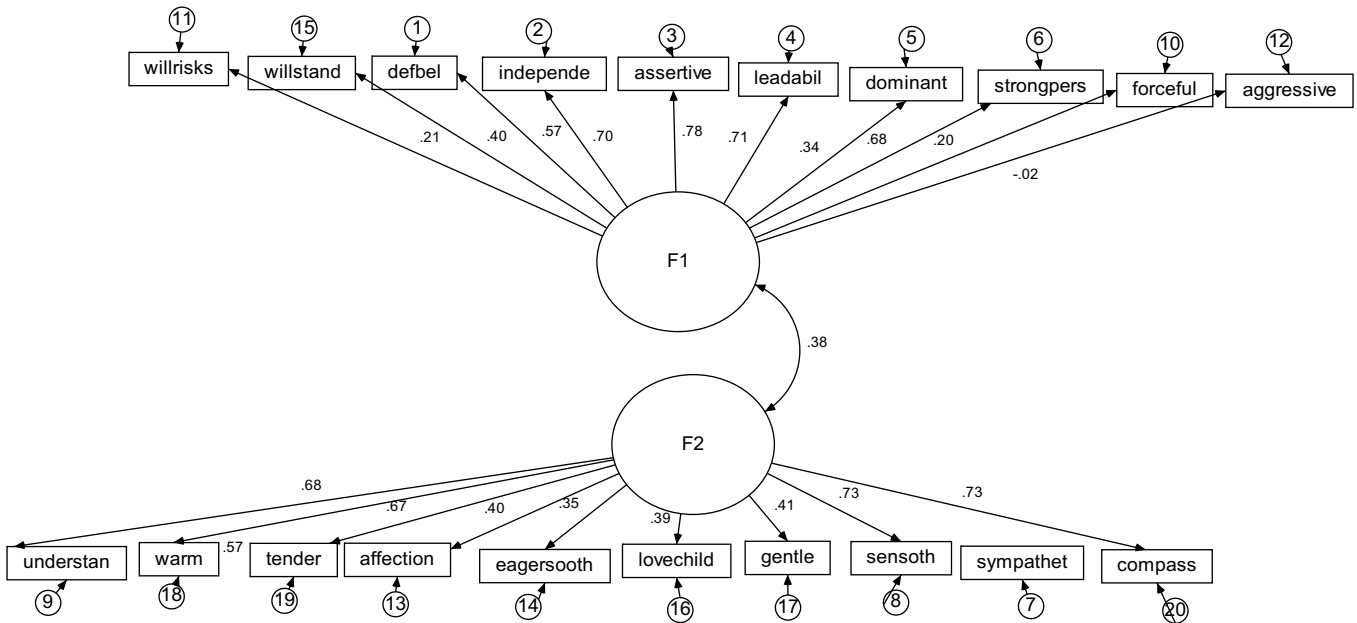


Fig. 2. Two factor model, Sample 2

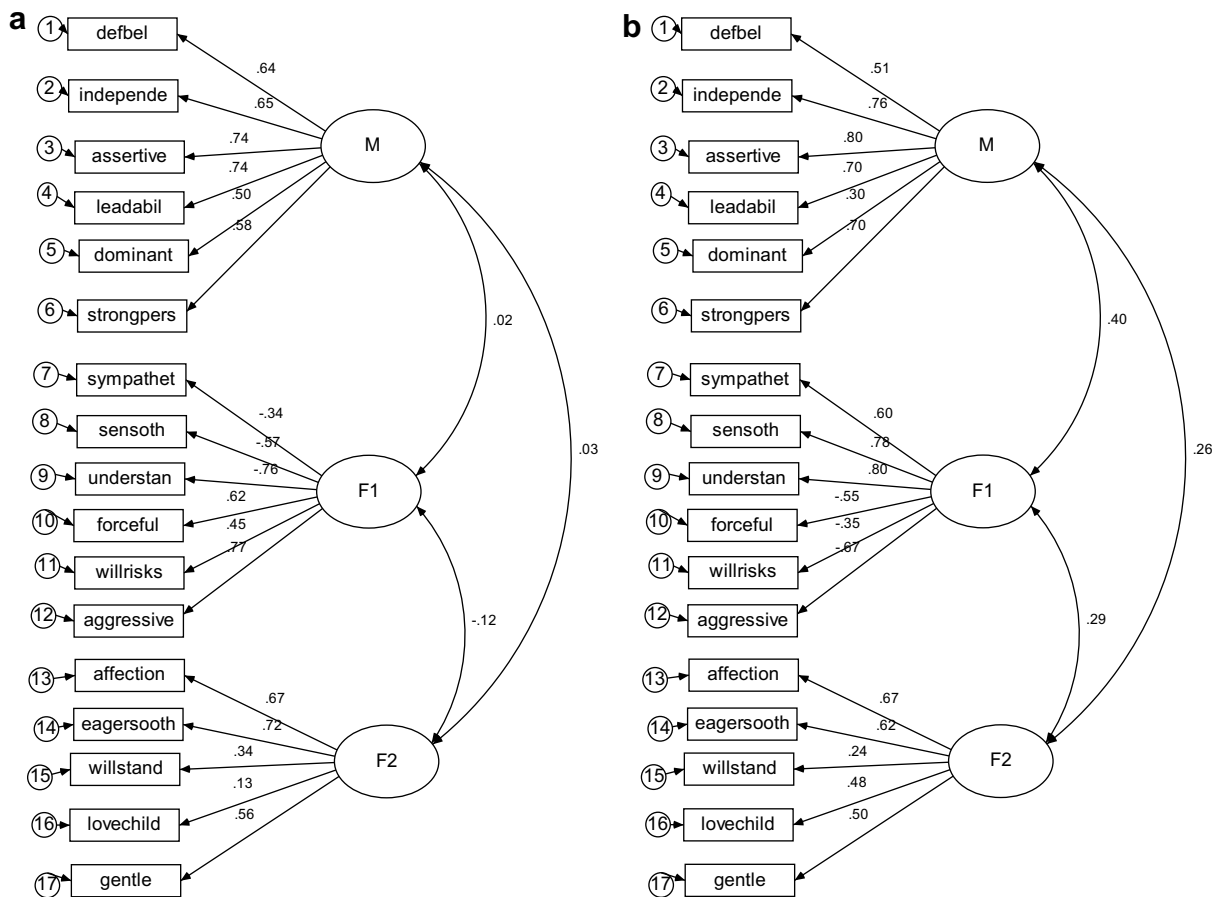


Fig. 3. (a) Sample 2: men. (b) Sample 2: women.

(Kline, 1986). Both rotation methods produced similar solutions, but correlations between the three factors favoured the use of the oblique rotation for purposes of interpretation (Table 1).

The first factor (F1: 25.4% of the variance) had positive loadings for *understanding, sympathetic, sensitive to the needs of others, compassionate, warm and tender*, and negative loadings for *forceful, aggressive and willing to take risks*. This suggests a bipolar factor reflecting interpersonal sensitivity/dominance and is in line with the male-female differences in dominance/risk taking vs. nurturance explained by sexual selection within evolutionary theories (e.g. Trivers, 1972). The second factor (M1: 15.9% of the variance) had high loadings for six M items reflecting personal agency: *assertive, leadership ability, dominant, strong personality, independent, defends own beliefs*. The third factor, (F2: 10.0% of the variance) had its highest loadings for *eager to soothe hurt feelings, affectionate, and gentle*, with further loadings > 0.3 for *compassionate, loves children, warm, tender and willing to take a stand*, and appears to reflect interpersonal expressiveness.

The same analysis was undertaken separately for men and women and produced a similar picture, although there were some differences in the factor loadings and more cross-loading items in the men's data (Table 1). In particular the men's interpersonal expressiveness factor (3) had a high loading for *willing to take a stand*, and *strong personality* also loaded, indicating a broader concept of expressiveness going beyond nurturance. There were also variations in the bipolar factor (1), in which the men's analysis showed additional negative loadings for *dominant* and *defends own beliefs*, while the women showed additional positive loadings for *gentle* and *warm*.

The next stage compared a model based upon this analysis with Bem's original scales. Following removal of the cross-loading items from the three factors derived from the whole sample analysis, the remaining items loading >0.3 comprised three scales.

3.3. Confirmatory factor analysis of Sample 2: two- and three factor solutions compared

A CFA was undertaken with Sample 2. The two factor structure (Fig. 2) exhibited a poor fit: $\chi^2 = 1291.44$, $df = 170$, $p < .001$, $CFI = .565$, $SRMR = .156$, $RMSEA = .132$ (.125, -.139). The fit from the three factor solution was better, although not good: $\chi^2 = 638.35$, $df = 116$, $p < .001$, $CFI = .732$, $SRMR = .119$, $RMSEA = .109$ (.101, -.117). Given the variations found within the EFAs of the male and female data, a multigroup CFA was undertaken to examine whether the three factor solution differed in fit between the men and women (Fig. 3). This showed that the correlations between the factors were different for men and women. The unconstrained model where values were allowed to differ for men and women ($CFI = .708$, $SRMR = .131$, $RMSEA = .082$ (.076, -.088)) was significantly better (change $\chi^2 = 49.140$, $p < .001$, change $AIC = 9.14$) than the constrained model where the factor loadings and factor correlations were constrained to be equal for men and women ($CFI = .693$, $SRMR = .141$, $RMSEA = .081$ (.075 - .086)), although the fit was similar. However, again, neither produced a good fit and there were some differences in factor loadings between the men and women, and correlations between the M factor and the two F factors were present only for the women.

4. Conclusions

Our overall conclusion is that investigators should be cautious in assuming that a 2 factor structure underpins the BSRI, and that the relationships between gender-related traits are necessarily the

same for men and women. Of course, differences between our results and those found previously could be due to the particular socio-cultural context present for young people in the UK, changes in self-conceptions over the 35 years since the original scale was constructed, or both. Our data suggest a separation between dominance-sensitivity represented in our bipolar factor, and the other M and F traits relating to agency and expressiveness, which formed two further factors. This has implications for conceptions of androgyny (Bem, 1974), based upon two independent M and F factors. Further data from different cultural settings is required in order to assess whether the structural problems found here generalize. It is also the case that our data have been gathered from a restricted age group, and that older age groups may produce a different pattern of associations.

The three factor model tested here, while not producing a good fit, has the potential to be developed further using a larger bank of items. Greater predictive power and validity may be gained by explicitly distinguishing between the personal and interpersonal aspects of instrumentality and communality. In addition it may prove fruitful to examine similar measures from other personality inventories that consistently show gender differences, for example facets of the Big Five traits of extraversion, neuroticism, conscientiousness and agreeableness (e.g. Schmitt et al., 2008).

In summary, the purpose of the current study was to examine whether the two factor structure of the short BSRI can still be assumed. The analyses presented here cast doubt on this and raise interesting questions concerning current conceptions of gender-related attributes, which, although beyond the scope of the present study, invite replication and further research.

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