

# **The Importance of a General Measure of Brand Engagement on Market Behavior: Development and Validation of a Scale**

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## **WEB APPENDIX: SCALE DEVELOPMENT AND NOMOLOGICAL VALIDITY**

### *Initial Item Generation and Selection*

An initial pool of 36 items was developed on the basis of extant branding and self-concept literature streams (e.g., Belk 1988; Fournier 1998) and on previously validated scales including self-brand connections (Escalas 2004), object attachment (Ball and Tasaki 1992), and RISC (Cross et al. 2000). This item pool was given to nine consumer behavior research experts for review; all experts possessed psychometric expertise (cf. Hardesty and Bearden 2004). Experts were provided with a definition of BESC and were asked to carefully read each item and rate it with regard to how well they believed it represented the construct. Experts rated each item on a nine-point scale, anchored with “Does not tap construct” (1) to “Taps construct” (9). Space was provided for experts to comment further about particular items as they felt appropriate.

Results of expert review led to eleven items being dropped from the initial pool, including five items with a mean and median below the scale midpoint and six items identified by written comment as inappropriate to the measure (e.g., bad wording). Remaining items included three reverse-scored items, which was raised as a minor concern by one reviewer. Thus, seven additional reverse-scored items were created (based on rewording of the most highly ranked items from the expert review), resulting in 32 items used for initial data collection (see Table A1).

Table A1

ORIGINAL ITEMS IN INITIAL DATA COLLECTION

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1. My favorite brands feel like a part of me.
  2. Brands are not that important to who I am.
  3. Brands that I most prefer reveal little about me.
  4. Overall, the brands I prefer most are those that are part of how I view myself.
  5. I have a special bond with the brands that I like.
  6. If a friend criticized a brand that I like, I would not feel offended.
  7. I consider my favorite brands to be part of myself.
  8. The brands that I most prefer clearly indicate something about me.
  9. I often feel a personal connection between me and my brands.
  10. Sometimes I view the success of my brands as my own personal success.
  11. I am offended when someone mocks one of my favorite brands.
  12. Part of me is defined by important brands in my life.
  13. I feel as if I have a close personal connection with the brands I most like.
  14. I can identify with the important brands in my life.
  15. There are links between the brands that I prefer and how I view myself.
  16. I would feel like I had lost part of my identity if one of my favorite brands were no longer available to me.
  17. I would be a very different person without my favorite brands.
  18. When friends criticize brands that I like, I feel offended.
  19. I rarely feel a personal connection with any brands.
  20. Brands that I prefer have nothing to do with how I view myself.
  21. I feel a personal sense of pride when my favorite brands introduce new successful products.
  22. My brands are an important indication of who I am.
  23. Brands do not indicate much about who I am.
  24. Many brands really reflect who I am.
  25. I do not feel that my favorite brands are part of me.
  26. No brands reflect who I am.
  27. Very little of me is defined by important brands in my life.
  28. Most brands have nothing to do with how I view myself.
  29. When someone criticizes a brand that is important to me, I often feel personally attacked.
  30. When a brand is important to me, it feels as if the brand defines who I am.
  31. You can learn a lot about me by looking at the important brands in my life.
  32. I dislike brands that do not reflect who I am.
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### *Scale Reduction*

The 32 initial scale items were then administered to a sample of 430 undergraduate students in exchange for extra credit. Participants were instructed:

“We are interested in learning more about the role that brands play in the lives of consumers. Below are a series of statements about brands and your life. Please read each statement carefully and indicate your level of agreement with the statement by circling the appropriate number. As you read the statements below, think about the brands that you prefer in your own personal life.”

Participants then evaluated each of the scale items utilizing seven-point scales anchored by 1 (“strongly disagree”) to 7 (“strongly agree”).

Following established scale development procedures, the sample was randomly split into two equal groups (Noar 2003). Exploratory factor analysis was performed on one half to reduce the number of items to a more parsimonious set. Confirmatory factor analyses (CFA) were then performed on the other half in order to identify final scale items and establish unidimensionality.

*Exploratory factor analysis.* A principal components analysis on the 32 items highlighted the presence of a single dominant factor explaining 48.72 % of total variance. Seventeen items were then eliminated due to factor loadings and item-to-total correlations of less than .70. A principal components analysis was conducted on the remaining 15 items (items 1, 5, 7, 8, 9, 12, 13, 14, 15, 23, 25, 26, 27, 28 and 30), resulting in a single dominant factor explaining 62.32 % of total variance (*eigenvalue* = 9.35; all the other factors < 1).

*Confirmatory factor analysis.* An initial CFA was then conducted on the 15 items with AMOS 5.0 using the covariance matrix as input, one latent variable, uncorrelated measurement errors and maximum likelihood estimation. Indices for this first model suggested considerable

room for improvement in terms of model fit (CMIN = 396.15, CMIN/DF = 4.40, GFI = .76, AGFI = .68, NFI = .84, CFI = .87, RMR = .19, RMSEA = .13,  $p_{close} = .00$ ). To improve model fit resulting in a more parsimonious scale, the number of items was further reduced by following the procedure implemented by Voss, Spangenberg, and Grohmann (2003). This procedure improves the psychometric characteristics of a scale while shortening it by iterative deletion of the poorest fitting items. One first selects and drops the item with the lowest item-to-total correlation. After that, two CFA models are estimated—one model based on the original set of items, and the other based on the reduced set. These two models are then compared on two criteria: (1) a  $\chi^2$  difference test; and (2) AGFI indexes. If the  $\chi^2$  test proves significant and if the AGFI index increases, the reduced scale is used for the next iteration wherein the item with the lowest item-to-total correlation is eliminated and the  $\chi^2$  test and AGFI are considered for the next iteration.

Following Voss et al. (2003), iterations are stopped when one of two possible results is obtained: The  $\chi^2$  test shows no significant difference between the models and/or the AGFI decreases. For our analysis, the AGFI reached a plateau at eight items (AGFI = .92). At this point, other fit indices also met conventional criteria (CMIN = 42.36, CMIN/DF = 2.12, CFI = .98, GFI = .96, NFI = .97, RMR = .06) and the hypothesis of close fit was not rejected (RMSEA = .07,  $p_{close} = .11$ ). The remaining eight items were therefore accepted as the final BESC scale (see Table A2 for factor loadings and item-to-total correlations). Reliability of the final scale was  $\alpha = .94$ . Respondents' average scores on the final scale were not affected by either their age ( $r = .04$  n.s.) or gender ( $M_{males} = 3.79$ ,  $M_{females} = 3.59$ ,  $F(1, 213) = 1.37$ , n.s.).

Table A2

ASSESSING BRAND ENGAGEMENT IN SELF-CONCEPT:  
PSYCHOMETRIC CHARACTERISTICS OF FINAL SCALE ITEMS

<i>Items</i>	<i>Factor Loadings<sup>a</sup></i>	<i>Item-Total Correlation</i>
1. I have a special bond with the brands that I like.	.787	.726
2. I consider my favorite brands to be a part of myself.	.839	.787
3. I often feel a personal connection between my brands and me.	.870	.824
4. Part of me is defined by important brands in my life.	.858	.808
5. I feel as if I have a close personal connection with the brands I most prefer.	.895	.855
6. I can identify with important brands in my life.	.859	.809
7. There are links between the brands that I prefer and how I view myself.	.848	.798
8. My favorite brands are an important indication of who I am.	.820	.764

<sup>a</sup>*Unrotated factor loadings in principal components analysis. Test-Retest Reliability Studies*

Following conventional practice, we performed inter-temporal reliability checks with a two-month delay between two administrations of the BESC measure to two new independent samples (e.g., Aaker 1997). The first sample was composed of 118 university staff members participating on a voluntary basis while the second sample included 83 undergraduate students fulfilling a course requirement. For the staff sample, the BESC scale demonstrated acceptable test-retest reliability with the two administrations being significantly correlated after a two-month delay,  $r = .62$  ( $p < .001$ ). The mean of the individual-item correlations was  $r = .51$  (all  $ps < .001$ ). For the student sample, the correlation between the two measures was  $r = .78$ , ( $p < .001$ ) and the mean of the individual-item correlations was  $r = .59$  (all  $ps < .001$ ). These test-retest reliability

coefficients are comparable to those obtained by Cross et al. (2000) with the structurally similar RISC scale, ranging between .63 and .73.

### *Nomological Validity*

Our next step was to position BESC within a broader network of self-relevant constructs in the literature and to demonstrate that it captures a unique dimension of the self. We also investigated the relationship between BESC and Material Values, expecting BESC to be related to but distinct from the concept of materialism. Additionally, we examined the relationship between BESC and the most routinely assessed form of response bias, social desirable responding (Paulhus 1998). Further, we sought to ascertain whether the BESC scale was free of potential gender biases arising from the possibility that some branded goods may reflect strong masculine or feminine gender portrayals (Lindsay and Widiger 1995).

*Samples and scales.* Four independent undergraduate samples participated in this study, whereby each sample completed a survey including the eight-item BESC scale and some of the other scales under scrutiny. Thus, the first sample (N = 398) completed the following: Self-Esteem (Rosenberg 1965), Satisfaction with Life (Diener et al. 1985), and Material Values (Richins 2004). The second sample (N = 279) completed Relational-Interdependent Self-Construal (Cross et al. 2000). The third sample (N = 107) completed Self-Concept Clarity (Campbell et al. 1996) as well as the Masculinity and Femininity sub-scales of the Interpersonal Bem Sex Role Inventory (Brembs and Johnson 1990). Finally, the fourth sample (N = 199) completed Independent Self-Construal (Singelis 1994), Interdependent Self-Construal (Singelis 1994), Collective Self-Esteem (Luhtanen and Crocker 1992), as well as the Self-Deception and Impression Management sub-scales of the Balanced Inventory of Desirable Responding (Paulhus 1998).

*Correlational results.* Correlation coefficients support the expected relationships between BESC and the aforementioned constructs. BESC was not related to measures of social aspects of the self, however, there was a significant positive correlation between BESC and RISC ( $r = .15$ ,  $p < .05$ ). Further, BESC was unrelated to general self-esteem, self-concept clarity and satisfaction with life. There is no evidence that BESC is subject to social desirable responding or gender bias. BESC was significantly and positively correlated to MATVALUES ( $r = .42$ ,  $p < .01$ ).

*Discriminant validity between BESC and Material Values.* Specifying Material Values and BESC items to load on two separate factors, two tests of discriminant validity were performed. In the first, two models were estimated wherein the correlation between factors was either constrained to correlate perfectly (i.e., a single factor model was forced), or unconstrained and estimated (Bagozzi, Yi, and Phillips 1991). A  $\chi^2$  difference test indicated that the second model provided a significantly better representation of the data than the first ( $\chi^2 = 32.63$ ,  $p < .01$ ). A second test focused on the unconstrained model; using Fornell and Larcker's (1981) criteria, the average variance extracted of .54 for this model was greater than the squared correlation between the two factors of .22.

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