A Brief Strengths Scale for Individuals With Mental Health Issues

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Using their strengths and virtues enables individuals to build resilience and alleviate mental health issues. However, most existing instruments for measuring strengths are too lengthy to provide effective assessment for clinical screening. A brief instrument with good factorial and ecological validity is needed to measure strengths, especially among individuals with mental health issues. In this study, the authors developed a brief inventory, the Brief Strengths Scale-12 (BSS-12), to assess 3 strengths: Temperance Strength, Intellectual Strength, and Interpersonal Strength. Two studies were conducted. Study 1 was conducted in Hong Kong. Service recipients (n = 149) from a psychiatric rehabilitation organization were recruited to establish the factor structure and construct validity of the BSS-12. In Study 2, 203 university undergraduates from mainland China were recruited to examine the factorial invariance of the BSS-12. Each factor demonstrated satisfactory internal consistency, content validity, and discriminant validity. The BSS-12 may be a useful tool for assessing strengths in clinical and nonclinical settings for service planning and the evaluation of intervention effectiveness.

Keywords: psychometric evaluation, virtues, strengths, factor structures, combined etic-emic approach

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In recent years, there has been increasing interest among mental health professionals in attending to both the strengths and weaknesses of their clients (McCrae, 2011). Many studies have since been conducted around the world to explore the relationship between positive personal traits and health (Duan, Ho, Siu, Li, & Zhang, 2015; Park, Peterson, & Seligman, 2004; Peterson & Seligman, 2004; Wood, Linley, Maltby, Kashdan, & Hurling, 2011). The results of these studies have shown that different strengths can be clearly identified, cultivated, used, and strengthened through regular application in daily life to increase life satisfaction and decrease depression and anxiety (Duan, Bai et al., 2012; Duan, Ho, Tang, Li, & Zhang, 2014; Park et al., 2004; Peterson & Seligman, 2004; Seligman & Csikszentmihalyi, 2000; Seligman, Ernst, Gillham, Reivich, & Linkins, 2009; Seligman, Steen, Park, & Peterson, 2005; Wood et al., 2011). A meta-analysis of 51 studies with a total of 4,266 individuals also concluded that these positive psychological interventions significantly decreased depressive symptoms and improved happiness (Sin & Lyubomirsky, 2009). Furthermore, a 10-year cohort study demonstrated that apart from negative personality traits, the absence of positive factors, such as self-acceptance, autonomy, purpose in life, and positive relations, were important risk factors to become depressed 10 years later (Wood & Joseph, 2010). The above findings suggest that both the presence of negative factors and the absence of positive ones are important in the conceptualization of psychopathology.

Accordingly, theoretical models and instruments for assessing strengths have been developed, including the Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) and the Gallup Strengths Framework (Clifton & Harter, 2003). Positive traits are also included and assessed in several other theories or scales; for instance, personality-like traits (stress tolerance, optimism, flexibility, empathy, and social responsibility) in emotional intelligence theory (Mayer, Salovey, & Caruso, 2003); personality components (e.g., imagination, generosity, joyfulness, and self-control) in the five-factor model (Norman, 1963); and autonomy and self-acceptance in the Psychological Well-Being Scale (Ryff, 1989). Among existing instruments, the most well-known inventory for measuring strengths is probably the VIA-IS developed by Peterson, Seligman, and colleagues (Peterson & Seligman, 2004). These researchers proposed a framework of six virtues and 24 character strengths that are important for a good life and are shared by people all over the world (Dahlsgaard, Peterson, & Seligman, 2012; Duan, Ho, Siu, Li, & Zhang, 2014; Park et al., 2004; Peterson, 2004; Peterson & Seligman, 2004; Seligman, Ernst, Gillham, Reivich, & Linkins, 2009; Seligman, Steen, Park, & Peterson, 2005; Wood et al., 2011).
They used this framework to develop the 240-item VIA-IS inventory to measure these strengths and virtues.

Two issues should be noted when applying the VIA-IS to people with mental health problems. First, the functional equivalence and factorial invariance of the VIA-IS are questionable, especially when applied to people in other cultures (Ho et al., 2014). Various studies have found that the 24 strengths proposed by Peterson and Seligman (2004) can be grouped into different virtues depending on the cultural background of the participants (Brdar & Kashdan, 2010; Duan, Ho et al., 2012; Macdonald, Bore, & Munro, 2008; Shryack, Steger, Krueger, & Kallie, 2010). For instance, Duan, Ho, and colleagues (Duan, Ho et al., 2012; Duan, Ho, Bai, & Tang, 2013) administered the 240-item Chinese version of the VIA-IS to participants in mainland China and selected 96 items from the original 240 to measure three virtues, interpersonal, vitality, and conscientiousness, based on the results of exploratory and confirmatory factor analyses. The authors named their scale the Chinese Virtues Questionnaire-96 (CVQ-96; Duan et al., 2013; Duan, Ho et al., 2012). In another study, the authors also reported that the virtues measured by the CVQ had significant contribution to the variance of psychological symptoms above and beyond the effect of perceived stress from daily events (Duan, Ho, Siu et al., 2015). Their result was also in accord with the findings of two other studies conducted in the United States that also suggested a similar three-factor model consisting of a caring/sociability factor, a personal agency/inquisitiveness factor, and a self-control/conscientiousness factor (McGrath, 2014; Shryack et al., 2010). Another limitation of the 240-item VIA-IS, and also the CVQ-96, is that it is too lengthy to use in clinical populations who are already experiencing psychopathological symptoms. Many people with mental health issues find it hard to complete a long questionnaire that requires immense patience and concentration. A much shorter questionnaire should be developed for screening strengths among clinical populations to encourage the future application of strength interventions in clinical and counseling settings.

It is worth noting that the above two issues, namely factorial equivalence and lengthy questionnaires, are not unique to psychological assessment of strengths and virtues but apply to inventories measuring other mental well-being such as posttraumatic growth, defined as self-perceived positive changes after a traumatic event (Tedeschi & Calhoun, 1995; Tedeschi, Park, & Calhoun, 1998). A 21-item English version Posttraumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996) was created to measure posttraumatic growth, and this scale has been translated into different languages including Chinese (PTGI-C) (Ho, Chan, & Ho, 2004), Japanese (PTGI-J) (Taku et al., 2007), German (PTGI-G) (Maercker & Langner, 2001), and Spanish (PTGI-S) (Weiss & Berger, 2006). However, different factor structures were obtained in different language versions of the PTGI (Ho et al., 2013). For instance, the Chinese version of the PTGI has four factors (Self, Spiritual, Life Orientation, and Interpersonal) versus the five-factor model of the original English version of PTGI (i.e., New Possibility, Relating to Others, Personal Strength, Appreciation of Life and Spiritual Change). A shorter 15-item version was developed among the Chinese as compared to the 21-item English version questionnaire. Finally, it is also relatively common and useful in psychopathology and personality psychology to develop shorter versions of measures as screening tools (Rammstedt & Beierlein, 2014; Ziegler, Kemper, & Kruyen, 2014). A notable example is the 53-item Brief Symptom Inventory (Derogatis, 1993) which can be regarded as a short version of the 90-item Symptom Checklist—Revised (Derogatis & Cleary, 1977; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). More recently, the 18-item Brief Symptom Inventory (Derogatis & Fitzpatrick, 2004) was developed as an abbreviated version of the Brief Symptom Checklist for screening purposes.

This Study

The aim of this study was to develop a brief screening instrument with strong ecological validity to measure personal strengths which are “observable traits manifest in cross-situationally consistent behavior” (Shryack et al., 2010, p. 714). The above trait-oriented definition of strengths would lead to the argument that these constructs should have been covered by current theories of values and their related measures, such as personality inventories. In fact, the original authors of the VIA-IS also acknowledged that their classification of character strengths should be related to the Five Factor Model (FFM) of personality (Costa & McCrae, 2008; McCrae, 2002) and other value theories (Cawley, Martin, & Johnson, 2000). For instance, conscientiousness and extrovert in FFM could be conceptually related to the strength of self-regulation and leadership in VIA, respectively (Peterson & Seligman, 2004). On the other hand, subsequent research generally showed that character strengths were either weakly related to FFM dimensions or a single strength of the VIA was related to a combination of FFM dimensions (Macdonald et al., 2008). It is reasonable to expect that strengths are related but independent constructs to existing models of personality.

We decided to create our own items instead of using items from existing similar scales (e.g., the CVQ-96 and the VIA-IS) because previous studies suggested that further reduction in item number of the CVQ-96 would be difficult and the ecological validities of some items of the VIA-IS were questionable (Duan, Ho et al., 2012; Duan et al., 2013). The generalizability, content validity, and structural validity of the new screening instrument were examined (John & Soto, 2007). Two studies were conducted. Study 1 involved a community sample of psychiatric service recipients in Hong Kong. Principal components analysis was conducted to select items to measure the strengths in individuals with psychiatric issues and to establish construct validity. It should be noted that the psychiatric symptoms of the patients might affect their responses in the strength scale. For example, the overly pessimistic view of oneself among the depressive participants may result in lower a self-rating of all strength items of the scale by them. However, our objective is to develop a brief scale for clinical use and one of the main purposes of Study 1 is to select items that are relevant to people with psychiatric issues. We consider that it is important to include people with psychiatric issues in this study to enhance the ecological validity of the selected items in the future scale. Study 2 involved a sample of undergraduates in mainland China to examine the factorial invariance of the instrument across populations, and cultures. This sample of nonpsychiatric and younger individuals would enable us to investigate if psychiatric issues of respondents in Study 1 may influence the results of the brief scale. In addition, during approximately 150 years of British colonial administration, Hong Kong’s subculture became quite different from that of mainland China (Cheung, Conger, Hau, Lew, & Lau, 1992), although the differences are not as great as those
between Eastern and Western cultures. To maintain harmony, mainland Chinese individuals tend to be more restrained and introverted, reflecting a typical collectivist culture, whereas Hong Kong Chinese may exhibit more individualism inherited from the British culture. A sample from Mainland China was used to explore if the scale could be applied to people in different cultures.

The results of our study should enhance the assessment of strengths among clinical samples and encourage the use of strength-based interventions in counseling settings (Fung et al., 2011). We anticipate that this newly developed instrument will be applicable both to individuals with psychiatric symptoms and to normal individuals. Accordingly, two potential applications of the scale include screening of normal individuals at risk of development psychiatric disorders and monitoring change in strengths of psychiatric patients receiving treatment (e.g., in pre- and post-outcome studies).

Study 1: Questionnaire Development and Factor Structure

Methods

Participants and procedures. A community sample of individuals with a history of psychiatric problems who were receiving services from the New Life Psychiatric Rehabilitation Association in Hong Kong was recruited. Principal components analysis was conducted for item selection, and the items were analyzed as continuous variables. One hundred forty-nine participants completed the assessment package after providing written informed consent. Among the participants, 77 were women (51.70%) and 71 were men (47.70%); 18 individuals (12.10%) were aged below 18 years, 32 (21.5%) between 18 and 25, 32 (21.5%) between 26 and 35, 31 (20.80%) between 36 and 45, 47 (31.50%) between 46 and 55, and 17 (11.4%) above 55 (four participants did not report their age). In addition, 94.50% of the participants had a history of psychiatric diagnosis, 92.5% required psychiatric/psychological follow-up, and 93.6% required psychiatric medication from the hospital and psychosocial services from the New Life Psychiatric Rehabilitation Association at the time of assessment. The other participants were receiving clinical psychology and social work services from the Association without taking medication. Mean years of diagnosis was 8.93 years ($SD = 8.94$ years, range = 1 to 35 years).

Measures

Initial version of the Brief Strengths Scale (BSS-Initial Version). A research team was formed to generate the corresponding items for measurement based on literature review and members’ previous experience in research and clinical practice (see later). The team was led by a university psychology professor who is also a clinical psychologist with a research focus on psychopathology (Ho et al., 2012; Ho, Tong, & Lai, 2009; Lo, Ho, & Hollon, 2008; Lo, Ho, & Hollon, 2010) and on strength assessment and intervention (Duan, Ho et al., 2012; Duan et al., 2013; Duan, Ho, Tang, et al., 2014; Fung et al., 2011). The team also consisted of two Master’s students in clinical psychology who had good knowledge of psychopathology and positive psychology. Initial content areas were based on the three virtues identified in previous studies (Duan, Ho et al., 2012; Duan et al., 2013), namely cautiousness ("I am a person with perseverance"), relationship ("I value my relationships with others around me"), and vitality ("I am a person who likes to look for new things"). The rationales to focus on these three dimensions of strengths were twofold: First, they were adapted from the original VIA system in two studies among the Chinese (Duan, Ho et al., 2012; Duan et al., 2013) and had shown to be related to mental health of Chinese participants (Duan, Ho, Siu, et al., 2015). It is reasonable to believe that these three strengths should have good ecological validity to be included in a screening tool for Chinese. Second, these three dimensions were similar to the three-factor strength structure, namely intellectual strength, interpersonal strength, and temperament strength, in a study conducted in the United States (Shryack et al., 2010). Most recently, it was proposed that similar three factors, namely Caring, Inquisitiveness, and Self-Control, should be the most reliable latent structure for the VIA Classification of strengths (McGrath, 2014). We believed that these three strengths should have good generalizability to people in other cultures.

Some items reflected their significance to interpersonal well-being among Chinese (Ho & Cheung, 2007), such as "I feel happy for other people’s happiness" (relationship). Potential items related to interventions for emotional distresses and psychiatric symptoms according to the clinical experience of team members and previous research (e.g., Fung et al., 2011) were first created by individual team members. These items included the ability to love and be loved (Basco, Prager, Pita, Tamir, & Stephens, 1992; Cochrane, 1990; Trumpeter, Watson, O’Leary, & Weathington, 2008), curiosity (Camp, 1986; Rodrigue, Olson, & Markley, 1987), creativity (Holm-Hadulla, Roussel, & Hofmann, 2010; Reynolds, 2000; Silveria & Kimbrel, 2010), gratitude (Wood, Froh, & Geraghty, 2010; Wood, Maltby, Gillett, Linley, & Joseph, 2008), optimism and hope (Hassija, Luterek, Naragon-Gainey, Moore, & Simpson, 2012; Peleg, Barak, Harel, Rochberg, & Hoofien, 2009; Snyder, 2000; Wong & Lim, 2009), persistence (Nation & Massad, 1978; Nation & Woods, 1980), self-control (Francis, Mezo, & Fung, 2012; Fuchs & Rehm, 1977; Jun & Choi, 2013), and self-regulation (Care & Kuiper, 2013; Mathews, 1977). All of the items were written in Chinese. Thirty-six initial items were created from the above strategies. The conceptual relevance of the items and wording modifications were considered carefully throughout the process. Respondents would be asked to rate the extent to which each statement described them on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). Twelve of the 36 items required reverse coding. A pilot test for the comprehensibility and clarity of the 36-item questionnaire was administered to two service users of New Life Psychiatric Rehabilitation Association where the sample for the current study was recruited. Feedback from respondents of the pilot test suggested that the items were clear and comprehensible to them and no revision of the 36-item was made after the pilot.

Hospital Anxiety and Depression Scale (HADS). The HADS was developed by Zigmond and Snaith (1983) to assess the presence and severity of anxiety and depression states among nonpsychiatric patients. Respondents are required to complete this 14-item scale using a 4-point Likert scale ranging from 0 (absence of symptoms) to 3 (severe symptoms) to rate the severity of symptoms related to depression and anxiety during the previous week. HADS Depression scores and HADS Anxiety scores were obtained by summing the corresponding items related to depression
(seven items) and anxiety (seven items), with higher scores reflecting more severe anxiety or depressive symptoms. The 5/6 cutoff point was used to classify participants into depression caseness and anxiety caseness according to the original study (Zigmond & Snaith, 1983) and a previous study among psychiatric patients in Hong Kong (Leung, Ho, Kan, Hung, & Chen, 1993). Accordingly, participants with a HADS Depression score of 5 or below were grouped under the Depression Noncaseness, whereas those with a HADS Depression score of 6 or above were grouped under Depression Caseness. The same criteria were used to categorize participants as Anxiety Caseness or Noncaseness. Zigmond and Snaith (1983) advised that the HADS can be used in both clinical and nonpsychiatric settings as the instrument was designed to minimize symptoms that might be ascribed to somatic disorders. The Chinese version of the HADS, developed by Leung et al. (1993), was used in the present study. In the current sample, Cronbach’s reliability α was .79 for the Depression subscale and .87 for the Anxiety subscale.

**Results**

**Principal components analysis (PCA).** PCA was used to explore the factor structure of the BSS-Initial version. Inspection of the correlation matrix revealed that most of the 36 items had coefficients above .30, except for the reverse-coded items. According to Marsh (1996), including both positively and negatively worded items in a measurement would make the factor structure more complicated (Greenberger, Chen, Dmitrieva, & Farruggia, 2003) and impair the response accuracy (Schriesheim & Hill, 1981). As a result, the 12 reversed items were removed from the item pool (e.g., “I will give up my goal(s) easily when I encounter setbacks” and “I often feel uncomfortable when others expressed their care to me”).

Principal component analysis with oblimin rotation was performed on the remaining 24 items. The Kaiser-Meyer-Olkin value to measure sampling adequacy was .91 showing that the sample size was excellent for the factor analysis. Barlett’s test of sphericity was statistically significant. An item loading cutoff point of .60 was adopted according to Hair et al. (1998). Five factors with eigenvalues above 1.00 were obtained. However, some item loadings were relatively low (<.50) and items with low loadings were deleted. Examples of these items were “I will set goals for myself, and think of ways to reach them” and “I often feel uncomfortable when others expressed their care to me.”

The scree plot suggested a three-factor solution (Reise, Waller, & Comrey, 2000). Partly based on this result and partly based on our objective to develop a brief scale, items that had multiple loadings (i.e., loading >.50 on more than one factor) and loaded onto conceptually inconsistent factors were also deleted. Examples of these items included “My life is filled with gratitude” and “No matter how bad things are, I can always find the positive side of them.” Similar strategies had been used in other studies involving principle component analysis and/or exploratory factor analysis to develop factor structures (Ho et al., 2004; Ho, Fung, Chan, Watson, & Tsui, 2003). The final solution consisted of three factors with four items per factor (Table 1). The percentage of total variance explained by the three factors was 61.50%, with Factor 1 contributing 40.00%, Factor 2 contributing 11.20%, and Factor 3 contributing 10.30%. All 12 items had a factor loading of .60 or above.

We adopted the labels of Shryack and colleagues (2010) to name our factors. Factor 1 was labeled Temperance Strength, which describes people who persist in achieving goals and exhibit self-control. Factor 2 was termed Interpersonal Strength, as it describes a person’s love, concern, and gratitude toward others. Factor 3 measures a person’s curiosity and zest for creativity, and thus was labeled Intellectual Strength. Finally, a Brief Strengths Scale Total (BSS-Total) score was computed by adding the scale scores of the 12 items.

**Ordinal Reliability, Descriptive, and Gender Difference Analysis.** As the traditional Cronbach’s alpha might lead to underestimated reliabilities when the number of items was small (Mayer et al., 2003), the ordinal reliabilities (Gadermann, Guhn, & Zumbo, 2012) were computed by using the R software version 3.0.2 (R Core Team, 2013). The internal consistency coefficients of the three strength subscales were satisfactory, ranging from .76 to .84. First, we explored if demographic variables would affect the strength subscale scores. A significant gender difference for the Intellectual Strength subscale was obtained (t = 2.61, p = .01, d = .43), but there was no gender difference for the other strengths (see Table 2).

Next, we examined if type of psychiatric problems would affect the strength subscale scores. The mean HADS Depression and HADS Anxiety scores were calculated first: HADS Depression, 7.85 ± 4.54; HADS Anxiety, 8.38 ± 4.74. Using the 5/6 cutoff of HADS to determine caseness, 67.8% (n = 101) and 69.8% (n = 104) of the participants were placed in the Depression Caseness and Anxiety Caseness groups, respectively. Independent samples t tests showed that participants in the Depression Caseness and the Anxiety Caseness groups had significantly lower scores on all three strength subscales of the BSS-12 than participants in the

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**Table 1**

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a persistent person.</td>
<td>.83</td>
<td>−.11</td>
<td>−.10</td>
</tr>
<tr>
<td>I am a hardworking person.</td>
<td>.82</td>
<td>.16</td>
<td>.07</td>
</tr>
<tr>
<td>I ask myself to persist in face of difficulty.</td>
<td>.67</td>
<td>.11</td>
<td>−.10</td>
</tr>
<tr>
<td>I am a person with strong self-control.</td>
<td>.61</td>
<td>.03</td>
<td>−.10</td>
</tr>
<tr>
<td>I am a person with compassion.</td>
<td>−.23</td>
<td>.72</td>
<td>−.11</td>
</tr>
<tr>
<td>I strongly treasure my relationships with people around.</td>
<td>.22</td>
<td>.72</td>
<td>.11</td>
</tr>
<tr>
<td>I appreciate people’s gratitude to me.</td>
<td>.13</td>
<td>.69</td>
<td>−.05</td>
</tr>
<tr>
<td>I feel happy for other people’s happiness</td>
<td>.24</td>
<td>.60</td>
<td>−.09</td>
</tr>
<tr>
<td>I am a person who likes to find new things.</td>
<td>.17</td>
<td>−.15</td>
<td>−.79</td>
</tr>
<tr>
<td>I always revel in some interesting things.</td>
<td>.06</td>
<td>−.08</td>
<td>−.80</td>
</tr>
<tr>
<td>I am excited when I can think of the possibility of producing a new creation</td>
<td>−.16</td>
<td>.24</td>
<td>−.79</td>
</tr>
<tr>
<td>I think there are a lot of interesting things in this world to be explored.</td>
<td>.13</td>
<td>.20</td>
<td>−.64</td>
</tr>
</tbody>
</table>

% of variance: 40.00% 11.20% 10.30%

Note. Factor loadings of 0.6 or above are highlighted in bold.
Correlations. The BSS-Total score was significantly and negatively correlated with depression and anxiety. The correlations between the BSS-12 subscale scores and HADS scores are presented in Table 4. The Intellectual Strength and Temperance Strength had significant negative correlations with depression and anxiety, whereas the Interpersonal Strength was significantly and negatively related to depression only.

Regression. Regression analyses were conducted to compare the ability of the three strengths to predict depression and anxiety. The results of the multiple regression analyses are shown in Table 5. The three strengths together predicted 28.50% and 13.10% of depression and anxiety, respectively. The Intellectual Strength was the only significant predictor in both regression equations: depression ($\beta = - .44$, $t = -4.99$, $p < .001$) and anxiety ($\beta = -.36$, $t = -3.67, p < .001$).

Summary of Study 1

In summary, a 12-item Brief Strengths Scale (BSS-12) was established to measure the three strengths, Interpersonal, and Intellectual. This brief screening questionnaire should be applicable to participants with psychiatric symptoms. In Study 2, we further investigated the ordinal $\alpha$ construct validity, and generalizability of this scale in a Chinese sample in mainland China.

Study 2: Factorial Invariance of the BSS-12

Methods

Participants and procedures. An undergraduate sample was recruited in mainland China to conduct a confirmatory factor analysis (CFA) on the BSS-12. Participants were recruited from several classes at Southwest University, Chongqing, China. Data collection was conducted by two postgraduate students in psychology. Verbal informed consent was obtained from the students before they completed the questionnaire. Two hundred and three undergraduates (113 female and 90 male; mean age = 20.93, SD = 1.13) from Year 1 to Year 3 completed the BSS-12. It should be noted that there are two types of Chinese characters, simplified Chinese and traditional Chinese, which are linguistically equivalent to each other. The former is used in mainland China and the latter in Hong Kong, Macau, and Taiwan. As the participants in Study 1 were recruited in Hong Kong, the traditional Chinese version of the BSS was used, whereas in Study 2 simplified Chinese was used. The contents of two Chinese versions of the BSS are identical. This design aimed to cater for the daily reading habits of participants, reducing the difficult in understanding content of the items. Our previous studies have confirmed that these two forms of Chinese can be used interchangeably with little effect on the results (Duan, Bai et al., 2012; Ho et al., 2004; Ho et al., 2003).

Distinct from the sample in Study 1, none of the participants in Study 2 had any history of psychiatric diagnosis. Ethical approval for this study was obtained from the School of Culture and Social Development Studies of Southwest University, Chongqing, China. Data collection was carried out between April and May, 2012.

Measures

BSS-12. The BSS-12\(^1\) is a 12-item self-report questionnaire developed in Study 1 that measures temperament strength (four items), interpersonal strength (four items), and intellectual strength (four items). Subscale scores were obtained by summing the corresponding item scores, with higher scores indicating that an individual possessed that particular strength to a greater extent.

Results

CFA. A series of CFAs was conducted to examine the factorial invariance of the BSS-12 using Mplus 7.0. Previous studies have found that some personal traits have a hierarchical factor structure. For example, Macdonald et al. (2008) found that the 24 character strengths were well represented by both one- and four-factor solutions. Therefore, in this study three hypothesized models were proposed for comparison, the three-factor related model (Model 1), the three factors with a second-order factor model (Model 2), and one-factor model (merging all of the factors into one, Model 3). As recommended by Hu and Bentler (1998), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), the standardized root mean residual (SRMR), and chi-square statistics were used for evaluation. Both Model 1 and Model 2 showed the same goodness-of-fit indices ($\chi^2/df = 1.846; \text{CFI} = .905; \text{RMSEA} = .065; \text{SRMR} = .059$; see Table 6), and achieved a better fit than Model 3. Figure 1 displays the standardized path coefficients.

Internal Consistency Coefficients and Descriptive Statistics. In our undergraduate sample, the ordinal’s alpha ranged from .72

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\(^{1}\) The English translated version of the Brief Strengths Scale-12 is provided as an online supplementary document of this article. The Chinese version of the BSS-12 can be obtained by sending an email to the corresponding author.
to .89 for the three subscales, reflecting a coherent and internally consistent measurement model. The means and standard deviations of the three strength subscales are displayed by subgroup in Table 7. These results were similar to those from the depressive and anxious sample used in Study 1.

**Discussion**

This study used a sample of participants with mental health issues to explore the factor structure of the strength items in the BSS-12. Similar to previous studies (Duan, Ho et al., 2012; Duan et al., 2013), three factors were found—Temperance Strength, Interpersonal Strength, and Intellectual Strength. The same three-factor structure was confirmed in an undergraduate sample in mainland China. First, our results support the factorial invariance of the three-factor structure of strength assessment. A basic viewpoint held by positive psychologists is the importance of emphasizing “what is strong” in a person (Duckworth, Steen, & Seligman, 2005), no matter whether the person is well or sick, and making use of these strengths to improve the person’s quality of life. This is a different perspective from the traditional clinical approach to psychopathology. Previous studies have followed this research direction to assess and enhance positive traits to combat psychological problems among people with depression, bereavement, and life-threatening illnesses such as cancer (Ho, Ho, Bonanno, Chu, & Chan, 2010; Ho et al., 2011; Wong & Lim, 2009). One of the major difficulties in applying the strength-based approach in clinical settings is the lack of a short but well-validated instrument to assess and monitor strengths. In this study, we developed a very concise but psychometrically sound instrument to assess strengths. This brief instrument will enable practitioners and researchers to extend the strengths and virtues approach to clinical populations.

Our results show that the three strengths of temperance, interpersonal, and intellectual (Duan et al., 2013; Duan, Ho et al., 2012) can also be found among depressive individuals and persons with psychosis, and further that the assessment scale developed using a sample of individuals with mental health issues in Hong Kong can be generalized to normal samples in mainland China. Our results suggest the cross-cultural and cross-population stability of the three-factor structure. Because the three strengths were also identified in other studies among American participants (McGrath, 2014; Shryack et al., 2010), it is reasonable to believe that this scale could be generalized to Western people. Future studies should explore the cross-cultural applicability of the BSS-12.

As revealed by Table 2 and Table 7, the strength scores of participants from Hong Kong were much lower than the participants from Mainland China. However, it is important to note that such differences were expected given the Hong Kong sample consisted of patients with mental issues whereas the mainland China sample was university students. Whether the three strengths are shared by different cultures and subcultures or not should be investigated through multi-Group CFAs with comparable samples characteristics.

Both Model 1 and Model 2 had identical goodness-of-fit, indicating the three strengths shared some variances at a more global level. Similar results that both first-order and second-order model achieved comparable goodness-of-fit were found in another study.
involving the development of Chinese Posttraumatic Growth Inventory (Ho et al., 2004). Given the intercorrelations among individual strengths, a second-order factor maybe a better model. We recommended that for researchers who do not need to measure individual character strengths (e.g., overall intervention efficacy to increase strengths), a total strength score can be used; whereas for researchers who need to investigate individual strength (e.g., potential differential effect of individual strength on specific outcome indicators), individual strength scores can be computed.

Internal Consistency, Construct Validity, and Criterion Validity of the BVS-12

The three subscales of the BSS-12 had internal consistency coefficients (ordinal $\alpha$) above .72, which is an acceptable value for scales with 20 items or above (Streiner, 2003). Despite the short length of the scale, the four-item strength subscales also had good internal consistency, indicating the excellent consistency of the BSS-12.

Regarding the construct validity of the questionnaire, it is interesting to note that intellectual strength was the most important strength related to both positive and negative outcomes. Given the high correlations among the three strengths, this result is not surprising. Similar to the findings of Shryack et al. (2010), intellectual strength of the BSS-12 includes items related to vitality (e.g., creativity and curiosity) of the VIA classification system. Accordingly, this finding is consistent with a previous study, which showed that vitality was the only positive predictor of an individual’s life satisfaction in both Hong Kong and Mainland samples (Duan, Bai et al., 2012). Ryan and Frederick (1997) suggested that vitality reflects the feeling of aliveness and energy.

Table 6
The Goodness-of-Fit Indexes of the Hypothesized Models ($N = 203$)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2/df$</th>
<th>CFI</th>
<th>SRMR</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Three related factors model</td>
<td>1.846</td>
<td>.905</td>
<td>.059</td>
<td>.065</td>
</tr>
<tr>
<td>(Factor 1: Temperance; Factor 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal; Factor 3: Intellectual)</td>
<td></td>
<td></td>
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<tr>
<td>Model 2: Three factors with a second-order</td>
<td>1.846</td>
<td>.905</td>
<td>.059</td>
<td>.065</td>
</tr>
<tr>
<td>factor model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3: One factor model</td>
<td>2.600</td>
<td>.811</td>
<td>.072</td>
<td>.089</td>
</tr>
</tbody>
</table>

Note. CFI = comparative fit index; SRMR = standardized root mean residual; RMSEA = root mean square error of approximation.
which covaries with both psychological and somatic factors, increasing the energy available for the self and improving functioning in terms of psychological well-being, physical symptoms, and perceived bodily functioning. Accordingly, negative cognition, emotions, and behavior may be alleviated by cultivating more positive energy within a person. The relationships between temperament strengths, interpersonal strength, and other variables were the same as those found in other studies (Duan et al., 2013). In summary, the three strengths have good construct validity, but the internal mechanism should be explored in future to gain a better understanding.

We believe that the BSS-12 complements existing longer inventories of virtues and strengths in several respects. The BSS-12 can be used as a screening instrument to provide initial information on the strength profile of an individual so that timely and appropriate intervention can be provided, especially to individuals with psychological issues or disorders. Should a more detailed assessment of virtues and strengths be needed after initial screening, the VIA-IS (Peterson & Seligman, 2004) or the CVQ-96 (Duan, Ho et al., 2012; Duan et al., 2013) can be used. The brevity of the BSS-12 is more applicable for initial clinical screening and to monitor changes in strength throughout the intervention process to inform treatment efficacy. Finally, we believe that this brief questionnaire should encourage further research on strength in future studies.

Limitations and Future Directions

One limitation is that the psychological symptoms of the participants may affect the relationships between strength and outcome measures in our cross-sectional design. For instance, the anhedonia and avoidance symptoms of depression (Dimidjian, Martell, Addis, & Herman-Dunn, 2008) might hamper intellectual strengths that consists of one’s interest in the pursuit of new or interesting things (“I am a person who likes to find new things”; “I always revel in some interesting things”), leading to a negative relationship between temperance strengths and severity of depressive symptoms in the present study. Longitudinal studies should be conducted in future to clarify the relationships. Furthermore, although intellectual strength was found to be a significant predictor of depression and anxiety in the regression analysis (see Table 5), we had not included measures of other constructs like behavioral activation, anhedonia, and avoidance in the present study. It is likely that Intellectual Strength might not make a significant contribution to the variance of psychological symptoms when other factors (e.g., avoidance behavior) were included in the regression equation. Future research could examine the validity of the BSS-12 further by comparing the three strengths with other constructs in affecting psychopathology.

There are other limitations worth mentioning. First, the factor structure was extracted from a depressive and anxious sample and confirmed in a nonclinical undergraduate sample. However, whether the factor structure is applicable to other samples with different physical and psychological disorders, such as cancer, phobia, or obsessive–compulsive disorder, should be further investigated. Second, more information is needed about the relationship between strengths and other influencing factors. Evidence-based studies are needed to deepen our understanding of the internal mechanisms of strengths and other psychological variables. Third, as the factor analytic models were separately fit to Mainland and Hong Kong samples, another direct comparison between the two samples were needed for testing the measurement invariance. An English (or other) language version of the measurement is needed to conduct cross-cultural studies in Eastern and Western cultures to establish the factor invariance of the scale. Fourth, cognitive-based interview could be conducted to increase the validity of our findings. Fifth, as the same structure solution was found in another strength questionnaire (Duan, Ho et al., 2012; Duan et al., 2013), future studies should explore the concordance rates of these two questionnaires. Finally, tests of sensitivity and specificity to identify the most discriminating cutoff point for screening purposes were not conducted in the present study. Future studies should attempt to establish the threshold for screening and monitoring of clinical change.

Conclusion

This study developed a brief inventory with good psychometric properties to evaluate strengths for clinical purposes, complementing existing longer strengths and virtues inventories. Three strengths were assessed: temperance, interpersonal, and intellectual. This new instrument was found to have high internal consistency, a stable and clear factor structure, and sound construct validity. We believe that the results of this study will contribute much to the screening and assessment of people with mental health issues and nonclinical cases.

References


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