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Original Article

Flourishing in Caribbean university students

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Abstract: *As a component of the American College Health Association-National College Health Assessment (ACHA-NCHA), 649 university students in Barbados completed the Flourishing Scale (FS; Diener, 2010) in academic year 2021-22. The mean FS score was 42.97 (SD = 8.82). No sex or gender differences in FS scores were observed. A confirmatory factor analysis (CFA) supported a unidimensional factor structure, consistent with findings of previous studies globally. Theoretically expected correlations with measures of resilience, loneliness, psychological distress, and suicidality provided evidence of construct validity. Findings of configural invariance and expected relationships with related constructs provide initial psychometric support for use of the Flourishing Scale in Barbados and the broader Anglophone Caribbean, as well as for cross-cultural research including Caribbean people.*

Keywords: Flourishing, psychometrics, Caribbean, college health, Flourishing Scale

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INTRODUCTION

Flourishing is a comprehensive construct that encompasses various aspects of well-being, including physical and mental health, as well as personal

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and social vitality. Research contributions aimed at conceptualizing flourishing have employed diverse theoretical and behavioral foundations of human well-being, broadly categorized into hedonic (focused on maximizing pleasure and minimizing pain) and eudaimonic (concerned with meaning and purpose) approaches (Ryan & Deci, 2001; Sirgy, 2019). Both hedonic and eudaimonic experiences have been linked to increased flourishing and reduced psychological distress (Henderson, Knight, & Richardson, 2013). Flourishing is associated with a wide array of positive health outcomes, including mental health protection (Burns et al., 2022; Fink, 2014), positive health behaviors (Trudel-Fitzgerald et al., 2019), improved cardiovascular health (Kubzansky et al., 2018), and longevity (Diener & Chan, 2011). Beyond its association with specific health outcomes, flourishing has garnered significant interest as a vital outcome in its own right, encompassing aspects of broad subjective well-being such as happiness, a sense of purpose, being a "good" person, and fulfilling relationships. Given its ability to capture crucial facets of health more comprehensively, the concept of flourishing can complement more granular outcome measures and serve as a valuable framework for assessing both individual and population health, including the well-being of healthcare professionals (VanderWeele, McNeely, & Koh, 2019).

The Flourishing Scale (FS; Diener et al., 2010) is a concise (8-item) Likert-style measure that assesses self-perceived success in relationships, self-esteem, purpose, and optimism. This scale generates a composite psychological well-being score ranging from 8 to 56, which is correlated with positive health outcomes. Diener and colleagues developed the FS drawing on humanistic theories of psychological needs, particularly competence, relatedness, and self-acceptance. They also incorporated items addressing meaning and purpose, which contribute to social and psychological capital, notably through the enhancement of well-being in others and the maintenance of positive relationships (Diener et al., 2010; Seligman, 2002). In essence, FS items tap self-perceived success in eudaimonic dimensions of well-being.

An increasing number of studies conducted outside the Caribbean have demonstrated robust psychometric properties and a broadly consistent unidimensional factor structure for the FS globally, including in countries such as Canada (Howell & Buro, 2015; Romano et al., 2020), Chile (Carmona-Halty et al., 2022), China (Duan & Chi, 2019; Tang et al., 2016), Columbia (Martín-Carbonell et al., 2021), Greece (Kyriazos et al., 2018), Honduras (Landa-Blanco et al., 2023), India (Singh, Junnarkar, & Jaswall, 2018), Iran (Fassih-Ramandi et al., 2020) Japan (Sumi, 2018), Macau (Tong & Wang, 2017), New Zealand (Hone, Jardan, & Schofield, 2014), Pakistan (Choudry et al., 2018), Portugal (Silva & Caetano, 2013), Russia (Didino et al, 2019), South Africa (Mostert et al., 2023), and Spain (Checa, Perales, & Espejo, 2018; Ramírez-Maestre et al., 2017).

The FS has also been validated with populations of interest in healthcare, including patients with spinal cord injury (Perera, Read, & DiPonio, 2018), people living with chronic pain (Ramírez-Maestre et al., 2017), parents of children with cancer (Muñoz & Nieto, 2019), and youth at risk for cannabis use (Butler et al., 2019). The FS appears to be useful for measuring subjective well-being across a broad range of cultures and is emerging as a useful measure in health research However, with few exceptions, studies on flourishing in the Caribbean region are limited (see Craig et al., 2018, and Henricks et al., 2020), and, to the best of our knowledge, the FS has not been validated previously with Caribbean populations. The FS is copyrighted but available for public use without charge or permission with appropriate attribution (Diener et al., 2010). The scale (in English) and translations in 18 additional languages are available at http://labs.psychology.illinois.edu/~ediener/FS.html.

The most recent iteration of the American College Health Association-National College Health Assessment (ACHA-NCHA) incorporated the FS as part of a comprehensive suite of measures aimed at assessing well-being and mental health among university students (Lederer & Hoban, 2022). Following this survey revision, Park and Bui (2022) reported changes in well-being and mental health status among nearly 55,000 students representing over 100 universities in the United States during the 2020-21 academic year, amidst the COVID-19 pandemic. The findings generally indicated a decline in self-reported psychological well-being, encompassing increases in loneliness, psychological distress, suicide risk, and a reduction in flourishing and resilience. Although the effect sizes were statistically significant, they were relatively small (e.g., for flourishing, d = .17), highlighting the ongoing need for the development of mental health resources for university students. While pandemic-related stressors might have contributed to some of the negative mental health outcomes, it is important to interpret these findings in the context of longer-term trends, which show a more substantial increase in the prevalence of mental health issues among university students, particularly in the United States (Lipson et al., 2022).

During the academic year 2021-22, our research team administered the ACHA-NCHA in Barbados for the first time as part of an initiative to bolster the evidence base for student health planning at the University of the West Indies. These research endeavors provided a unique opportunity to establish psychometric support for measures that hold potential utility in both clinical and research contexts within the Caribbean. In this context, the current study aimed to assess the psychometric properties and configural invariance of the FS for university students in Barbados.

METHODS

The study received prior approval from the Cave Hill Campus Research Ethics Committee (approval # 201204-B). The ACHA-NCHA survey was distributed as a cross-sectional survey via five email notifications to all currently enrolled students (approximately 7000, with some enrollment fluctuation across both semesters) at The University of the West Indies Cave Hill Campus from October 2021 to March 2022. Undergraduate and postgraduate students were included. Students under 18 were excluded. Unique identifiers were implemented to prevent duplicate survey submissions, and previous respondents were excluded from subsequent invitations to participate.

Additional Measures

In addition to the FS, the current version of the ACHA-NCHA included the following scales as measures of relevant mental health outcomes for university student populations. Given that each instrument is theoretically expected to exhibit relationships with flourishing, these measures are pertinent for evaluating the concurrent validity of the FS.

Connor-Davidson Resilience Scale-Two Item Version (CD-RISC2): The CD-RISC2 (Vaishnavi et al., 2007) utilizes two items from the original CD-RISC to efficiently assess increases in resilience in response to psychotropic medication. CD-RISC2 scores range from 0 to 8, with higher scores indicating greater resilience.

Short UCLA Loneliness Scale (ULS3): The ULS3 (Hughes et al., 2004) is a 3-item measure developed from the original UCLA Loneliness Scale to facilitate use in large-scale surveys. The ULS3 yields scores ranging from 3 to 9, with scores of ≥ 6 indicating a positive screening for loneliness.

Kessler-6 (K6): The K6 (Kessler et al., 2010) is a brief (6-item) 5-point Likert scale designed for the assessment of psychological distress in epidemiological surveys. The instrument exhibits robust psychometric properties and discriminatory capacity for psychiatric diagnosis in large-scale health surveys in the US and internationally (Kessler et al., 2010). K6 scores span from 0 to 24, with scores of 0-4 indicating minimal to no distress, 4-12 reflecting moderate distress, and scores of ≥13 suggesting severe psychological distress (Prochaska et al., 2012).

Suicide Behaviors Questionnaire-Revised (SBQ-R): The SBQ-R (Osman et al., 2001) is a 4-item Likert scale designed to assess past suicidal ideation and behaviors. It has been shown to be useful in distinguishing between suicidal and

non-suicidal respondents. In a normative US sample, the most useful cut-off scores were 7 for non-clinical and 8 for clinical groups.

Analytic Strategy

After calculating descriptive statistics to describe respondent characteristics and summarize FS scores, we assessed internal consistency using Cronbach's (1951) alpha and McDonald's (1999) omega. After initial data screening and imputing missing data, a confirmatory factor analysis (CFA) with maximum likelihood estimation and oblique rotation was used to examine the fit of a one-factor model for the FS. We further assessed construct validity by calculating bivariate correlations of the FS with the CD-RISC2, ULS3, K6, and SBQ-R.

RESULTS

Characteristics of the Sample

Among students who completed the omnibus ACHA-NCHA survey (n = 649, overall response rate ≈ 10%, accounting for enrollment fluctuations during the study period), the response rate for the FS was 99.4% (n = 640). There were 495 biological females and 143 biological males; 2 did not specify sex; 11 identified as transgender. Mean age was 26.94 (SD = 9.91; range: 18-63). Most respondents (72.3 %) were enrolled as full-time students.

Initial Data Screening

No more than 0.8% of data were missing for any FS item, and Little's (1988) test indicated that the missing data were entirely at random ($\chi 2$ (36) = 47.41, p = .10). Consequently, we used Estimation Maximization (EM) to impute missing data before conducting CFA.

Summary, Reliability, and Validity of Flourishing Scale Scores

The mean FS score was 42.97 (SD = 8.82; range: 10-56). The internal consistency of the FS was very good (α = .905). Item analysis did not identify any items that lowered the alpha coefficient. Recognizing the limitations of alpha due to its restrictive assumptions (Cortina, 1993; Dunn, Baguley, & Brunsden, 2014), we also calculated McDonald's omega, which was marginally stronger (ω = .908).

Construct validity of the FS was assessed using four scales: the Kessler 6 Non-Specific Psychological Distress Scale (K6; n = 617, r = -.59, p < .01), the UCLA Loneliness Scale (n = 640, r = -.46, p < .01), the Suicide Behavior Questionnaire –

Revised (SBQR; n = 629, r = -.47, p < .01), and the Connor-Davidson Resilience Scale 2 (CD-RISC2, n = 638, r = .51, p < .01). As anticipated, we observed a moderate positive correlation between the FS and the resilience measure, as well as negative correlations between the FS and the distress, loneliness, and suicidality measures.

Factor Structure

A CFA using maximum likelihood estimation and oblique rotation was used to examine the fit of the one-factor model observed in other samples. Factor loadings ranged from .65 to .85. Modification indices for the CFA suggested specifying correlations between the residual variances of items 1 and 8, items 2 and 7, and items 2 and 3. These modifications were conceptually congruent and therefore adopted. The resulting path model can be found in Figure 1. Table 1 shows fit indices for the model with and without modifications. After modifications, four of five fit indices calculated by Mplus 8.9 were well within the acceptable ranges. The exception was the chi square, which is notoriously impacted by sample and model size.

Figure 1
Visual Representation of the Flourishing Scale One-factor Model.

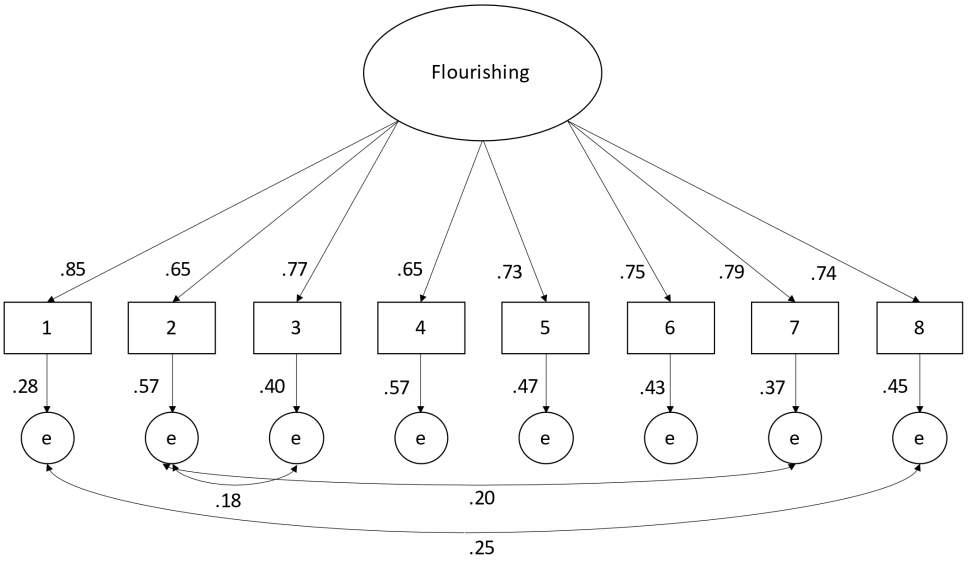

Table 1
Fit Indices for Flourishing Scale Confirmatory Factor Analysis Model

	χ^2	*df*	χ^2 *p* value	χ^2 / *df*	CFI	TLI	SRMR	RMSEA	RMSEA 90% C.I.
DFS 1 Factor	141.22	20	.000	7.06	.96	.94	.03	.09	.082 - .112
DFS ModInd	73.56	17	.000	4.32	.98	.97	.02	.07	.055- .089
Acceptable Range	N/A	N/A	$p \geq .05$	< 3	$\geq .90$	$\geq .95$	$< .08$	$< .08$	N/A

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; C.I. = confidence interval.
Note. Acceptable ranges sourced from Kline (2016).

Demographic Associations with Flourishing

No significant differences in flourishing scores were found between transgender participants and others when Welch's t tests were conducted. Further, no significant differences were found between the mean flourishing scores of men and women. A small positive correlation was found between age in years and flourishing score ($n = 634$, $r = .27$, $p < .01$). Unexpectedly, a small negative correlation was found between approximate GPA and flourishing ($n = 629$, $r = -.17$, $p < .01$).

DISCUSSION

The construct of flourishing, encompassing physical, psychological, and social vitality, provides a comprehensive measure of well-being for health research involving both individuals and populations. Despite comprising items from diverse theoretical perspectives, the FS consistently demonstrates a unidimensional factor structure that remains invariant across various cultural settings, including the Caribbean, as evidenced in this study. Additionally, all correlations with measures used to establish construct validity align with theoretically expected directions.

The mean flourishing score in the Barbadian sample (42.97) was somewhat lower than findings for university students in other settings: Missouri, USA (44.11) (Partners in Prevention, 2023); Seville (46.8) and Basque Country (46.5), Spain (de la Fuente et al., 2017); and the Southeastern USA (45.29) (Cedillo et al.,

2023). However, a study in France reported a slightly lower mean score of 42.63. (Villieux et al., 2016). Direct comparisons to previous findings are beyond the scope of this paper. However, stressors during the COVID-19 pandemic plausibly could have negatively influenced scores of students in the current study.

No significant differences in FS scores by biological sex were observed in this study, and there were no differences between trans- and cisgender students. Findings from previous studies regarding sex and gender differences are mixed. Findings of higher flourishing among females have been reported in Canada (Howell & Buro, 2015), China (Tong & Wang, 2017), Italy (Parola & Marcionetti, 2023), and Spain (de la Fuente et al., 2020). Other studies found no significant sex differences, for example, in Chile (Carmona-Halty, 2022) and Portugal (Rando, Abreu, & Blanca, 2022). Moreover, studies have demonstrated measurement invariance between males and females (de la Fuente et al., 2017; Martín-Carbonell et al., 2022; Rando, Abreu, & Blanca, 2022; Romano et al., 2020; Seok et al., 2022). Further research examining sex, gender, and other demographic associations with flourishing is desirable.

Voluntary sampling is a limitation of this study. Nonetheless, our findings support the utility of a useful tool for future Caribbean research, particularly in the fields of health and social sciences, where valid and reliable measures of well-being are essential. More broadly, the research on flourishing lends support to emerging mreconceptualizations of therapeutic goals in psychotherapy and mental health outcomes. These reconceptualizations emphasize the inclusion of well-being and virtue development alongside symptom reduction as therapeutic objectives for individuals (Jankowski et al., 2020; VanderWeele, 2017) and as targets for enhancing population mental health (Keys, 2007; VanderWeele, McNeely, & Koh, 2019).

CONCLUSION

Our findings provide evidence of internal consistency, construct validity, and configural invariance of the one-factor model of the FS in a Caribbean university student population and contribute to an evidence base supporting the measure for further use in studies with Caribbean people.

AUTHOR CONTRIBUTIONS

M.H.C. Conceptualization; Methodology; Formal analysis; Investigation; Data curation; Writing-Original Draft; Writing-Review & Editing; Project administration.

J. G-T. Methodology; Formal analysis; Data curation; Writing-Original Draft; Writing-Review & Editing.

T. W-B. Conceptualization; Investigation; Writing-Review & Editing; Project administration.

N.S.G. Conceptualization; Methodology; Investigation; Writing-Review & Editing; Project administration.

M.K.E. Conceptualization; Investigation; Writing-Review & Editing; Project administration.

P.S.C. Conceptualization; Methodology; Investigation; Data curation; Writing-Review & Editing.

S.G.A. Conceptualization; Methodology; Investigation; Writing-Review & Editing; Project Administration; Funding acquisition.

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CONFLICT OF INTERESTS

M.H.C. is an editorial board member for WCPRR. Authors declare no other conflicts of interest.

DATA AVAILABILITY

The data from the current manuscript are not publicly available because some information is currently being used for ongoing institutional research and program development. Data is available from the corresponding author on reasonable request.

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