

PSYCHOMETRIC PROPERTIES OF THE PSYCHOLOGICAL STRAIN SCALE IN A MALAYSIAN UNIVERSITY STUDENT SAMPLE

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Abstract: The Psychological Strain Scale (PSS) was a 40-item scale developed by Zhang and Lyu (2014) to measure four dimensions of psychological strain, included value, aspiration, deprivation, and coping strain. This study aimed to examine the psychometric properties of the PSS, among university students in Malaysia. A total of 259 students (201 females, 58 males) were selected through snowball sampling from public and private universities. In addition to the PSS, the Depression, Anxiety, and Stress Scale (DASS-21) and the Rosenberg Self-Esteem Scale (RSES) were used to provide concurrent validity evidence of PSS. Findings indicated acceptable reliability level across the four subscales of PSS, with Cronbach's alpha values of .638 (Value Strain), .698 (Deprivation Strain), .725 (Aspiration Strain), and .809 (Coping Strain). Convergent validity was supported by positive and significant intercorrelations between the four dimensions ($r = .286$ to $r = .624$). Concurrent validity evidence was provided with a significant and negative correlations between PSS dimensions and RSES scores ($r = -.247$ to $-.578$) and with significant and positive correlations between PSS dimensions and DASS-21 subscales ($r = .188$ to $.533$), the results were consistent with theoretical expectations. The findings suggest that the Psychological Strain Scale demonstrates satisfactory reliability and validity for assessing psychological strain among university students in Malaysia.

Keywords: Reliability, concurrent validity, convergent validity, Psychological Strain Scale

INTRODUCTION

Psychological strains are defined as experiences that generate tension, psychological discomfort, conflict, hopelessness, or desperation which may trigger suicidal thoughts (Zhang, 2019). This construct comprises four dimensions: value, deprivation, aspiration, and coping strain. Each strain corresponds to a different type of conflict. Value strain emerges when an individual experiences incompatible expectations or social norms. Aspiration strain arises when discrepancies exist between individual actual life circumstances and aspirations. Deprivation strain occurs when individuals compare themselves with others of similar backgrounds unfavourably. Coping strain emerges when the individual coping skills inadequately confronting their life challenges (Zhang et al., 2014). Individuals may experience multiple strains simultaneously (Wei et al., 2020).

The Psychological Strain Scales (PSS) was developed by Zhang et al. (2014) from the Centre for Suicide Prevention Research (CSPR) at Shandong University to assess each of the four strains. The PSS is a standardized self-report instrument evaluating perceptions of lack of control, unpredictability, and overload experienced in the past month. PSS exist in several versions, including the PSS with 14 items, 10 items (PSS-10), and 4 items (PSS-4) forms. Of all, the PSS-10 being most widely used as it shown the strong psychometric properties. PSS-10 has been tested on diverse populations and demonstrated high reliability ($\alpha = .74$ to $.91$). this version comprises only two subscales: perceived self-efficacy and experienced helplessness.

The PSS 60-item Chinese version consisted of four subscales (with 15 items per subscale) also demonstrated excellent reliability and validity among Chinese college students (Zhang et al., 2014), however, the scale length posed practical limitations. Consequently, the English version has been refined into shorter version with a 40-item scale (with 10 items per subscale). This version was validated among American college students and demonstrated strong psychometric performance (Zhang & Lyu, 2014). The 40-item PSS was used in the current study, and it has not been validated yet within the Malaysian

context, and limited research has examined its psychometric properties outside Western and Chinese populations. This gap highlights the essential for further examination to ensure the scale's utilities and applicability in Malaysian context.

Conducting psychometric evaluation is an important step in the development and validation of instruments. The process is to ensure that the constructs are able to measure consistently and able to measure what it intends to measure. Therefore, this study was aimed to examine the psychometric properties of the 40-item Psychological Strain Scale (PSS) among university students in Malaysia (e.g., its reliability, convergent validity, and concurrent validity) to determine its suitability as a measure of psychological strain in this population.

Participants

A total of 259 university students were recruited from several public and private universities in Malaysia. Participants were selected using snowball sampling where the data were collected through an online survey distributed using a secure platform. The sample comprised 201 females (77.6%) and 58 males (22.4%), with ages ranging from 18 to 24 years ($M = 21.4$, $SD = 1.13$). In terms of academic year of study, 22.4% were first-year students, 29.3% were second-year students, 34.7% were third-year students, and 13.5% were in their fourth year. Regarding field of study, 42.1% students were enrolled in psychology, 18.5% were social sciences and humanities students, business and finance (14.7%), education (12.0%), and various science programs (12.7%). Participants also reported demographic characteristics including religion (Muslim = 49.1%, Christian = 29.3%, Buddhist = 12.0%, Hindu = 4.4%, Others = 5.2%).

Instruments

Psychological Strain Scale

The 40-item Psychological Strain Scale (PSS) developed by Zhang et al. (2014) to measure four dimensions of psychological strain: value, deprivation, aspiration, and coping strain, with 10 items per subscale. The instrument

measure experiences such as goal–reality discrepancies, value conflict, adverse social comparison, and coping difficulties. Items were rated on a 5-point *Likert* scale (from 1 = *Not like me at all* to 5 = *Exactly like me*), with higher scores indicating greater psychological strain. The PSS has been employed internationally and demonstrates strong potential as a multidimensional strain assessment tool.

Depression Anxiety and Stress Scale

The Depression Anxiety and Stress Scale (DASS-21) developed by Lovibond and Lovibond (1995) was also used in this study to assess the concurrent validity of the PSS. The scale consisted of 21 items, with seven items per subscale measuring depression, anxiety, and stress. The items were rated on a 4-point scale ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me most of the time*). Higher scores reflecting higher levels of emotional distress. The DASS-21 has demonstrated strong psychometric properties across cultures and was widely used among university populations.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES) developed by Rosenberg (1965). The RSES was a 10-item scale to assess global self-worth and the items were rated on a 4-point scale (1 = strongly agree to 4 = strongly disagree). Its five items were positively worded and another five were negatively worded. Higher scores indicating higher self-esteem. The RSES was included to evaluate the concurrent validity of the PSS due to theoretical links between psychological strain and lower self-esteem.

Data Analysis

Data were analysed using IBM SPSS Statistics Version 29.0. Internal consistency reliability was evaluated using internal consistency Cronbach's Alpha, with values $\geq .70$ considered acceptable (Ursachi et al., 2015). To evaluate validity, convergent validity was assessed by examined the intercorrelations among the PSS subscales. Concurrent validity was assessed by examined the correlations between the PSS subscale and the RSES scores,

and the DASS-21 depression, anxiety, and stress subscale scores. These correlations were expected based on theoretical assertions that psychological strain is associated negatively with self-esteem and positively with depression, anxiety, and stress.

RESULTS

Reliability of the Psychological Strain Scale

The internal consistency reliability of the Psychological Strain Scale (PSS) was assessed using Cronbach’s alpha, with values of .70 or higher indicated accepted and good reliability (Ursachi et al., 2015). Table 1 presents the reliability coefficients for each of the four PSS dimensions. The result indicated that the two subscales, Aspiration Strain ($\alpha = .725$) and Coping Strain ($\alpha = .809$) achieved the recommended threshold, demonstrating good internal consistency. The reliability coefficient of Value Strain ($\alpha = .638$) and Deprivation Strain ($\alpha = .698$) subscales were slightly below .70 but remained within an acceptable range for psychological constructs measured in exploratory research.

Table 1

Internal Consistency Cronbach’s Alpha for the Four Dimension of Psychological Strain Scale (PSS)

Dimension	Items	Cronbach’s Alpha
Value strain	1, 2, 3, 4, 5	.638
Aspiration strain	6, 7, 8, 9, 10	.725
Deprivation strain	11, 12, 13, 14, 15	.698
Coping strain	16, 17, 18, 19, 20	.809

Convergent Validity of the Psychological Strain Scale

Convergent validity was tested by assessing the intercorrelations among the four subscales of PSS. The subscales were expected to demonstrate significant and positive relationships based on the basis that they were theorized to

measure facets of the same underlying construct of psychological strain. As shown in Table 2, the correlation coefficients among the four dimensions ranged from $r = .286$ to $r = .624$, the positive and significant relationship between the dimensions support the convergent validity of the PSS, the results suggested that the subscales were related yet distinct components of psychological strain.

Concurrent Validity of the Psychological Strain Scale

Concurrent validity was assessed by correlating the PSS subscale scores with the Rosenberg Self-Esteem Scale (RSES) score and the three components score of the Depression Anxiety and Stress Scale (DASS-21). As theoretically expected, the PSS dimensions demonstrated significant and negatively correlated with self-esteem, reflected the assumption that individuals experiencing higher levels of psychological strain tend to report lower global self-worth. Correlation coefficients between the four subscales of PSS and RSES scores ranged from $r = -.247$ to $r = -.578$ (refer to Table 2).

Conversely, the PSS subscale exhibited significant and positive correlations with all three DASS-21 components, the findings were consistent with theoretical perspectives that psychological strain was associated with elevated emotional distress, included depression, anxiety, and stress (Zhang, 2019; Zhang et al., 2014; Wei et al., 2020). The correlations between PSS subscales and DASS-21 scores ranged from $r = .188$ to $r = .533$. The results provided empirical support for the concurrent validity of the PSS (refer to Table 2).

Table 2

Matric Correlation between the dimensions of the Psychological Strain Scale, Rosenberg Self-Esteem Scale, and DASS-21.

Dimension	Value Strain	Aspiration Strain	Deprivation Strain	Coping Strain
Value Strain				
Aspiration Strain	.334**			
Deprivation Strain	.286**	.419**		
Coping Strain	.366**	.624**	.355**	
Self-Esteem	-.267**	-.437**	-.247**	-.578**
Stress	.255**	.369**	.210**	.533**
Anxiety	.188**	.264**	.272**	.411**
Depression	.240**	.385**	.260**	.508**

DISCUSSION

The present study examined the psychometric properties of the Psychological Strain Scale (PSS) among university students in Malaysia, focused on internal consistency reliability, convergent validity, and concurrent validity. The findings provided evidence that PSS as a reliable and valid measure of psychological strain within this population and applicable in Malaysian context. In the present study, aspiration strain and coping strain dimension demonstrated good reliability, while value strain and deprivation strain dimensions showed acceptable reliability. Although these coefficients were slightly lower than the findings in previous research using Chinese and American samples, where Cronbach’s alpha exceeded .80 (Zhang et al., 2014; Zhang & Lyu, 2014; Wei et al., 2020) the results still indicate that the PSS subscales is adequately acceptable in the Malaysian context. Variations in cultural background, sample characteristics, and language differences may explained the lower coefficients relative to earlier studies.

Convergent validity was supported by positive intercorrelations among all four PSS subscale. This pattern was consistent with theoretical expectations, as the four subscales measure interconnected components of psychological strain. Although distinct in conceptual focus, these dimensions collectively measure pressure, tension, or conflict arising from value conflicts, unmet

aspirations, deprivation experiences, and coping difficulties. The observed correlations indicated that the PSS subscales measured related aspects of the overarching construct of psychological strain.

Concurrent validity of PSS was also demonstrated through the significant positive correlations between the four subscales of PSS and the depression, anxiety, and stress components of the DASS-21. The findings were consistent with the Strain Theory of Suicide, which claimed that psychological strain preceded and contributed to emotional distress such as depression and anxiety (Liu et al., 2019; Zhang et al., 2011). Previous studies have similarly shown that individuals experienced higher levels of psychological strain reported greater depressive and anxiety symptoms (Zhang & Lv, 2014; Zhang & Lyu, 2014).

As expected, the PSS subscales demonstrated significant and negative correlations with self-esteem. The findings aligned with prior research showed that psychological strain was inversely related to global self-worth (Wei et al., 2020). Numerous studies have also documented that low self-esteem was associated with increased risk for depression, anxiety, academic stress, and suicidal ideation (Jang et al., 2014; Mitsui et al., 2014; Thompson, 2010; Nguyen et al., 2019). Given that psychological strain was positively associated with these maladaptive outcomes, its negative relationship with self-esteem was theoretically and empirically supported.

CONCLUSION

The present study provided empirical support that the Psychological Strain Scale (PSS) was a reliable and valid measure of psychological strain among university students in Malaysia. The instrument showed promise as a useful tool for researchers and practitioners seeking to assess psychological strain and its associations with mental health outcomes in university populations. Although the findings provided evidence for the psychometric properties of the PSS, several limitations should be acknowledged. First, the sample consisted predominantly of female participants, limited the ability to draw firm conclusions about gender differences in psychological strain. Second, the study relied solely on university students, whose stressors and developmental experiences may differ significantly from the working adults or adolescents.

As such, the generalizability of the findings to the wider Malaysian population was limited. Future research should aim to include more diverse samples, representing a broader range of genders, age groups, educational backgrounds, and occupational contexts.

REFERENCES

- Cristobal, E., Flavian, C., & Guinaliu, M. (2007). Perceived e-service quality (PeSQ) measurement validation and effects on consumer satisfaction and website loyalty. *Managing Service Quality: An International Journal*, 17(3), 317–340.
- Echevarría-Guanilo, M. E., Gonçalves, N., & Romanoski, P. J. (2018). Psychometric properties of measurement instruments: Conceptual bases and evaluation methods. *Texto & Contexto–Enfermagem*, 26(e1600017).
- Jang, J. M., Park, J. I., Oh, K. Y., Lee, K. H., Kim, M. S., Yoon, M. S., ... & Chung, Y. C. (2014). Predictors of suicidal ideation in a community sample: Roles of anger, self-esteem, and depression. *Psychiatry Research*, 216(1), 74–81.
- Liu, Y., Zhang, J., Hennessy, D. A., Zhao, S., & Ji, H. (2019). Psychological strains, depressive symptoms, and suicidal ideation among medical and non-medical staff in urban China. *Journal of Affective Disorders*, 245, 22–27.
- Mitsui, N., Asakura, S., Shimizu, Y., Fujii, Y., Toyomaki, A., Kako, Y., ... & Kusumi, I. (2014). The association between suicide risk and self-esteem in Japanese university students with major depressive episodes. *Neuropsychiatric Disease and Treatment*, 10, 811–816.
- Nguyen, D. T., Wright, E. P., Dedding, C., Pham, T. T., & Bunders, J. (2019). Low self-esteem and its association with anxiety, depression, and suicidal ideation in Vietnamese secondary school students: A cross-sectional study. *Frontiers in Psychiatry*, 10, 698.
- Thompson, A. H. (2010). The suicidal process and self-esteem. *Crisis*, 31(5), 311–316.

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, 20, 679–686.

Wei, Y. X., Wang, X. T., Zhang, J., Yao, Z. Y., Liu, B. P., & Jia, C. X. (2020). Psychometric properties of the Psychological Strain Scales (PSS) in suicide attempters and community controls of rural China. *Journal of Affective Disorders*, 266, 753–759.

Zhang, J. (2019). The strain theory of suicide. *Journal of Pacific Rim Psychology*, 13, e27.

Zhang, J., & Lv, J. (2014). Psychological strains and depression in Chinese rural populations. *Psychology, Health & Medicine*, 19(3), 365–373.

Zhang, J., & Lyu, J. (2014). Reliability, validity and preliminary hypothesis tests for the English version of the Psychological Strain Scales (PSS). *Journal of Affective Disorders*, 164, 69–75.

Zhang, J., Lu, J., Zhao, S., Lamis, D. A., Li, N., Kong, Y., ... & Ma, Z. (2014). Developing the Psychological Strain Scales (PSS): Reliability, validity, and preliminary hypothesis tests. *Social Indicators Research*, 115, 337–361.

Zhang, J., Wang, W., Huen, J. M. Y., Lyu, J., & Lew, B. (2022). Towards higher psychometric properties: Testing the Psychological Strain Scales with larger samples. *Archives of Suicide Research*, 26(2), 912–927.

Zhang, J., Wiczorek, W. F., Conwell, Y., & Tu, X. M. (2011). Psychological strains and youth suicide in rural China. *Social Science & Medicine*, 72(12), 2003–2010.