



Short Communication

The single-item need to belong scale

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ABSTRACT

The need to belong is one of the most fundamental and well-researched human motives. Although a valid 10-item need to belong scale (NTB) is now readily available, many research settings may not afford researchers the luxury of including it, despite its potential relevance to a variety of research questions. The current research constructed and validated a single-item measure that could overcome this limitation. Three studies examined the psychometric properties of a single-item need to belong scale (SIN-B). We examined the concurrent validity of the SIN-B with the NTB in a student sample (Studies 1 & 2), the test–retest reliability of the SIN-B across four months (Study 2), and the construct validity of the SIN-B in a diverse international sample (Study 3). Across all studies, the SIN-B showed good reliability and validity, supporting its use and utility in future research.

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1. Introduction

Belongingness is a fundamental human need. Consequently, research on the need to belong is extensive, and the key theoretical paper in this area (Baumeister & Leary, 1995) is one of the most cited in psychology (over 5000 citations in Google Scholar). According to Baumeister and Leary (1995, p. 522) the need to belong is a “strong desire to form and maintain enduring interpersonal attachments.” They contend that this need can account for much of the research on interpersonal behavior. However, researchers must be able to effectively measure the need to belong to adequately understand its relationship to past and future research. To meet this need, researchers constructed and validated the need to belong scale (NTB; Leary, Kelly, Cottrell, & Schreindorfer, 2013). Despite remaining unpublished, the scale has become widely used in a variety of countries and languages (Mellor, Stokes, Firth, Hayashi, & Cummins, 2008; Pickett, Gardner, & Knowles, 2004; Sanquiro, Oberle, & Chekroun, 2012). Nevertheless, because resources are scarce in longitudinal and experience-sampling studies—as well as mass-testing and field research settings—a ten-item measure may be impractical. Therefore, it is important for researchers to have a shorter alternative with similar psychometric properties.

Researchers often desire to measure multiple constructs with reliable, valid measures while not consuming excessive participant time or resources (Widaman, Little, Preacher, & Sawalani, 2011).

Consequently, researchers have developed and validated shorter versions of many important constructs, including the “Dark Triad” (Jonason & Webster, 2010; Webster & Jonason, 2013) and impulsivity and sensation seeking (Webster & Crysel, 2012). Although short measures provide a good alternative to longer scales, many research designs (e.g., longitudinal, field studies) do not allow researchers to include multi-item personality measures of all constructs relevant to their research question. One solution is measuring each construct with only a single item. Although single-item measurements are often criticized as being less psychometrically sound than multi-item measures, substantial evidence suggests that measuring a construct with a single item can be just as valid and reliable as using longer scales (Bergkvist & Rossiter, 2007; Dollinger & Malmquist, 2009; Gardner, Cummings, Dunham, & Pierce, 1998; Nagy, 2002; Wanous, Reichers, & Hudy, 1997). As a result, many single-item scales have emerged, including measures of self-esteem (Robins, Hendin, & Trzesniewski, 2001), the Big Five (Woods & Hampson, 2005), and job satisfaction (Wanous et al., 1997). In the current research, we validate a new single-item measure of belongingness—the single-item need to belong scale (SIN-B).

2. Study 1

In Study 1, our goal was to test the concurrent validity of the SIN-B with the NTB. To do this, we included the NTB in a questionnaire administered at the beginning of a semester to a large participant pool. We also examined the construct validity of the SIN-B and NTB with social desirability.

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Table 1
Descriptive statistics by study for the SIN-B and NTB.

Scale	N	Mean	SD
<i>Study 1</i>			
SIN-B	699	3.28	1.08
NTB	701	3.44	0.65
<i>Study 2^a</i>			
SIN-B	66	3.03	0.91
NTB	66	3.35	0.56
<i>Study 3</i>			
SIN-B	200	3.66	1.03
NTB	200	3.38	0.60

^a Note: Averaged across four time points.

2.1. Method

2.1.1. Participants

Participants were 701 undergraduates (61% women) at the University of Florida and were mostly European American (59%).

2.1.2. Measures

Participants completed the ten-item need to belong scale ($\alpha = .79$; Leary et al., 2013) on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) along with over 100 items from other measures unrelated to the current research. The questionnaire also included the 33-item Marlowe–Crowne Social Desirability Scale (SDS; $\alpha = .75$; Crowne & Marlowe, 1960), which measures people's likelihood of responding in ways desirable to others. Participants indicated whether each statement was true (1) or false (0). All reported results (in Studies 1–3) are based on the full ten-item scale; however, similar results emerged when considering a nine-item NTB with the SIN-B removed.

2.2. Results and discussion

2.2.1. Construct, content, and face validity

We first examined the data in an effort to determine which item best represents the construct as a whole. Specifically, we examined the average inter-item correlations between each of the ten items, and the correlations between each item and the full NTB. One item outperformed the other nine across both criteria: “I have a strong need to belong.” We therefore chose this item as the new single-item need to belong scale (SIN-B). The average correlation between the SIN-B and the other nine NTB items was .38 and ranged from .24 to .51. In contrast, the mean inter-item correlation between the other items was .27 and ranged from .07 to .53. The correlation between the SIN-B and NTB was .75. The average correlation between the remaining nine items and the NTB was .57 and ranged from .50 to .70. In sum, the SIN-B showed superior construct, content, and face validity, independent of and in relation to the other nine NTB items.

2.2.2. Convergent validity

The two measures also demonstrated similar relationships with the SDS (SIN-B: $r = -.14$, $p < .01$; NTB: $r = -.17$, $p < .01$). In all, Study 1's findings suggest strong convergence between the SIN-B and NTB; these measures correlated highly with each other and similarly related to the SDS. Table 1 shows descriptive statistics for all scales.

3. Study 2

Study 1 provided preliminary evidence of the SIN-B's concurrent validity with the full NTB. It also provided initial support for the discriminant validity of the SIN-B. In Study 2, we sought to

Table 2
Study 2 temporal correlations.

	SIN-B	NTB
Times 1→2	.74**	.84**
Times 2→3	.49**	.68**
Times 3→4	.51**	.81**
Times 1→3	.45**	.65**
Times 2→4	.51**	.74**
Times 1→2	.61**	.62**

Note: SIN-B: Single-Item Need to Belong Scale. NTB: Need to Belong Scale.

** $p < .01$.

extend these findings by examining the test–retest reliability of the SIN-B and comparing it to the NTB.

3.1. Method

3.1.1. Participants

Participants were 66 undergraduates (67% women) at the University of Florida who completed items for at least one of four time points. The majority of the sample was European American (61%).

3.1.2. Measures

We administered a questionnaire to participants at four time points each approximately a month apart. Study 2 used the same measures as Study 1. We measured need to belong ($M_x = .76$) and social desirability ($M_x = .80$; Table 1).

3.2. Results and discussion

3.2.1. Test–retest reliability and stability

To measure test–retest reliability for the SIN-B, we used Heise's (1969) Equation 9: $r_{xx} = (r_{12}r_{23})/r_{13}$. This procedure allows for an estimate of test–retest reliability that separates true change from measurement error in a single-item. Essentially, it estimates the reliability of a single-item scale based on its pattern of autocorrelations over three time points. Because we had four time points, we were able to compute this estimate twice (Times 1–3, Times 2–4). The mean reliability estimate for the SIN-B was .66. In addition, Cronbach's alpha across all four time points for the SIN-B was .84. See Table 2 for all temporal correlations.

3.2.2. Concurrent and construct validity

The mean correlation between the SIN-B and the NTB was .70 (Times 1–4: .73, .78, .63, and .66). After correcting for attenuation, the mean correlation between the SIN-B and NTB was .97. This suggests that the SIN-B explains most of the reliable variance in the NTB.

Table 3
Study 2 correlations with the SDS.

Time	SIN-B	NTB
1	-.02	-.10
2	-.14	-.06
3	.04	-.20
4	.00	-.08
All	-.03	-.11

Note: All values were nonsignificant. SDS: Marlowe–Crowne Social Desirability Scale. SIN-B: Single-Item Need to Belong Scale. NTB: Need to Belong Scale.

3.2.3. Convergent validity

Next, we assessed the convergent validity of the SIN-B and NTB with the SDS across all four time points. Both measures again showed similar mean correlations with the SDS (Table 3).

4. Study 3

Study 3 had three goals. First, we sought to examine the validity and reliability of the SIN-B and NTB, but with a non-student population. Second, we aimed to examine the construct validity of the SIN-B with other measures in the belongingness nomological network. We also sought to extend this network by examining additional relationships not previously considered.

4.1. Method

4.1.1. Participants

Participants were 200 people (50% men) aged 18–71 years ($M = 30.89$, $SD = 10.53$) who completed an online questionnaire. Participants came from 15 different countries, and possessed a wide range of education (48% bachelor's, 31% master's, 11% some college, 5% high school).

4.1.2. Measures

Study 3 used the same belongingness measures as Studies 1–2 (NTB: $\alpha = .68$; Table 1). We also measured variables relevant to the convergent and discriminant validity of the NTB including affect (positive affect: $\alpha = .88$; negative affect: $\alpha = .88$; Watson, Clark, & Tellegen, 1988), social anxiety ($\alpha = .85$; Leary, 1983), hurt feelings ($\alpha = .50$; Leary & Springer, 2001), affiliation ($\alpha = .92$; emotional support: $\alpha = .72$; attention: $\alpha = .81$; positive stimulation: $\alpha = .83$; social comparison: $\alpha = .72$; Hill, 1987), shyness ($\alpha = .79$; Cheek & Buss, 1981), sociability ($\alpha = .76$; Cheek & Buss, 1981), and self-esteem ($\alpha = .78$; Rosenberg, 1965). Finally, we measured variables not yet examined in relation to belongingness: internal locus of control ($\alpha = .78$; Levenson, 1973), need for consistency ($\alpha = .88$; Cialdini, Trost, & Newsom, 1995), and private ($\alpha = .69$) and public ($\alpha = .79$) self-consciousness (Scheier & Carver, 1985).

4.2. Results and discussion

The correlation between the SIN-B and NTB was .65. Additionally, a correlated vectors analysis (i.e., the relationship between

Table 4

Study 3 correlations and incremental validity tests.

	SIN-B	NTB	ΔR^2	$F(1, 197)$
Affiliation	.40**	.40**	.04	9.05**
Attention	.38**	.40**	.04	9.88**
Comparison	.30**	.34**	.03	7.86**
Emotional support	.34**	.39**	.05	11.75**
Hurt feelings	.21**	.42**	.13	31.88**
Locus of control	.12	.07	.00	0.03
Need for consistency	.38**	.45**	.07	18.18**
Negative affect	.04	.08	.00	0.95
Positive affect	.34**	.15*	.01	1.80
Private self-consciousness	.13	.12	.00	0.46
Public self-consciousness	.29**	.39**	.07	16.84**
Self-esteem	.07	-.07	.02	4.44*
Shyness	-.08	.10	.04	7.92**
Social anxiety	-.07	.08	.03	5.78*
Sociability	.32**	.23**	.00	0.17
Stimulation	.33**	.28**	.01	1.52

Notes: SIN-B: Single-Item Need to Belong Scale. NTB: Need to Belong Scale. ΔR^2 : Change in R^2 between a model with the SIN-B as the sole predictor and a model with the SIN-B and NTB as simultaneous predictors.

* $p < .05$.
** $p < .01$.

the pattern of correlations produced by the NTB and the SIN-B) suggested that the two measures showed similar correlations with all other measures, $r = .77$ (Table 4). We also examined the incremental validity of the SIN-B versus the NTB. Specifically, we ran two regressions, one with only the SIN-B predicting each construct, and one with the SIN-B and NTB predicting the outcome, and tested the significance of the change in R^2 . The SIN-B sufficiently explained the variance in some, but not all, of the examined constructs (Table 4).

5. General discussion

Belongingness is among the most fundamental human motives (Baumeister & Leary, 1995), and is a popular research topic in a variety of academic disciplines. Nevertheless, many studies cannot afford to include a ten-item measure. To remedy this problem, the current research developed and validated a single-item need to belong scale (SIN-B). Across three studies, the SIN-B showed acceptable concurrent validity with the longer NTB. Additionally, the SIN-B showed good reliability and explained most of the variance of the NTB. In an international sample, the SIN-B also showed similar relationships with several variables in the belongingness nomological network. Finally, both measures similarly related to several constructs not previously examined in the belongingness literature. Although the NTB often explained variance in other measures beyond that of the SIN-B, the SIN-B provides a suitable alternative when researchers cannot accommodate the longer NTB.

Our findings provide guidance for future theoretical and empirical research on belongingness. Specifically, we tested relationships not previously examined in belongingness research. Internal locus of control and private self-consciousness were unrelated to the need to belong, while need for consistency and public self-consciousness strongly positively related to both the NTB and SIN-B. This provides a bridge between the need to belong and need for consistency literatures, and suggests that people with a strong need to belong are also aware of how others view them and desire for that view to be of a consistent, predictable person. Future research should continue to investigate these relationships in controlled, laboratory environments.

Across three studies, we examined almost 1000 people, both students and non-students, using both online and offline administrations of the SIN-B. This provides broad support for the reliability and validity of the SIN-B and its relationships with other variables. Future research, however, should continue to examine the SIN-B's nomological network and its applications to research settings.

6. Conclusion

Three studies supported the use of the SIN-B as a measure of the need to belong. The measure showed good face and content validity, concurrent validity with the NTB, predictive validity, and convergent and discriminant validity with other measures in the belongingness nomological network as well as measures not before examined in belongingness research. Additionally, the SIN-B has adequate test-retest and internal reliability. Overall, the SIN-B provides a valid, reliable addition to any study regardless of the design or limited resources involved.

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