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## Development and Validation of an International English Big-Five Mini-Markers<sup>☆</sup>

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### ABSTRACT

Examination of Saucier (1994) big-five Mini-Markers using a multinational sample ( $N = 491$ ) found its psychometric properties suboptimal. Using further multinational samples, through a qualitative study ( $N = 23$ ) appraising items and then a series of quantitative development and validation studies (total  $N = 3,068$ ), a revised marker set was derived. This new International English Mini-Markers (a) produced better factor structures, higher scale internal consistency reliabilities, and greater orthogonality than the original set of items, (b) prove to have temporal stability, and (c) acceptable convergent validity.

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### 1. Introduction

Personality dimensions have long attracted research attention (Eysenck, 1991). The five-factor model of personality (Goldberg 1990; McCrae and Costa; 1987) has met with particularly wide application in the personality field, plus across disciplines as diverse as aviation (Grant et al., 2007), politics (Schoen & Schumann, 2007), and entrepreneurship (Zhao & Seibert 2006). The model's wide disciplinary application has prompted the development of several brief big-five measures comprising fewer than 50 single-item adjectives or only a very few statement-based items specifically for use in applied research settings where respondent time or instrument space are constrained (e.g. Gosling, Rentfrow, & Swann, 2003; Langford, 2003; Saucier, 1994; Woods & Hampson, 2005).

While, as Church (2001) notes, some debate has existed about the uniform replicability of the five-factor model in emically developed measures across some cultures such as China (Cheung et al., 2001), the model's general cross-cultural applicability has, nevertheless, stimulated translations of relatively long big-five measures into Chinese (Trull & Geary, 1997), Croatian (Mlacic & Goldberg, 2007), Italian (Terracciano, 2003), Spanish (Garcia, Aluja, & Garcia, 2004), and other languages. Such translations tend to support the broad cross-cultural applicability of the five-factor model. For example, Hendriks, Hofstee, and De Raad (1999) developed inter-actively in Dutch, English and German a 100-statement big-five

measure that confirmed the five-factor structure in these languages and 11 others into which it was subsequently translated, including Chinese and Japanese. More recently, Schmitt, Allik, McCrae, and Benet-Martínez (2007) found robust support for the five-factor model across world regions in a study covering 56 nations using a 44-statement (173-word) big-five measure. Some brief big-five measures have also been translated, although as yet only into German (Muck, Hell, & Gosling, 2007; Rammstedt & John 2007) and Swedish (Hochwalder, 2006).

The relatively low number of languages into which any single brief big-five measure has so far been translated has meant that some forms of applied cross-cultural research demanding brief measures have been constrained. Most particularly, applied research in cross-cultural settings where multiple national backgrounds can (a) be anticipated, are (b) of specific interest, but (c) cannot necessarily be known precisely in advance is currently impossible, except, as Thompson (2007) suggests, using English measures. Such research settings include international government bodies and firms, plus, of course, many educational institutions, where populations increasingly comprise individuals from numerous countries who, despite not always being native English-speakers, are obliged to operate organizationally in English.

Because English big-five measures have been emically developed, predominantly among native English-speakers in North America, research is needed to assess their psychometric properties among non-native English-speakers before they can with confidence be used in international research settings. No such research has yet been undertaken. The six studies reported in this paper, first, examine the psychometric performance of Saucier's (1994) big-five Mini-Markers, in an English-using, multinational sample, then, having found its psychometric properties to be suboptimal, develop and validate an International English Mini-Markers.

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The Mini-Markers, a short-form of Goldberg's (1992) unipolar lexical big-five measure, is selected for assessment because it has proven to be one of the most psychometrically reliable (Mooradian & Nezlek, 1996) and frequently used brief big-five measures, being employed widely in personality research (Diefendorff & Richard, 2003; McCullough, Emmons, & Tsang, 2002) and in applied settings across several disciplines, including health (Austin, Saklofske, & Egan, 2005), business (Erdheim, Wang, & Zickar 2006), and education (Moon & Illingworth, 2005). Comprising just 40 single-adjective personality descriptors originally selected for their psychometric qualities (Saucier, 1994), the Mini-Markers can be hypothesized to lend itself without translation to use with multinational samples that use English.

## 2. Study one: Mini-Markers assessment with multinational sample

### 2.1. Participants

Participants comprised 491 family and friends of executive MBA students at an English-based international university in East Asia who had volunteered to assist with research, plus had identified themselves as proficient at English. The sample therefore represents the relatively affluent and educated strata of individuals who might reasonably be encountered in numerous international but English-speaking research settings (see Table 1 for demographic details).

### 2.2. Measure

The Mini-Markers was used as Saucier (1994) specifies, except, following Hampson and Goldberg (2006), the original 9-point interval measure anchored on accurate and inaccurate was reduced to 5 points to maximize brevity. This was incorporated into an online instrument addressing career motivations sent individually to participants.

### 2.3. Analyses and results

Following Saucier's (1994) analytical procedure in his development of the Mini-Markers, a principal component analysis with a varimax rotation specifying five components failed to produce the expected factor structure, with Conscientiousness being the only sub-scale forming a distinct, complete and interpretable component (Table 2). Seven items had loadings below the lowest (.44) reported by Saucier's (1994, p. 512), and 18 items had loadings failing to meet Saucier's (1994, p. 509) item-purity criterion of having a highest loading at least double its loading on any other component. Of the 22 items that did meet this criterion, only seven could be said to load on the expected component. Analyses specifying different extraction and rotation procedures failed to produce an improved or acceptable five-factor solution. The mean inter-scale correlation of .31 was considerably higher than Saucier's (1994, p. 512–514) reported mean inter-scale correlation of .11, indicating considerable lack of orthogonality of sub-scales. However, scale internal consistency reliabilities were adequate, with the exception of Extraversion (Table 3).

### 2.4. Discussion

Given the poor factor structure and high inter-scale correlations, but acceptable internal consistencies for four of the sub-scales, method variance was suspected. Examination of responses to other measures administered alongside the Mini-Markers, such as Rosenberg's (1965) self-esteem scale, did not indicate careless or non-diligent responding, suggesting that the suboptimal psychometric performance of the Mini-Markers with a multinational sample was due to an interaction of the nature of the multinational sample and the Mini-Markers.

A number of items could be identified as potentially problematic by their low component loadings or high cross-loadings, including *energetic, relaxed, touchy, withdrawn, complex, sloppy,*

**Table 1**  
Sample characteristics of each study

	Study 1	Study 3	Study 4	Study 5
N	491	650	459	1927
Males	259	346	216	704
Age (percent)				
18–24	30	15	25	55
25–29	33	48	36	25
30 or older	37	37	39	20
Percent already with undergraduate degree	78	86	83	63
Occupation (percent)				
Private sector employees	33	49	34	26
Public sector employees	17	22	18	9
Self-employed	4	5	5	9
Postgraduate student	17	11	19	8
Undergraduate student	10	5	9	24
Homemaker, retired or unemployed	19	9	15	24
Non-native English-speakers	408	629	378	1327
Number of non-native English-speaking countries sample drawn from	38	31	23	68
Non-native English-speaking countries with 20 plus respondents (N)	Burma (54) China (26) Indonesia (27) Mexico (44) Thailand (79) Vietnam (35)	China (50) Indonesia (58) Japan (42) Malaysia (78) Mongolia (39) Philippines (109) Singapore (26) Vietnam (90)	China (22) Indonesia (53) Japan (35) Malaysia (25) Peru (20) Singapore (29) Taiwan (21) Thailand (29) Vietnam (49)	Burma (83) China (884) Hungary (82) India (28) Indonesia (96) Japan (40) Malaysia (37) Philippines (67) Taiwan (32) Thailand (48) Vietnam (32)

Note: Countries with fewer than 20 respondents are omitted for space considerations.

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