***Original Research Article***

# Cross-Cultural Evaluation of Cohen's Perceived Stress Scale Among College Students

**Comment [John Scze1]:** Consider adding "Filipino"

.


ABSTRACT

The objective of this study was to evaluate the psychometric properties (reliability and validity) of the English version of the 14-item Perceived Stress Scale (PSS-14) in the context of Filipino university students. The data of 200 undergraduate students sampled through purposive sampling who completed the PSS-14 were used for the analyses. The researchers employed Cronbach's Alpha ($\alpha > 0.7$) to evaluate the internal consistency of the scale, and Pearson Correlation to assess the validity of items. Moreover, ethical standards were principally addressed. The results showed that the internal consistency ($\alpha = 0.81$) of the PSS-14 was acceptable. Pearson Correlation Coefficient for items demonstrated a low to high association; statistically significant below 0.05 and critical values was less than the R-value. Hence, PSS – 14 was gleamed as a valid scale. Therefore, the psychometric properties of PSS – 14 were potent and vigor in the provision of insights in the pursuit of estimating the extent of perceived stress in the context of Filipino university students.



*Keywords: Perceived Stress Scale, Reliability Analysis, Validity, Filipino Students*


## 1. INTRODUCTION

Within the lens of behavioral science, stress is regarded as any circumstance that makes it difficult for an individual to adapt to a new environment and maintain a condition of equilibrium between him and the outside world (Humphrey, Yow & Bowen, 2000). In regards, one of the psychometrically sound scales used to assess the perceived stress is the Perceived Stress Scale (PSS) which is a 14-item scale based on the transactional perspective (Cohen et al. 1983). The PSS was based on the internal perceptions of the respondents as this scale would ask them whether their lives appeared to be unpredictable, unmanageable, or overloaded, instead of focusing on a single occurrence (Cohen & Williamson, 1988). Hence, the PSS was and is sensitive to the absence of events as well as continuous life circumstances, stress coming from events in friends and relatives' lives, and anticipation about future events (Cohen et al., 1983).

In relation to what has been noted, it is undeniable that college life in the Philippines is definitely a stressful one. College is primarily composed of students in their late adolescent years (Garrett, 2001). As students, they are considered to have a particular set of pressures, which could have a substantial impact on their capacity to cope with college life (Dussellier et al., 2005). Some of these pressures might be rooted internally, while some might as well be external to the individual as

there are interpersonal, intrapersonal, academic and environmental existing stressors (Ross, Neibling, & Heckert, 1999). It was revealed by Agolla and Ongori (2009) that the intrapersonal stressors such as the change in sleeping habits, desire for vacation or academic break, change in eating habits, and new responsibilities were generally cited by college students as the most common sources of stress. Moreover, Agolla and Ongori (2009) had specially mentioned examinations, papers, organization tasks, deadlines, and other stressful activities as the frequently factors that were given emphasis by college students.

Meanwhile, as the world was combatting the pandemic insurgence caused by the 2019 novel coronavirus, all aspects were heavily affected particularly the school settings (Bender, 2020). In retrospect, the UNESCO (2020) revealed that 1, 576,021, 818 students were affected as of April 6, 2020, accounting for 91.3 percent of all enrolled students at all stages of education in 188 countries due to the implementation of massive school closures. In the Philippines, the COVID-19 pandemic had a major effect on higher education institutions as a result of the increasing number of cases during the mid- year of 2020 that resulted on the decision of the Commission on Higher Education (CHED) to resort for online learning (DOH, 2020). However, many students, including professors, have spoken out against online learning for a variety of reasons. The reality was that numerous higher education institutions in the Philippines, both private and public colleges and universities, were unprepared to meet the challenges (Toquero, 2020).

Thus, due to the social distance norms and fear of infection, the typical youth-related experiences of attending school in physical classrooms, socializing with friends, engaging in fun social activities, and preparing for future vocations have been interrupted or modified (Cao et al., 2020). Furthermore, the "new normal," including online classrooms and extracurricular school events, restricted movement and socializing, disruptions of major social functions and leisure events, and an uncertain future outlook, might have an impact on the students' psycho-emotional development (Power et al., 2020). As a result, the repercussions of the pandemic and other scenarios in 2020 might have a significant impact on college students' transition to adulthood (Toquero, 2020).

In regards to what have been iterated, these would be a great opportunity to undergo a cross-validation on the well-known measure of perceived stress called the PSS. The PSS was available in 14, 10, and 4-item versions and had become one of the most widely used non-invasive measures of subjective stress in psychophysical health studies (Sharp et al., 2007). Specifically, the 4- and 10-item versions were subsets of the 14-item scale's items which were reported as reliable and as valid as the original version of the Perceived Stress Scale (Sharp et al., 2007). In retrospect, there were already few prior studies conducted to evaluate the psychometric properties of the English version of the PSS which were mostly focused on utilizing the principle component analysis (PCA) or exploratory factor analysis (EFA). Moreover, the PSS was also already translated into several other languages wherein its psychometric properties were assessed in a variety of populations (Andreou et al., 2011; Leung et al., 2010; Remor, 2006).

As mentioned, some of these studies were administered on Japanese samples (Mimura and Griffiths, 2008), samples of adults who had lost a family member or significant other to suicide (Mitchell, Crane, & Kim, 2008), on Chinese cardiac patients who smoked (Leung, Lam, and Chan, 2010), on Greek samples (Andreou et al., 2011), on community sample of older adults (Ezzati et al., 2014), on Chinese samples (Huang et al.,2020), and on Malaysian samples (Tambol et al., 2021). However, amidst the fact that there had been a wide utilization of the Perceived Stress Scale, it was found that it was not yet assessed specifically on college students of the Philippines wherein congested subjects and poor response to the impact of pandemic in school settings were reported (Toquero, 2020). Thus, considering that stress played an essential role in the holistic development of college learners, the psychometric properties of the test that measured stress across cultural settings must be considered. Therefore, the aim of this study was to investigate the reliability and validity of the English version of the 14-item PSS among samples of college students in University of Mindanao Digos College, an established higher education institution of Mindanao Island in the Philippines.

## 2.methodology

### 2.1 Participants

This validation study was administered among undergraduate students of the University of Mindanao Digos College, an established higher education institution of Mindanao Island, Philippines. The imposed criteria in the process of selecting the participants were centralized on the following requirements: (1) the participant shall be an enrolled student of University of Mindanao Digos College in the Academic Year 2021- 2022, and (2) the participant shall not be taking a Psychology program. The exclusion of students enrolled in Psychology program was in the pursuit of the researchers to extinguish or at least reduce bias during the course of test administration.

Moreover, the participants were favored in pursuance to the principles of purposive sampling. As Alchemer (2020) suggested, researchers shall utilize purposive sampling if there is a desire to target a specific population subgroup, provided that these participants meet the imposed criteria. The respective respondents who were chosen in this validation study were all residence within the vicinity of Davao del Sur province. Hence, all were reached through online distribution of questionnaires enclosed in Google forms.

Table 1 revealed the demographics of this validation study. The sample comprised 200 undergraduate students from University of Mindanao Digos College (UMDC) with a mean age of 20.8 years (SD=1.48). Specifically, an equal number of male sample (n=100, 50%) with a mean age of 20.9 years (SD=1.55), and female sample (n=100,50%) with a mean age of 20.8 years (SD=1.42) accounted the total number of samples used (n=200). Furthermore, respondents were mainly accumulated from the Department of Teaching Education and the Department of Criminal Justice Education, accounting 34 % (n=68) and 24.5 % (n=49). These were succeeded by the Department of Business Administration with 13 % (n=26), Department of Accounting Education with 10 % (n=20), Department of Technical Programs with 9.5 % (n=19), and the Department of Arts and Sciences with 9 % (n=18).

**Table 1 Demographics of the Participants**

**Table 1 | Background of the respondents (n=200)**

| | **Value** |
|---|---|
| **DEPARTMENT** | **N (%)** |
| Department of Teaching Education | 68 (34.0) |
| Department of Criminal Justice Education | 49 (24.5) |
| Department of Arts and Sciences | 18 (9.0) |
| Department of Accounting Education | 20 (10.0) |
| Department of Technical Program | 19 (9.5) |
| Department of Business Administration | 26 (13.0) |
| **GENDER** | **N (%)** |
| Female | 100 (50.0) |
| Male | 100 (50.0) |
| **MEAN AGE (SD)** | 20.84 (1.481) |
| **AGE MEAN PER GENDER (SD)** | |
| Female | 20.79 (1.416) |
| Male | 20.90 (1.547) |

## 2.2 Instrument

In this validation study, the researchers have utilized the 14-item English version of the Perceived Stress Scale from Cohen et al. (1983). The Perceived Stress Scale (PSS) was develop to assess how stressful certain situations in a person's life. The items were created to gauge how overburdened, unpredictable, and unmanageable the life events of the respondents. These three

difficulties were at the heart of the stress experience. A number of questions about current levels of experienced stress were also included on the scale. On a 5-point Likert scale, target participants would grade statement items, with reported significantly greater perceived stress.

The scale's questions inquired about feelings and thoughts during the previous month. In each case, the respondents would be asked to indicate how frequently he/she felt or thought a specific emotion or thought a certain way with 1 being the lowest and 5 being the highest. Although some of the questions were similar, there were some differences that one should be aware of. There were seven items reverse-keyed particularly item numbers 4, 5, 6, 7, 9, 10, and 13 respectively. Items must be added in order to consolidate the final score. Hence, each statement item should be treated as a separate question.

## 2.3 Design and Procedure

*2.3.1 Securing Permission*

In this validation study, the researchers have ascertained to secure and consolidate the permissions of the target respondents through the provision of informed consents. In these informed consents, the rights of the respondents were acknowledged to have the choice to either accept or refuse to partake in the test administration. The informed consent was presented in the Google Form in a comprehensive manner wherein the terms and conditions were completely discussed such as the purpose, benefits, and risks. In retrospect, the researchers have made sure the clarity and preciseness of the reasons in the informed consent why the validation study was needed to be conducted, and the accompanying sense of urgency of administrating the study.

*2.3.2 Instrument Distribution*

The distribution of the research instruments was addressed through online platform particularly in Google Form medium in pursuance to a safe and secured administration of the test. Since the archipelago was still in combat against the COVID – 19, the face-to-face test administration was not considered; hence resorting to online distribution of the instruments was the best option for this reason. The Google Forms were sent via the social media application called Messenger in each of the respondent's Messenger account during the working hours of weekdays. The researchers have avoided delivering Google Forms in non- working hours, holidays and during the weekends. Meanwhile, all queries coming from the respondents were substantially addressed which were mostly about their concerns on the instability of their internet.

*2.3.3 Data Collation and Processing*

As the researchers have met the standard minimum sample size of 200 responses gathered from the distributed Google Forms, the data were then collated and arranged in the Microsoft Excel. The demographic profiles of the respondents which served as the imposed criteria were categorized such as the names (optional), sex, age, college department, course program, and year level. Furthermore, these categorizations of the respondents' demographic profiles were accompanied by their responses on each of the 14 item statements of the English version of the Perceived Stress Scale in a 5 point-Likert scaling format. The researchers have rechecked and ascertained the finalized and irrevocable presentation of data in the Microsoft Excel in the pursuit of obtaining an accurate process of encoding. The data were then sent to the research adviser to undergo reevaluation prior to delivering the data set to the statistician for data analysis.

*2.3.4 Sample Size*

The sample size used was 200 based from the guidelines for the respondent-to-item ratio of ten-times rule (Hair et al., 2017) which posited that a minimum sample size would be determined through multiplying the number of questionnaire items by 10. In this validation study, the total number of items of the scale was 14 which were multiplied by 10 to gain a minimum sample size of 140. However, the researchers decided to increase the minimum sample size to 200 as this was a fair amount of sample size in contrast to 140 which was considered poor (Comrey & Lee, 2013). Furthermore, Kline (2015) stressed that a sample size of 200 was regarded as appropriate and moderate in non-complex researches. Nevertheless, given the wide range of questionnaire forms in used, it was also acknowledged that there were no absolute guidelines regarding the sample size required to verify a questionnaire (Osborne & Costello, 2004). The respondent-to-item ratios were only used to bolster the justification for a large sample size when necessary.

*2.3.5 Statistical Analyses*

In this validation study, a statistician was designated for the data analysis in examining the psychometric properties of the PSS-14 in terms of its reliability and validity. A software program called Statistical Package for the Social Sciences (SPSS) was utilized in order to statistically measure the psychometric properties of the scale through the provided data set. In particular, the reliability of the PSS-14 was evaluated through examining its internal consistency. As emphasized by Tang et al. (2014), internal consistency referred to the extent to which all of the items in a test measured the same notion or construct, and thus linked to the test's inter-relatedness. Hence, the internal consistency of the items was assessed through the utilization of the Cronbach's Alpha ($\alpha > 0.7$) which would indicate the strength of the association between items (Tavakol & Dennick, 2011). Finally, the corrected item-total correlation ($> r = .30$), and the Cronbach's Alpha ($\alpha > 0.7$) if item was deleted were also reported (DeVellis, 2017).

Meanwhile, construct validity of the PSS-14 was assessed through the utilization of Pearson product-moment correlation to measure the strength of a linear association between variables and was denoted by *r* (Laerd Statistics, 2021). To contextualize in this validity study, the calculations were done through significantly correlating each scale's item to the total of each item using the Pearson correlation coefficient. Hence, one way to assess the validity of each item was through examining the value of significance. The significant value obtained by the Sig. (2-tailed) was compared under 0.05 level of confidence ($p<0.05$) to determine if the item was valid (Dahiru, 2008). Lastly, another technique adopted to scout up the validity of items was through comparing the R-values with respect to the critical values under Pearson product coefficient at 0.05 level of confidence. R- values should exceed the critical values to pronounce that the scale's items were valid; otherwise, it would indicate the opposite interpretation (Salkind, 2018; Hartmann, 2018).

*2.3.6 Ethical Considerations*

The researchers made sure to adhere to the ethical standards and protocols set in conducting the research and gathering the data from the participants. In order to serve the best interest of ethical standards of this validation study, the application of the following ethical principles was addressed in order to protect the human subjects.

Informed consent was provided through Google Forms as an online medium towards the target test takers amidst the ongoing transmission of COVID – 19 in the public. Provision of informed consent was the most important part of any ethical process. Therefore, the researchers have made sure that the test takers have completely understood the study's purpose, benefits, and risks prior to making a decision of whether they would agree or decline to partake in the test administration. Thus, the researchers have secured the permission of the test takers without any exercise of pressure or coercion as these consents were given on their own volition and accord.

Avoidance of any form of physical or mental damage was seriously observed and complied during the course of test administration. The researchers have taken into account all the possible outcomes of the validation study and weighed the risks against the benefits. Moreover, the nature of administering the test was through online platform to abate the risks of being infected by the existing novel Corona virus in the public. At the same time, physical, social, and psychological harm, as well as all other types of harm, were kept to a bare minimum. Hence, no any incident associated with harm-induced by test administration was reported.

The researchers have ascertained that the respondents were fully aware that they had an option to opt-in or out of the validation study at any given time should they feel uncomfortable or violated. As well, the researchers have assured that the test takers were fully informed on the terms and conditions of the study prior to their decision to partake in the test administration. Finally, the researchers made it clear to the participants that they were free to answer the survey questionnaires without any pressure or coercion.

The researchers took precautions to ensure that any of the subject's identifying information could not be linked to personal responses. The researchers also addressed confidentiality by concealing the identities of the participants. Researchers have always considered the psychological and social consequences that a breach of confidentiality may have on subjects. To protect participants,

the researchers have educated them on their rights and employed all possible coding systems that they deemed appropriate in the research study.

## 3. results and discussion

*3.1 Reliability*

Table 2 shows the reliability analysis of PSS – 14. Cronbach's Alpha coefficients were utilized to evaluate the internal consistency of the scale. In regards, the results illuminated a reliability coefficient of 0.813 for the PSS – 14. In the same fashion, the Cronbach's Alpha if item deleted was reported; .799 (Item 1), .798 (Item 2), .802 (Item 3), .786 (Item 4), .798 (Item 5), .814 (Item 6), .798 (Item 7), .806 (Item 8), .803 (Item 9), .808 (Item 10), .798 (Item 11), .803 (Item 12), .804 (Item 13), and .800 (Item 14). Meanwhile, the corrected item total correlations were .473 (Item 1), .479 (Item 2), .423 (Item 3), .644 (Item 4), .476 (Item 5), .276 (Item 6), .480 (Item 7), .374 (Item 8), .409 (Item 9), .349 (Item 10), .483 (Item 11), .416 (Item 12), .395 (Item 13), and .453 (Item 14) respectively. Finally, Corrected Item – Total Correlation Coefficients were gleamed as ranging from .276 (Item 6) to .644 (Item 4).

**Table 2 Reliability Result**

**TABLE 2 | Reliability Analysis of PSS – 14**

| | **Corrected Item- Total Correlation** |
|---|---|
| ITEM_1 | .473 |
| ITEM_2 | .479 |
| ITEM_3 | .423 |
| ITEM_4 | .644 |
| ITEM_5 | .476 |
| ITEM_6 | .276 |
| ITEM_7 | .480 |
| ITEM_8 | .374 |
| ITEM_9 | .409 |
| ITEM_10 | .349 |
| ITEM_11 | .483 |
| ITEM_12 | .416 |
| ITEM_13 | .395 |
| ITEM_14 | .453 |
| **Cronbach`s Alpha = 0.813 (acceptable)** | |

*Note: The score of items 4, 5, 6, 7, 9, 10, and 13 were reversed. A response of "always" suggests low perceived stress. PSS – 14: Item 4. In the last month, how often have you dealt successfully with irritating life hassles?; Item 5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?; Item 6. In the last month, how often have you felt confident about your ability to handle your personal problems?; Item 7. In the last month, how often have you felt that things were going your way?; Item 9. In the last month, how often have you been able to control irritations in your life?; Item 10. In the last month, how often have you felt that you were on top of things?; Item 13. In the last month, how often have you been able to control*

*the way you spend your time?*

The psychometrics of the English version of the 14-itemed Perceived Stress Scale (PSS-14) were explored in the context of Filipino university students, and the findings suggested that the PSS-14 questionnaire had potential in assessing perceived stress among Filipino students. The analyses, in particular, revealed a good report on the PSS-14's internal consistency. Moreover, the Pearson correlation demonstrated an outstanding relationship; despite the fact that the correlation's strength varied from low to strong, PSS-14 items were still susceptible of assessing the same construct of perceived stress among students.

Cronbach Alpha coefficient for the PSS - 14 was found to be within the acceptable range set by Cronbach (DeVellis, 2017). Furthermore, the PSS-14 exhibited a high- reliability coefficient that was compatible and conforming with the findings of other researchers (Tavakol & Dennick, 2011, Peterson, 1997). In this regard, the usability and portrayal of the internal consistency of PSS-14 in estimating perceived stress among Filipino samples coincided with the evidences from Japanese samples (Mimura and Griffiths, 2008), Greek samples (Andreou et al., 2011), Chinese samples (Huang et al., 2020), and Malaysian samples (Tambol et al., 2021).

Furthermore, these data suggest that the PSS-14 items attained strong interconnections and consistency among each other, implying that they were capable of evaluating similar construct (Mimura & Griffiths, 2008; Andreou et al., 2011; Huang et al., 2020; Tambol et al., 2021). Besides, when it came to the corrected item-total correlation, only item 6 failed to qualify on the recommended correlation coefficient, which meant to say that the items 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, and 14 were higher than the recommended correlation coefficients (> r = .30) signifying that majority of the PSS-14 items were justifiably appropriate to be included in the scale (Laerd Statistics, 2021; Kline, 2015). On the other note, Cronbach Alpha of the PSS-14 was not compromised if any items were deleted on the scale; interestingly, deleting item 6 would increase the Cronbach's Alpha from 0.813 to 0.814. Hence, deletion of item 6 could be considered to make the scale more reliable.

*3.2 Validity*

Table 3 displays the validity analysis of the PSS - 14. The validity of items was explicated by correlating each item to its total. Hence, by executing this, the construct of the scale was assessed by looking at the value of significance and comparing the R-values with respect to the critical values under Pearson Product Coefficient at 0.05 level of significance. Pearson Correlation Coefficient for item 4 (.716**) demonstrated a strong or high association; statistically significant below 0.05, and critical value was less than the R- value. Meanwhile, items 1 (.569**), 2 (.583**), 3 (.532**), 5 (.578**), 7 (.576**), 9 (.505**), 11 (.579**), 12 (.523**), 13 (.501**), and 14 (.561**) demonstrated a moderate association; statistically significant below 0.05, and critical values were less than the R-value. Finally, items 6 (.403**), 8 (.489**), and 10 (.460**) acquired a low to moderate correlation; statistically significant below 0.05, and critical values were less than the R-value.

**Table 3 Validity Result**

**TABLE 3 | Validity of the Items Using the Critical Values of Pearson Product (N=200)**

| Items | | Total |
|---|---|---|
| ITEM_1 | Pearson Correlation | .569** |
| | Sig. (2-tailed) | .000 |
| ITEM_2 | Pearson Correlation | .583** |

| | | |
|---|---|---|
| | Sig. (2-tailed) | .000 |
| ITEM_3 | Pearson Correlation | .532** |
| | Sig. (2-tailed) | .000 |
| ITEM_4 | Pearson Correlation | .716** |
| | Sig. (2-tailed) | .000 |
| ITEM_5 | Pearson Correlation | .578** |
| | Sig. (2-tailed) | .000 |
| ITEM_6 | Pearson Correlation | .403** |
| | Sig. (2-tailed) | .000 |
| ITEM_7 | Pearson Correlation | .576** |
| | Sig. (2-tailed) | .000 |
| ITEM_8 | Pearson Correlation | .489** |
| | Sig. (2-tailed) | .000 |
| ITEM_9 | Pearson Correlation | .505** |
| | Sig. (2-tailed) | .000 |
| ITEM_10 | Pearson Correlation | .460** |
| | Sig. (2-tailed) | .000 |
| ITEM_11 | Pearson Correlation | .579** |
| | Sig. (2-tailed) | .000 |
| ITEM_12 | Pearson Correlation | .523** |
| | Sig. (2-tailed) | .000 |
| ITEM_13 | Pearson Correlation | .501** |
| | Sig. (2-tailed) | .000 |
| ITEM_14 | Pearson Correlation | .561** |
| | Sig. (2-tailed) | .000 |

*Note: A p-value less than 0.05 (typically ≤ 0.05) is statistically significant.*

Finally, the Pearson Correlations of all the items of PSS-14 yielded significant values under 0.05 level of significance, and critical values were revealed as smaller than R-values, implying that the items and scale were legitimate if the requirements specified by numerous authors were met (Hartmann, 2018; Salkind, 2018). Specifically, item 4 got the strongest association among the 14 items, items 1, 2, 3, 5, 7, 9, 11, 12, 13, 14 garnered moderate association, and items 6, 8, and 10

attained low to moderate association. Thus, signifying that if each item of the scale was correlated to it summations, then most of the items were considered valid, however it did not disaffirm the possibility that few of the items could be revisited and revised.

## 4. Conclusion

The PSS-14 had shown to be a reliable scale with acceptable validity, allowing it to efficiently quantify student perceived stress. Using the Cronbach Alpha, a satisfactory reliability coefficient was obtained in this investigation. Item 6 got the lowest item correlation however including it did not cause an adverse impact on the robustness of the scale. In general, the PSS-14 demonstrated strong psychometrics, was easy to fill out and understand, and could elicit useful information in the context of Filipino university learners.

## Consent (where ever applicable)

All authors declare that 'written informed consent was obtained from the participants. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

## References


Agolla, J. E., & Ongori, H. (2009). An assessment of academic stress among undergraduate students: The case of University of Botswana.

Alchemer (2020). *Purposive sampling 101.* https://www.alchemer.com/resources/blog/purposivesampling-101/

Andreou, E., Alexopoulos, E. C., Lionis, C., Varvogli, L., Gnardellis, C., Chrousos, G. P., & Darviri, C. (2011). Perceived stress scale: reliability and validity study in Greece. *International journal of environmental research and public health*, *8*(8), 3287-3298.

Bender, L. (2020). Key messages and actions for COVID-19 prevention and control in schools. *Education UNICEF NYHQ*.

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, *287*, 112934.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 385-396.

Cohen, S., Williamson, G., Spacapan, S., & Oskamp, S. (1988). The social psychology of health. *The social psychology of health*.

Comrey, A. L., & Lee, H. B. (2013). *A first course in factor analysis*. Psychology press.

Dahiru, T. (2008). P-value, a true test of statistical significance? A cautionary note. *Annals of Ibadan postgraduate medicine*, *6*(1), 21-26.

Department of Health (DOH, 2020). Updates on Novel Coronavirus Disease. Retrieved from http://www.doh.gov.ph/2019-nCoV

DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. Sage publications.

Dusselier, L., Dunn, B., Wang, Y., Shelley II, M. C., & Whalen, D. F. (2005). Personal, health, academic, and environmental predictors of stress for residence hall students. *Journal of American college health*, *54*(1), 15-24.

Ezzati, A., Jiang, J., Katz, M. J., Sliwinski, M. J., Zimmerman, M. E., & Lipton, R. B. (2014). Validation of the Perceived Stress Scale in a community sample of older adults. *International journal of geriatric psychiatry*, *29*(6), 645-652.

Garret, J. B. (2001). Gender differences in college related stress. *Undergraduate journal of psychology*, *14*(7), 5-9.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the academy of marketing science*, *45*, 616-632.

Hartmann, K., Krois, J., & Waske, B. (2018). E-learning project SOGA: Statistics and geospatial data analysis. *Department of Earth Sciences, Freie Universitaet Berlin*, *33*.

Kline, R. (2015). Principles and Practice of Structural Equation Modeling, 4th Edn. New York, NY: The Guilford Press.

Statistics, L. (2020). Pearson's product moment correlation. Statistical tutorials and software guides. *Retrieved March*, *9*, 2022.

Leung, D. Y., Lam, T. H., & Chan, S. S. (2010). Three versions of Perceived Stress Scale: validation in a sample of Chinese cardiac patients who smoke. *BMC public health*, *10*, 1-7.

Mimura, C., & Griffiths, P. (2008). A Japanese version of the Perceived Stress Scale: cross-cultural translation and equivalence assessment. *BMC psychiatry*, *8*(1), 1-7.

Mitchell, A. M., Crane, P. A., & Kim, Y. (2008). Perceived stress in survivors of suicide: psychometric properties of the Perceived Stress Scale. *Research in nursing & health*, *31*(6), 576-585.

Osborne, J. W., & Costello, A. B. (2004). Sample size and subject to item ratio in principal components analysis. *Practical Assessment, Research, and Evaluation*, *9*(1), 11.

Power, E., Hughes, S., Cotter, D., & Cannon, M. (2020). Youth mental health in the time of COVID-19. *Irish Journal of Psychological Medicine*, *37*(4), 301-305.

Remor, E. (2006). Psychometric properties of a European Spanish version of the Perceived Stress Scale (PSS). *The Spanish journal of psychology*, *9*(1), 86-93.

Ross, S. E., Niebling, B. C., & Heckert, T. M. (1999). Sources of stress among college students. *College student journal*, *33*(2), 312-312.

Salkind, N. J. (Ed.). (2010). *Encyclopedia of research design* (Vol. 1). sage.

Sharp, L. K., Kimmel, L. G., Kee, R., Saltoun, C., & Chang, C. H. (2007). Assessing the Perceived Stress Scale for African American adults with asthma and low literacy. *Journal of Asthma*, *44*(4), 311-316.

Tambol, Z., Bakar, A. Y. A., & Mahmud, M. I. (2021). Validity and Reliability of the Malaysian Perceived Stress Scale (PSS) using Rasch Measurement Model.

Tang, W., Cui, Y., & Babenko, O. (2014). Internal consistency: Do we really know what it is and how to assess it. *Journal of Psychology and Behavioral Science*, *2*(2), 205-220.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, 53.

Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, *5*(4).

UNESCO. (2020). Global monitoring of school closures caused by COVID-19.

**Appendix A**

**Perceived Stress Scale**
**Cohen et. al (1983)**

**Perceived Stress Scale**

The questions in this scale ask you about your feelings and thoughts during the **last month**. In each case, you will be asked to indicate by selecting how often you felt or thought a certain way among the given choices.

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

1. In the last month, how often have you been upset because of something that happened

unexpectedly?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

2. In the last month, how often have you felt that you were unable to control important

things in your life?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

3. In the last month, how often have you felt nervous and “stressed”?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

4. In the last month, how often have you dealt successfully with irritating life hassles?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

5. In the last month, how often have you felt that you were effectively coping with

important changes that were occurring in your life?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

6. In the last month, how often have you felt confident about your ability to handle your

personal problems?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

7. In the last month, how often have you felt that things were going your way?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

8. In the last month, how often have you found that you could not cope with all the things

that you had to do?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

9. In the last month, how often have you been able to control irritations in your life?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

10. In the last month, how often have you felt that you were on top of things?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

11. In the last month, how often have you been angered because of things that happened that were outside of your control?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

12. In the last month, how often have you found yourself thinking about things that you have to accomplish?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

13. In the last month, how often have you been able to control the way you spend your time?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

**1=never; 2=almost never; 3=sometimes; 4=fairly often; 5=very often.**

## Appendix B
**Permission Letter Addressed to Dr. O'Connor**

**MR. SHELDON COHEN**

PSS Author

Carnegie Mellon University

Re: Request for Permission to Grant Utilization of the Perceived Stress Scale

Greetings!

I'm writing to you in reference to our Laboratory course requirement in Psychological Assessment (Psych 312/L).

As part of completing the said course, and in accordance with the ethical standards of psychological testing and assessment, we were tasked with assessing a psychometric test across cultures, and one way to do so is to obtain permission from the appropriate and respective authors for the utilization of the aforementioned scale. In this regard, I and my colleagues will evaluate the Cohen's Perceived Stress Scale (CPSS) in order to develop a cross-validated test norm using Filipino university sample wherein students' demographic data will be stratified by age, gender, and department.

Hence, we are writing to respectfully request permission to use your PSS questionnaire from your good office to cross-culturally assess perceived stress among Filipino college students at the University of Mindanao Digos College, Philippines.

With great honor and gratitude, we look forward to working with you on this humble request to substantiate our desire to pursue this academic task by collecting data. Without a doubt, your assistance will open the door to the next stage of the process, and we are confident that your assistance in our letter will have a significant impact on us in advancing our educational excursion at the university.

Furthermore, if you so desire, I am fully prepared, on behalf of my colleagues, to collaborate with you in order to conform with the various materials required for this validation and norming study. You can contact us as shown above, via the group's chosen email and contact.

Sincerely,

**ANGELLI S. REPALDA**
Student-Researcher

by

## Appendix C
**Permission Letter Addressed to UM Digos College**

**EDUARD L. PULVERA, MSIS**

Dean of College

University of Mindanao Digos College

Re: Request for permission to conduct a validation study

Greetings!

I'm writing to you in reference to our Laboratory course requirement in Psychological Assessment (Psych 312/L).

As part of completing the said course, and in accordance with the ethical standards of psychological testing and assessment, we were tasked with assessing a psychometric test across cultures, and one way to do so is to obtain permission from the appropriate and respective authors for the utilization of the aforementioned scale. In this regard, I and my colleagues will evaluate the Cohen's Perceived Stress Scale (CPSS) in order to develop a cross-validated test norm using Filipino university sample wherein students' demographic data will be stratified by age, gender, and department.

Hence, we are writing to respectfully request permission if you may want to allow us in our study to cross-culturally assess perceived stress among Filipino college students at the University of Mindanao Digos College, Philippines.

With great honor and gratitude, we look forward to working with you on this humble request to substantiate our desire to pursue this academic task by collecting data. Without a doubt, your participation will open the door to the next stage of the process, and we are confident that your participation in our study will have a significant impact on us in advancing our educational excursion at the university.

Furthermore, if you so desire, I am fully prepared, on behalf of my colleagues, to collaborate with you in order to conform with the various materials required for this validation and norming study. You can contact us as shown above, via the group's chosen email and contact.

Sincerely,

**ANGELLI S. REPALDA**
Student-Researcher

**Approved by:**

**EDUARD L. PULVERA, MSIS**
Dean of College

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Date Received: _____

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