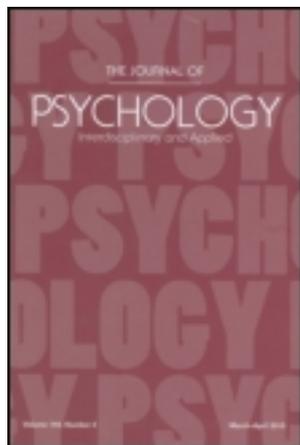


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### Integrative Self-Knowledge Scale: Correlations and Incremental Validity of a Cross-Cultural Measure Developed in Iran and the United States

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# Integrative Self-Knowledge Scale: Correlations and Incremental Validity of a Cross-Cultural Measure Developed in Iran and the United States

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**ABSTRACT.** The authors used Iranian ( $N = 723$ ) and American ( $N = 900$ ) samples to develop an Integrative Self-Knowledge Scale for measuring a temporally integrated understanding of processes within the self. They administered this new instrument, the Mindfulness Scale (K. W. Brown & R. M. Ryan, 2003), the Reflective and Experiential Self-Knowledge Scales (N. Ghorbani, M. N. Bing, P. J. Watson, H. R. Davison, & D. L. Lebreton, 2003), and additional sample-specific measures to 3 separate groups of university students in each society. The Integrative Self-Knowledge Scale displayed internal reliability and measurement equivalence, along with convergent, criterion, discriminant, and incremental validity. This new instrument may be useful in promoting cross-cultural research in positive psychology.

**Keywords:** Iran, mindfulness, positive psychology, self-knowledge, United States

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SELF-KNOWLEDGE SERVES AS both a challenge and an opportunity for the research and practice of contemporary psychology. Scholarly discussions about self-knowledge “make it clear how terribly complex the human subject is” (Midgley, 1999, p. 468). That complexity helps explain why “the epistemological quagmire inherent in the empirical assessment of knowledge about oneself has always posed a problem” (Devos & Banaji, 2003, p. 170). Understanding

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that complexity and solving that problem nevertheless remain critical because self-knowledge is not “an optional subject like Russian or trigonometry which we can drop if we find it hard. Failure to know ourselves can be a serious moral fault” (Midgley, p. 468). Self-knowledge also seems essential to the project of a positive psychology because a “psychology that can promote the realization of potentials and the development of human strengths must focus heavily on self-reflective capacities” (Caprara & Cervone, 2003, p. 67). The reasons for this seem clear: “Recognizing one’s own patterns of stable behavioral variability across time can empower individuals by allowing them to recognize the things they may be doing—or could be doing differently—to lead to desired outcomes” (Mischel & Mendoza-Denton, 2003, p. 251).

Noteworthy among the opportunities associated with self-knowledge is its relevance to human flourishing across cultures. A near global affirmation of self-knowledge was emphasized in the literature review of a recent study that illustrated its cross-cultural importance in Iran and the United States (Ghorbani, Watson, Bing, Davison, & LeBreton, 2003). As with many other societies, Iranian and American cultural traditions identify self-knowledge as an ideal. The 13th-century Persian mystic Afdal al-Dīn Kāshānī, for example, wrote, “O soul, intellect is nothing but to find and see self. Any soul that has not found self is dead, and seeing self is endless life” (as quoted in Chittick, 2001, p. 109). Similarly, in the 3rd century, the philosopher Plotinus echoed the general Western acclamation of self-knowledge when he argued, “Knowing oneself, then, is to know oneself no longer as a human being but as someone who has become wholly other—someone who has torn himself away upward and is carrying along with him only the best part of his soul” (as quoted in Hadot, 2002, p. 165). Therefore, a greater understanding of self-knowledge may represent an opportunity of positive psychology to promote greater understanding across cultures.

Ghorbani, Watson, et al. (2003) obtained empirical confirmation of the cross-cultural benefits of self-knowledge through the development of two scales that they administered to Iranian and American samples. The underlying assumption of these instruments was that knowledge about the self must be organized in time. The Reflective Self-Knowledge Scale operationalized efforts of the self to make sense of past experience and was apparent in such self-reports as, “I find it important to occasionally consider how my thinking, feeling, and behavior in a specific situation relate to my character traits.” The Experiential Self-Knowledge Scale instead measured attempts of the self to understand ongoing experience in the present. Illustrative of experiential self-knowledge was the claim, “In almost all situations, I am frequently noticing how the spontaneous reactions of my mind determine how I behave.”

The Experiential and Reflective Self-Knowledge Scales parallel other psychometric instruments in measuring two broad types of self-reflective tendencies involving “(1) an ongoing sense of self-awareness and (2) stable mental representations”

(Robins, Norem, & Cheek, 1999, p. 447), respectively. Experiential self-knowledge is similar, for instance, to the Mindful Attention Awareness Scale in recording the “state of being attentive to and aware of what is taking place in the present” (Brown & Ryan, 2003, p. 822). Instead, reflective self-knowledge corresponds to such other well-established indexes of more stable self-representations as private self-consciousness (Fenigstein, Scheier, & Buss, 1975) and the “intellectual self-attentiveness” operationalized by the Reflection Scale (Trapnell & Campbell, 1999, p. 287).

Numerous studies have documented the validity of these two self-knowledge instruments. Expected correlations have appeared with diverse mental health constructs in student and nonstudent samples, including academic performance in an American university classroom, intellectual interests of high school students and teachers of philosophy in Iran, religious motivations of Iranian Muslims, and number of promotions earned by Iranian managers (Ghorbani, Ghramaleki, & Watson, 2005a; Ghorbani & Watson, 2005, 2006; Ghorbani, Watson, et al., 2003; Watson et al., 2002).

### *The Present Study*

Construction of the Experiential and Reflective Self-Knowledge Scales occurred as an explicit attempt to differentiate between present- and past-oriented capacities for self-insight. Potential statements of self-knowledge within one dimension of time were eliminated if they loaded on a factor largely defined by items associated with the other. Such temporally distinct instruments may be useful for specific research purposes, but in daily life, a self presumably does not maintain clear boundaries between the two and must instead integrate past and present experience to “empower” activities that lead to “desired outcomes” (Mischel & Mendoza-Denton, 2003, p. 251). Ghorbani and Watson (2006) suggested the importance of such integration in their multiple regression data in which the two self-knowledge scales joined together to explain independent sources of variance in psychological functioning. Scales that segregate present and past self-experience may consequently underestimate the mental health advantages of a temporally integrated self-knowledge.

In the present investigation, we sought to develop a cross-culturally relevant integrative self-knowledge measure for use in Iran and the United States. We defined *integrative self-knowledge* as an adaptive and empowering attempt of the self to understand its experience across time to achieve desired outcomes. Implicit in this definition was the assumption that a self tries to maintain a coherent life story by attempting to integrate the present into a seamless narrative that moves from the past toward a hoped-for future (e.g., McAdams, 1999). Therefore, we combined statements of both present- and past-oriented self-knowledge without requiring that they load on temporally distinct factors. We also examined some statements expressing an orientation of the self toward the future.

In the present study, we also addressed a potential methodological problem. Brown and Ryan (2003) reviewed previous arguments and supplied evidence supporting the claim that individuals offer more insightful and thus more valid self-reports of the absence rather than the presence of self-awareness. In the 13-item Reflective Self-Knowledge Scale, only 3 statements are expressed in a negative direction, and none of the 13 Experiential Self-Knowledge items are scored in this manner. Therefore, we made an effort to ensure that the Integrative Self-Knowledge Scale included a substantial number of reverse-scored items.

We assessed the validity of this Integrative Self-Knowledge Scale in several ways. Convergent validity would be established if the new instrument correlated positively with other indexes of self-reflective capacities. These would include the Mindfulness Scale (Brown & Ryan, 2003), Private Self-Consciousness Scale (Fenigstein et al., 1975), Reflection Scale (Trapnell & Campbell, 1999), and Experiential and Reflective Self-Knowledge Scales (Ghorbani, Watson, et al., 2003). Criterion validity would be established with evidence of associations between individuals' scores on the Integrative Self-Knowledge Scale and their adaptive self-functioning. Discriminant validity would be confirmed if linkages failed to appear with public self-consciousness (Fenigstein et al.) and self-monitoring (Snyder & Gangestad, 1986). Integrative self-knowledge focuses on knowledge of processes within the self, whereas public self-consciousness and self-monitoring record tendencies to evaluate the self relative to interactions with others. The two types of measures, therefore, should be distinct (Brown & Ryan, 2003). Last, we used regression procedures to evaluate incremental validity. We administered the Integrative Self-Knowledge Scale, Mindfulness Scale, and Experiential and Reflective Self-Knowledge Scales to three separate groups of Iranians and Americans, who also responded to additional sample-specific instruments. The empirical question we asked was whether integrative self-knowledge would account for variability in sample-specific measures beyond that already explained by the other self-reflective capacities, all of which assessed present- and past-oriented processes in three independent measures rather than in a single integrated instrument. Again, one of our assumptions was that temporally distinct measures might underestimate the mental health benefits of an integrated form of self-knowledge. Evidence of incremental validity would support that possibility and would be established if integrative self-knowledge explained significant variance on Step 2 of multiple regressions after the other three self-insight measures had been entered on Step 1.

In summary, we sought to develop a scale for measuring a temporally integrated form of self-knowledge that seeks to empower "desired outcomes" (Mischel & Mendoza-Denton, 2003, p. 251). As a feature of positive psychology, research into self-knowledge has promise in promoting an understanding of psychological well-being across cultures. We attempted to illustrate that cross-cultural potential by devising an instrument for use in Iran and the United States. We assessed the convergent, criterion, discriminant, and incremental validities of this new Integrative Self-Knowledge Scale.

## Method

### *Participants*

Participants were undergraduate students from universities in Iran and the Southeastern United States. We examined three separate samples at each institution, consisting of 226 men and 497 women in Iran and 416 men and 484 women in the United States. Of the American participants, 64% were White, 30% were Black, and 6% belonged to various other ethnic groups. Sample 1 included 256 Iranian participants (73 men, 183 women;  $M$  age = 20.3 years,  $SD$  = 3.1 years) and 256 U.S. participants (162 men, 94 women;  $M$  age = 20.1 years,  $SD$  = 5.1 years). Sample 2 included 239 Iranian participants (64 men, 175 women;  $M$  age = 19.9 years,  $SD$  = 2.0 years) and 298 U.S. participants (95 men, 203 women;  $M$  age = 18.7 years,  $SD$  = 2.9 years). Sample 3 included 228 Iranian participants (89 men, 139 women;  $M$  age = 21.1 years,  $SD$  = 3.1 years) and 346 U.S. participants (159 men, 187 women;  $M$  age = 19.6 years,  $SD$  = 3.0 years).

### *Measures*

We included all measures in a single questionnaire booklet that first presented the Experiential and Reflective Knowledge Scales, followed by 30 new potential statements of integrative self-knowledge, the 15-item Mindfulness Scale (Brown & Ryan, 2003), and the sample-specific measures administered in each of the three separate procedures. Our development of the integrative self-knowledge items was based on the formal definition of integrative self-knowledge, with items involving past-, present-, and future-oriented forms of self-understanding. Twelve items expressed the absence of self-knowledge and thus were reverse-scored.

All self-knowledge items were developed initially in Persian and English. Translation of all other instruments occurred in preparation for the present or previous projects. All English translations were back-translated into Persian by an individual not previously involved in the translation process. Meaningful discrepancies between original and back-translated items were discussed and resolved as necessary through revision of the Persian translation.

In the first group of participants, sample-specific measures included the 10-item Rosenberg (1989) Self-Esteem Scale, the 9-item Anxiety Scale and the 14-item Depression Scale of Costello and Comrey (1967), the 14-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), the 17-item Impaired Control over Mental Activity measure of obsessiveness (Sanavio, 1988), and the 5-item Subjective Well-Being Scale (Deiner, Emmons, Larsen, & Griffith, 1985). Persian versions of all but the last instrument have been used previously with Iranian samples (e.g., Ghorbani, Bing, Watson, Davison, & LeBreton, 2003; Ghorbani, Bing, Watson, Davison, & Mack, 2002; Ghorbani, Watson, Krauss, Davison, & Bing, 2004).

Included in the questionnaire booklet of the second sample were the 7-item Autonomy, 6-item Competency, and 8-item Relatedness measures from the Basic Psychological Need Satisfaction Scale (Deci & Ryan, 2000); 7-item Subjective Vitality Scale (Ryan & Frederick, 1997); 5-item Awareness of Self and the 5-item Perceived Choice measures from the Self-Determination Scale (Sheldon, Ryan, & Reis, 1996); and the 28-item Global Constructive Thinking Scale (Epstein, 1998). Basic Psychological Need Satisfaction and Global Constructive Thinking have been used in previous Iranian studies (Ghorbani, Ghramaleki, & Watson, 2005b; Ghorbani & Watson, 2006).

Participants in the third sample responded to the 12-item Rumination Scale and 12-item Reflection Scale (Trapnell & Campbell, 1999); the 6-item Reappraisal and 4-item Suppression measures from the Emotion Regulation Scale (Gross & John, 2003); the 6-item Social Anxiety, 10-item Private Self-Consciousness, and 7-item Public Self-Consciousness subscales from the Fenigstein et al. (1975) Self-Consciousness Scale; and the 18-item Self-Monitoring Scale (Snyder & Gangestad, 1988). The Self-Consciousness Scales have been administered to previous Iranian samples (Ghorbani et al., 2002; Watson et al., 2002).

Responding to all Self-Knowledge items occurred along a 0 (*largely untrue*) to 4 (*largely true*) Likert-type scale. The Self-Monitoring Scale used true–false response options, whereas the Impaired Control over Mental Activity measure used a Likert-type scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). All other measures used a Likert-type scale with values ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). As in previous Iranian and American studies, internal reliabilities were examined prior to computing final scale scores, and items displaying negative item-to-total correlations in one or both samples were eliminated. This procedure resulted in the removal of one perceived stress item and four constructive thinking items. We scored all instruments in terms of average responses per item. With regard to criterion validity, we expected that integrative self-knowledge would correlate positively with all measures of adjustment, including self-esteem, subjective well-being, the three basic need satisfaction measures, subjective vitality, the two self-determination scales, constructive thinking, and reappraisal. We also expected negative correlations with indexes of maladjustment, including anxiety, depression, perceived stress, impaired control over mental activities, rumination, suppression, and social anxiety.

### *Procedure*

Participation in this project was voluntary, and all responses were anonymous. Procedures conformed to ethical standards for conducting research in each institution. Groups of varying sizes responded to questionnaire booklets in classroom settings.

### *Data Analyses*

Data analyses occurred in three basic steps. The first step involved our identification of statements to be included in the Integrative Self-Knowledge Scale. The assumption, again, was that integrative self-knowledge would have beneficial psychological implications. A preliminary task, therefore, involved examining how each item correlated with the other psychological scales across all three studies, but especially in terms of their relations with the basic mental health measures of self-esteem, depression, anxiety, and perceived stress in the first study. Statements displaying the most robust and consistent associations with mental health in both societies were chosen for further examination. For each society separately, we joined all potential items from the three samples in a single data set that we then used in a series of exploratory factor analyses. The purpose of these exploratory factor analyses was to identify a scale that would display as similar a structure as possible across the Iranian and American samples in eventual confirmatory factor analysis (CFA) and structural equation modeling procedures (Bobko, 1990; Hinkin, 1998).

Completion of the first step of the data analysis procedures occurred once a factor structure in one society or the other seemed to offer a useful model for testing measurement equivalence across cultures. In the second step, CFA procedures examined the adequacy of model fit in each society separately, and then we used structural equation modeling to assess measurement equivalence across the two countries.

An examination of evidence relevant to validity was the third and final step of the procedure. Correlations among all measures conformed to our general expectations. However, with the exception of associations among the three self-knowledge measures and mindfulness, we do not include these findings in this article but focus instead more exclusively on integrative self-knowledge. In examinations of incremental validity, we entered mindfulness and experiential and reflective self-knowledge simultaneously into Step 1 of multiple regressions designed to predict each sample-specific measure and entered integrative self-knowledge in Step 2. Presentation of these data was simplified by reviewing only the  $\Delta R^2$  and beta values of the second step.

### **Results**

We chose 12 items defining a three-factor model in the American sample for testing measurement equivalence across cultures. This structure appeared using a principal components analysis with a varimax rotation; however, we obtained virtually identical results with different extraction (e.g., maximum likelihood, principal axis factoring) and rotation (e.g., oblique) methods. The three factors with eigenvalues above 1.0 explained approximately 49% of the variance. Maximal loadings of all items on a factor were greater than .45 with minimal cross-loadings.

CFA results suggested that the three-factor solution fit the data obtained in both Iran and the United States. Specifically, the root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), and comparative fit index (CFI) statistics were .06, .96, and .92, respectively, for the Iranians. The RMSEA, GFI, and CFI fit statistics for the Americans were .03, .98, and .97, respectively. These indexes met or exceeded the cutoff values suggested in the literature as indicative of an adequate or good-fitting model (Hoyle, 1995; Raykov & Marcoulides, 2000). Furthermore, all factor loadings were significantly related to the construct that they were designed to measure ( $p < .05$ ) and were in the expected direction. As Table 1 shows, the three statements of the first factor expressed past- and future-oriented self-experience, whereas the four items of the second factor were present-oriented. Present- and past-oriented statements combined to define the five loadings on the third factor. Nine of the 12 statements were reverse-scored.

We next evaluated the measurement invariance of this instrument. Using structural equation modeling techniques, we tested invariance on the form of the model (i.e., testing the model form equivalency across countries), the factor loadings (i.e., factor loadings were held constant across cultures), the errors of measurement, and the correlations between latent constructs. Across all four models, the observed data suggested that the measure was equivalent across cultures. For the form invariance model (the baseline model), the fit indexes were indicative of good fit: RMSEA = .047, GFI = .981, and CFI = .947. When the factor loadings were held constant, the fit indexes again indicated good fit: RMSEA = .046, GFI = .979, and CFI = .942. When the factor loadings and the errors of measurement were held constant, the fit indexes once more were indicative of good fit: RMSEA = .048, GFI = .975, and CFI = .932. Last, in the model in which factor loadings, errors of measurement, and correlations between the latent constructs were held constant, the fit indexes suggested good fit: RMSEA = .05, GFI = .976, and CFI = .932.

In addition to examining the overall model fit, it was important for us to compare the degree of change between the form invariance model (the baseline model) and the remaining models. Two methods are available for comparing degree of change between models: (a) examining the normal theory weighted least squares chi-square and (b) examining the degree of change between fit indexes. Due to the sensitivity of chi-square tests to relatively large sample sizes, we evaluated the degree of measurement equivalence between models by focusing on changes in the goodness-of-fit indexes. In most instances, the fit values presented above all changed less than .01, with the exception of the CFI statistics associated with the last two models. In short, at least some evidence suggested the existence of measurement equivalence between the two cultures.

We next used a preliminary set of correlational analyses to examine the implications of the three integrative self-knowledge factors. Variations appeared in the relations of these factors with other constructs, but differences tended to be minor and inconsistent across samples and were not conceptually noteworthy. Our report of the statistical results, therefore, focuses on data obtained for the full scale.

TABLE 1. Factor Loadings for Integrative Self-Knowledge Items in Iran and the United States

Item	Iranian factors			American factors		
	1	2	3	1	2	3
By thinking deeply about myself, I can discover what I really want in life and how I might get it.	.50			.61		
What I have learned about myself in the past has helped me to respond better to difficult situations.	.52			.56		
If I need to, I can reflect about myself and clearly understand the feelings and attitudes behind my past behaviors.	.58			.60		
While I am in the middle of a personal problem, I get so involved that I just can't at the same time rise above the situation and clearly examine what I am thinking and feeling. (R)		.80			.67	
Most of the time, I get so involved in what is going on that I really can't see how I am responding to a situation. (R)		.81			.72	
Often, I am unaware of my thoughts and feelings as they are happening, and only later get some idea about what I may really have been experiencing. (R)		.69			.57	
When I get upset, I immediately react without any clear awareness of what I am doing. (R)		.74			.71	
Often my feelings about an experience are so complex and contradictory that I don't even try to understand them as they are going on. (R)			.51			.62
During a demanding experience, I never even try to understand the thoughts and feelings that are flowing through me because it is all too confusing. (R)			.65			.69
In some situations, I almost never can understand why I have behaved in particular ways, so I usually don't even try. (R)			.67			.72
Spending time to know and understand my thoughts and feelings has almost never helped me to know myself better. (R)			.61			.58
Anytime I try to analyze my contributions to a problem, I get confused. (R)			.74			.54

Note. All loadings were significant at  $p < .05$ . For the Iranian sample, fit statistics were root mean square error of approximation (RMSEA) = .06, goodness-of-fit index (GFI) = .96, and comparative fit index (CFI) = .92. For the American sample, fit indexes were RMSEA = .03, GFI = .98, and CFI = .97. (R) at the end of a statement indicates that the item was reverse scored.

In the first Iranian sample, integrative self-knowledge ( $\alpha = .82$ ,  $M = 2.41$ ,  $SD = 0.69$ ) correlated with reflective self-knowledge ( $r = .42$ ,  $\alpha = .76$ ,  $M = 3.04$ ,  $SD = 0.56$ ), experiential self-knowledge ( $r = .30$ ,  $\alpha = .87$ ,  $M = 2.92$ ,  $SD = 0.66$ ), and mindfulness ( $r = .41$ ,  $\alpha = .82$ ,  $M = 2.40$ ,  $SD = 0.70$ ; all  $ps < .001$ ). Similarly, in the American sample, the new Integrative Self-Knowledge Scale ( $\alpha = .78$ ,  $M = 2.45$ ,  $SD = 0.62$ ) was positively related to reflective self-knowledge ( $r = .41$ ,  $\alpha = .80$ ,  $M = 2.77$ ,  $SD = 0.58$ ), experiential self-knowledge ( $r = .38$ ,  $\alpha = .82$ ,  $M = 2.65$ ,  $SD = 0.56$ ), and mindfulness ( $r = .31$ ,  $\alpha = .82$ ,  $M = 2.14$ ,  $SD = 0.64$ ; all  $ps < .001$ ). Table 2 shows that integrative self-knowledge correlated as hypothesized with all additional measures of the first sample in both societies. Incremental validity was observed as well with all but the Subjective Well-Being Scale in the American sample.

Similar evidence supporting the new scale was observed in the second sample. With the Iranian participants, integrative self-knowledge ( $\alpha = .81$ ,  $M = 2.48$ ,  $SD = 0.67$ ) correlated with reflective self-knowledge ( $r = .42$ ,  $\alpha = .76$ ,  $M = 3.04$ ,  $SD = 0.57$ ), experiential self-knowledge ( $r = .34$ ,  $\alpha = .85$ ,  $M = 2.84$ ,  $SD = 0.63$ ), and mindfulness ( $r = .43$ ,  $\alpha = .82$ ,  $M = 2.43$ ,  $SD = 0.69$ ; all  $ps < .001$ ). In the American sample, integrative self-knowledge ( $\alpha = .78$ ,  $M = 2.55$ ,  $SD = 0.59$ ) correlated with reflective self-knowledge ( $\alpha = .77$ ,  $M = 2.74$ ,  $SD = 0.55$ ), experiential self-knowledge ( $\alpha = .81$ ,  $M = 2.63$ ,  $SD = 0.53$ ), and mindfulness ( $\alpha = .82$ ,  $M = 2.12$ ,  $SD = 0.63$ ), with  $r$  values of .45, .43, and .32, respectively (all  $ps < .001$ ). Again, all correlations conformed to our expectations, and only the American multiple regression data for subjective vitality failed to document incremental validity (see Table 2).

Integrative self-knowledge ( $\alpha = .81$ ,  $M = 2.50$ ,  $SD = 0.63$ ) in the third Iranian sample correlated with reflective self-knowledge ( $\alpha = .73$ ,  $M = 3.05$ ,  $SD = 0.50$ ), experiential self-knowledge ( $\alpha = .84$ ,  $M = 2.80$ ,  $SD = 0.57$ ), and mindfulness ( $\alpha = .81$ ,  $M = 2.42$ ,  $SD = 0.63$ ), with  $r$  values of .45, .43, and .33, respectively (all  $ps < .001$ ). For the American participants, integrative self-knowledge ( $\alpha = .74$ ,  $M = 2.59$ ,  $SD = 0.62$ ) correlated with reflective self-knowledge ( $\alpha = .78$ ,  $M = 2.81$ ,  $SD = 0.57$ ), experiential self-knowledge ( $\alpha = .73$ ,  $M = 2.03$ ,  $SD = 0.87$ ), and mindfulness ( $\alpha = .82$ ,  $M = 2.13$ ,  $SD = 0.65$ ), with  $r$  values of .53, .47, and .36, respectively (all  $ps < .001$ ). As Table 2 shows, all predicted correlations achieved significance except for linkages with (a) the Reappraisal Scale in Iran and (b) rumination and suppression in the United States. The same basic pattern appeared with the incremental validity data except that the relation with private self-consciousness was also nonsignificant in the American sample. The failure to observe reliable relations with public self-consciousness and self-monitoring in both societies supported our hypotheses about discriminant validity.

## Discussion

Self-knowledge is an ideal of personal functioning across cultures (Ghorbani, Watson, et al., 2003) and a centrally important concern of positive psychology (Caprara & Cervone, 2003). An ability to measure this construct could, therefore,

TABLE 2. Correlations and Incremental Validity Analyses of Integrative Self-Knowledge Scale in Iran and the United States

Scale	Iran					United States						
	$\alpha$	<i>M</i>	<i>SD</i>	<i>r</i>	$\Delta R^2$	$\beta$	$\alpha$	<i>M</i>	<i>SD</i>	<i>r</i>	$\Delta R^2$	$\beta$
Sample 1 <sup>a</sup>												
Self-esteem	.81	2.58	0.72	.56***	.19***	.52***	.88	2.93	0.81	.37***	.08***	.32***
Anxiety	.82	2.00	0.83	-.55***	.24***	-.60***	.75	1.81	0.71	-.32***	.10***	-.36***
Depression	.93	1.34	0.86	-.44***	.09***	-.40***	.92	0.87	0.83	-.35***	.07***	-.30***
Perceived stress	.85	1.71	0.66	-.51***	.16***	-.48***	.80	1.77	0.54	-.38***	.11***	-.38***
Impaired control												
mental activities	.90	1.40	0.75	-.51***	.14***	-.45***	.89	1.15	0.69	-.34***	.09***	-.35***
Subjective well-being	.84	2.26	0.90	.29***	.04***	.24***	.85	2.47	0.93	.13*	.01	.12
Sample 2 <sup>b</sup>												
Autonomy	.78	2.52	0.80	.46***	.09***	.47***	.54	2.57	0.57	.30***	.04***	.23***
Competency	.68	2.42	0.75	.53***	.16***	.47***	.63	2.64	0.63	.38***	.04***	.24***
Relatedness	.67	2.67	0.67	.37***	.05***	.27***	.80	3.00	0.67	.26***	.03***	.20***
Subjective vitality	.84	2.43	0.89	.50***	.13***	.26***	.80	2.54	0.72	.22***	.01	.09
Awareness to self	.68	2.50	0.82	.37***	.05***	.42***	.77	2.64	0.93	.29***	.03***	.20***
Perceived choice	.83	2.60	0.87	.46***	.12***	.34***	.70	2.74	0.76	.20***	.01*	.14*
Global constructive thinking	.73	2.28	0.50	.49***	.18***	.51***	.75	2.30	0.45	.33***	.05***	.26***

Table continues



promote efforts to understand cross-cultural commonalities in psychological well-being. The present investigation revealed that the Integrative Self-Knowledge Scale could be useful in such research. Perhaps most important, this scale was developed not just in one culture and language but in two. We obtained evidence of internal reliability, measurement equivalence, and validity using one set of samples responding to Persian questionnaires the theocratic, Islamic context of Iran and another reading English the Western, liberal framework of the United States. Current events indicate that conflict can exist between Iranian and American perspectives, so the ability of a measure to function validly across such a divide may support its use in other cultures as well.

This new scale was integrative because it sought to operationalize an adaptive capacity to integrate past and present self-experience to obtain desired outcomes in the future. Statements within the scale describe a temporally general form of self-knowledge, and loadings on two of three factors demonstrated that items were in fact integrative and not reducible to clearly separate past, present, and future dimensions of self-experience. Full-scale correlations in both societies also confirmed the presumed mental health advantages of the construct. Specifically, integrative self-knowledge in both Iran and the United States was associated with greater self-esteem, subjective well-being and vitality, basic need satisfaction, self-determination, and constructive thinking. It also predicted lower levels of depression, anxiety, perceived stress, obsessiveness, and social anxiety. In Iran, inverse correlations also appeared with rumination and with the maladjusted suppression index of emotion regulation. In the United States, we found a positive relation with the more adaptive reappraisal strategy of emotion regulation. In short, all hypotheses relevant to criterion validity were upheld and usually in both societies.

Convergent validity was obvious as well. In all three studies and in both societies, integrative self-knowledge was associated with greater mindfulness, experiential self-knowledge, and reflective self-knowledge. In addition, this new scale correlated positively with reflection and private self-consciousness in both samples of the third study. Integrative self-knowledge, nevertheless, was not reducible to these other self-reflective capacities. In only one instance did any of these other scales explain more than 25% of the variance in integrative self-knowledge. More important, multiple regressions demonstrated that integrative self-knowledge was a significant predictor of other measures after controlling for mindfulness and the two other self-knowledge scales. Across both societies, 32 of the 38 relevant analyses yielded significant effects when integrative self-knowledge was entered on the second steps of these multiple regression procedures. Thus, we obtained strong evidence of incremental validity.

We could not dismiss linkages of integrative self-knowledge with other constructs as the product of common method variance associated with reliance upon self-report data. Integrative self-knowledge was conceptualized as an awareness of the more inward psychological dynamics of the self across time.

In contrast, public self-consciousness and self-monitoring operationalize personal assessments of how the self relates to others. Integrative self-knowledge did not correlate with either of these measures in Iran or in the United States. In other words, integrative self-knowledge did not correlate generally with all questionnaire assessments of the self, and thus it displayed discriminate validity. However, common method variance may still have affected observed outcomes. The appearance of multiple integrative self-knowledge factors, for example, may have been due in part to this kind of influence. Future researchers may need to explore that possibility (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

In the development of this new instrument, procedures remained sensitive to the need for evaluating reverse-scored items. Previous studies had indicated that more valid assessments of self-awareness might occur through self-reports of its absence rather than its presence (Brown & Ryan, 2003). Creation of this new scale involved sifting through 30 potential items to identify statements that consistently measured adjustment across three samples from two societies. Of the 12 final Integrative Self-Knowledge Scale statements, 9 were reverse-scored. This high percentage might support the possibility that self-reflective capacities are more effectively operationalized in statements articulating their absence. Such evidence, nevertheless, could offer no definitive confirmation of such a conclusion, because direct comparison of the two types of statements was not a formal goal of this project.

However, some attention should be given to how the high percentage of reverse-scored items might have influenced the incremental validity data. Instruments such as the Mindfulness Scale and the Experiential and Reflective Self-Knowledge Scales only assess present- or past-oriented capacities and may be ideal for some research purposes. Still, an underlying assumption of the Integrative Self-Knowledge Scale is that an optimally adaptive form of self-awareness must unite temporally distinct forms of self-understanding. Strong evidence of incremental validity on Step 2 of multiple regressions after entering Mindfulness and the other two Self-Knowledge Scales on Step 1 was consistent with that possibility. But could such data merely reflect the superior validity of reverse-scored items, given the smaller number of such statements in the two older self-knowledge scales? Some contribution of this factor to the incremental validity results cannot be wholly dismissed, but it seems unlikely to have exerted a major influence. Three of the 13 Reflective Self-Knowledge Scale items and all 15 of the Mindfulness Scale items were reverse-scored. Empirical and fairly obvious logical considerations, therefore, support the idea that an especially advantageous form of self-knowledge would integrate self-experience across time.

Relations of integrative self-knowledge with other constructs tended to be more consistent and robust in Iran. Women constituted a larger percentage of the Iranian samples, but a reexamination of data in partial correlations controlling for gender produced no substantive changes in the observed pattern of results. Other unspecified methodological factors may have produced these differences,

but such findings might also have reflected substantive cross-cultural contrasts. Haque (2004) argued, for example, that an emphasis of early Muslim philosophers on *Ilm-al Nafsiat*, translated as *self-knowledge*, might be especially relevant in efforts to develop an Islamic approach to psychology. In addition, some evidence suggests that the psychological dynamics of Iranians may be less individualistic, at least in subtle ways (Ghorbani et al., 2002), and greater attention to the self may have more positive implications within the more collectivistic contexts of Iran (e.g., Watson et al., 2002). Conversely, at least some, again subtle, evidence indicates that collectivistic traits may be more noteworthy in ameliorating the potential liabilities of individualism within the presumably more self-oriented contexts of the United States (Ghorbani, Watson, Krauss, Bing, & Davison, 2004; Watson & Morris, 2002). The possibility that more individualistic forms of functioning may have greater benefits within more collectivistic cultural contexts (and vice versa) may deserve additional research attention.

Efforts to interpret the results of this investigation must be conditioned by numerous caveats. The ability of the Integrative Self-Knowledge Scale to predict behavioral as well as self-report variables remains an essential step in confirming its validity. Correlational findings pointed toward the positive mental health implications of integrative self-knowledge, but in no way established a causal influence. Enhanced self-knowledge is theoretically central to numerous forms of psychotherapy (e.g., Ghorbani, Watson, et al., 2003). The issue of causality might be addressed by examining the success of therapeutic interventions that explicitly seek to enhance integrative self-knowledge. Finally, we evaluated the validity of this scale in samples of university students. In neither Iran nor the United States are such students typical of the general population. In future investigations, researchers should examine more representative samples.

As noted previously, the religious and philosophical foundations of many cultures associate self-knowledge with optimal human functioning (e.g., Ghorbani, Watson, et al., 2003). We place a concluding reemphasis, therefore, on how the validity of this new instrument in countries as different as Iran and the United States supplied encouraging evidence of a broader cross-cultural relevance. Still, it would be wrong to assume that Iran and the United States are wholly different and that the present findings necessarily establish the utility of this new instrument elsewhere. It might be important, for example, to evaluate integrative self-knowledge in societies that do not have as strong cultural foundations in monotheistic religion. The Integrative Self-Knowledge Scale, nevertheless, should make it possible to explore this and many other potentially interesting questions in efforts to develop a cross-cultural positive psychology.

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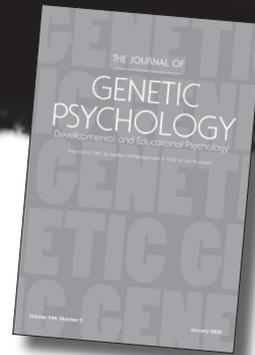
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