Evidence for Use of a Psychometric Inventory of New College Student Adjustment With Ghanaian Students: Implications for the Professional Globalization of Counseling

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As the counseling profession continues its globalization onto Ghanaian college campuses, there is an increased need for psychometric assessments that support programming and interventions that promote degree matriculation and general student well-being. A sample of 696 young adult Ghanaian college students completed the Inventory of New College Student Adjustment (INCA) and related measures to estimate evidence of internal structure and relationships with conceptually related constructs. Confirmatory factor analyses were completed and inspection of fit indices revealed strong evidence for internal structure, and bivariate correlations indicated statistically significant positive associations with related medium effect sizes between the INCA subscales (Supportive Network and Belief in Self) and related measures. Implications for use of the INCA to support the professional activities of Ghanaian counselors working on college campuses are provided.

Keywords: Ghanaian counselors, college student adjustment, globalization, psychometric inventory, assessment

Higher education in Ghana has experienced tremendous growth over the past two decades, increasing access to institutions of higher education and student enrollment. In 2012, there were 138 accredited higher education institutions throughout Ghana, including public and private institutions, polytechnics, and training colleges (Atuahene, 2013; National Council for Tertiary Education [NCTE], 2014). This is an exponential degree of growth when compared to the existence of only three public universities in Ghana at the close of the 1990s (Atuahene, 2013). Although access and participation in university education has grown rapidly, the proportion of enrolled students versus those eligible to be enrolled remains low. According to the United Nations Educational, Scientific and Cultural Organization (2017), the percentage of enrolled students compared to those eligible to be enrolled in higher education in Ghana for 2015 was only 16.23%, indicating inadequate pre-college academic preparation, lack of affordability, low retention rates, and inadequate supports once enrolled (Atuahene, 2012). With its higher education system facing such challenges, resources and tools that can assist Ghanaian higher education institutions meet student needs as they enter university life, adjust to the unique set of demands, and access existing supports are imperative.

Because the demand for higher education in Ghana has traditionally been greater than its supply, most of the available resources have been focused on the expansion of facilities rather than the improvement of student experiences that may promote university persistence and degree matriculation. Only in recent years has the NCTE begun to rate institutions on the quality and relevance of their academic programs. Atuahene (2012) identified several distinctive factors associated with Ghanaian student dropout, including: (a) inadequate financial support for low income students, (b) student socioeconomic and geographic background, (c) student pre-college academic preparation,

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(d) unfavorable institutional policies and practices, and (e) a lack of academic advising. With these barriers in mind, there is currently an opportunity in Ghanaian higher education to develop resources that can support student adjustment and academic persistence.

Researchers (e.g., Carter, Locks, & Winkle-Wagner, 2013; Gray, Vitak, Easton, & Ellison, 2013; Pascarella & Terenzini, 2005; Robbins, Oh, Le, & Button, 2009) have found first-year adjustment to an academic setting to be a crucial component in student retention. Furthermore, they have found that positive adjustment within the first year of college can significantly impact a student's academic persistence to degree completion. Andoh-Arthur, Asante, and Osafo (2015) studied the help-seeking behaviors of Ghanaian university students and found that the first-year student population was least likely to engage in help-seeking behaviors. They attributed this to the students' unfamiliarity with their new identity as university students. Knowing this, Ghanaian students' first year of university experience is a crucial time for university support personnel to proactively engage students regarding college adjustment issues. The capacity to identify new university students who are struggling to adjust to college life and who also may be at a higher risk for attrition is essential for Ghanaian university personnel as they seek to improve university retention rates.

Globalization of Counseling and Its Role in University Settings

The welcome statement of NBCC International proposes an organizational intention to increase the "availability of competent, reliable services to any part of the world that indicates an interest in acquiring them . . . with the utmost care and respect for the social, cultural, political, and economic realities of the various areas where we are invited" (Clawson, 2011, para. 2). Lorelle, Byrd, and Crockett (2012) identified the globalization of counseling as an inevitability, wherein professional counseling activities are progressively transitioning from a Western-based practice to one that gives international communities the opportunity for transformation as well. Lorelle et al. suggested that as the counseling profession is introduced on a local level, opportunities emerge for adaptation to local cultures and new contexts that yield new ways of understanding culturally defined standards of care. Among the many international settings adopting the values and activities synonymous with the counseling profession, Ghana appears poised to increase the capacity and scope of counseling activities through meaningful placement of services on university campuses.

Quarshie, Annor, Tagoe, Osei-Poku, and Andoh-Arthur (2016) identified a growing population of mental health professionals within the country of Ghana. This expansion of service provider capacity has been positively correlated with growth in the Ghanaian economy and represents a commitment to developing public mental health infrastructure using existing resources and expanding capacity over time (Ghana Health Professions Regulatory Bodies Act 857, 2013). Quarshie et al.'s (2016) analyses also detected that the majority of Ghanaian mental health professionals are housed on college, polytechnic, and university campuses. Situating these providers within these settings not only provides them support for their professional preparation programs, but also provides proximal contact with students who may be experiencing mental health symptoms while attempting to adjust to new demands within university settings. This action has important consequences for both the globalization of the counseling profession and the promotion of optimal development, degree matriculation, and access to a more equitable life for Ghanaian students. However, evidence-supported interventions require evidence-supported assessments that are population-specific, and currently there is a paucity of such assessments that can be utilized by mental health professionals to understand the adjustment experiences of students at Ghanaian universities.

Rationale and Purpose of the Study

Given that one aspect of counselor identity is the use of evidence-supported assessment practices, and another is evidence-supported intervention and programming (American Counseling Association, 2014; Lorelle et al., 2012), there is a call to complete activities to support the actions of Ghanaian mental health professionals charged with promoting adjustment among local university students. The Inventory of New College Student Adjustment (INCA; Watson & Lenz, 2017) is one viable instrument for assessing college student adjustment that is free to use and has yielded promising psychometric properties among ethnically diverse samples within the United States. It has been identified as a resource to help determine the appropriate support services needed for university students, as well as a resource to assess the overall effectiveness of campus initiatives focused on student adjustment. Although the INCA could be a valuable tool to address the current needs and trends in Ghanaian higher education, the degree of validity of INCA scores for a Ghanaian university student population is currently unknown. Therefore, the purpose of this study was to evaluate the transferability of validity evidence for scores on the INCA to a sample of Ghanaian students. Specifically, we intended to identify the degree of evidence related to internal structure of the INCA scores and their relationships with conceptually related variables.

Method

Participant Characteristics

Six hundred ninety-six Ghanaian college students (435 male [63%], 237 female [34%], 24 did not report gender [3%]), the majority of whom were young adults (*M* age = 22.45 years; *SD* = 4.37) completing undergraduate coursework at one large university in Ghana, Africa, participated in this study.

Measurement of Constructs

Inventory of New College Student Adjustment. The INCA (Watson & Lenz, 2017) was developed to assess the adjustment difficulties experienced by first-year college students and was normed using an ethnically diverse sample of 474 freshmen students in the United States. The INCA is a 14-item instrument using a 4-point Likert scale to assess participant responses from 1 (*strongly disagree*) to 4 (*strongly agree*). Scores can range from 14 to 56, with higher scores indicating higher levels of college adjustment. The 6-item Supportive Network subscale includes items such as "My friends support me as I work toward my goals" and "My family's support makes me feel stronger." The 8-item Belief in Self subscale includes items such as "My study habits are effective" and "I know what I will do after graduation." Initial psychometric testing demonstrates good alpha reliability coefficients for scores on INCA subscales ranging from .77 (Belief in Self) to .83 (Supportive Network), indicating good internal consistency. Moreover, our sample reported alpha reliability coefficients of .74 for both the Belief in Self subscale and the Supportive Network subscale.

The Multidimensional Scale of Perceived Social Support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988) was developed to assess an individual's perception of social support from family, friends, and significant others. Each of these sources of social support is considered a distinct subgrouping and is assessed individually. The MSPSS was normed using a subject pool of 275 undergraduate students in the United States with a nearly equal sample of male and female students (Zimet, et al., 1988). After further psychometric testing, reliability has been established for diverse samples beyond the original norming group (Stanley, Beck, & Zebb, 1998). The MSPSS is a 12-item instrument using a 7-point Likert-scale to assess participant responses from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Scores can range

from 12 to 84, with higher scores representing higher levels of perceived social support. For the purposes of this study, we used the Family Relationships subscale and Relationships with Friends subscale. The 4-item Family Relationships subscale includes items such as "My family really tries to help me" and "I get the emotional help and support I need from my family." The 4-item Relationships with Friends subscale includes items such as "My friends really try to help me" and "I can count on my friends when things go wrong." Zimet et al. (1988) reported high Cronbach's alpha coefficients for scores on MSPSS subscales ranging from .85–.91, indicating good internal consistency. The reliability of the total scale for the initial sample was .88. Additionally, our sample reported coefficients ranging from .81 for the Family Relationships subscale and .88 for the Relationships with Friends subscale.

College Self-Efficacy Inventory. The College Self-Efficacy Inventory (CSEI; Solberg, O'Brien, Villareal, Kennel, & Davis, 1993) was developed to assess a student's confidence in their ability to successfully complete college-related tasks. Originally developed to measure college self-efficacy in Hispanic college students, CSEI data has established reliability beyond the initial norming population to also include ethnically diverse college students (Gore Jr., Leuwerke, & Turley, 2005). The CSEI is a 20-item instrument using a 10-point scale to assess a participant's confidence in their ability to successfully complete a task from 1 (*not at all confident*) to 10 (*extremely confident*). Scores can range from 20 to 200, with higher scores indicating higher levels of confidence in one's ability to successfully complete college-related tasks. The 20-item scale includes items such as "Make new friends at college," "Talk to university staff," and "Take good class notes" (Barry & Finney, 2009). Gore et al. (2006) reported Cronbach's alpha coefficients for scores on the CSEI subscales ranging from .62–.89. The reliability of the CSEI for the initial sample was .93 (Solberg et al., 1993). Additionally, we observed a Cronbach's alpha coefficient of .88 for our sample.

Procedure

After ethical review board approval, students registered in classes at one large university in Ghana were asked to participate in this study. A survey administrator, who was not the course instructor, shared the opportunity to participate in this study with students and disseminated an information sheet explaining the purpose, processes, and voluntary nature of the study. After having time to review the information sheet, the students choosing to participate in the study were given a packet including a demographic questionnaire, the INCA, the MSPSS, and the CSEI. All measures except for the demographic questionnaire were counter-balanced in an effort to control for random responding, order effect, and fatigue. Participants filled out hard copy surveys in class and turned them in to the survey administrator, who supplied them to the authors. Participant answers to the survey packet were entered into an SPSS spreadsheet. After all data was documented, the original hard copy surveys were securely destroyed.

Data Analysis

Statistical power analysis. We conducted a power analysis to determine the suitability of our sample size for identifying model fit using the criteria outlined by Stevens (2009): $n/p \geq 30$. Using this standard, our largest scale (Belief in Self), consisting of eight items, would necessitate a sample size of at least 240. With a sample size of 696 (i.e., 87 participants per item), we considered our sample size sufficient for making statistical inferences about model fit. We also acknowledge that this model is over-powered for hypothesis testing and may lead to type I error. Therefore, when interpreting analyses, a greater emphasis was placed on model fit indices over *p*-values for χ^2 tests.

Preliminary data analysis. The dataset was analyzed for missing values prior to performing statistical analyses. A small percentage of missing values (684 out of 71,100; .009%) was detected, but

no identifiable pattern within these absent values was present. We used the series mean imputation function in IBM SPSS, Version 23, to replace all missing values.

Evidence regarding internal structure. We analyzed model fit for the INCA subscales using the SPSS Analysis of Moment Structures Software, Version 22. We conducted our analyses of the INCA subscale factor structures based on the initial factor structure emerging from the analyses completed by Watson and Lenz (2017). Initially, we interpreted the C-minimum/degrees of freedom (CMIN/DF), *p*-values, root mean residual (RMR), goodness of fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA) metrics of model fit. Standards presented by Dimitrov (2012) were used to interpret these values with criteria for a strong model fit represented by CMIN/DF < 2, *p* > .05, RMR < .08, GFI > .90, CFI > .90, TLI > .90, and RMSEA < .10. When model fit proved inconsistent with these standards, modification indices were evaluated to determine items with potential covaried error. Covarying items provides a scenario within the factorial model wherein two items share their assumed variance. If such instances were identified, the model was computed again to re-inspect fit indices. If a factor model continued to have an inadequate fit, we inspected individual item correlation loadings and considered items for removal from the model. Items were removed if correlation coefficients were found to be less than .70.

Evidence regarding relationships with conceptually related constructs. Bivariate correlations were computed between scores on the INCA, MSPSS, and CSEI to depict degree of convergent validity between scores on the INCA subscales (Supportive Network and Belief in Self) with conceptually related constructs of perceived social support and academic self-concept, via the MSPSS and CSEI, respectively. Pearson's correlation coefficients were interpreted as small (.10), medium (.30), or large (.50) based on the conventions reported by Swank and Mullen (2017) and evaluated at the .05 level of statistical significance.

Results

All alpha coefficients, descriptive statistics, and bivariate correlations for variables included within the analyses can be found in Table 1.

Table 1

Alpha Coefficients, Descriptive Statistics, and Bivariate Correlations for Variables Included Within Analyses.

Scale-Construct	α	*M*	*SD*	1	2	3
INCA - Belief in Self	.74	23.31	3.32			.34*
INCA - Supportive Network	.74	17.44	2.65	.44*	.44*	
1. MSPSS - Family Relationships	.88	20.02	6.49			
2. MSPSS - Relationships with Friends	.81	16.70	5.91			
3. CSEI - College Self-Efficacy	.88	36.77	14.69			

Note. * indicates statistical significance at .01 level

Evidence Regarding Internal Structure

INCA - Belief in Self. The primary analysis of the Belief in Self subscale was significant for the hypothesized model, $\chi^2(20) = 124.51$, $p < .01$, and was suggestive of an unacceptable fit for the data: CMIN/DF = 6.22, RMR = .02, GFI = .95, CFI = .88, RMSEA = .08. After deleting item 6 and pairing the error terms for items 2 and 5 ("Past experiences help me cope with the demands of university life" and "Challenging courses make me a better student") and 3 and 4 ("I believe I handle adversity well" and "My classmates value my opinions"), a good model fit emerged for scores on the Belief in Self subscale: $\chi^2(12) = 28.58$, $p < .01$. This finding was additionally supported by the fit indices: CMIN/DF = 2.38, RMR = .01, GFI = .98, CFI = .98, RMSEA = .04. Inspection of the alpha coefficient for scores for this sample ($\alpha = .74$) was within the good range, indicating an acceptable degree of consistency and precision suitable for social sciences research activities.

INCA - Supportive Network. The primary analysis of the Supportive Network subscale was significant for the hypothesized model, $\chi^2(9) = 102.28$, $p < .01$, and was suggestive of an unacceptable fit for the data: CMIN/DF = 11.37, RMR = .03, GFI = .95, CFI = .80, RMSEA = .12. After pairing error terms for items 1 and 3 ("My friends support me as I work toward my goals" and "My friends help me to grow in important ways") and items 4 and 6 ("My family's support makes me feel stronger" and "I can be real with at least a few of my friends"), a good model fit emerged for scores on the Supportive Network subscale: $\chi^2(7) = 14.03$, $p = .08$. This finding was additionally supported by the fit indices: CMIN/DF = 3.41, RMR = .01, GFI = .98, CFI = .96, RMSEA = .05. Inspection of the alpha coefficient for scores for this sample ($\alpha = .74$) was within the marginal range, indicating an acceptable degree of consistency and precision suitable for social sciences research activities.

Evaluation of Conceptually Related Measures

Family Relationships. The primary analysis of the Family Relationships subscale of the MSPSS was significant for the hypothesized model, $\chi^2(2) = 45.47$, $p < .01$, and was suggestive of an unacceptable fit for the data: CMIN/DF = 22.73, RMR = .10, GFI = .96, CFI = .97, RMSEA = .17. After pairing the error terms for items 3 and 4 ("I can talk about my problems with my family" and "My family is willing to help me make decisions") a good model fit emerged for scores on the Family Relationships subscale: $\chi^2(1) = 9.21$, $p < .01$. This finding was additionally supported by the fit indices: CMIN/DF = 9.21, RMR = .04, GFI = .99, CFI = .99, RMSEA = .10. Inspection of the alpha coefficient for scores for this sample ($\alpha = .88$) was within the good range, indicating an acceptable degree of consistency and precision suitable for social sciences research activities.

Relationships with Friends. The primary analysis of the Relationships with Friends subscale of the MSPSS was significant for the hypothesized model, $\chi^2(2) = 49.52$, $p < .01$, and was suggestive of an unacceptable fit for the data: CMIN/DF = 24.76, RMR = .15, GFI = .96, CFI = .95, RMSEA = .18. After pairing the error terms for items 1 and 2 ("My friends really try to help me" and "I can count on my friends when things go wrong"), a good model fit emerged for scores on the Relationships with Friends subscale: $\chi^2(1) = 1.43$, $p = .23$. This finding was additionally supported by the fit indices: CMIN/DF = 1.43, RMR = .02, GFI = .99, CFI = 1, RMSEA = .02. Inspection of the alpha coefficient for score for this sample ($\alpha = .81$) was within the good range, indicating an acceptable degree of consistency and precision suitable for social sciences research activities.

College Self-Efficacy. The primary analysis of the College Self-Efficacy subscale of the CSEI was significant for the hypothesized model, $\chi^2(9) = 66.70$, $p < .01$, and was suggestive of an unacceptable fit for the data: CMIN/DF = 7.41, RMR = .34, GFI = .97, CFI = .98, RMSEA = .09. After pairing the error terms for items 1 and 2 ("Manage time effectively" and "Research a term paper") and 3 and 5 ("Do well on your exams" and "Understand your textbooks"), a good model fit emerged for scores on the

College Self-Efficacy subscale: $\chi^2(7) = 22.45$, $p < .01$. This finding was additionally supported by the fit indices: CMIN/DF = 3.20, RMR = .10, GFI = .98, CFI = .99, RMSEA = .05. Inspection of the alpha coefficient for scores for this sample ($\alpha = .88$) was within the good range, indicating an acceptable degree of consistency and precision suitable for social sciences research activities.

Evidence Regarding Relationships With Conceptually Related Constructs

Bivariate correlation analysis of scores on the INCA Belief in Self subscale and CSEI resulted in a statistically significant positive relationship ($r = .34$, $p < .01$) indicative of a medium effect size. The correlation analysis of scores on the INCA Supportive Network subscale and MSPSS Family Relationships and Relationships with Friends subscales also resulted in statistically significant positive relationships ($r = .448$, $p < .01$, $r = .448$, $p < .01$, respectively) indicative of medium effect sizes. The strong positive relationships between scores on the two INCA subscales and conceptually related constructs are suggestive of support for convergent validity wherein the scores on the INCA tended to increase while scores on related measures increased too. Taken together, students who reported a greater belief in self also tended to report a greater sense of college self-efficacy. Similarly, participants who reported a greater belief in self during the first year of transition to college life also tended to report higher scores, indicating strong relationships with friends and family.

Discussion

The purpose of this study was to evaluate the validity evidence for the INCA using a Ghanaian college student population, with the hope that the instrument could be used by mental health professionals working in Ghanaian universities. Given the robust nature of our findings, we are heartened by the potential for the INCA and other emerging assessments to contribute to evidence-supported practices for optimal development and adjustment among students at Ghanaian universities. In light of our findings, several considerations warrant discussion.

Foremost, the INCA has potential uses that could address some of the most prominent issues facing higher education in Ghana today, particularly low matriculation rates. As the NCTE begins to rate institutions on the quality and relevance of their academic programs, the INCA can be used by university personnel to assess student adjustment so that necessary changes to student affairs programming can be made to improve the adjustment experiences of Ghanaian college students. Specifically, the INCA can be used by university personnel to gain a better understanding of the adjustment experiences of their first-year college students. This understanding can have important implications for program development at Ghanaian higher education institutions. As university personnel better understand the adjustment experiences of their first-year students, they can create programs that are more specialized to meet the needs of the Ghanaian student population, improve retention rates, and increase matriculation. Such activities have auspicious implications for not only promoting optimal development proximally, but encouraging access to a more equitable life, one characterized by fewer disparities than individuals within the emerging Ghanaian economy who do not have similar educational preparation and training.

Additionally, scores on the INCA can support early identification of first-year students who are struggling to adjust to university life. Because first-year students are least likely to engage in help-seeking behaviors (Andoh-Arthur et al., 2015), university personnel can develop proactive strategies to support struggling students and provide psychoeducation about the benefits of help-seeking behaviors. Such activities may include designing early detection protocols within orientation activities or integrating screening and referral within initial coursework activities.

In the cases of both program development and early identification, scores on the INCA have potential for evaluating outcomes in a manner that is culturally valid to a reasonable degree. Thus, the quantification of intervention outcomes by student affairs programmers and mental health professionals can provide an impetus for further understanding their students' needs and the best strategies for meeting them. This is an important consideration in an era wherein Ghanaian mental health professionals are leveraging existing resources while extending their scope of influence within an emerging sociopolitical climate, which has expanded professional counseling activities through legislative action (Ghana Health Professions Regulatory Bodies Act 857, 2013). It is reasonable to conjecture that through the use of the INCA and other emerging assessments, the utilization and extension of personnel resources can not only be data-driven, but data-justified as well.

Finally, as the globalization of the counseling profession continues to be cultivated worldwide, it is important that counselors in international settings have valid psychometric tools that are population specific. Validation activities, such as the INCA project reported here, provide psychometrically robust assessments that Ghanaian mental health professionals can add to their growing corpus of resources. Although the use of assessment-based programming and outcome measurement do not define the whole of a counselor's professional identity, it is a critical feature (American Counseling Association, 2014; Lorelle et al., 2012). Therefore, as the INCA and other assessments continue to be validated with Ghanaian student populations, the professionalization of Ghanaian mental health professionals grows lockstep.

Limitations and Recommendations for Future Research

Some important limitations and related recommendations for future research are indicated. First, although we sampled almost 700 Ghanaian students, the scope of our participant sample was limited to one campus. Therefore, we regard our findings as preliminary and most relevant to the student body from which they were affiliated. While it is reasonable that a substantial degree of validity generalization may be present, future studies completed at other Ghanaian universities are needed to estimate the transferability of INCA scores across regions. Second, internal consistency of INCA scores (α) were within the acceptable range (.70–.80), yet they did not reach a level that would warrant use for high stakes decision-making, such as program eligibility or dismissal. Further research evaluating content-oriented evidence (Lambie, Blount, & Mullen, 2017), cognitive processing, and response processes (Peterson, Peterson, & Powell, 2017) of INCA items and scores is needed to identify variables that may influence the reliability of items. It is possible that because INCA factors were developed from a Western theory of student adjustment, that consistency may be affected and indicative that some modification of item wording may be warranted (Lenz, Soler, Dell'Aquila, & Uribe, 2017). Thus, further evaluation related to cross-cultural adaptation and representation of constructs consisting within Ghanaian culture is warranted. Finally, this study only reported two sources of validity evidence. Although evidence across all sources of validity would not necessarily imply that INCA is inherently useful (Lenz & Wester, 2017), future research that elucidates INCA features associated with construct irrelevance and underrepresentation would further promote responsible testing and evaluation practice (Spurgeon, 2017).

Conclusion

In conclusion, this study evaluated the transferability of validity evidence for scores on the INCA to a sample of Ghanaian college students. The findings suggest the INCA is a valid psychometric assessment that has the potential to contribute to evidence-supported practices for optimal development and adjustment among students at Ghanaian universities. Specifically, the INCA can be used by Ghanaian university personnel to assess student adjustment, make any necessary changes to

student affairs programming to improve the adjustment experiences of their college students, identify first-year students who are struggling to adjust to university life, and develop proactive strategies to support struggling students. Although initial results are promising, continued research is needed to validate the INCA at various universities across Ghana to continue to determine its degree of generalizability.

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