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Confirmatory factor analysis of the Warwick-Edinburgh Mental Wellbeing Scale among youth in Mexico

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Abstract

The internal structure of the Warwick-Edinburgh Mental Wellbeing Scale was evaluated using confirmatory factor analysis for a sample of youth living in Michoacán, Mexico. While the chi-square test of model fit suggested misfit to the data, the alternative fit indices and standardized factor loadings supported the conclusion that the items are adequate and reliable indicators of a single underlying latent factor. The utilization of this strengths-based mental health instrument could help circumvent some of the negativity and stigma inherent in traditional mental health assessments.

Keywords

Adolescent health, mental well-being, Mexico, psychometrics, Warwick-Edinburgh

Introduction

The mental health field has historically been dominated by an emphasis on deficits and weaknesses, leading people in desperate situations to fixate on and micro analyze their shortcomings. Indeed, as one observer stated, 'Over the years, the mental health professions and institutions – psychiatry, psychology, and medicine – have created an increasingly luxuriant language of deficit, pathology, frailty, and infirmity' (Saleebey,

2006: 24). The deficits approach has become so interwoven with the mental health profession in the United States that insurance companies, community organizations, and government entities at all levels require mental health professionals to make deficit-centered diagnoses using the *Diagnostic and Statistical Manual of Mental Disorders* in order to be reimbursed for services (Saleebey, 2008). In stark contrast to the deficits model, the field of social work has been a leader in spearheading a radical alternative approach, generally titled 'the strengths perspective' (aka 'strengths-based approach').

The strengths perspective emphasizes the discovery and utilization of client strengths, helping them to identify the good qualities they possess and teaching them how to use their talents and abilities to achieve positive life changes (Luthar et al., 2000; Patterson, 2002). The International Federation of Social Workers (IFSW, 2016b) underscores the importance of this model by recognizing 'the inherent dignity and worth of all people' and 'identifying and developing strengths' as foundational values of the social work profession (IFSW, 2016a). The strengths-based approach has laid the groundwork for positive client-centered techniques for practitioners to follow when interacting with clients, such as the ROPES framework (Graybeal, 2001). This framework helps practitioners continually draw on the strengths of their clients by identifying Resources, Opportunities, Possibilities, Exceptions, and Solutions they can use to change their situation (Pattoni, 2012). This is just one of many tools that have stemmed from the transition away from deficits-focused to strengths-centered helping. Along with practical approaches to guide social worker interactions with clients, another essential part of perpetuating the use of a strengths-based approach throughout the world is the development, validation, and utilization of strengths-based assessments for diverse countries. Unfortunately, many assessments that promote client dignity and identify strengths are not used in some countries simply because they have not undergone the requisite psychometric testing. In order to address the ongoing need to make strengths-based instruments available to social work and mental health practitioners throughout the world, the purpose of this study was to assess one such instrument – the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) – among Mexican youth using confirmatory factor analysis (CFA).

The use of strengths-based models and assessments is especially important

when discussing mental health and its accompanying stigma. Stigma associated with mental health has a negative effect on self-esteem, interpersonal relationships, and job opportunities (Lai et al., 2000). Fortunately, new strengths-based assessments centered on mental well-being and positive mental health have begun to reduce stigma and replace former deficits-centered instruments. These new assessments focus on more than just mental illness; they also encompass self-acceptance, personal growth, and fulfilling relationships (López et al., 2013; Stewart-Brown and Janmohamed, 2008). There has been increasing international interest in utilizing such assessment to study positive mental well-being as organizations such as the European Commission and the United Nations are now using positive mental health as a marker of societal advancement (Castellví et al., 2014). As positive mental health is associated with strong physical health and social outcomes (Linley and Joseph, 2004), new therapies and health programs centered on its promotion (Joseph and Linley, 2006) should be of interest to mental health professionals throughout the world, particularly social workers.

The present study

The WEMWBS was developed by the Scottish government to assess positive mental health in the United Kingdom (Stewart-Brown and Janmohamed, 2008). It consists of 14 positively worded items measuring subjective well-being and psychological functioning, scored on a 1- to 5-point Likert scale. It has undergone multiple adaptations and translations as researchers and government health officials from countries including Spain, Chile, and Argentina have recognized the importance and value of a brief, positively focused assessment of mental well-being (Carvajal et al., 2015; Castellví et al., 2014; López et al., 2013). Using CFA, Rasch modeling, test-retest validity, and internal consistency assessments (e.g. Cronbach's alpha), the original version of the WEMWBS has been rigorously evaluated and found to be adequate among both youth (aged 15+) and adults (López et al., 2013; Stewart-Brown et al., 2009). Like the original instrument, the Spanish version of the WEMWBS has been identified as valid for general use in various countries throughout the world, but to the best of our knowledge it has not been empirically assessed among Mexican youth. Assessment and application of a strengths perspective may be particularly useful

for Mexican-origin youth who demonstrate significant disparities in their mental health functioning (Isasi et al., 2016) and who are often portrayed in research literature as having little resilience to combat exaggerated mental health challenges (Holleran and Waller, 2003). In order to make this strengths-based assessment available to social workers and mental health professionals in Mexico, we tested the WEMWBS among a group of secondary students living in the Mexican state of Michoacán. In doing so, we figuratively join the efforts of various other research teams who are actively engaged in adapting and analyzing mental well-being assessments for use in Mexico (Mora-Rios et al., 2013). Based on previous findings in other Spanish-speaking countries, we hypothesized that the internal structure of the WEMWBS would align with previous research on the assessment. Such a finding would provide social workers in Mexico a brief strengths-based assessment of positive mental health to align with their profession's strengths-centered outlook.

Method

The governing Institutional Review Board approved this project and all its procedures. Youth in rural Michoacán, Mexico, attending a middle school (US equivalent = seventh to ninth grade) were recruited to participate in a study on health that took place during a typical school day. The first and second authors of this study collaborated with a Mexican research team (led by a school psychologist), who discussed the study and disseminated informed consent documentation to the parents of each student. Although the study required active consent, we were able to attain a high response rate (95%) as the school psychologist had rapport with families in the community and was able to personally answer questions including assurance of confidentiality. Trained data collectors worked with school personnel to remove students from classrooms and administer anonymous surveys. Of the 118 potential participants, 112 students (female = 48%; mean (*M*) age = 13.2, standard deviation (*SD*) = 0.99) received parental consent, provided assent, and participated.

Analysis plan

We used Mplus Version 7.11 to fit a single-factor CFA model to the item

response data from the WEMWBS in order to evaluate the unidimensionality of the scores and compute reliability estimates. The model parameters were estimated using robust mean- and variance-adjusted weighted least squares (WLSMV) and item response data were treated as ordinal indicators of the underlying latent factor. Goodness-of-fit of the model was evaluated using standard indices and generally accepted cut-off values (Hu and Bentler, 1999). Specifically, we used the chi-square statistic, root mean square error of approximation (RMSEA), comparative fit index (CFI) and the Tucker–Lewis index (TLI) to assess model fit. A CFA model may be considered to fit the data acceptably when the chi-square statistic is non-significant, $RMSEA \leq 0.08$, and CFI and $TLI \geq 0.90$. It should be noted that evaluating model fit is a gestalt process and one would not necessarily expect all indices to align with one another. The structural parameters from the CFA model were also used to estimate score reliability as expressed as *coefficient omega* (McDonald, 1999). Coefficient omega was computed using formulae given in Brunner et al. (2010).

Results

The results of the CFA suggest that the WEMWBS scores are fairly unidimensional since the model fits the data acceptably according to many of the goodness-of-fit indices ($\chi^2(77) = 131.30$, $p < 0.001$; $RMSEA = 0.080$ (95% confidence interval (CI) = 0.056, 0.104); $CFI = 0.940$; $TLI = 0.929$). For example, the RMSEA, CFI, and TLI indices meet the criteria for acceptable fit (Hu and Bentler, 1999); however, the chi-square test was statistically significant, indicating misfit to the data. In many cases, the chi-square test of exact fit is considered too conservative and therefore alternative fit indices (AFIs; e.g. RMSEA, CFI) are more heavily relied upon when evaluating fit in applied studies. It is also important to note that the upper limit of the 95 percent CI for the RMSEA index was larger than 0.10, which may indicate that this model is poor-fitting in the population.

In addition to the goodness-of-fit of the single-factor model, the standardized factor loadings were all positive and nearly all of substantial magnitude ($\lambda \geq 0.40$), suggesting that the items are adequate indicators of a single underlying latent factor. The two exceptions were item #4 (*I've been feeling interested in other people*)

and item #11 (*I've been able to make up my own mind about things*), which demonstrated 'low' loading onto the latent factor ($\lambda = 0.35$ and 0.32 , respectively). Several other items, including items #1 (*I've been feeling optimistic about the future*), #2 (*I've been feeling useful*), and #3 (*I've been feeling relaxed*), demonstrated relatively weak factor loadings around 0.40 . See Figure 1 for standardized factor loadings.

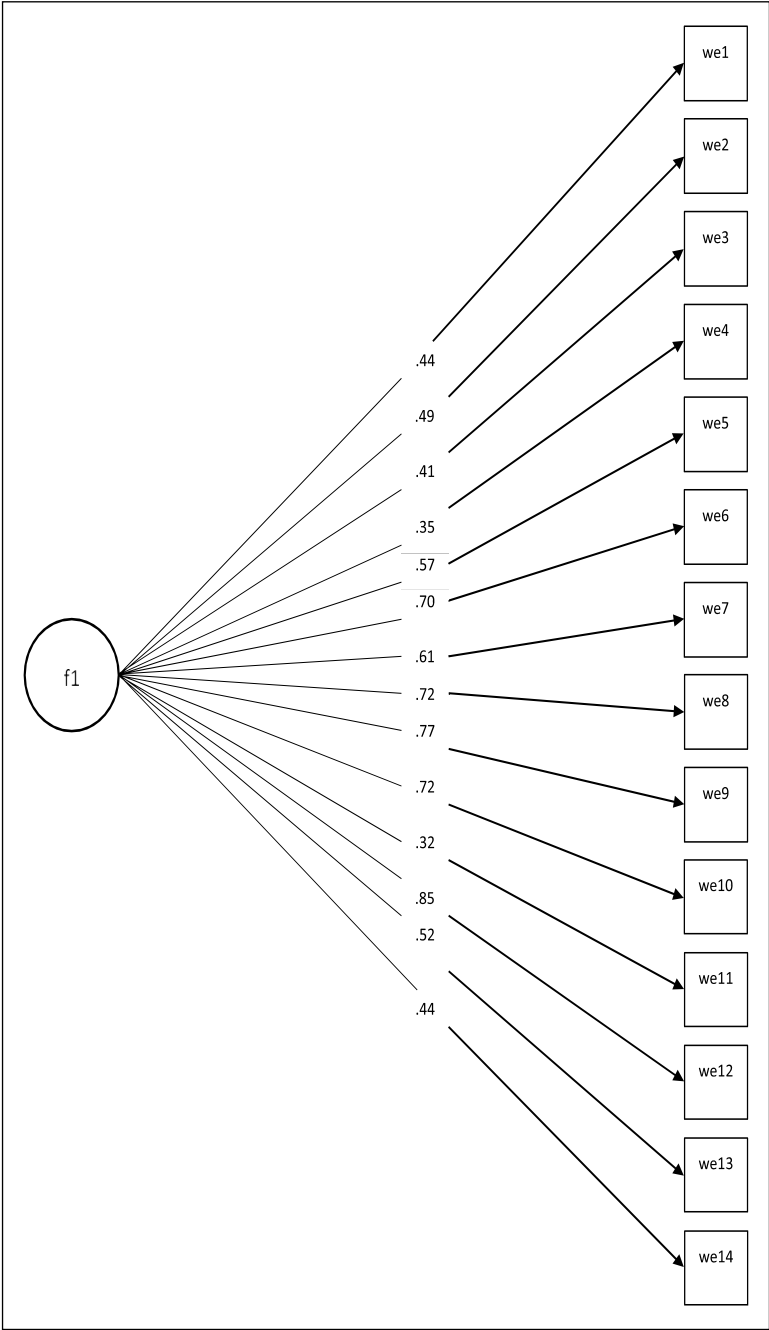


Figure 1. Path diagram for the single-factor CFA model.

CFA-based reliability (i.e. coefficient omega) was estimated using the standardized factor loadings and residuals. Coefficient omega, like coefficient alpha, is a ratio of true score variance to total variance and is therefore scaled from 0 (completely unreliable) to 1 (perfectly reliable). Coefficient omega was equal to 0.885, demonstrating that 88.5 percent of the variance in the composite score is attributable to the underlying latent factor, indicating that the WEMWBS score is a precise measure of the well-being of Mexican adolescents.

Discussion

In this study we assessed the psychometric adequacy of the WEMWBS scores among a sample of Mexican youth living in Michoacán. The findings indicate that, overall, the Spanish version of the WEMWBS is an acceptable and reliable measure of mental well-being. A more detailed analysis of the findings indicates that, as with previous studies, a few of the standardized factor loadings were not as strong as typically desired. This was especially true in the case of two items; interestingly, one of these items (*I've been feeling interested in other people*) has not performed particularly well in other validation studies. In an adaptation study of the original WEMWBS into Spanish, López et al. (2013) found that this item had the lowest item-total score correlation of all the WEMWBS questions. Likewise, Stewart-Brown et al. (2009), in efforts to create a shortened version of the WEMWBS, suggested that it could be left out, along with six of the other original questions. However, based on the scale's overall performance, the authors of both aforementioned studies recommended moving forward and continuing to analyze and collect data on the full version of the instrument. While our study identified some items with less than ideal loadings, we also found strong evidence of score reliability and evidence of internal structure based on the goodness-of-fit indices (CFI, TLI, RMSEA); therefore, we also recommend that the full version of the WEMWBS be used among Mexican adolescents. Future researchers should continue to assess the validity of the instrument scores with adolescent Mexican populations.

Limitations

Because this is a pilot study, cautions should be taken regarding the

generalizability of the results. First, our sample comprised strictly youth in middle school and findings are not generalizable beyond this particular population. Likewise, the participants were not selected randomly, but were taken from just one school in Michoacán; therefore, replication studies are needed to identify whether the WEMWBS works equally well among other similarly aged and older youth in Mexico, and from other (e.g. urban) locations.

Conclusion

Aligned with the profession's global ethical principles, study of mental well-being by social workers should focus on client strengths. With more than one-third of the Mexican population projected to struggle with a mental disorder at some point during their lifetime (Kessler et al., 2007), the manner in which these individuals are assessed and assisted by social workers and other helping professionals is vital to their long-term well-being. By incorporating positively worded strengths-based measures such as the WEMWBS, helping professionals in Mexico can help circumvent much of the stigma and negativity surrounding mental health and help clients receive assistance in an empowering manner.

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