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A multi-national validity analysis of the self-perceived communication competence scale

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ABSTRACT

The self-perceived communication competence (SPCC) measure has been used in over 50 published studies since 2000. McCroskey and McCroskey (1988). Self-report as an approach to measuring communication competence. *Communication Research Reports*, 5, 108–113. doi: 10.1080/08824098809359810 developed the measure to be used within the US college/university classroom. Despite its intended use, the measure is frequently used outside of the US and outside of the college/university setting without tests of measurement invariance. In fact, only four studies have performed tests of internal consistency on the measure since 2000, and each has found poor fit. Therefore, the purpose of this study was to assess the utility of the measure outside of its intended population. The measure was utilized to survey respondents from 12 countries and failed to yield acceptable fit statistics in all samples, showing poor evidence of construct validity.

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Self-perceived communication competence; confirmatory factor analysis; validity; reliability

Self-perceived communication competence (SPCC) is often measured in relation to other communication traits such as communication apprehension, willingness to communicate, self-disclosure, and argumentativeness, to name a few (Donovan & MacIntyre, 2004; Teven, Richmind, McCroskey, & McCroskey, 2010). SPCC is frequently measured among college/university students, with few exceptions. SPCC is conceptualized as the “adequate ability to pass along or give information; the ability to make known by talking or writing” (McCroskey & McCroskey, 1988, p. 109). SPCC, as a construct, focuses on communication with acquaintances, friends and/or strangers in interpersonal, small group, and public speaking contexts. Researchers studying SPCC have mainly used the 12-item SPCC scale by McCroskey and McCroskey (1988) to measure this concept (e.g., Burroughs, Marie, & McCroskey, 2002; Croucher, 2013; Croucher, Rahmani, Hamble, & Sakkinen,

2016; Dilbeck, McCroskey, Richmond, & McCroskey, 2009; Donovan & MacIntyre, 2004; Fallah, 2014; Hammick & Lee, 2014; Hsu, 2010; Jung & McCroskey, 2004; Öz, Demirezen, & Pourfeiz, 2015; Steele & Plenty, 2014; Teven et al., 2010).

Research into communication traits are increasingly conducted in non-US university classroom settings and cross-culturally. As such, questions of measurement invariance are critical. Individual responses to individual items and variables differ between groups. The calculation of reliability and validity involves correlating responses to individual items and variables. As such, correlations between items often differ significantly in one culture or context versus another. These effects lead to different reliabilities and validity results in different groups. Thus, as Gudykunst (2003, p. 156) asserted, “reliability and validity must be established within each culture separately.”

The SPCC scale has been shown to be a highly reliable measure in many US, and non-US samples, with reliabilities ranging from .80 to above .92 (Croucher, 2013; Hsu, 2007, 2010). Although McCroskey and McCroskey (1988) cautioned that the 12-item SPCC scale should not be presumed to be a valid measure of competence in real communication behaviors, the measure has been used multiple times outside its intended population, with Cronbach’s Alpha as the sole test of quality. Moreover, when the “strong” validity of the SPCC scale is cited in published research, the references often cited do not directly test/measure, or report validity results (e.g., Baraclough, Christophe, & McCroskey, 1988; Burroughs et al., 2002; Chesebro et al., 1992; McCroskey, Burroughs, Daun, & Richmond, 1990; Rosenfeld, Grant, & McCroskey, 1995). In fact, validity is not mentioned in these articles (Barracough et al., 1988; Burroughs et al., 2002), yet each is cited as supporting the validity of the SPCC scale. Chesebro et al. (1992) did not measure/report validity. They stated:

Statistical analyses supporting the validity of the SPCC have not been provided. Although McCroskey and McCroskey (1988) have reviewed the literature regarding the validity of the relationships between communication competence and self-report measures and McCroskey, Andersen, Richmond, and Wheless (1981) have reviewed the literature regarding the validity of the relationships between communication competence and environment. Further research regarding the validity of the SPCC are required. (p. 358)

McCroskey and McCroskey (1988) argued the scale has high face validity as a measure of SPCC, “since it involves asking subjects to directly estimate their own communication competence across a variety of contexts. It is *not* presumed, however, to be a valid measure of competence in actual communication” (p. 132). In Rosenfeld et al. (1995), previously mentioned literature was cited to support construct validity. Moreover, structural validity was assessed by investigating correlations among scale subscores. In fact, since 2000, of the more than 50 peer-reviewed quantitative articles using the scale, four have reported results of construct validity testing (Croucher, 2013; Croucher et al., 2016; Hsu, 2004, 2007). In each of these cases numerous items from the SPCC scale were deleted to confirm the scale, and in Croucher et al. (2016) a valid scale could not be attained. The belief that the SPCC scale has been validated and has strong validity among non-student samples is not justified by the literature. Thus, to understand the validity of the SPCC scale given its wide use, this study explores the scale’s validity in different national contexts. To be clear, the purpose of the paper is not to investigate the construct



of SPCC, but rather to examine the measure used to assess it. Specifically, the following research question investigates the SPCC scale in multiple national contexts:

RQ: To what extent does the self-perceived communication competence scale exhibit evidence of measurement invariance in multi-national contexts?

Method

Research locations

The research sites were England, France, Germany, India, Iran, Kenya, Kyrgyzstan, New Zealand, Rwanda, Turkey, Uganda, and the United States. Data were collected in the US from both an adult sample and college/university sample. Because the measure was developed to assess communication competence among US college/university students, the US student sample served as the control group for comparison. England, France, Germany, and New Zealand were chosen as nations representing more individualistic nations, and under-represented European and/or Australasian nations in communication research. Kenya, Rwanda, Uganda, Kyrgyzstan, India, and Iran were included to redress the limited understanding of communication processes and behaviors in African, Post-Soviet, South-Asian, and West-Asian cultures.

Procedures and participants

In total, 13 samples were collected ($n = 2771$). Individuals were recruited from 2015 to 2017 to complete a three-to-four-page survey measuring communication traits and demographic questions. In 10 of the national cultures (England, France, Germany, India, Iran, Kenya, Kyrgyzstan, Rwanda, Turkey, Uganda, and US-students) surveys were distributed via paper and pencil collection method to social networks, friends, family members, co-workers, and neighbors, and among college/university students at Northeastern and Mid-western universities in the US and Istanbul. In two national cultures (New Zealand and the US-adult), surveys were distributed via Qualtrics to random adult participants.

The instrument was translated from English into Russian, French, German, Turkish, and Persian by native speakers of each language. The translations were then back translated; see [Table 3](#) for the kappa (κ) values for each translation. The reliability of the translations were calculated with the assistance of bilingual linguists in each language. The kappa values, as shown in [Table 3](#), all exceed the .70 threshold recommended for reliability (Fleiss, 1981; Gwet, 2014). Descriptive statistics for participants are broken down by sample in [Table 1](#).

Instrument

The Self-Perceived Communication Competence is a 12-item unidimensional measure designed to assess a person's perceptions of their own communicative competence among acquaintances, friends and strangers (McCroskey & McCroskey, 1988). The items range from (0) *not at all competent* to (100) *completely competent* for items such as "Talk with a friend" and "Present a talk to a group of acquaintances." There are

Table 1. Sample overview.

Country	N	Sex		Average age
		Male	Female	
England	252	126	126	26.9 (<i>SD</i> = 4.83)
France	143	53	90	27.9 (<i>SD</i> = 10.54)
Germany	191	70	121	30.7 (<i>SD</i> = 10.76)
India	265	119	146	21.3 (<i>SD</i> = 1.92)
Iran	151	86	65	34.3 (<i>SD</i> = 9.55)
Kenya	108	54	54	27.3 (<i>SD</i> = 10.35)
Kyrgyzstan	325	94	229	18.4 (<i>SD</i> = 8.30)
New Zealand	206	102	104	46.9 (<i>SD</i> = 13.84)
Rwanda	138	73	65	26.6 (<i>SD</i> = 9.23)
Turkey	121	63	55	23.8 (<i>SD</i> = 6.32)
Uganda	102	58	44	27.2 (<i>SD</i> = 10.20)
US Adult	296	151	145	41.3 (<i>SD</i> = 14.83)
US Student	473	282	191	21.0 (<i>SD</i> = 1.96)

Note: Mismatch between male and female totals vs. sample size is a result of participants choosing not to disclose their sex.

three types of receivers, and four contexts for competence (i.e., public, meeting, group, and dyad). The combined score is often reported. **Table 2** includes the descriptive statistics for the measure broken down by sample.

Analysis

Construct validity (Haynes, Richard, & Kubany, 1995) for the measure was tested through a series of confirmatory factor analyses (CFA). After ensuring that no assumptions of normality were violated, the SPCC was subjected to a CFA using the AMOS maximum likelihood parameter estimation algorithm within each sample. **Table 3** includes the goodness of fit indices (GFI), comparative fit index (CFI), standardized root mean square (SRMR), and root mean square error approximations (RMSEA). CFA includes a test of internal consistency, which allows items that cause a statistically significant amount of residual error (standardized residuals > 1.96 or < -1.96) to be identified and removed (Anderson & Gerbing, 1988; Schermelleh-Engel, Moosbrugger, & Müller, 2003). **Table 3** notes the items that cause a statistically significant amount of residual error in each measure. It also gives the fit statistics of the remaining items in each population after the items that cause a statistically significant amount of residual error were removed. To be clear,

Table 2. Descriptive statistics for SPCC by sample.

	Mean	SD	Skewness	Kurtosis
England	60.25	6.13	-.02	.14
France	58.64	6.19	-.08	-.28
Germany	59.50	6.12	-.25	.29
India	61.45	5.60	-.07	-.40
Iran	52.14	22.94	1.23	5.39
Kenya	58.54	13.71	-1.48	4.51
Kyrgyzstan	69.24	21.78	-.26	.94
New Zealand	64.57	22.02	-.67	-.06
Rwanda	59.79	14.70	-.61	3.11
Turkey	80.19	15.14	-1.38	3.10
Uganda	60.07	16.01	-.40	.35
US Student	76.71	22.35	-1.07	.32
US Adult	61.12	6.65	.08	.07

Table 3. Confirmatory factor analyses of the self-perceived communication competence scale.

Country	Language	Initial fit				Items causing statistically significant residual error	Fit if problematic items removed					k	
		GFI	RMSEA	CFI	SRMR		GFI	RMSEA	CFI	SRMR	χ^2		
England	English	.90	.08	.49	.08	$\chi^2(54, N = 252) = 146.87, p < .001$	9, 10	.96	.04	.62	.08	$\chi^2(35, N = 252) = 50.16, p = .05$	-
France	French	.91	.06	.75	.07	$\chi^2(54, N = 143) = 78.43, p < .001$	1, 5	.96	.00	1.00	.05	$\chi^2(35, N = 143) = 37.55, p = .84$.75
Germany	German	.90	.08	.64	.08	$\chi^2(54, N = 191) = 120.90, p < .001$	1, 7	.96	.02	.98	.05	$\chi^2(35, N = 191) = 26.87, p = .35$.90
India	English	.92	.08	.54	.07	$\chi^2(54, N = 265) = 133.82, p < .001$	3	.95	.05	.66	.06	$\chi^2(44, N = 265) = 75.41, p = .002$	-
Iran	Persian	.83	.11	.79	.09	$\chi^2(54, N = 151) = 153.92, p < .001$	3, 5, 9, 11	.97	.00	1.00	.04	$\chi^2(20, N = 151) = 19.95, p = .46$.71
Kenya	English	.67	.19	.44	.17	$\chi^2(54, N = 108) = 257.08, p < .001$	5, 11	.82	.13	.51	.15	$\chi^2(5, N = 108) = 122.79, p < .001$	-
Kyrgyzstan	Russian	.82	.14	.80	.08	$\chi^2(54, N = 325) = 410.99, p < .001$	1, 2, 4, 10	.94	.10	.94	.04	$\chi^2(20, N = 325) = 91.30, p < .001$.80
New Zealand	English	.57	.25	.74	.10	$\chi^2(54, N = 206) = 752.36, p < .001$	4, 5, 11	.79	.20	.87	.05	$\chi^2(27, N = 206) = 254.95, p < .001$	-
Rwanda	French	.80	.13	.64	.11	$\chi^2(54, N = 138) = 178.03, p < .001$	1, 6, 11	.89	.12	.80	.08	$\chi^2(27, N = 138) = 76.46, p < .001$.75
Turkey	Turkish	.71	.18	.70	.12	$\chi^2(54, N = 121) = 260.24, p < .001$	4, 5, 10	.87	.13	.88	.07	$\chi^2(27, N = 121) = 80.24, p < .001$.85
Uganda	English	.68	.19	.50	.15	$\chi^2(54, N = 102) = 253.96, p < .001$	2, 6, 8, 9, 11, 12	.97	.02	1.00	.04	$\chi^2(9, N = 102) = 9.32, p = .41$	-
US Student	English	.95	.07	.53	.07	$\chi^2(54, N = 473) = 160.50, p < .001$	4, 9, 10	.98	.05	.80	.05	$\chi^2(27, N = 473) = 55.65, p = .001$	-
US Adult	English	.57	.23	.78	.09	$\chi^2(54, N = 296) = 883.86, p < .001$	1, 2, 4, 7, 12	.86	.18	.94	.04	$\chi^2(14, N = 296) = 114.56, p < .05$	-

Note: Numbers correspond to their ordering in McCroskey and McCroskey (1988).

Table 4. Reliability scores.

Country	Initial composite α	Initial submeasure α							Refined measure α
		Public	Meeting	Group	Dyad	Stranger	Acquaintance	Friend	
England	.16	-.04	-.37	.12	-.04	-.02	.25	-.06	-.01
France	.09	.29	-.18	.06	-.27	.09	.21	.05	.05
Germany	.06	.25	-.27	.03	-.07	.03	.30	-.12	-.05
India	.01	.10	-.34	.05	-.07	-.01	.20	-.06	-.06
Iran	.77	.77	.60	.59	.64	.83	.72	.69	.85
Kenya	.74	.65	.55	.58	.29	.52	.52	.46	.71
Kyrgyzstan	.87	.67	.69	.70	.43	.73	.77	.79	.81
New Zealand	.95	.91	.93	.83	.67	.88	.86	.85	.94
Rwanda	.78	.47	.50	.46	.57	.48	.62	.52	.74
Turkey	.87	.65	.62	.62	.60	.77	.80	.80	.85
Uganda	.81	.65	.65	.40	.44	.70	.56	.49	.60
US Student	.06	.08	-.40	-.02	-.05	.12	.20	-.16	.09
US Adult	.96	.88	.90	.90	.76	.89	.89	.90	.95

Table 5. EFA.

	Number of Factors
England	5
France	4
Germany	4
India	5
Iran	3
Kenya	3
Kyrgyzstan	2
New Zealand	2
Rwanda	3
Turkey	2
Uganda	4
US Student	5
US Adult	2

these statistics are given not to suggest trimmed measures per population, but rather to unveil patterns of error and fit improvement. No patterns in item wording, language disseminated, culture, or context were apparent. **Table 4** indicates the reliability scores of the original measure, including the subscale alphas, and reliability scores for the remaining items in each measure. Note that reliability scores are not reported for the respecified measures because many subscales disappeared or were left with only one item.

As a supplemental analysis, exploratory factor analyses (EFA) were run on the measure in each country to identify if the dimensions of SPCC emerge within any of the samples. **Table 5** indicates the number of factors that emerged from running the EFAs in each sample. For the sake of brevity, the 13 EFA tables are not included, but can be provided by request to the corresponding author. None of the subscales by context or referent loaded as predicted in any of the samples.

Discussion

This study was designed to investigate the measurement invariance of the SPCC scale. The results indicate that the original measurement items failed to yield acceptable fit statistics in all 13 samples, showing poor evidence of construct validity ($GFI & CFI \geq .9$, $RMSEA \leq$

.06, and SRMR $\leq .08$). Although the retained items for France, Germany, and Iran have acceptable fit statistics, the purpose of CFA is to confirm proposed measurement models; therefore, these fit statistics should not be interpreted as acceptable refined fit. While the scale has been used among many different populations, the results of this 13 sample, multi-national study reveal that this scale's validity among non-US university students should be strongly reconsidered.

It was especially surprising that the SPCC did not yield good fit or even acceptable reliability within the US student sample, the sample it was originally designed to assess. Table 6 shows the inner-item correlation matrix of all 12 items among the student sample. The items did not correlate well, with most correlations falling between -.1 and .1. The reliability score of the US college student sample was very low at $\alpha = .06$. Reliability assesses the extent to which a measure can yield consistent results across groups (Patten & Newhart, 2017). As such, the inference from the reliability score yielded within the US sample is that the measure would not work well within other samples, which is consistent with the validity and reliability analysis among other samples. This calls into question how many studies have been unpublished because of poor fit statistics or low reliability scores yielded for the SPCC. As McEwan, Carpenter, and Westerman (2018) pointed out in their essay on the importance of replication, the tendency to publish only strong results obscures our understanding of constructs, which is one of many reasons why the field of communication is currently in need of replication and verification of assumptions. The low reliability score and poor validity data within the US student sample also supports the replication work of Violanti, Kelly, Garland, and Christen (2018), who found evidence that measures designed to assess Generation X students may no longer be valid among Millennial and Generation Z students, who have grown up in a vastly different political, economic, social, and communication landscape.

It is noteworthy that when analyzing the reliability scores of the subscales, the only submeasure that did not yield a negative reliability score within at least one sample was the acquaintance submeasure. This means the acquaintance submeasure was the only submeasure that did not have a negative inter-item correlation matrix within at least one country. Comparing this to the CFA analyses in Table 3, items in the acquaintance submeasure were the most common to cause statistically significant residual error. In short, the evidence from both of these analyses indicate that the items composing the acquaintance submeasure did not behave the same as the other submeasure items across samples. As all items are worded the same within the SPCC except for the changes of referent and context, this is not a result of unique wording. Instead, this indicates that communication with an acquaintance may be the phenomenon that has stayed most consistent across generations and national cultures.

The results of this study should lead us to rethink our understanding of how SPCC is conceptualized and differs in non-US college/university student samples. While the psychological construct of SPCC likely holds across cultures, the way it is assessed does not. This cross-cultural disparity in measuring the construct could be related to the lexical choices of the scale and how it is understood among different national cultures. The instruction of the scale asks the respondents to indicate the percentage of the times they would choose to communicate in specific situations. In some national cultures choosing to communicate could be equal to communication competence; in others, based on perception of politeness, people may refuse to begin communication even though they

**Table 6.** US student inter-item correlation matrix.

	SPCC1	SPCC2	SPCC3	SPCC4	SPCC5	SPCC6	SPCC7	SPCC8	SPCC9	SPCC10	SPCC11	SPCC12
SPCC1	1.00	0.13	0.36	0.00	0.01	-0.05	0.00	0.01	-0.05	-0.01	-0.05	0.02
SPCC2	0.13	1.00	0.07	0.05	0.02	0.07	0.02	0.02	-0.01	0.01	-0.06	0.00
SPCC3	0.36	0.07	1.00	-0.13	-0.18	-0.04	0.01	0.23	-0.05	-0.08	0.02	0.14
SPCC4	0.00	0.05	-0.13	1.00	0.09	-0.11	0.00	-0.09	0.05	0.16	-0.11	-0.01
SPCC5	0.01	0.02	-0.18	0.09	1.00	0.10	-0.07	-0.21	0.17	0.04	-0.01	0.01
SPCC6	-0.05	0.07	-0.04	-0.11	0.10	1.00	0.03	-0.08	0.11	-0.20	-0.01	-0.01
SPCC7	0.00	0.02	0.01	0.00	-0.07	0.03	1.00	-0.08	0.08	0.01	0.09	0.07
SPCC8	0.01	0.02	0.23	-0.09	-0.21	-0.08	-0.08	1.00	-0.06	0.11	-0.05	0.05
SPCC9	-0.05	-0.01	-0.05	0.05	0.17	0.11	0.08	-0.06	1.00	-0.11	0.03	0.18
SPCC10	-0.01	0.01	-0.08	0.16	0.04	-0.20	0.01	0.11	-0.11	1.00	-0.01	-0.11
SPCC11	-0.05	-0.06	0.02	-0.11	-0.01	-0.01	0.09	-0.05	0.03	-0.01	1.00	-0.01
SPCC12	0.02	0.00	0.14	-0.01	0.01	-0.01	0.07	0.05	0.18	-0.11	-0.01	1.00



find themselves totally capable of doing it. For example, Croucher et al. (2016) showed there is a negative correlation between WTC and SPCC among the ethnic Chinese in Singapore. As such, arguments that non-US cultures (such as Asian) have lower levels of SPCC than US-Americans (e.g., Dilbeck et al., 2009; Zarrinabadi, 2012) need to be reconsidered. Instead, communication studies should focus on finding ways of measurement to minimize cultural discrepancies in understanding scales. Development in communication technology has provided a unique chance to access samples from diverse populations and maximize cross-cultural equity of measurement.

It is possible the SPCC scale would have yielded better fit statistics if this study were conducted in the 1990s. When the measure was developed in 1988, the prevalence of computer-mediated communication could not have been predicted, which is why the items in this measure are limited to only verbal communication scenarios. Future iterations of the measure need to be developed so all communication channels are included. However, researchers should not develop context-specific items (e.g., competence communicating through email, text, Myspace, Facebook, Instagram, and others) because adding contexts puts an expiration date on the validity of measures as technology advances (Autman & Kelly, 2017). Researchers developing future iterations of this measure, and other measures, should also be certain to have ample sample sizes. When conducting a CFA, it is recommended that a sample include at least 200 participants so that personal-level effects can be detected (Byrne, 2016). This study was limited in that it was impossible to acquire 200 participants from France, Iran, Kenya, Kyrgyzstan, Rwanda, Turkey, or Uganda.

The study was also limited in that it was not possible to collect separate adult and college student samples from the non-US countries surveyed. Because the SPCC scale was developed for college/university students, it is possible the measure would have worked better among college student samples in each culture. In fact, among the Indian participants, who were quite young, with an average age of 21.3 ($SD = 1.92$), only one item exhibited signs of internal consistency issues. However, this must be weighed against the results of the similarly young Kyrgyzstan sample with a mean age of 18.4 ($SD = 8.30$), where a third of the items yielded internal consistency issues.

To further improve validity, it is important to clarify the theoretical aspects of constructs. Such clarification should go beyond conceptualization, to synthesizing various conceptualizations into a solid framework (MacKenzie, 2003). This will ease the process of “faithful measurement,” facilitate the process of relating constructs to measures, and increase the credibility of hypotheses (MacKenzie, 2003). Reviewing emerging trends in social science to deal with the reliability-validity dilemma, Fendler (2016) identified different trends in translational sciences: a shift from significance to replicability; a move from inference to big data; and the increasing importance of consequential validity. Regarding the future of communication measures and validity, a shift to bigger data sets and including different social, gender, educational, and age groups in measurement designs instead of only using students samples, will go a long way in addressing potential validity concerns.

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